



INTERNATIONAL  
HELLENIC  
UNIVERSITY

# **Integrated Cross-Border Public Services in the EU: A Case Study**

**Moving within the EU: Change of Address**

**Anna-Marina Panaretou**

**UNIVERSITY CENTER OF INTERNATIONAL PROGRAMMES OF STUDIES  
SCHOOL OF SCIENCE AND TECHNOLOGY**

A thesis submitted for the degree of  
***Master of Science (MSc) in eBusiness & Digital Marketing***

January 2021  
Thessaloniki – Greece

Student Name: Anna-Marina Panaretou  
SID: 3305190041  
Supervisor: Prof. Ioannis Magnisalis

I hereby declare that the work submitted is mine and that where I have made use of another's work, I have attributed the source(s) according to the Regulations set in the Student's Handbook.

January 2021  
Thessaloniki - Greece

## **Abstract**

This dissertation was written as part of the MSc in eBusiness and Digital Marketing at the International Hellenic University and aims to contribute to the improvement of cross-border public services in the European Union, proposing a data model as an assistive semantic interoperability solution. Interoperability between the EU Member States is a prerequisite for seamless cross-border public services, while in most cases public services across borders can only be requested digitally. This automatically involves concepts as eGovernment, the Single Digital Gateway, the once-only technical system, and electronic identification and authentication.

The proposed data model is a digital registration form for a change of address within the same country or abroad. The form requires the fewest steps possible to complete the registration of the new address. The model is constructed based on the common attributes identified in different countries' registration forms and processes for a change of address, in order to make the form suitable for use by all Member States.

This dissertation was accomplished under the supervision and kind guidance of Dr. Ioannis Magnisalis, Professor at the International Hellenic University, School of Science and Technology in Thessaloniki and the help of Syed Iftikhar Hussain Shah, PhD Scholar at the International Hellenic University, School for Science and Technology in Thessaloniki.

**Keywords:** Integrated Cross-Border Public Services, Interoperability, eGovernment, Single Digital Gateway, Electronic Identification

Anna-Marina Panaretou  
04/01/2021

## **Preface**

This is the dissertation “Integrated Cross-Border Public Services in the EU: A Case Study, Moving within the EU: Change of Address”, the basis of which is the improvement of cross-border public services between the Member States of the European Union, proposing a data model as an assistive semantic interoperability solution and the examination of eGovernment initiatives and interoperability in the Union. It was written as a part of the MSc in eBusiness and Digital Marketing at the International Hellenic University. I was engaged in researching and writing this dissertation from July 2020 to January 2021. I would like to thank my supervisor Dr. Ioannis Magnisalis for the excellent guidance and support during this process and all other people that helped me during this period.



# Contents

<b>ABSTRACT .....</b>	<b>III</b>
<b>PREFACE .....</b>	<b>I</b>
<b>CONTENTS .....</b>	<b>III</b>
<b>1. INTRODUCTION .....</b>	<b>1</b>
<b>2. LITERATURE REVIEW.....</b>	<b>7</b>
2.1 EUROPEAN DIGITAL SINGLE MARKET .....	7
2.1.1 <i>European Single Market Definitions</i> .....	7
2.1.2 <i>European Single Digital Market Definitions</i> .....	8
2.2 PUBLIC SERVICES.....	8
2.2.1 <i>Public Services Definitions</i> .....	8
2.2.2 <i>Electronic (Online/Digital) Services Definition</i> .....	9
2.2.3 <i>Electronic (Online/Digital) Public Services Definition</i> .....	9
2.3 INTEROPERABILITY .....	9
2.3.1 <i>Interoperability Definitions</i> .....	9
2.3.2 <i>Interoperability Types</i> .....	9
2.3.3 <i>Interoperability in Cross-Border Public Services</i> .....	11
2.3.4 <i>Common Data Models &amp; Common Metadata in Evidence Exchanged         Across Borders &amp; Interoperability</i> .....	14
2.4 INTEROPERABILITY ISSUES.....	15
2.4.1 <i>National Silos Definition</i> .....	15
2.4.2 <i>Issues Deriving from National Silos &amp; Incompatibility</i> .....	16
2.5 eGOVERNMENT.....	17
2.5.1 <i>eGovernment Definitions</i> .....	18
2.5.2 <i>eGovernment Advantages &amp; Disadvantages</i> .....	18
2.5.3 <i>European eGovernment Initiatives</i> .....	19
2.5.4 <i>eGovernment Status in the EU</i> .....	22
2.6 SINGLE DIGITAL GATEWAY .....	26
2.7 ONCE-ONLY PRINCIPLE.....	27

2.8 EIDENTIFICATION (EID) & AUTHENTICATION .....	30
<b>3. PROBLEM DEFINITION &amp; METHODOLOGY .....</b>	<b>32</b>
3.1 GAPS IN THE BIBLIOGRAPHY.....	32
3.2 CONTRIBUTION OF THIS STUDY .....	32
3.3 METHODOLOGICAL APPROACH .....	33
3.3.1 Literature Review .....	33
3.3.2 Analysis & Findings .....	34
3.3.3 Questionnaire.....	38
<b>4. ANALYSIS &amp; FINDINGS .....</b>	<b>40</b>
4.1 STEP 1: SELECTION OF THE TYPE OF EVIDENCE FOR EXAMINATION .....	40
4.2 STEP 2: IDENTIFICATION OF COMPETENT AUTHORITIES FOR THE SELECTED TYPE OF EVIDENCE .....	41
4.3 STEP 3: DEFINITION OF ATTRIBUTES IN EACH EXAMINED PIECE OF EVIDENCE .....	42
4.3.1 Case Studies – Review .....	43
4.3.2 Review Tables.....	46
4.4 STEP 4: PROPOSAL OF DATA MODEL FOR THE SELECTED TYPE OF EVIDENCE .....	58
4.5 USABILITY AND USER-EXPERIENCE QUESTIONNAIRE - COLLECTED DATA & ANALYSIS .....	70
4.5.1 Usability Part.....	71
4.5.2 Ease-of-Use Part .....	73
4.5.3 Learnability Part.....	74
4.5.4 Degree of Satisfaction Part .....	76
4.5.5 Age .....	77
4.5.6 Comments & Questions Part.....	80
<b>5. CONCLUSIONS .....</b>	<b>81</b>
<b>BIBLIOGRAPHY .....</b>	<b>86</b>
<b>APPENDIX .....</b>	<b>1</b>
E-GOVERNMENT BENCHMARK 2018 .....	1
E-GOVERNMENT BENCHMARK 2019 .....	1
E-GOVERNMENT BENCHMARK 2020 .....	2
FINLAND.....	3
i. Automated Online Process.....	3

ii.	<i>Moving to another address, when already living abroad PDF Form</i>	.....7
SWEDEN.....		9
i.	<i>Moving within Sweden PDF Form (SKV 7845)</i> .....	9
ii.	<i>Moving Abroad PDF Form (SKV 7665)</i>	.....11
iii.	<i>Moving to another address, when already living abroad/remain a voter PDF Form (SKV 7842)</i> .....	13
iv.	<i>Automated Online Process (Moving within Sweden)</i>	.....15
ESTONIA.....		16
i.	<i>Notice of Residence PDF Form</i>	.....16
GREECE.....		18
i.	<i>Solemn Declaration for Change of Address PDF Form</i> .....	18
ii.	<i>Solemn Certificate Declaration for Alterations in Registry Data/Tax Registration (M1) PDF Form</i>	.....20
USABILITY & USER-EXPERIENCE QUESTIONNAIRE		.....22



## 1. Introduction

Nowadays, integrated cross-border public services in the European Union is a highly discussed topic, drawing a lot of attention. The accomplishment of integrated cross-border public services requires a high level of interoperability at all layers between the Member States (27). The European Union provides its citizens and businesses with four freedoms in the context of the internal market; hence the citizens and businesses of the Union have the right to free circulation of goods, capital, services, and people within the European Single Market area (26).

The endeavor to establish a connected Europe at the level of public services is yet not completely achieved. Despite the plethora of European initiatives, cross-border services are still not available in most situations. Furthermore, in the majority of cases moving or exchanging goods, services, and/or capital between the Member States involves electronic interaction with public administrations (27). However, some countries are more digitally mature than others (5–7), adding another obstacle to the European effort for interoperable national ICT systems.

The Digital Single Market Strategy (DSM) aims at improving the *“access for consumers and businesses to digital goods and services across Europe”* (22), to establish an environment with *“right conditions and a level playing field for digital networks and innovative services to flourish”* (22), and to maximize the *“growth potential of the digital economy”* in the Union (22).

The definitions of the term *“public service”* are several. According to the European Parliament, public service is *“an economic activity of general interest,...”* (33). Public services can be provided at a national level or/and across borders. The term integrated cross-border public services can also be found as *“European services”*. These services are delivered by public administrations to citizens, businesses, or other public administrations across borders (27). As mentioned earlier, a prerequisite for effective cross-border public services is interoperability between the EU Member States.

In most cases, the means to request a service from a country, while being located in another country is to apply for the service electronically in order to avoid procedures that demand physical presence at a governmental service location. Online public

services (or digital or electronic services) are defined as service provision to citizens and businesses with the use of ICTs (47).

That makes eGovernment an inextricable part of cross-border service delivery. eGovernment is the exploitation of ICTs for the development of upgraded public services and for citizen and business participation in democratic government to further expand (10). Furthermore, the performance of eGovernment within the Union is monitored and assessed annually. These reports aim to detect the weaknesses and achievements in eGovernment implementation by Europe's +27 countries (7).

In general, interoperability is a term that can be found in many areas and contexts. It is defined as two or more connected systems or components that not only exchange information but also use this information (68). Interoperability is essential both in the private and the public sector, while it is often a prerequisite in big or small organizations for them to function properly (44,68). For example, interoperability is frequently required in companies so that different departments of the same company or other companies can communicate and exchange information with each other. On the public sector side, interoperable public administrations both within a country and/or across borders are often required for seamless public service delivery.

Moreover, interoperability is defined slightly differently depending on the context in which the term is found. There are also various types of interoperability, as organizational, technical, semantic (27,68,77), conceptual (59,68), syntactic (68,77), etc. For example, organizational interoperability is the capacity of two or more units to provide services to and accept them from other units and to use these services to assist them to operate successfully together (77). However, the type that is the most significant for this case study is semantic interoperability, as it is the potential of two or more systems to translate exchanged information in order to generate useful outcomes (68). This type is key in the cross-border exchange of evidence. The European Interoperability Framework proposes the implementation of four layers of interoperability between EU countries for effective cross-border public services. The four layers are organizational, technical, semantic, and legal interoperability (27).

Additionally, the regulatory framework on evidence exchange became more specific a few years ago with the adoption of the Single Digital Gateway Regulation, providing the EU members with guidelines and specifications on evidence exchange through

the once-only technical system (82). The Single Digital Gateway is a “*single point of access to information, procedures and assistance services online*” (28) that is meant to offer information about websites where users can request public services online and problem-solving services (28). Moreover, the Once-Only Principal allows citizens and businesses to submit various data to public administrations only once so as to receive multiple national or cross-border public services without the need of re-submitting data already provided once to a public authority (8).

Furthermore, the aim is that citizens and businesses will be authenticated through their national electronic identification (eID) schemes when requesting a service. More specifically, eIDs and Trust Services (electronic signatures, electronic seals, time stamps, electronic delivery services, and website authentication) should be used as legally equivalent means of authentication as the traditional ones (23). These digital authentication solutions can be used both when requesting public services at a national level and across borders. Moreover, the eIDAS regulation provides a regulatory framework for mutual recognition of the national IDs as authenticators by the Member States. Thus, the need for manual validation is significantly reduced (80).

As mentioned previously, eGovernment performance in Europe is being monitored yearly. The eGovernment Benchmark report in 2020 showed that the EU’s 27+ countries’ overall eGovernment performance scored 68% in comparison to 62% in 2018. Furthermore, the performance is evaluated through four top-level benchmarks (user-centricity, transparency, use of key enablers, cross-border mobility) in relation to eight life events (business start-up, losing and finding a job, family life, studying, regular business operations, moving, owning and driving a car, starting a small claims procedure). All assessed indicators were improved during the last two years. In 2020 user-centricity scored 87% in comparison to 82% in 2018. This benchmark consists of three sub-indicators, online availability, usability, and mobile-friendliness. Transparency marked 66% in 2020 compared to 59% in 2018. The transparency benchmark consists of three sub-indicators, as well, transparency in service delivery, transparency in public organizations, and transparency in personal data. Use of key enablers scored 61% in 2020 and 54% two years ago, the sub-indicators are cross-border online service availability, cross-border usability, cross-border eID use, cross-border eDocuments. And last, cross-border mobility reached 56% in 2020 compared to 52% in 2018 with four sub-indicators, eID,

eDocuments, authentic sources, and digital post. Cross-border mobility is the lowest indicator compared to the other four benchmarks (5,7).

The Benchmark Reports have shown that cross-border mobility has been having the lowest performance in general. This indicator is significantly interesting as it shows also that business mobility is easier than citizen mobility (5–7). For example, in 2019 business mobility across borders scored 63%, while citizen mobility only 48% (6). These numbers indicate that cross-border public services are not fully developed yet (6). Another factor contributing to limited cross-border service delivery appears to be the difference between leading counties (e.g., Malta, Estonia, Austria) in eGovernment and laggards (5–7). Some countries are more technologically developed than others and their ICT solutions are better aligned with European requirements in the eGovernment area. For example, some countries meet the Once-Only Principle requirements to a greater extent than others (45).

Consequently, cross-border mobility and cross-border service delivery appear to be constrained mainly due to legal (22) and technological incompatibilities between the countries (45). The European initiatives on integrated service delivery in the Union have not completely solved issues as the different pace in technological development between member states or lack of semantic interoperability.

The objectives of this case study are four. The first is to find out how eGovernment is evolving in the EU and what is its current state while highlighting the weaknesses and achievements. This research question is entirely answered in the literature review in “Chapter 2” in the sections named “European eGovernment Initiatives” and “eGovernment Status in EU.

The second objective is to discover how common data models or common metadata for evidence exchange between public administrations, in the context of electronic cross-border public services, could assist interoperability between EU member states. This research question is answered partially from the literature review in “Chapter 2”, in the parts named “Interoperability in Cross-Border Public Services” and “Common Data Models & Common Metadata in Evidence Exchanged Across Borders & Interoperability”, and partially in “Chapter 4” through the collected data and proposed data model for semantic interoperability.

The third objective is to answer how automated evidence exchange between the EU Member States could reduce manual validation for European citizens and facilitate their access to cross-border public services, answering the question in “Chapter 4” through the collected data and proposed data model for semantic interoperability.

And last, the fourth objective is to contribute to the improvement of semantic interoperability between the Member States with the formation of the proposed data model mentioned previously. The model uses as an assistive semantic interoperability solution for digital cross-border public service delivery in the Union, that focuses on the process of changing address while moving within the EU. Furthermore, the model is constructed following four steps of analysis (selection of the type of evidence for examination, identification of competent authorities, the definition of attributes in each selected piece of evidence, proposal of a data model) and is afterwards presented to a group of people in order to find out the user-experience and usability of the proposed data model, through a usability questionnaire.

The rationale behind the topic selected for analysis and the construction of a proposed data model, concerning the registration process for change of address, was the fact that semantic interoperability between EU members is still limited, thus citizens and businesses are in most cases not provided with the option to request an online service across borders, while this implicitly results in citizen cross-border mobility to be relatively low (5).

Following, “Chapter 2” contains the literature review, while “Chapter 3” describes the contribution of this case study and the methodological approach followed. Next, “Chapter 4” consists of the analysis and findings (proposed data model and results of a user acceptance questionnaire). Lastly, “Chapter 5” contains the conclusions, as well as the limitations, met in this case study. Additionally, at the end of the case study, the references indicating the used bibliography are presented, as well as an appendix.



## 2. Literature Review

The concept of integrated cross-border public services is related to several other concepts as the Digital Single Market, interoperability, eGovernment, Single Digital Gateway, Once-Only Principle, and electronic identification, because digital interaction is a prerequisite in most cases for cross-border public service delivery. Thus, it is important to define and discuss these topics.

### 2.1 European Digital Single Market

The European Single Market is a successful undertaking that started many decades ago in the European Union and is still in progress, as the member states and the European bodies continue to improve the environment of the Single Market. The digitization of the Single Market is one of the biggest efforts for modernization and improvement.

#### 2.1.1 European Single Market Definitions

According to the European Commission, *“the single market refers to the EU as one territory without any internal borders or other regulatory obstacles to the free movement of goods and services. A functioning single market stimulates competition and trade, improves efficiency, raises quality, and helps cut prices. The European single market is one of the EU’s greatest achievements. It has fueled economic growth and made the everyday life of European businesses and consumers easier”* (26) and *“in the EU’s single market (sometimes called the internal market) people, goods, services, and money can move around freely. Mutual recognition guarantees that any product lawfully sold in one EU country can be sold in all others. EU citizens can study, live, shop, work and retire in any EU country - and enjoy products from all over Europe”* (29).

In EU’s internal market citizens and businesses are provided with four freedoms. EU citizens and businesses have the right to move freely between member states and to circulate goods, services, and capital. These freedoms are guaranteed through treaties and common policies. The movement within the Union often result the need to interact electronically with European countries’ public administrations (27).

### 2.1.2 European Single Digital Market Definitions

According to the European Commission, *“a Digital Single Market (DSM) is one in which the free movement of persons, services and capital is ensured and where the individuals and businesses can seamlessly access and engage in online activities under conditions of fair competition, and a high level of consumer and personal data protection, irrespective of their nationality or place of residence”* (22).

The Digital Single Market Strategy (DSM) that was adopted by the European Commission in 2015 is based on three pillars. The first pillar is *“Access”* which signifies *“better access for consumers and businesses to digital goods and services across Europe”* (22). The second pillar is *“Environment”* which means the establishment of *“right conditions and a level playing field for digital networks and innovative services to flourish”* (22). Last, the third pillar is *“Economy & Society”* which suggests maximization of *“growth potential of the digital economy”* (22).

## 2.2 Public Services

The term *“service”* is vague and can be found in several different circumstances; hence its definition is often reflecting the context in which the term is referred. For example, the European Commission defines service strictly in the context of its official documents, suggesting that the definition used might not be suitable for other disciplinary areas (55).

### 2.2.1 Public Services Definitions

According to the European Parliament, *“public service is an economic activity of general interest defined, created and controlled by the public authorities and subject, to varying degrees, to a special legal regime, irrespective of whether it is actually carried out by a public or private body”* (33).

Also, according to the EIF a *“European public service comprises any public sector service exposed to a cross-border dimension and supplied by public administrations, either to one another or to businesses and citizens in the Union”* (27).

In this case study the term *“public services”* will be used in the context given by the new EIF report (27).



### 2.2.2 Electronic (Online/Digital) Services Definition

Electronic or digital or online service (eService) is defined as the service provided to citizens and businesses with the use of ICT (47,55). The word eService applies on many fields; however, it is usually found in the fields of eBusiness and eGovernment (47).

### 2.2.3 Electronic (Online/Digital) Public Services Definition

An electronic or digital or online public service can be defined as a single electronic interaction between a public administration and a user or as a series of electronic interactions combined with physical service delivery as well (55).

## **2.3 Interoperability**

The term interoperability can be found in many disciplinary areas and is often defined differently according to the context.

### 2.3.1 Interoperability Definitions

Interoperability means that two or more connected systems or components are in a position not only to exchange information but also to use this information (68).

*“For the purpose of the EIF, interoperability is the ability of organisations to interact towards mutually beneficial goals, involving the sharing of information and knowledge between these organisations, through the business processes they support, by means of the exchange of data between their ICT systems” (27).*

For this case study, the term interoperability is used as in the definition given by the EIF (27).

### 2.3.2 Interoperability Types

There is a significant number of interoperability categorizations in the literature and some of the most common types (or levels (77) or layers (68)) are mentioned and defined below:

Technical interoperability (27,68,77) is related to infrastructure and software. More specifically, this type of interoperability refers to a situation in which hardware and software components, networks, and equipment acquired by different organizations are interconnected, allowing machine-to-machine communication unambiguously (68,77).

Syntactic interoperability (68,77) is associated with data formats and in particular with data representation in machine-readable forms. This type accomplishes identification of elements and rules (68), aiming at *“structuring the elements, mapping, bridging, and navigating among equivalent elements”* (77).

Organizational interoperability (27,77) refers to the capacity of two or more units to provide services to and accept them from other units and to use these services to assist them to operate successfully together. Additionally, organizational interoperability relies on the effective implementation of the other three types of interoperability (technical, syntactical, and semantic interoperability) (77).

Pragmatic interoperability means that a message sent by a system produces the effect expected by that system. According to Spalazzese et al. (2020), the idea is that *“the collaborating system understands the message’s intended effect”*. Understanding of methods and procedures used by the other systems as well as the use of data and the context of its application in the other systems is a prerequisite for it to work. Moreover, pragmatic interoperability can only be accomplished with the combination of syntactic and semantic interoperability (68).

Dynamic interoperability means that systems are able to understand the state alterations that take place in other systems’ assumptions and constraints (68).

Conceptual interoperability, according to Spalazzese et al. (2020), is the alignment of *“the conceptual models and then the assumptions and constraints of the meaningful abstractions of the reality”*. This entails entirely specified implementation-independent conceptual models that can be interpreted and assessed by a program or by software engineers (68).

Legal interoperability is related to the ability of organizations to become interoperable, despite functioning based on different legal frameworks, policies and strategies (27).

Semantic interoperability (27,68,77) is a type where the information must be relevant in order to be exchanged or shared (77). Semantic interoperability assures that two or more systems can translate exchanged information to generate valuable outcomes (68) and that, according to Valle et al. (2019), *“the precise meaning of exchanged information is understandable by any other application that was not initially developed for this purpose”* and supports *“high level, context-sensitive information request over*

*heterogeneous information resources, hiding system, syntax, and structural heterogeneity*” (77). The means to accomplish this type of interoperability is the existence of a common information exchange reference model between the two participating sides (77) and interaction protocols at the application layer (68).

However, some of these types of interoperability (technical, semantic, organizational) are met in other studies as well. For instance, the European Interoperability Framework (EIF) proposes to apply interoperability solutions in four layers, legal, organizational, semantic, and technical, along with a cross-cutting component of the four layers, “integrated public service governance” and a background layer referred to as “interoperability governance” (27).

### 2.3.3 Interoperability in Cross-Border Public Services

Nowadays, the European Union focuses on establishing a foundation to facilitate and promote the function of integrated cross-border public services as a part of the undertaking of the Digital Single Market (DSM) (12). The European Commission suggests that any business should have the opportunity to expand across borders online and become pan-European within a month (24). Moreover, Europe can become more competitive through interoperability and standardization (22).

National eGovernment solutions modeled in different European countries should be able to communicate with other countries' digital solutions instead of developing in isolation (24). Interoperability is a key concept in accomplishing a proper operation of public services between countries within the EU (27). In the context of the digital economy, interoperability is translated into the effective connection between digital components (devices, networks, data repositories), along the supply chain, or between industry and service areas. It also means improved connections at the cross-border level, at the community level, and between public services and authorities (22).

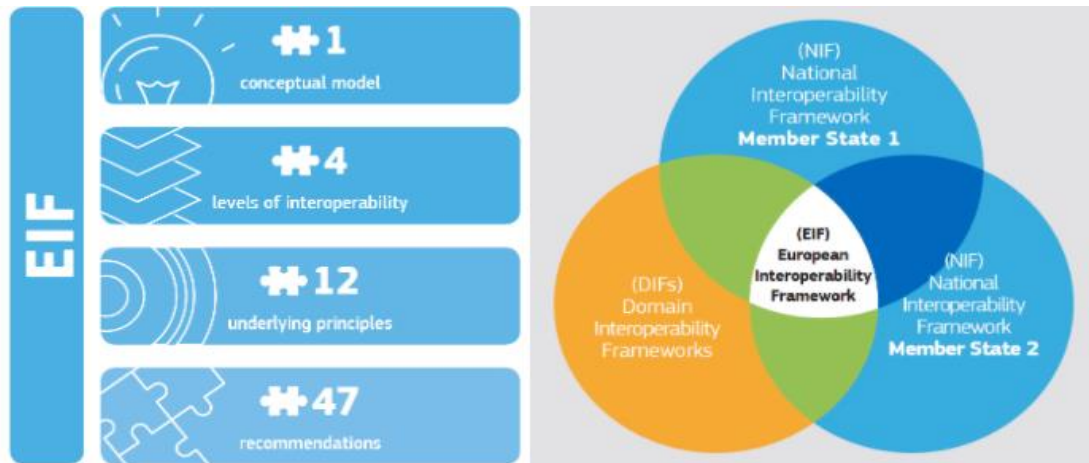
As mentioned above interoperability might have many categories and levels (77). One of the most considerable pan-European efforts to establish a common ground for all member states is the new European Interoperability Framework (EIF) that was published in 2017 (27). However, during the past 25 years, the Union made a series of efforts to boost interoperability across borders within the EU. More recent common interoperability frameworks were launched in 2004 (IDABC) and 2010 (EIF v1) (10). The new EIF is

generic and addresses all member states. It is constructed to help EU countries to correspond to specific organizational, legal, semantic, technical, and governance requirements that are common for all member states to enhance interoperability between them. The EIF is based on twelve fundamental principles that were grouped in four categories (“Principle Setting the Context for EU Actions on Interoperability” category that includes the “Principle 1”, “Core Interoperability Principles” category that includes “Principles 2-5”, “Principles Related to Generic User Needs and Expectations” category that includes “Principles 6-9”, “Foundation Principles for Cooperation Among Public Administrations” category that includes “Principles 10-12”) (27) and include 47 recommendations to be implemented by member states. The twelve principles are i) subsidiarity and proportionality, ii) openness, iii) transparency, iv) reusability, v) technological neutrality and data portability, vi) user-centricity, vii) inclusion and accessibility, viii) security and privacy, ix) multilingualism, x) administrative simplification, xi) preservation of information, and xii) assessment of effectiveness and efficiency. Moreover, it presents a common underlying of interoperability components to European National Interoperability Frameworks (NIF) and Domain Interoperability Frameworks (DIF), while assisting the countries in two directions. The first is a bottom-up approach, in which the NIF aligned with the EIF is used for the employment of public services at all levels of national administrations, establishing an interoperability ground for cross-border public services as well. The second is a top-down approach, in which the EIF is considered in EU legislation and policy domains, either through ad hoc references or in a structured fashion using DIFs. Hence, it leads to a follow-up logic through which the countries could possibly invert the European-level interoperability actions to enhance interoperability within the country (27). Furthermore, the interoperability areas are three. The first area concerns administration to administration interactions (A2A), e.g., exchanges between a member state and another member state or a member state and a European administration. The second area concerns administration to business interactions (A2B), e.g., exchanges between European or national public administration and businesses. And last, the third area concerns administration to citizens interactions (A2C), e.g., exchanges between national or European administrations and citizens (27).

Additionally, the EIF proposes an interoperability model that applies to all types of digital public services. It can be perceived as an important part of the interoperability-

by-design paradigm. The model consists of four layers of interoperability: i) legal, ii) organizational, iii) semantic and iv) technical. Also, there is a cross-cutting component of the four layers called integrated public service governance and last is a background layer referred to as interoperability governance (27) (Diagram 1.1).

Diagram 1.1



Source: European Interoperability Framework (27)

Except for the New EIF, there is also a revised version of the European Interoperability Strategy (EIS) that was launched in 2016, as a revised version of the EIS of 2010. The New EIS provides organizational, financial, and operational directions for the implementation of the EIF recommendations to the member states. It also defines a group of focal points and an Action Plan for EU countries and European Institutions for the years 2016-2020, while emphasizing organizational interoperability, because of its current potential for further development (24). In addition to the new EIF and EIS, there are also the European Interoperability Reference Architecture (EIRA) and the European Interoperability Cartography (EIC). The EIRA is an *“architecture content metamodel defining the most salient architectural building blocks (ABBs)”* (32) necessary to construct e-Government systems with interoperability. It also offers a *“common terminology”* that can be applied in public administration transactions in several architectures and system development activities. The ArchiMate language is used as a modeling notation by EIRA while its architectural style is service orientation (32). Last, the European Interoperability Cartography (EIC) serves as a fount of interoperability solutions for public administrations in Europe offered by European Institutions and EU members. The interoperability

solutions are provided in a “*common format*” and in compliance with “*specific re-usability and interoperability criteria*” that corresponds to the EIRA (34).

All these initiatives are supported by the ISA<sup>2</sup> Programme (Interoperability Solutions for Public Administrations, Businesses, and Citizens), which is in force since the 1<sup>st</sup> January 2016 and ends at the end of 2020. ISA<sup>2</sup> works as an enabler for the development of digital solutions for the Union in order for European public administrations, businesses and citizens to be offered “*interoperable cross-border and cross-sector public services*” (11).

#### 2.3.4 Common Data Models & Common Metadata in Evidence Exchanged Across Borders & Interoperability

The key to the seamless provision of digital cross-border public services is semantic interoperability. Efficient exchange of evidence between different countries’ public authorities requires the use of common semantic standards and the existence of transparent and precise metadata policies (27). Another prerequisite for seamless exchange of evidence across borders is to focus and capitalize on existing semantic interoperability solutions (1,27). Common definitions are essential in order to avoid discrepancies in electronic systems, while standard vocabulary and defined relationships are required to improve interoperability between systems (55).

In Europe, the SEMIC action (Semantic Interoperability Community) provides the Union with free of charge solutions on semantic interoperability, making data exchange easier for European member states in the context of digital cross-border public services. According to SEMIC, interoperability between countries’ systems will be improved through assisting alignments and agreements on common vocabulary and semantic requirements between European countries or countries and European institutions. Furthermore, interoperability can be boosted through shedding light on existing data standards and ISA<sup>2</sup> specifications (e.g., Core Vocabularies, ADMS, and DCAT-AP), while detecting where new common data models are required (1).

The Deloitte report on data mapping, published recently, suggests that semantic interoperability for the SDG technical system could be structured around two complementary tracks. The first track is “*Exchange of evidence-based on an EU common data model*” and the second track is a “*Fall back option with basic structured markup*”. In

other words, “Track 1” allows common types of electronic evidence to be exchanged between countries in a structured, semi-structured, and unstructured format while applying a common data model established by EU countries, and “Track 2” that is a fallback option would enable any other type of evidence, in any format that comprises a basic structured mark-up with more general metadata, to be exchanged with the purpose of being in compliance with the SDG Regulation. Simultaneous use of these two tracks whenever needed, is considered to be optimal (56).

All in all, common data models and common metadata in evidence exchanged across borders are inextricable components for efficient semantic interoperability between countries. Differences in interpretation of data lead in non-effective interconnection between national ICT systems. All European initiatives towards the accomplishment of an interoperable EU are indicating the need for mutually recognized and implemented frameworks on semantic solutions by the countries (27) .

## **2.4 Interoperability Issues**

Interoperability issues can arise due to many reasons. The lack of interoperability is mainly caused by incompatibilities between organizations’ ICT systems and/or organizational silos. Interoperability between countries is often hindered by legal barriers, creating “national silos” .

### 2.4.1 National Silos Definition

In Jean Claude Juncker’s “Agenda for Jobs, Growth, Fairness and Democratic Change” in 2014, he mentioned the term “*national silos*”, saying that it was time to “*break down national silos in telecoms regulation, in copyright and data protection legislation, in the management of radio waves and in the application of competition law*” (43).

This statement aimed to stress the fact that national silos hinder the accomplishment of the European Digital Single Market. National silos obstruct the operation of a digital market that does not have barriers towards European citizens and businesses. Furthermore, this statement highlighted the fact that they lead to loss of prospective profits and additional growth in Europe (22).

As there is no specific definition for national silos, it is helpful to define the terms “information silos”, “silo mentality”, and “organizational silos” in order to be able to

analyze further the meaning of the term “national silos” and the issues deriving from their existence.

Silo mentality, according to the Business Dictionary, is *“a mind-set present in some companies when certain departments or sectors do not wish to share information with others in the same company. This type of mentality will reduce the efficiency of the overall operation, reduce morale, and may contribute to the demise of a productive company culture”* (83).

Information silos in organizations are frequently the result of a silo mentality. Silos arise either when heads of departments are not willing to share departmental data and information or when they are willing to share data and information but prefer to avoid it due to concern of potential damage to data and information of privacy and security issues (50).

Another reason related to the arise of silos in an organization is the lack of interoperability among departments in the same organization. According to the Business Dictionary, information silo is *“any information management system that is unable to communicate with other information management systems, even if otherwise related or within the same organization. This can be by design or by choice for a variety of reasons, though nowadays generally frowned upon because of the lack of accessibility and implied limitations to productivity”* (84).

And last, “organizational silos” describe the absence of intention or motivation for coordination (even communication) between entities within an organization (60).

#### 2.4.2 Issues Deriving from National Silos & Incompatibility

The term “national silos” is describing the barriers set by the countries towards the undertaking of the Digital Single Market. It refers to the walls arisen at a national level mainly through regulation and legislation (22).

Some of the main issues deriving from the existence of national silos are the differences between the online and offline market. These differences, mostly related to legislation, create obstacles in cross-border online activity, impeding European consumers and businesses from easier and more inclusive access to online goods and services within the Union. Also, the lack of appropriate infrastructures, content services, and regulatory conditions for innovation, investment, fair competition, and a level playing field



caused by national regulative burdens, deprive consumers and businesses of enhanced digital networks and services (22). Furthermore, current legal frameworks of the member states have to allow administrations to consume and share data and also permit share and reuse of existing data for cross-border public services (45).

Incompatibility between two connected systems can appear in many forms. According to the FEI, incompatibility between two connected systems can arise also due to conceptual, technical, or organizational barriers. Conceptual barriers describe problems arising at the high level of abstraction models (e.g., company models). Technological barriers refer to inadequacy in using different computing techniques to share or exchange data between systems due to the absence of compatible standards. And last, the organizational barriers refer to incompatibilities in structures of organizations, corporate rules, and management techniques applied in interoperating companies (organizations in this case), as well as in legislation incompatibilities (61).

Incompatibility between countries' ICT systems or between European and national level systems, usually due to heterogeneousness, could be considered as another obstacle towards the success of the DSM. For example, a local system might not be congruent with OOP requirements (45). Additionally, member states might have dissimilar methods of managing specific types of data or difficulty in developing common tools for retrieving data from different data sources (45). Also, disregard of European and national technological standards can result in a lack of interoperability, as the existence of European standards does not ensure that they will be integrated into technological solutions at a national level (22). Moreover, differences in European and national catalogues with ICT-standards and interoperability specifications can result in market fragmentation at the EU level (22).

## **2.5 eGovernment**

Electronic Government (eGovernment) is a significant part of cross-border public services, because, in most cases, the only option for requesting a service from another member state is to make it electronically, through digital service delivery channels.

### 2.5.1 eGovernment Definitions

E-Government is the use of Information Communication Technology (ICT) for the purpose of providing electronically public services and information to citizens and businesses (52,53). Furthermore, eGovernment can be defined as the interaction between citizens or businesses and public administrations in the context of e-services (49).

eGovernment and digital government refer to the application of ICTs for the development of enhanced public services and for the expansion of the participation of citizen and businesses in democratic government (10).

The term eGovernment is used in European policymaking (10), thus this term is selected to be used in this case study as well.

### 2.5.2 eGovernment Advantages & Disadvantages

The implementation of eGovernment comes with a number of advantages and disadvantages. One of the most significant advantages of eGovernment is the cost savings, as digital administrative processes manage data faster and better (10,22,36). Thus, electronic public service delivery leads to reduced costs or even the development of different types of services without any additional costs. Additionally, the “digital by default” strategy also contributes to cost reduction, as digital services are carefully designed to appeal to users, in order for them to select digital channels rather than non-electronic options, e.g., service locations or paper-based transactions in general. Another important advantage is the reduction in administrative burdens. Cost-wisely, the diminished administrative burden is not only counted financially. It is also counted in less time-consuming processes for citizens and businesses as they are disencumbered from time-costly information and registration constraints established by government regulation. Digital services are more convenient for the majority of citizens and businesses and less costly financially. They require also less effort because data that has already been submitted to a public administration can be reused (10). The Once-Only Principle allows citizens and businesses to provide data only once to a national authority so that this data -that is already registered- can be reused in the future (8,36,82). Hence, automated processes relieve citizens from doing all the work on their own. Another complementary tool for the OOP is the “whole-of-government” approach, through which various public agencies work beyond their portfolio in order to generate an integrated plan for

program management and service provision. An additional advantage of eGovernment, worth mentioning, is related to transparency in data and services. Transparency improves citizens' willingness to participate in policy development while eliminating corruption because of the limited need for intermediaries. Lastly, the digitization of public services contributes also to the minimization of the carbon footprint caused by government, e.g., reduced need for physical presence through travel and paper-based processes (10).

In contrast to the advantages mentioned above, eGovernment introduces some, either tangible or potential, issues. A disadvantage might be related to the inclusiveness and accessibility. Digital by default services could possibly exclude a part of the society due to lack of access to the internet, e.g., physical handicaps, age, limited digital literacy, etc., resulting "digital divide" (10). However, preserving other service channels that require physical presence, services by telephone and/or paper-based transactions to avoid social exclusion, affect the cost-saving side of digitized services. Another issue might be the necessity to invest time and capital in developing "digital skills" (10) through training citizens and public officials in order for them to be able to receive and provide e-services. Furthermore, besides the benefits from the OOP, privacy concerns could emerge because of the collection and share of already registered data for service personalization towards citizens. Other fears concerning data storing are related to malicious activities by third parties, e.g., stolen data. Also, the process of storing data might evoke a loss of trust by the citizens concerning the management and security of their personal information by the government and discourage them from choosing e-services (7,36). Moreover, the protection and privacy of the stored data are costly for governments. Next, the introduction of digital services could cause political issues as unsuccessful leadership, lack of funds for the generation of new services, organizational barriers, political unwillingness, or/and obstacles in the jurisdictional, administrative, or geographic coordination (10).

### 2.5.3 European eGovernment Initiatives

Furthermore, in the context of the DSM Strategy, the European Commission has launched the "EU eGovernment Action Plan 2016-2020" in 2016. The Action Plan is a political instrument that supports the digitization of European public services. The

objective is to eliminate remaining digital barriers towards the Digital Single Market and avoid the rise of new ones in the process of modernizing public administrations across Europe. This Action Plan is meant to be used as an instrument that establishes several principles on which the member states' future initiatives should be based. However, it does not hinder the countries from carrying out their own strategies and activities. The Action Plan also encourages collaborative cross-border efforts, aiming to deliver major benefits to businesses, citizens, and public administrations through eGovernment (25).

The vision behind the Action Plan is the facilitation of free movement of businesses and citizens and the improvement of public administrations both at the national and cross-border level through the opening of data and services between them. Another point of interest that leads the effort for modernization of public administrations is citizen-centricity as the digitization of everyday life is resulting in European citizens to have higher expectations of public services and transparency in administrative procedures (22). Moreover, the contribution of stakeholders in decision-making will enhance public administrations' trustworthiness and accountability. Additionally, open data and services, fully complying with the legal framework for the protection of personal data and privacy, can be contributors to growth and competitiveness in the EU (25).

The new eGovernment Action Plan is built upon seven underlying principles. The first principle is *"Digital by Default"*, which means that public administrations must be able to seamlessly provide e-services, along with other already existing channels of service provision (*"public services should be delivered through a single contact point or a one-stop-shop and via different channels"*, European Commission (2016)). The second is the *"Once Only Principle"*, which suggests that European citizens and businesses should be able to supply personal data only once to a public administration and then the same data could be reused internally or between administrations for various procedures, yet in compliance with data protection rules (35,81). The third is the *"Inclusiveness and Accessibility"* principle, which notes that digital public services should be designed to be inclusive from the beginning and in respect to the different needs of users. The fourth principle is *"Openness & Transparency"*, suggesting that data should be shared between public administrations and that citizens and businesses should be able to access, control, and correct their own data or follow step by step administrative

processes that concern them. The fifth principle is *“Cross-Border by Default”*, indicating that cross-border public services should be available from the beginning, to enable mobility within the EU. The sixth is the *“Interoperability by default”* principle, noting that public services should work in an interconnected fashion across the Union, bypassing organizational silos through the free movement of data and e-services. The last principle is *“Trustworthiness & Security”*, meaning that all initiatives introduced should always comply with the legal framework on personal data protection and privacy, in order to improve trust in digital services (25).

Complementary to the EU eGovernment Action Plan 2016-2020, the ministers responsible for eGovernment policy and coordination from 32 countries of the EU and the European Free Trade Area (EFTA) signed the Tallinn Declaration on eGovernment in 2017 with a commitment to the EU eGovernment Action Plan 2016-2020 and the EIF. The vision behind the Tallinn Declaration was the accomplishment of a Union that is *“open, efficient and inclusive, providing borderless, interoperable, personalized, user-friendly, end-to-end digital public services to all citizens and businesses – at all levels of public administration”*, Council of the EU (2017) (9). A five-year scheme (2018-2022) was undertaken in order to realize this vision and the EU eGovernment Action Plan principles. The improvement of the modernization process of public administrations was based on five categories of objectives. The first category is based on the principles of digital-by-default, inclusiveness, and accessibility and includes three objectives: i) guarantee that European citizens and businesses indeed use digital means to interact with public administrations whenever they want, provided that it is possible and appropriate from a cost-effective and user-centered point of view, ii) certify that there is a consistency in the quality of user experience in digital public services and iii) improve the readiness of European citizens and businesses to receive digital public services. The second category consists of one objective and underlies on the once-only principle. The goal is the implementation of the OOP for key public services, at least as an option for European citizens and businesses. The third category is based on the principle of trustworthiness and security and includes two objectives: i) ensure that information security and privacy requirements are considered in the design process of public services and public administration ICT solutions, with a risk-based tactic and state-of-the-art technologies, and ii) expand the uptake of national eID schemes, as well as making them

more user friendly and more suitable for mobile platforms without compromising security. The next category is based on the principle of openness and transparency and consists of one objective: forward the possibility for better management of personal data, controlled by public administrations, for citizens and businesses, as a minimum in base registries and/or similar databases wherever possible. The last category is built on the interoperability by default principle and consists of a single objective as well: improve national interoperability frameworks established on the EIF in respect to national standards while following EIF principles for cross-border digital public services (9).

#### 2.5.4 eGovernment Status in the EU

The aforementioned pan-European initiatives are measured yearly in order to obtain insights into the maturity level of online public services concerning user-centricity, transparency, and use of key enablers, as well as in cross-border mobility and service delivery performance, which identifies as a genuinely European metric. These reports are called eGovernment Benchmarks and are monitoring instruments of the European Commission (5–7). They measure and collect data concerning the use of information and communications technologies (ICT) in the public sector from Europe’s 27+ countries (7), 28+ before the United Kingdom exited the Union (5,6).

The eGovernment Benchmarks evaluate European public services and indicate the priority areas of the EU eGovernment Action Plan 2016-2020 and provide insights into the current status of the principles presented in the Tallinn declaration of eGovernment in 2017 (9). The priority areas are separately measured by one or more indicators, included in the top-level benchmarks (user-centricity, transparency government, cross-border mobility, key enablers). The reports assess eight different life events, by capturing citizens’ and entrepreneurs’ journeys through relevant online public services related to events in their lives.

In eGovernment Benchmark 2018 half of the eight life events included in the report were measured in 2016 (business start-up, losing and finding a job, family life, studying) and the rest in 2017 (regular business operations, moving, owning and driving a car, starting a small claims procedure). Overall, the 2018 report shows that eleven countries delivered high-quality digital services across four top-level benchmarks, across

all life events. The five countries that were first in the ranking were Malta, Estonia, Austria, Latvia, and Denmark. These EU members successfully made public services broadly available online in a mobile-friendly approach with strong user-centricity. The government transparency level in service delivery, organizational operations, and personal data processing were high as well. They have also provided citizens and businesses with smart key enabling technologies, e.g, eIDs, and digital post solutions (5).

On the other hand, eight countries appeared to be fairly behind in eGovernment solutions (see in Appendix, eGovernment Benchmark 2018). The majority of these countries seemed to be struggling with the implementation of key enablers in eGovernment services. Thus, their e-service provision was significantly limited.

In this report the four top-level benchmarks for the 28+ countries, with biennial 2016-2017 average, reached 82% in user-centricity (sub-indicators: online availability 83%, usability 88%, mobile friendliness 62%). Next, transparency marked 59% (sub-indicators: transparency in service delivery 52%, transparency in public organisations 71%, personal data 54%). Cross-border mobility marked 52% (sub-indicators: cross-border online service availability 64%, cross-border usability 68%, cross-border eID use 10%, cross-border eDocuments 20%), while businesses eID use cross-borders marked 18% and citizens eID use abroad marked only 6%. And last, key enablers scored 54% (sub-indicators: eID 51%, eDocuments 63%, authentic sources 53%, digital post 51%) (5).

The next eGovernment Benchmark published in 2019, shows a significant improvement in eGovernment performance indicators (6). The life-events examined are the same as in the previous report. Half of them were examined in 2017 and the other half in 2018 (6). The overall eGovernment performance for Europe's 28+ countries reached 65% on average (user-centricity, transparency, cross border mobility, key enablers) (6), being higher by 3% than the score presented in eGovernment Benchmark 2018 that reached 62% (5). To be more specific, user-centricity marked 85% (sub-indicators: online availability 85%, usability 90%, mobile-friendliness 68%), transparency marked 62% (sub-indicators: transparency in service delivery 55%, transparency in public organizations 72%, transparency in personal data 60%). Next, cross-border mobility scored 53%, however, there is still a significant difference between citizen and business mobility. Cross-border citizen mobility marked 48% (sub-indicators: online service availability across borders 59%, usability cross borders 64%, eID use cross borders 6%,

eDocuments use cross borders 16%), while business mobility marked 63% (sub-indicators: online availability across borders 72%, usability across borders 77%, eID use across borders 27%, eDocuments use across borders 45%). And last, the key enablers indicator marked 58% (sub-indicators: eID 54%, eDocuments 65%, authentic sources 55%, digital post 63%). Also, in this report, Malta, Estonia, and Austria appear to be the leading countries in eGovernment, with high scores in all four top-level benchmarks, with Lithuania, Latvia, and Finland following right behind (6). In the opposite direction, countries in the south-east of Europe appear to be below the EU average (6) (see in Appendix, eGovernment Benchmark 2019). The fact that cross-border mobility appears to be the lowest among the four top-level indicators (53%), implies that European citizens cannot use eGovernment services in another country. All data are biennial and collected during the years 2017-2018 (6).

In the most recent eGovernment Benchmark, published in 2020, the results were significantly improved. The EU27+ (36 countries) overall performance scored 68% (7), which is 3% higher than the one in eGovernment Benchmark 2019 that reached 65% (6) and 6% higher than the percentage in eGovernment Benchmark 2018 that reached 62% (5). As can be seen, eGovernment has been increasingly improved in Europe within two years, indicating that European countries are perpetually working on the implementation of eGovernment solutions. All top-level indicators were increased with user-centricity scoring 87% (sub-indicators: online availability 78%, possibility to find services via portal websites 95% and online information on services nearly 98% - usability sub-indicator -, mobile-friendliness 76%,). Next, transparency marked 66% (sub-indicators: transparency in service delivery 64%, transparency in public organizations 98%, information on the time needed to complete online forms and obtain a service 46%, possibility to see whether your data has been used 64%, when your data has been used 42%, by whom data has been used 17% - transparency in personal data sub-indicator -). Furthermore, cross-border mobility reached 56%, (sub-indicators: for citizens, online service availability across borders reaches 62%, while for businesses it reaches 76% and national eID solution can be used by citizens in 9% of cases, while businesses in 36% of cases). And last, key enablers marked 61% (sub-indicators: eID 57%, eDocuments 68%, digital post 67%, online forms with pre-filled data 54%) (7).



All in all, there is a clear improvement in eGovernment across Europe, taking into consideration the increase in the overall eGovernment performance of Europe's 27+ countries. However, cross-border mobility has the lowest score in all reports (52% in 2018, 53% in 2019, and 56% in 2020). Despite the progress and the 4% increase in the last two years, cross-border mobility continues to be a challenge (7). Furthermore, as mentioned in all eGovernment Benchmarks there is a persisting difference in citizen and business cross-border mobility, indicating that cross-border mobility is easier for businesses than for citizens (5–7). Another interesting fact is that laggards (countries falling behind in eGovernment solutions) managed to reduce the gap between them and the frontrunner countries during the last years (7). Additionally, in 2018 the difference between online availability at the national and local level was 20%, a chasm that has been improved as the difference currently reaches 12% (5).

Conversely, other indicators remain at a low level, showing substantial gaps in their performance. The indicators referred to are the ones showing the availability of eGovernment solutions for citizens and businesses. Online services availability for citizens stands at 65%, while for businesses at 76%. The availability for citizens has increased 5% in two years (60% in 2018) (5), while the availability for businesses 6%, leaving the gap at a high level (70% in 2018) (5). Other indicators, showing the gap are related to the transparency top-level benchmark which indicates that businesses receive 70% transparency of service delivery, while citizens receive only 54%. In addition, businesses can upload or obtain eDocuments through 82% of the services, while citizens through 64%. Moreover, businesses are provided with 70% pre-filled online application forms. Contrarily, citizens are offered only 53% of the application forms containing pre-populated data (7).

Another category of indicators being low is related to foreign and domestic online service availability. Despite that there is an increase in foreign online availability, the score is still low (cross-border online availability indicator marks 69%, while domestic online availability marks 87%). The gap between these two indicators decreased only by 2% within two years (20% gap in 2018 vs. 18% gap in 2020) (5,7). The explanation for this situation is that in most cases foreign eIDs are not being accepted in e-services that require authentication. Users can use their own national eID solution in 9% of cross-border online services because most services require and accept solely domestic eIDs

(7). However, the score is slightly improved compared to 2018 when the possibility to use foreign eIDs reached 6% (5). Furthermore, documentation problems hinder the accessibility to e-services across borders, since foreign citizens are not made available the option to upload or retrieve documents in 67% of cases (80% in 2018) (5,7). Also, language issues are met in almost half of cases, since 43% of online procedures are available only in the language of the country that provides the service. The number is slightly improved considering that language problems existed in 50% of online processes in 2018. Lastly, another problematic spot is that 18% of services cannot be completed without the physical presence (22% in 2018), which is a practical barrier due to the fact citizens that who are abroad cannot visit a governmental service location (5,7).

Another issue that challenges the Union is cybersecurity, as the assessment of a number of URLs showed that 20% of them meet 7 out of 14 basic security criteria evaluated. This might cause trust issues to citizens and businesses in Europe. Thus, cybersecurity must be improved in order to avoid this type of problem (7).

## **2.6 Single Digital Gateway**

As mentioned earlier, the Digital Single Market is a policy that promotes the digitization of the European Single Market (22). In addition to the aforementioned initiatives towards the accomplishment of the DSM, the European Parliament and the Council of the European Union adopted the Single Digital Gateway Regulation (SDGR) in 2018 (82). The Single Digital Gateway (SDG) is a *“single point of access to information, procedures and assistance services online”* (28), that directs citizens and businesses to information related to national and EU rules, rights, and procedures. The SDG is destined to provide information on websites where users can complete these procedures online as well as problem-solving services (28).

The SDG is integrated into the “Your Europe” (82) portal and the search functions are currently provided in a BETA version (21). The goal is that the search function on the portal will provide citizens and businesses access to information. To be more specific, they will be provided with easy access to consistent and qualitative information on EU and national rules applicable to them when they want to exercise their Single Market rights. The portal will also provide them with information on procedures, as users will

be able to learn the exact way and required steps to complete administrative procedures. Lastly, they will be provided with information on assistance services, as whenever users face difficulties in the completion of administrative procedures, they will be led to the European or national assistance service appropriate to address their problem (28).

Furthermore, the SDGR requires that a list of 21 essential administrative procedures will be available entirely online in all European members by 2023. Also, by the same year, all national online processes must become fully accessible to users across borders without requiring the physical presence, while the “Once-Only Principle” shall be used in cross-border exchanges of evidence for a range of procedures, for which users will be provided with the option of requesting the direct exchange of evidence between different member states’ public authorities. (28)

The SDG is a user-centric initiative that, according to the SDGR (2018), aims to *“facilitate online access to the information, administrative procedures and assistance services that citizens and businesses need to get active in another EU country”* (82). Therefore, its quality, user-friendliness, and adequacy of the information provided by the European and national authorities will be monitored through user feedback, starting in December 2020, with the aim to improve all relevant procedures (28).

## **2.7 Once-Only Principle**

As mentioned previously, the Once Only Principle (OOP) is a part of the SDG (82). It is an initiative that is included in the eGovernment Action Plan 2016-2020 (25). The OOP is a pan-European project that gives the opportunity to citizens and businesses to provide various data to public administrations only once in order to receive multiple national or cross-border public services without providing data already given to a public authority again. The OOP will launch in 2023 and will make available to public administrations in Europe the possibility of reusing and sharing data and documents supplied previously by European citizens. The circulation of data and documents will take place accordingly with the data protection legal framework with transparency and safety measures (8).

Furthermore, the OOP will improve public procedures, as the website from which the user is requesting the service can retrieve supporting evidence that the citizen has provided to a public authority in the past. This will reduce manual validation for the user, as he or she does not need to provide already given data once again. This will also

apply to cross-border public services as European countries' public administrations will be able to exchange information from one to another automatically, but always in compliance with the data protection and privacy regulation (35,81). In this case, the country providing the service would be the data consumer, and the country sending the requested data would be the data provider (39). In all cases, the websites will be authorized to request solely evidence needed to carry out a certain procedure. To be more precise, every time a citizen requests a digitized service, the public authority requests only the data required in order to deliver that specific service (82). Hence, no additional data will be transferred from one authority to another than the evidence needed to execute the process. Another characteristic of the OOP will be that the vast number of participants and the high exchange volume of data and messages will not undermine its efficiency in providing high quality and performance of eDelivery. All in all, the OOP promises a reduced amount of administrative burden, enhanced efficiency, strong protection of personal information, and cross-border services (8).

Concerning the legal framework for the application of the OOP and the technical system for cross-border automated exchange of evidence, the SDG Regulation emphasizes that the technical systems must permit the user to "preview" the evidence requested for exchange (82) by the data consumer (39) and decide whether or not to proceed with the exchange of the requested data (82). However, the preview option is not obligatory for procedures where the automated cross-border data exchange without preview is legally authorized by the member state or EU (82). Furthermore, the SDGR highlights that the preview option must be available without prejudice to the obligation to provide the information according to the General Data Protection Regulation (GDPR) (39,81).

Except for the preview option, the user must be provided with the choice of "explicit request" as well. The explicit request means that the evidence that includes personal data are exchanged only after a freely given, specific, informed, and unambiguous indication of the user's wish to have the relevant personal data exchanged, either by a statement or by affirmative action. But the explicit request is not obligatory for procedures where the automated cross-border data exchange without preview is legally authorized at a national or EU level (82).

Moreover, the technical system should be and remain voluntary for European citizens and businesses, while users should remain free to provide personal data by other means besides the technical system (82). Also, the data kept should comply with time limitations in data storage set by the GDPR guidelines (81).

In January 2017, the European Commission launched the Once-Only Principle Project (TOOP) as an initiative that included about fifty organizations from twenty EU Member States and Associated Countries (74). The TOOP was a business-focused project with the aim to enable cross-border e-services for business mobility (75) and relieve businesses from administrative burden, time-loss and high costs that are barriers commonly met during the process of fulfilling the business's legal obligations (74). Another important objective of the TOOP is the establishment of a federated architecture that is generic and assist national registries of EU countries to become interoperable (45). Moreover, the pilot presents in what manner information can be automatically retrieved from a company's country of origin to reduce time-consuming administrative processes (e.g. paperwork, duplicated effort, and excessive bureaucracy) (76).

Similarly, the Digital Europe for All (DE4A) Project is a set of highly extensive member-state driven pilots designed in accordance with the EU eGovernment Action Plan 2016-2020, the Tallinn Declaration, and the EIS. Most significantly DE4A is based on the SDG technical system (OOP and Digital-by-Default) (13).

These pilots aim to reinforce and examine the real-life application of the OOP Technical System under the SDGR while assessing the effect of innovative technologies and their advantages in relation to the OOP (13). Another objective is the establishment of a federated, multi-pattern architecture under the new EIF, constructed on existing and new building blocks as well as the generation of toolboxes concerning service delivery, semantic interoperability, and security. Furthermore, an additional goal of the pilots is to propose solutions to legal obstacles and the vagueness concerning the regulation related to the OOP (39). And last, the pilots aim to assist the future use of the Once-Only Technical System, establishing common requirements and components and to promote co-creation, transparency, liability, and trustworthiness (13).

The DE4A pilots are real-life pilots designed around three real-life events: "Studying Abroad" (apply for higher education, study grants, professional recognition of diplomas, certificates and/or studies without any paper-based transactions), "Doing

Business Abroad” (start a business abroad, retrieving and update company data from authentic sources, and/or request digital annual reports fully online) and “Moving Abroad” (register a change of address, request civil status certificates, and/ or claim retirement/retirement information entirely online) (14).

## **2.8 eidentification (eID) & Authentication**

Electronic identification (eID) and Trust Services are significant drivers in the process of digitizing public services across Europe. The eIDAS Regulation (eIDAS stands for electronic identification, authentication, and trust services) was adopted by the European Parliament and the Council of the EU in 2014 (80) and the European Commission finalized the adoption of all the implementing acts by 2015 (23). Furthermore, eIDAS offers a certain regulatory framework for *“secure and seamless electronic interactions between businesses, citizens and public authorities”* (23). The objectives are for citizens and businesses to be able in practice to use their own national eID schemes to access online cross-border public services within EU and electronic signatures, electronic seals, time stamps, electronic delivery services, and website authentication (Trust Services) to function cross borders as legally equivalent means of authentication as traditional paper-based processes. Additionally, electronic transactions with the use of eIDs are considered to be safer and more likely to block online fraud, while protecting the exchanged data. The security parameter is considered a significant driver for online services, as it increases the trust in this type of transactions with public authorities (23).

However, authentication across borders through national eID solutions is very limited until now due to the absence of interoperability and the adoption of a common legal ground between European countries (7). The eIDAS regulation is meant to establish the ground for the acceptance of national eIDs as authenticators for citizens and businesses across borders by the member states, offering a regulatory framework as a basis for the cross-border authentication process to properly function (23). Moreover, the regulation supports mutual recognition of national eID schemes by the countries of the Union (80).

The OOP and the eIDAS promise that individuals will be provided with the option of being automatically authenticated in other EU members through national eIDs, while the data required to complete the requested online service will be automatically

retrieved via the OOP technical system, always in compliance with the respective regulatory framework (82). Thus, European citizens and businesses are enabled to request digital public services across borders. This also results in a reduced necessity for manual validation of users as they are being authenticated through their eID, while evidence exchange occurs via the OOP technical system (82).

It is safe to suggest that the aim of all European regulatory frameworks, directives, and projects (SDGR, OOP, eIDAs, etc,) is to increase digital service delivery within the Union and facilitate citizens and businesses to request services online in order to be further enabled to exercise their rights as EU residents. More significantly, the SDG along with the once only technical system and the eIDs aim to achieve a more user-centric approach of cross-border public services, as the combination of these regulatory frameworks lead to service provision with the fewest steps possible for the users-citizens/ users-businesses to complete an administrative process. These initiatives eliminate unnecessary actions related to data submission or authentication for/of an individual. The implementation of these solutions permits already submitted data to be used whenever needed, always in compliance with data protection regulations, facilitating the process for users that request an online service.

As mentioned earlier, eIDs and automated evidence exchange reduce manual validation for users, as they can access online services and be authenticated through their eIDs, if any, while the required evidence is exchanged automatically through the SDG and the OOP. The automated evidence exchange provides the competent authority with the data needed to complete the process automatically or semi-automatically.

### **3. Problem Definition & Methodology**

This part of the study contains the gaps found in the bibliography while searching for authoritative academic sources to construct the literature review, the contribution of this study, and the methodology followed to create the study.

#### ***3.1 Gaps in the Bibliography***

There are very few recent studies focusing on how eGovernment is evolving in EU, the European eGovernment initiatives and the results deriving from these initiatives. Most studies focus solely on the barriers and drivers, or the advantages and disadvantages of eGovernment or the state of eGovernment in a certain country. Other than that, there are very limited studies that provide definitions of the terms public services and electronic (online/digital) public services. Additionally, concerning cross-border interoperability in Europe, the majority of studies focus on interoperability in the health sector.

Furthermore, there is a limited number of studies on the Once-Only Principle after the end of the real-life pilots (TOOP) and even less studies on the application of the Single Digital Gateway Regulation in general. Lastly, concerning the cross-border identification (eID) in Europe, most studies focus on the use of eID schemes for authentication at Universities.

#### ***3.2 Contribution of This Study***

This case study's contribution is the concentration and explanation of all concepts related directly and indirectly to the concept of cross-border public services, as Single Digital Market, interoperability, eGovernment, Single Digital Gateway, Once-Only Principle, and identification (eID).

Moreover, it provides a critical view on eGovernment in the European Union, combining eGovernment definitions, advantages and disadvantages, European initiatives, and results in order to find out how eGovernment is evolving in the EU and what is its current state while highlighting the weaknesses and achievements.

Furthermore, the case study attempts to discover how common data models or common metadata for evidence exchange between public administrations, in the



context of electronic cross-border public services, could assist interoperability between EU member states.

Additionally, another goal is to answer how automated evidence exchange between the EU Member States could reduce manual validation for European citizens and facilitate their access to cross-border public services.

And lastly, the main contribution of this case study is the construction of a data model as a proposed semantic interoperability solution for EU member states. The proposed data model concerns the process of changing the address in the EU offering a digital form for the registration of a new address within the same country or across borders. The purpose of this data model is both to facilitate the process for users and to assist semantic interoperability.

### ***3.3 Methodological Approach***

The methodological approach is divided in three parts: i. methodology followed for the creation of the literature review, ii. the methodology followed for the analysis and findings part (that includes a diagram of the steps followed for the construction of the proposed data model, and iii) the methodology followed for the construction of the questionnaire.

#### **3.3.1 Literature Review**

For the literature review, the methodology followed started with the definition of some keywords in order to find online suitable bibliography for the research. The keywords were used in the “Google Scholar” search machine to find authoritative academic sources. The used keywords were, “cross-border public services”, “public services”, digital public services”, “interoperability”, “European interoperability”, “eGovernment in EU”, “eGovernment benefits”, “eGovernment barriers”, “eGovernment initiatives”, “Once-Only Principle”, “eIDAS”, “Single Digital Gateway”, “Digital Single Market”, and other similar keywords with the same meaning, e.g., digital public services/online public services/electronic public services. However, the sources had to be relatively recent, so every source before 2014 was excluded. Furthermore, a search was conducted on the official European Union website “www.europa.eu” to find accurate information on

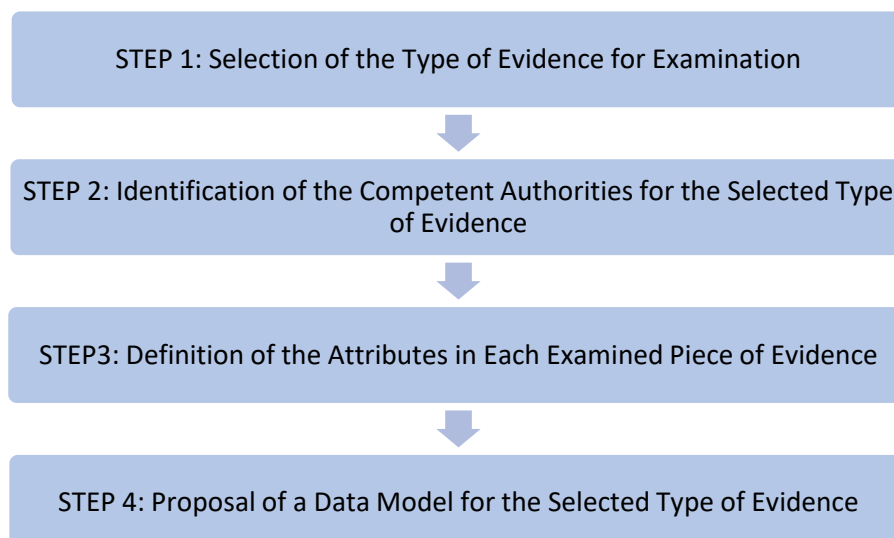
European policies, initiatives, and regulatory frameworks. Moreover, in some cases references found in the examined bibliography, that were related to the study, were also checked for further sources of information on the topic.

Additionally, the literature review (“Chapter 2”) was carefully constructed in order to answer the first research question thoroughly (“How is eGovernment evolving in the EU and what is its current state, while highlighting the weaknesses and achievements), while giving supplementary information to answer comprehensively the second research question (“How could common data models or common metadata for evidence exchange between public administrations, in the context of electronic cross-border public services, assist interoperability between EU member states”) that is to a greater extent answered in “Chapter 4” (Analysis & Findings). More significantly, the second research question is mainly being answered in “Chapter 4”, in combination with some further explanatory information included in “Chapter 2”, while the third research question (“How could automated evidence exchange between the EU Member States reduce manual validation for European citizens and facilitate their access to cross-border public services”) is entirely answered in “Chapter 4” (Analysis & Findings).

### 3.3.2 Analysis & Findings

For the analysis and findings part (Chapter 4) the methodological approach followed for the construction of the proposed data model (digital form for a change of address) consist of four steps (Diagram 2.1.).

Diagram 2.1



As mentioned above, the methodology followed was based on four steps, with the aim to construct a data model as a proposed semantic interoperability solution, that would later be presented and assessed by a group of people.

The first step was the “selection of the type of evidence”. The goal of this case study is to assist semantic interoperability by giving a proposed solution for the process of changing address. Thus, the piece of evidence selected was related to the one(s) requested by the competent authorities when registering a change of address. However, due to the abundance of options and sub-categories of procedures for change of address the selection of evidence occurred from only four Member States (Sweden, Finland, Greece, and Estonia), after setting some criteria. These countries were chosen based on four criteria, “language”, “type of process”, “easiness to identify relevant information about the change of address processes”, and “similarities in the forms and processes of the examined countries”. The “language” criterion demanded that the form should be in English, Greek, or Swedish. Next, the “type of process” criterion indicated that the process should occur through a fillable form available online or an accessible online procedure for change of address. The other criterion, “easiness to identify relevant information”, required that finding information online about the process for change of address in each member state should be unproblematic. And last, the “similarities” criterion demanded that the use of all examined forms and processes by a citizen should be leading to the same outcomes. For example, all forms should result in an update of a person’s address data that are stored in a country’s population register.

Next, the second step was to “identify the competent authorities for this type of evidences”. In other words, to find out which authorities must be addressed in order to register a change of address in each of the examined countries (Sweden, Finland, Greece, Estonia).

Furthermore, the third step was to “define the attributes in each examined piece of evidence” and identify the common ones. But first, a review of all identified public authorities, forms, processes, and service delivery channels occurs, in order to proceed with a certain number of evidence for examination. However, the selected forms and processes had some differences because each of them was used for different sub-categories of processes for change of address (e.g., moving within a country compared to

moving abroad). Thus, eight separate summary/review tables were constructed in order to encompass the differences in the selected evidences, to be able to define the attributes in each examined piece of evidence and to identify the common attributes in these evidences.

These tables categorize the attributes thematically, aiming to find out which attributes were met most frequently in the majority of evidence. The objective was to use the most common attributes in “Step 4” as a ground to construct the proposed data model. The first table (Table 1.1) includes all forms and processes selected for examination. The second table, (Table 1.2) includes the attributes related to “personal details of the submitter” that is requesting the change of address (e.g., name, surname, e-mail, etc.). Furthermore, the third table (Table 1.3) consists of the attributes found in evidence required to register the new address when “moving abroad” (e.g., new street address abroad). The fourth table (Table 1.4) includes attributes related to the “current/old address” (e.g., current street address) of the submitter. Next, the fifth table (Table 1.5) contains attributes related to the “registration of other persons participating in the move with the same form”. The sixth table (Table 1.6) groups the attributes related to “moving within the same country” (e.g., new street address in the same country). Additionally, the seventh table (Table 1.7) includes attributes related to the “consent and details of the residence owner” if the submitter moves to a residence that he or she does not own (e.g., residence owner’s first name surname, etc.). And last, the eighth table (Table 1.8) groups attributes related to “additional details for the submitter and the other persons participating in the move”, if any (e.g., additional address, personal identification code of a foreign state, etc.)

Finally, the fourth step was to “present a data model for the selected types of evidence as a proposed semantic interoperability solution”. As mentioned above, the proposed data model was constructed based on the common attributes identified in the summary tables. The goal was to include strictly the attributes that were required in most examined procedures, in order to find a common interpretation for these certain attributes (e.g., markup language) to facilitate the cross-border exchange of data. The proposed data model is a digital form for change of address that requires the minimum steps possible to register a new address within the same country or abroad. The proposal is that the evidence required should be retrieved automatically through a system

that links all EU countries' national registries (e.g., the once-only technical system) so that the user is exempted from providing already given data again.

The proposed data model was constructed on "Microsoft Forms" in order to provide a simulation of how the proposed digital form should function in real life. The first part of the form was structured based on the identified common attributes concerning the submitter's personal details in "Table 1.2" (forename, surname, national identity number, telephone number, and e-mail). The concept is that the user should be authenticated after three steps. After filling in his/her national identity number and e-mail in the first two boxes, his/her full name should appear automatically in the third box through the system (e.g., the once-only technical system). However, the user should also fill in a fourth box with a unique code that he/she would receive on his/her mobile phone after his/her name would appear.

The second part requires that the user should select the countries from and to which he/she is moving, from two drop-down lists. These two steps were included based on the "country" attribute found in the common attributes of "Table 1.3, Table 1.4, and Table 1.6" that were related to the new and current address of the user.

In real circumstances, the third part of the form should automatically present the current address of the user in the first box. The address formation was based on the common attributes identified in "Table 1.4" (street address, street number, and letter(s) if any, postal code). However, if the address presented by the system was false or absent, the user should be able to correct or submit it instantly. The reference used for this proposed function was from the Finnish online process for change of address (see in Appendix, Automated Online Process, Image 5.3).

The fourth part of the form requires that the user should insert his/her new address in the boxes (five boxes, including one with a date format). The required data in this part were chosen based on the common attributes indicated in "Table 1.3" and Table 1.6" (street address, street number, and letter(s) if any, postal code, and moving date).

Lastly, the fifth part indicates that the user should declare if he/she is moving alone or together with other people. This part was based on the common attributes found in "Table 1.7". The user should be able to choose between "yes" and "no" in the format of "multiple choice". If the user would select "no" the form could be submitted,

but if he/she selected “yes” a drop-down list with numbers should appear for him/her to declare the number of people moving along with him/her. Then, he/she should proceed to a sub-section in order to fill in the personal details of the persons participating in the move in four boxes (national identity number, forename, full name, e-mail address). After that, the user should declare if the move would include minors, choosing between “yes” or “no” in the format of multiple choice. If the user selected “yes”, he/she should proceed to another sub-section to fill in the personal details of the custodial parent(s) in four boxes (national identity number, forename, full name, e-mail address), so that he/she would be permitted to submit the form. The concept behind the last step was that in real-life the system that stores and provides the data should automatically send a notification to the custodial parent(s) whenever a minor would be included in a procedure of moving. Furthermore, the custodial parent(s) should accept the notification in order for the form to be submitted to the system.

After following the four steps of the methodological approach analyzed above, the newly constructed data model (digital form) was presented to a group of people, followed by a “Usability and user-experience questionnaire”.

### 3.3.3 Questionnaire

A structured questionnaire has been constructed online through “Microsoft Forms”, based on Lund’s “Measuring Usability with the USE Questionnaire” (48) with some adjustments for it to better accomplish the research needs.

The questionnaire consists of five parts including 17 Likert-scaled variables with agree/disagree answers (from 5 “strongly agree” to 1 “strongly disagree”) and one open-ended question. The first part of the questionnaire consists of 5 Likert-scaled questions about the “usability” of the form. Next, the second part consists of 5 Likert-scaled questions about the “ease of use” of the form. Furthermore, the third part consists of 3 Likert-scaled questions about the “learnability” of the form. Additionally, the fourth part of the form includes 4 Likert-scaled questions concerning the “degree of satisfaction” with the form. And last, the fifth part consists of a single open-ended question for additional comments/questions about the form.

The questionnaire and the form were distributed exclusively online from October 2020 to December 2020. The sample was reached via social media channels

(Facebook and Viber) and by e-mail, using lists provided by the International Hellenic University to reach students and alumni. The sample that saw the proposed data model and answered the questionnaire were 60 people in total.

Afterward, the results were analyzed using descriptive statistics. The results for each Likert-scaled question were depicted in pie graphs showing the percentage of people that agreed/disagreed with each statement (17 pie graphs). Furthermore, one pie graph presents the ages of the participants and four histograms present the level of agreement with four “key” Likert-scaled questions, divided by age group. The selected Likert-scaled questions for further examination were: “the form is useful”, “I fully understand how to fill out the form quickly”, “the form is user-friendly”, and “overall, I am satisfied with the form”.

## 4. Analysis & Findings

The proposed data model presented in this part of the study is built following four steps of analysis. The data model is a digital registration form for change of address, that is also presented and assessed by a group of people.

### ***4.1 Step 1: Selection of the Type of Evidence for Examination***

The types of evidence examined in the case study are the ones exchanged between citizens and public authorities when a person wants to register a change of address within the European Union. A piece of evidence, in this case, might be a fillable form or an online process that requires personal or other data in each step of the registration process for a change of address.

The forms selected for examination were found online on governmental platforms. The selection was based on four criteria, “language”, “type of process”, “easiness to identify relevant information about the change of address processes”, and most significantly the “similarities” in the forms and processes of the examined countries. There are different types of registration processes in each country, but the outcome from the use of them is nearly similar. For example, the Greek “Solemn Declaration for Alterations in Registry Data/Tax Registration Certificate (M1)” form is a generic form that is used for the online submission of alterations in registry data. The outcome though is the same as the one coming from the “Moving in Sweden” electronic or non-electronic registration process (see in Appendix, Solemn Certificate Declaration for Alterations in Registry Data/Tax Registration (M1) PDF Form, Moving within Sweden PDF Form (SKV 7845)). Both processes in these two countries update the submitter’s residence data in the national data registry.

Concerning the criteria, the forms and processes had to be in English, Greek, or Swedish. The type of process had to be a fillable form available online or an accessible online process. The accessibility parameter was set because of the need for online credentials to access e-services. The easiness to identify relevant information criterion was mainly related to finding information about the change of address process in each member state. To be more specific, this was related to the ease of finding data online, on official governmental platforms, in order to obtain accurate information on each



country's procedures. The fact that the first phase of online searching led to discovering an abundance of different forms and processes, resulted in a necessity of setting the criterion of similarity. Similar outcomes, in this case, mean that if a person submits a piece of evidence, from the selected forms and processes that are examined in this research, to a public authority (fillable forms /online processes), that action will result in an update of the person's residence data in the country's population register. That includes cases where a person moves within the same country, abroad, or when registering a new address from another country while still being registered in another country's population register.

A cross-border change of address might be a process with two parts. The one part could be the deregistration from the current/old address and the other part could be the registration to the new address (82). However, registration to a country's population register is usually related to the legal side of a person's right to reside in a country (e.g., residence card, etc.) (79), thus out of scope of this research.

As mentioned in previous chapters, the goal is to identify what evidence is required at a national level in order to register a change of address and then compare common attributes in the evidence exchanged between citizens and public authorities in the chosen countries for examination. That could result in the facilitation of integrated cross-border public services as all exchanged evidence could include the same attributes, that could possibly be interpreted with a common markup language. That could also lead to easier identification of European citizens as all member states would request evidence with common attributes.

#### ***4.2 Step 2: Identification of Competent Authorities for the Selected Type of Evidence***

This part of the case study presents the countries' competent authorities that must be addressed in order to register a change of address. The competent authority in Sweden is the Swedish Tax Agency (Skatteverket) that provides both electronic services at "skatteverket.se" and non-electronic services at service locations (62).

Following, the competent authorities in Greece are the General Secretariat of Information Systems of Public Administration (GSISPA) and the Ministry of Interior (37,40). Notification for change of address in Greece can be made either by submitting a form to a service location (Citizen's Service Centers - ΚΕΠ) belonging to the Ministry of

Interior or via the governmental platform provided by the GSISPA (gsis.gr - TaxisNet). The GSISPA belongs to the Hellenic Ministry of Digital Governance. Recently, the Citizen's Service Centers started to provide electronic services through the online governmental platform ermis.gov.gr (19). However, an online change of address process via the platform is currently not available. Last, a notification can also be submitted at a local tax office (Δ.Ο.Υ.) belonging to the Independent Authority for Public Revenue (Α.Α.Δ.Ε.).

Furthermore, the competent authorities in Finland are the Digital and Population Data Services Agency (Maistraatit Magistraterna), which launched on the 1<sup>st</sup> January 2020 and is a merging of the Population Register Centre, the Local Register Offices, and the Steering and Development Unit for the Local Register Offices and the Finnish Post Office (Posti) (15,57).

Lastly, the competent authority in Estonia is the Ministry of Interior that controls the Population Register. There are both electronic services on the e-population register (rahvastikuregister.ee) and non-electronic services provided at service locations (local government units) available in order to update the population register about a change of address (18).

#### ***4.3 Step 3: Definition of Attributes in Each Examined Piece of Evidence***

Step 3 starts with presenting all findings from the case studies (Sweden, Finland, Estonia, and Greece). To be more specific, all identified public authorities, forms, processes, and service delivery channels are reviewed, in order to construct some review/summary tables based on a certain number of evidence for examination.

This case study focuses on the process of changing the address in European member states. However, there are many sub-categories. Change of address can include a move to or from another country, a move within the same country, or a move of a person that is already living abroad but is still belonging to the national population register of another country. Indubitably, there might be some forms or processes that were not included in the examined material of this case study, mainly due to time limitations that made the searching process more difficult.

All these sub-categories of change of address resulted in discovering various forms and processes. There are forms available online on official governmental or national websites that can be printed, filled out, and sent via post or e-mail or be submitted to a local service location. There are also fully digitized processes, where people can fill in the required data and complete the process in a fully automated or semi-automated fashion. Lastly, a person that is interested in registering a change of address can also visit a local service location to register the new address.

#### 4.3.1 Case Studies – Review

The following findings were based on the criteria that were mentioned at the beginning of this chapter (language, type of process, easiness to identify relevant information on the processes, and most significantly the similarities in the forms and processes). Although, there might be services related to change of address that were eligible for this case study but escaped the writer's attention.

Notification for a change of address in Sweden can be performed either electronically or non-electronically. More specifically, a person that would like to change his or her address can either send a notification via post or go to a local service location belonging to the Swedish Tax Agency (Skatteverket) or visit the Swedish Tax Agency's official website ([skatteverket.se](http://skatteverket.se)). The official governmental website offers both automated online services and downloadable forms in PDF format that can either be printed and filled out by hand or directly on a computer (62). When registering a change of address at "Skatteverket", other national organizations' databases are being updated as well (63).

There are several available forms and processes related to registering a change of address in the Swedish online platform. The forms that will be examined in this case study are the ones for changing address within Sweden (see in Appendix, Moving within Sweden PDF Form (SKV 7845)), moving abroad (see in Appendix, Moving Abroad PDF Form (SKV 7665)), and changing address when already living abroad (the last form can also be used to request to preserve the right to vote in Sweden, (see in Appendix, Moving to another address, when already living abroad/remain a voter PDF Form (SKV 7842))). However, another automated process for European and non-European citizens is also available on the platform. Users can register electronically a permanent move to

Sweden from another country within or outside the European Union (64). Though, this process will not be included in the examined material, as there are no similar processes in the other examined countries. The scope of work, in general, was determined considering the time limitation, and the selection of the forms for examination was mainly contemplating the fact that there are similar processes in the other chosen countries that can be compared to each other.

As mentioned earlier, there are also fully digitized processes. For example, a user can log in to “skatteverket.se” with a BankID from a Swedish bank and have access to all e-services (65). This authentication method requires that the user downloads an application in order to be able to use his BankID (3). This applies to the eIDs mentioned below. There are also options to be authenticated with IDs provided by other organizations, e.g. a user can log in to the platform with Freja eID+ that is an electronic identity. Freja eID is a mobile application, where the user can save his or her personal data in order to acquire an identity in digital form (4). Another way to log in is the AB Svenska Pass, which is an electronic identification (e-legitimation) that is provided on the Tax Agency’s ID card since 2017 and can be compared to a traditional ID document (66). If the user carries an ID card that was issued earlier than 2017, the Tax Agency’s ID card includes an eID by Telia (73) that can be used for e-identification as well (66). Finally, another way to log in to skatteverket.se is to use a Foreign eID that was issued by countries that have joined eIDAS to offer authentication services between countries. The services provided to users with eIDs issued by other countries than Sweden may be limited due to the lack of Swedish personal identification numbers (70).

Next, notification for change of address in Finland can be registered online, at a local service location, or via telephone on the Move Service Line. The Finnish post office (Posti) offers an online service where citizens can register a change of address via Posti’s online platform. Users can log in with credentials from “Posti” or with their BankID (85).

This is a process where the Digital and Population Data Services Agency and many other public and private organizations are being updated automatically through an online system that operates at a national level. Furthermore, the Digital and Population Data Services Agency has a governmental online platform (dvv.fi), where users can download various forms or log in with a Bank ID, Mobile ID, or Certificate Card (Varmennekortti) to access online services (16). Also, users can log in to dvv.fi using Foreign

eIDs that were issued by countries that have joined eIDAS to offer authentication services across borders (69).

However, all the aforementioned types of services (electronic or non-electronic services) do not support all processes. For example, a change of address from Finland to abroad or to Finland from abroad cannot be registered by phone. Another example is that the only downloadable form online, concerning the change of address was the one for changing address when already living abroad (see in Appendix, Moving to another address, when already living abroad PDF Form). The change of address notification forms for moving within Finland, from Finland, or to Finland cannot be printed from the website. The reason is that these forms have unique identifying numbers that are optically read during the storage process and it is not possible to read the numbers from copies. However, a person who is interested in those forms can find them at Posti or the Digital and Population Data Services Agency (57).

A change of address in Greece can be registered at a Citizen's Service Centre (ΚΕΠ) (46) or a local tax office (Δ.Ο.Υ.) belonging to the Independent Authority for Public Revenue (Α.Α.Δ.Ε.) (40). Additionally, a notification for a change of address can be submitted online at a governmental platform (TaxisNet) through a PDF form (41). There is no fully automated online process at this point.

In the first case, the submitter fills out a solemn declaration with the new address along with a copy of the tenancy agreement or a bill belonging to his or her residence if the submitter is moving to a house that he or she owns. However, if the person stays at the new address as a guest, he or she must submit a solemn declaration on behalf of the host (see in Appendix, Solemn Declaration for Change of Address PDF Form). These forms can either be submitted at a Citizen's Service Centre (ΚΕΠ) or a local tax office (ΔΟΥ). Alternatively, a change of address can be registered online at the Greek governmental platform called TaxisNet (42). This website belongs to the General Secretariat of Information Systems of Public Administration. The user can log in with "TaxisNet" credentials or with his or her Bank ID in order to access digitized services (38). However, as mentioned earlier, the online registration process for a change of address is not fully automated. A new address can be registered by downloading and completing a "Solemn Declaration for Alterations in Registry Data/Tax Registration Certificate (M1)" form in a PDF format (41). This is a generic form compared to the Swedish and the Finnish ones

mentioned previously. It can be used both as a tax registration certificate and a declaration for alterations in registry data (see in Appendix, Solemn Certificate Declaration for Alterations in Registry Data/Tax Registration (M1) PDF Form). The process of changing address is considered as an alteration in registry data. The form can be filled out directly on a computer and submitted to TaxisNet electronically (42).

Additionally, in Estonia, a change of address can be registered at a service location, by post and electronically via an automated process on the State Portal (51) or via e-mail (72). A user can log in on the State Portal by being authenticated through his or her ID card if he or she has an ID Card Reader installed on the device. Other ways to be authenticated are a MobileID, SmartID (58), or in some cases foreign eID (under eIDAS) (20). After submitting a notification, the user can follow the progress of the procedure on the portal. Then, he or she is being notified by the e-population register on his or her population register profile or by e-mail about the results (72).

Furthermore, a person can register a change of address via e-mail with a digitally signed notice. In this case, digitally signed means that the signature should be legally equal to a handwritten signature. The digital signature is provided by software that has to be installed on a user's device in order for him to be identified. The submitter has to fill out the form "Notice of Residence" and then sign it digitally (72). Also, all other adults mentioned in the form should sign it digitally, both those participating in the move and the owner(s) of the premises, if any. Lastly, the e-mail should include any other requested piece of evidence as tenancy agreements and consents of owners digitally signed as well (72) (see in Appendix, Notice of Residence PDF Form).

#### 4.3.2 Review Tables

The following tables were constructed with the purpose of identifying common attributes in the process of changing the address in Sweden, Finland, Greece, and Estonia, including both semi-automated/automated online processes and downloadable forms. The fact that change of address includes several different categories, according to the type of process and the context, led to a necessity of categorizing the identified attributes. To be more specific, these are attributes found in evidence requested by competent authorities whenever a person wants to register a change of address. The categorization was based on the context in which these attributes were identified in all

electronic processes, non-electronic processes, “moving within a country” processes, “moving abroad” processes, and “moving to another address when already living abroad” processes.

Below, you are presented with eight summary tables. Table 1.1 presents all forms and processes to be examined in the case study. Table 1.2 summarizes the attributes concerning personal details of a submitter that are requested by a national competent authority. Table 1.3 presents identified attributes in evidence required when registering a move abroad. Table 1.4 summarizes attributes in evidence concerning the old or current address of the person that is moving. Following, Table 1.5 presents a summary of attributes included in evidence required when the registration process involves also other persons. Furthermore, Table 1.6 summarizes attributes in evidence required when registering/sending a notification of changing address within the same country. Table 1.7 presents attributes in required evidence concerning the residence owner from the new address if there is one. And last, Table 1.8 summarizes attributes, in the evidence, concerning additional details about the persons participating in the move, including the submitter.

Table 1.1 presents all forms and processes identified during the research. The fact that most of the online procedures needed a type of national eID scheme led to a series of limitations. The lack of online credentials made it impossible to access the majority of e-services provided by member states. Consequently, these are the final pieces of evidence for examination (see in Appendix, Finland, Sweden, Estonia, Greece).

Table 1.1

<b>SWEDEN</b>	Moving within Sweden PDF Form (SKV 7845)
	Moving Abroad PDF Form (SKV 7665)
	Moving to another address, when already living abroad/remain a voter PDF Form (SKV 7842)
<b>FINLAND</b>	Automated Online Process (Moving within Sweden)
<b>FINLAND</b>	Moving to another address, when already living abroad PDF Form
	Automated Online Process
<b>GREECE</b>	Solemn Declaration for Change of Address PDF Form
	Solemn Declaration for Alterations in Registry Data/Tax Registration Certificate (M1) PDF Form (not fully automated online process)
<b>ESTONIA</b>	Notice of Residence PDF Form

All review tables below consist of ten columns formed to compare all attributes, found in the different processes and forms, to each other. The columns are showing the type of evidence that must be exchanged between citizens and authorities in order to complete a process. For example, if a person wants to move abroad from Sweden, the competent authority (Skatteverket) asks him or her to submit a piece of evidence, which in this case is a form especially for moving from Sweden to another country (see in Appendix, Moving Abroad PDF Form (SKV 7665)). This form consists of a number of attributes, e.g full name, personal identity number, new address, etc. The main purpose here is to identify and group all attributes in all exchanged evidence and find out which attributes appear the most. After identifying the most common attributes, the next step is to construct a form that combines the attributes that are met more often. For example, a type of national identification number is required in eight out of nine processes. This type of data is frequently requested by the competent authorities in order to continue with the registration process for changing address.

Below, Table 1.2 includes attributes related to the submitter's personal details. As can be seen, in all cases of registering a change of address, the competent authorities ask for a national identity number that is identifying each person in the national population register. That number can either be a personal identification number/code or a tax identity number given by the state. The most common attributes are national identity number, forename and surname, telephone number, and e-mail address.

The data requested in the Swedish, Finnish, and Estonian forms concerning the submitter are limited compared to the Greek forms. For example, one of the Greek forms includes details as date and place of birth, gender, mother's and father's full names, occupation, fax number, ID card details, marital status, and the spouse's personal details as well. The Greek M1 form also requires the date of death if the form is submitted by beneficiaries. The additional data requested in the M1 form might be due to the nature of the form, as it is used for alterations in a person's population register data in general and similarly as a Tax Registration Certificate, subsequently not only for registering a change of address.



Table 1.2

PERSONAL DETAILS OF SUBMITTER									
Attributes	ESTONIA PDF FORM	Changing Address When Already Living Outside FINLAND PDF FORM	FINLAND online	GREECE solemn declaration of changing address PDF FORM	GREECE online M1 PDF FORM	SWEDEN Moving Abroad PDF FORM	Moving in SWEDEN PDF FORM	Changing Address When Already Living Outside SWEDEN PDF FORM	SWEDEN online
Tax Identity Number Personal Identity Number or	YES	YES	YES	NO	YES	YES	YES	YES	YES
Gender	NO	NO	NO	NO	YES	NO	NO	NO	NO
Name	YES	YES	NO	YES	YES	YES	YES	YES	YES
Surname	YES	YES	NO	YES	YES	YES	YES	YES	YES
Surname B	NO	YES	NO	NO	YES	NO	NO	NO	NO
Father's Name	NO	NO	NO	YES	YES	NO	NO	NO	NO
Father's Surname	NO	NO	NO	YES	YES	NO	NO	NO	NO
Mother's Name	NO	NO	NO	YES	YES	NO	NO	NO	NO
Mother's Family Surname	NO	NO	NO	YES	YES	NO	NO	NO	NO
Date of Birth	NO	Only if there is no personal identity number	NO	YES	YES	NO	NO	NO	NO
Place of Birth or Country if Born Abroad	NO	NO	NO	YES	YES	NO	NO	NO	NO
Date of Death (if the form is being filled by beneficiaries)	NO	NO	NO	NO	YES	NO	NO	NO	NO
Nationality	YES	NO	NO	NO	YES	NO	NO	NO	NO
Occupation	NO	NO	YES	NO	YES	NO	NO	NO	NO
Employed/Unemployed	NO	NO	NO	NO	YES	NO	NO	NO	NO
E-mail Address	YES	YES	YES	YES	NO	NO	YES	YES	YES
Telephone Number	YES	YES	YES	YES	YES	YES	YES	YES	YES
FAX Number	NO	NO	NO	YES	YES	NO	NO	NO	NO
Marital Status	NO	NO	NO	NO	YES	NO	NO	NO	NO
Spouse's Personal Identity Number or Tax Identity Number	NO	NO	NO	NO	YES	NO	NO	NO	NO
Spouse's Full Name	NO	NO	NO	NO	YES	NO	NO	NO	NO
ID Card Details	NO	NO	NO	YES	YES	NO	NO	NO	NO

Table 1.3 consists of attributes included in evidence required when registering a move abroad. This table refers to moves from a country to another within the European Union. The most common attributes that are contained in most of the examined forms and processes are street address, street numbers and letters if any, postal code, city or region, country, and date of the move.

Less common attributes are the ones related to the place of residence abroad (the type of residence or if the residence is rented or owned). Other infrequent attributes are linked to the planned time of staying abroad or the permanent or temporary character of the relocation. However, reasons for moving are required in three out of nine processes.

The Swedish moving abroad form includes also the option to state if the move is occurring from Sweden to another Nordic country, while the “changing address when already living outside Sweden” form and the Finnish online process contains the option to state in care of whom the mail would arrive at the new address.

The Greek change of address form is slightly vague in comparison to the other forms and processes as it is unclear if a person can register a move to another country using this form and there are not many sources of online information concerning that form.

Table 1.3

Moving Abroad									
Attributes	ESTONIA PDF FORM	Changing Address When Already Living Outside FINLAND PDF FORM	FINLAND online	GREECE solemn declaration of changing address PDF FORM	GREECE online M1 PDF FORM	SWEDEN Moving Abroad PDF FORM	Moving in SWEDEN PDF FORM	Changing Address When Already Living Outside SWEDEN PDF FORM	SWEDEN online
Street Address	YES	YES	YES	YES	NO	YES	NO	YES	NO
Street Number (and letter(s) if any)	YES	YES	YES	YES	NO	YES	NO	YES	NO
Postal Code	YES	YES	YES	YES	NO	YES	NO	YES	NO
City/Region	YES	YES	YES	YES	NO	YES	NO	YES	NO
Country	YES	YES	YES	-	YES	YES	NO	YES	NO
Date of Move	YES	YES	YES	NO	NO	YES	NO	NO	NO
Owned/Rent House in the Country, while Living Abroad	YES	NO	NO	NO	NO	YES	NO	NO	NO
Permanence of Residence	NO	YES	YES	NO	NO	NO	NO	NO	NO
Period planned to reside abroad	NO	NO	YES	NO	NO	YES	NO	NO	NO
Reasons for the move (work, school, moving back to home country, etc.)	NO	YES	YES, if permanent	NO	NO	YES	NO	NO	NO
Employer while living abroad (name & address)	NO	NO	NO	NO	NO	YES	NO	NO	NO
Type of Residence Abroad (hotel, house, etc)	NO	NO	YES	NO	NO	YES	NO	NO	NO
If moving to a Nordic country, name the municipality to which you move	NO	NO	NO	NO	NO	YES	NO	NO	NO
c/o (address)	NO	NO	YES	NO	NO	NO	NO	YES	NO

Table 1.4 summarizes attributes related to the current or old address. The current/old address is required in three out of nine processes; however, the current address appears automatically in automated online processes as soon as the user logs in to the governmental platform (Image 1.1). Considering that, it is safe to suggest that the current/old address is related to an extent to the procedure of identifying a person. Additionally, a reason the current address is not included in the required data in some of the forms for registering a change of address could be the fact that the current/old address might already be listed in the population register data. That could result in the competent authority not to need the information to be submitted again. The previous suggestion is based on the fact that the examined automated processes present the current/old address automatically, an element that indicates that the data is somehow already listed in the national data registry (67). Images 1.1 and 1.2 show the Swedish and Finnish automated online processes for change of address. These images demonstrate the steps in both automated processes showing the current/old address. In the Finnish process on Posti (Image 1.2) the current address appears automatically and there are also options to correct the current address if the information is incorrect or fill in the current address if the information is missing. In addition, in the Swedish process on skatteverket.se the address details appear automatically as well. The population registration date and the property designation are also presented automatically along with the address details.

The forms and processes, in Table 1.4, that require the current address as evidence in order to register a change of address have common attributes, as street address, street number and letters -if any-, postal code and city or region. Furthermore, as can be seen in the table none of all forms and processes in this category require additional data about the current address, as the apartment's number, district, or municipality. Oppositely, when registering a new address all this data is required in most cases, especially when registering a move within the same country (Table 1.6).



Table 1.4

Current/Old Address									
Attributes	ESTONIA PDF FORM	Changing Address When Already Living Outside FINLAND PDF FORM	FINLAND online	GREECE solemn declaration of changing address PDF FORM	GREECE online M1 PDF FORM	SWEDEN Moving Abroad PDF FORM	Moving in SWEDEN PDF FORM	Changing Address When Already Living Outside SWEDEN PDF FORM	SWEDEN online
Street Address	NO	YES	YES	NO	NO	YES	NO	NO	YES
Street Number (and letter(s) if any)	NO	YES	YES	NO	NO	YES	NO	NO	YES
Apartment's Number	NO	NO	NO	NO	NO	NO	NO	NO	YES
Postal Code	NO	YES	YES	NO	NO	YES	NO	NO	YES
City/Region	NO	YES	YES	NO	NO	YES	NO	NO	YES
Municipality	NO	NO	NO	NO	NO	NO	NO	NO	NO
District	NO	NO	NO	NO	NO	NO	NO	NO	NO

Table 1.5 includes a summary of data that might be requested by an authority when the submitter has the right to register a change of address regarding other people through one single form. This table refers to attributes in forms and processes that can be used in order to register a change of address concerning the submitter as well as other persons that are moving to the same address as him or her or to register a change of address regarding exclusively another person. As can be noticed in Table 1.5, the only forms that do not include the option of registering other persons' move along with the submitter are the Greek ones. Neither the form that is a solemn declaration for changing address includes this option nor does the M1 form that is used in the online process on TaxisNet.

In Greece, a person (submitter) can register a change of address regarding another person's move with an officially signed authorization (proxy) by the person that is moving, by the submitter, and by the competent public authority (see in Appendix, Solemn Declaration for Change of Address PDF Form). The signatures of the person that is

moving and the submitter must be reviewed by the public authority at a service location, e.g. ΚΕΠ, and signed by the public authority as well. Both persons' physical presence is required in order to validate a proxy. If the proxy is not signed by all parties mentioned, the submitter cannot register any information concerning another person. Although, there is no option to register multiple people's move to the same address through one single form. All persons must submit separate forms. Nevertheless, a person can currently log in to "gov.gr" with a Greek BankID or TaxisNetID (38) and download a digitally signed authorization that is equally valid as one issued at a service location.

Table 1.5

Register All Persons Participating in the Move in the Same Form									
Attributes	ESTONIA PDF FORM	Changing Address When Already Living Outside FINLAND PDF FORM	FINLAND online	GREECE solemn declaration of changing address PDF FORM	GREECE online M1 PDF FORM	SWEDEN Moving Abroad PDF FORM	Moving in SWEDEN PDF FORM	Changing Address When Already Living Outside SWEDEN PDF FORM	SWEDEN online
Personal identity numbers & names of all persons participating in the move	YES	YES	YES	NO	NO	YES	YES	YES	YES
E-mails of all persons participating in the move	YES	YES	NO	NO	NO	NO	YES	NO	-
Submit the new place of residence regarding another person (other persons)	YES	NO	YES	NO	NO	NO	NO	NO	-
Nationality of all persons participating in the move	YES	NO	NO	NO	NO	NO	NO	NO	-
Telephone Numbers' of all persons participating in the move	YES	NO	NO	NO	NO	YES	YES	NO	-
Signature/Consent of Both Custodial Parents if Moving with Minors	YES	NO	NO	NO	NO	YES	YES	NO	-

Table 1.6 summarizes attributes that are included in evidence exchanged in the registration process for a change of address within the same country. Except for the Swedish "Moving Abroad" form, all other forms and processes require data as street address, street number, and letters if any, and postal code. The cells in the "Moving

abroad from Sweden” column are listed with “No” because a person’s new address within the same country in which he or she is currently living is different than a new address in another country. The previous statement is significant as it is essential to mention that these two categories are clashing as concepts.

On the contrary, the cells on the “Changing address when already living outside Sweden” column are listed with “Yes” whenever an attribute is identified in the form. The reason is that a notification for a new address within the same country can be submitted to another country if the person is registered in the country’s population register despite living abroad, e.g. If a person that is registered in Sweden’s population register lives in Belgium and changes address within Belgium, it is considered as a move within the same country in this case.

Table 1.6

Moving in the Same Country									
Attributes	ESTONIA PDF FORM	Changing Address When Already Living Outside FINLAND PDF FORM	FINLAND online	GREECE solemn declaration of changing address PDF FORM	GREECE online M1 PDF FORM	SWEDEN Moving Abroad PDF FORM	Moving in SWEDEN PDF FORM	Changing Address When Already Living Outside SWEDEN PDF FORM	SWEDEN online
Street Address	YES	YES	YES	YES	YES	NO	YES	YES	YES
Street Number (and letter(s) if any)	YES	YES	YES	YES	YES	NO	YES	YES	YES
Apartment’s Number	YES	YES	NO	NO	NO	NO	YES	YES	YES
Postal Code	YES	NO	YES	YES	YES	NO	YES	YES	YES
City/Region	YES	YES	NO	YES	YES	NO	YES	YES	YES
Municipality	NO	YES	YES	NO	YES	NO	NO	NO	NO
District	NO	NO	NO	NO	YES	NO	NO	NO	NO
Date of Move	YES	YES	YES	NO	NO	NO	YES	NO	YES
Permanence of Residence	NO	YES	YES	NO	NO	NO	YES	NO	NO
Residence Designation (rent/owned/etc)	YES	NO	YES	NO	NO	NO	YES	NO	YES
Period planned to reside at the new address	NO	NO	YES	NO	NO	NO	YES	NO	NO
c/o	NO	NO	YES	NO	NO	NO	NO	YES	NO

Table 1.7 summarizes all data related to the residence owner in case the submitter moves to a residence that is rented, co-owned, or if he or she is staying at the new address as a guest. This table includes all attributes found both in one single form type of evidence and in additional pieces of evidence submitted along with the form. To be



more specific, in this table evidence that must be submitted along with the form for change of address are also considered (see in Appendix, Notice of Residence PDF Form, Image 7.2). The last four cells in the last column (SWEDEN online) are empty because the access to the online process stopped at step 3 (see in Appendix, Automated Online Process (Moving within Sweden)), hence there is no source to confirm that these attributes are included in the process or not.

Table 1.7

Consent/Details of the Residence Owner									
Attributes	ESTONIA PDF FORM	Changing Address When Already Living Outside FINLAND PDF FORM	FINLAND online	GREECE solemn declaration of changing address PDF FORM	GREECE online M1 PDF FORM	SWEDEN Moving Abroad PDF FORM	Moving in SWEDEN PDF FORM	Changing Address When Already Living Outside SWEDEN PDF FORM	SWEDEN online
Residence owner's first name	YES	NO	NO	YES	NO	NO	YES	NO	YES
Surname	YES	NO	NO	YES	NO	NO	YES	NO	-
Personal identification code	YES	NO	NO	YES	NO	NO	NO	NO	-
Signature	YES	NO	NO	YES	NO	NO	NO	NO	-
Contract for Lease	YES	NO	NO	YES	NO	NO	NO	NO	-
Telephone Number	NO	NO	NO	YES	NO	NO	YES	NO	-

Table 1.8 consists of attributes related to additional details in evidence that might be requested by a public authority when registering a change of address. These details might concern the submitter, the persons participating in the move, or both parties. These attributes are met less often than the ones mentioned in the tables above. As can be seen data as additional address, personal identification code of a foreign state, place or at least state someone arrived from if he or she is coming from abroad, native language and the highest level of acquired education are identified solely in the Estonian downloadable PDF form. It is unknown if the online process includes as many attributes as the downloadable form because there is no access to the Estonian online process for change of address, due to the lack of online credentials. Furthermore, the reason the last column is empty is that, as mentioned earlier, the access to the Swedish online

process stopped at step 3 (see in Appendix, Automated Online Process (Moving within Sweden)), so there is no source confirming that the attributes in Table 1.8 are included in the process or not.

Table 1.8

Additional Details (For Submitter and Persons Participating in the Move)									
Attributes	ESTONIA PDF FORM	Changing Address When Already Living Outside FINLAND PDF FORM	FINLAND online	GREECE solemn declaration of changing address PDF FORM	GREECE online M1 PDF FORM	SWEDEN Moving Abroad PDF FORM	Moving in SWEDEN PDF FORM	Changing Address When Already Living Outside SWEDEN PDF FORM	SWEDEN online
Additional address	YES	NO	NO	NO	NO	NO	NO	NO	-
Personal identification code of a foreign state (if any)	YES	NO	NO	NO	NO	NO	NO	NO	-
Place (at least state) you arrived from, if coming from abroad	YES	NO	NO	NO	NO	NO	NO	NO	-
Native language	YES	NO	NO	NO	NO	NO	NO	NO	-
Highest level of acquired education	YES	NO	NO	NO	NO	NO	NO	NO	-

#### **4.4 Step 4: Proposal of Data Model for the Selected Type of Evidence**

In this part of the research, the proposed data model for change of address is constructed based on a combination of the most common attributes that were identified through the examination of the review tables in Step 3.

The proposed form is designed for electronic use, because of the Union's contemporary needs in the sector of public service delivery. The main goal is to present a model that requires as few steps as possible to complete a registration of a change of address, in order to facilitate the procedure for the end-users. Furthermore, the proposed data model aims to remove the step of searching for the competent authority as the core idea is to enable all European citizens to use one single online form that is linked to a system (e.g. SDG and OOP) that receives the required data from the national population registers whenever a person wants to register a new address through the digital form.

The proposal is that the digital form will be connected to the EU countries through a system, as the SDG, that is linked to all member states' national registries, that will provide and receive the required data in order to register the new data in the national registry of each country, thus, to achieve a higher level of interoperability within Europe. For example, if a person is registered in the Swedish population register and he or she wants to move from Sweden to Greece, the data provider would be Sweden and the data consumer would be Greece. In this case, Greece would ask for evidence with specific attributes (with common metadata) that would be common for both countries in order to register the new address of the person that is moving from Sweden. The data about the move would be registered in both countries involved. However, the legal side of the person's relocation is another part that is not involved in this process (right to reside, residence card, and other similar procedures have to be performed apart from the notification for the new address). The country to which the person moves is being notified about his or her move and the data concerning his or her name, contact information, and new address.

Furthermore, the goal is to reduce the need for manual validation, releasing the users from the burden of searching the required evidence every time they want to repeat the same procedure or another that requires similar data. Also, the concept behind the proposed digital form is that the users will not be obligated to be authenticated through a national eID scheme because, as stated in "Chapter 2", there is still a lack of interoperability in cross-border public services and despite the existence of the eIDAS regulation, mutual recognition of the national eID schemes is not yet fully accomplished.

The proposed form is created based on the attributes that were identified as the ones appearing more often than others in the pieces of evidence for a change of address. Another proposed feature is for the form to appear automatically in the language of the country from which the user enters along with an option to switch it to English. This feature is inspired by the SDGR, which is suggested in the SDG interface should appear in all official EU languages (Article 2, Paragraph 3, SDGR) (82).

Table 1.2 indicated that the most common attributes concerning the submitter's personal details included in the required evidence were: national identity number, forename and surname, telephone number, and e-mail address.

Therefore, the first part of the proposed digital form/process was constructed based on the aforementioned attributes. A simulation of the proposed data model was created in “Microsoft Forms”. The first box in the form requires the user’s national identity number (Image 1.3.1). The fact that a national identity number issued by a national public authority is unique and identifies a person for life indicates that this number serves as a way to authenticate a person in a country’s population register, as it is requested both in administrative procedures that require physical presence and in online procedures. Also, in many cases when a user enters a governmental platform with an eID, his or her national identity number appears automatically (see in Appendix, Automated Online Process & Automated Online Process (Moving within Sweden)). Though, national identity/identification numbers might have other meanings in different countries. For example, in Greece, the most common identification number is the tax identity number, as it is required in order to request most public services (30). Another example is Estonia, where the most common identification code required by a public authority is an 11-digit number, which does not change for the individual’s entire lifetime. The number is created taking into consideration the sex and date of birth of the person. This ID code allows the specific identification of a person in Estonia. Also, every individual working and/or living in Estonia can acquire a personal identification code (71). Last, in Sweden and in Finland, a national identity number is a personal identity/identification number that is issued from the first day of a person’s life (17,54). As a result, the form should alter the requirements depending on the country from which the user fills in the form. For example, if a person from Greece is about to fill in the form, the first box’s explanation in the parenthesis should write “tax identity number” (Image 1.3.1) and if a person from Sweden is about to fill in the form, the first box’s explanation in the parenthesis should write “personal identity number” (Image 1.3).

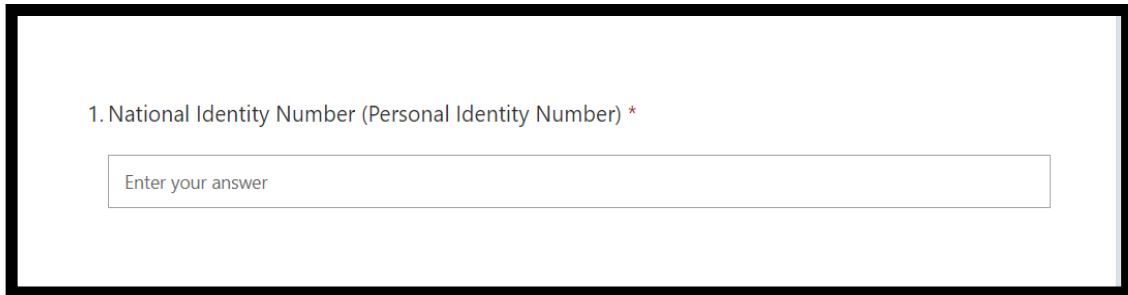
However, in this case, the national identity number is not adequate to authenticate a user. Thus, the proposal is that he or she should insert his or her e-mail address in the second box of the form as additional information in order to be authenticated. After inserting the national identity number and the e-mail, the user’s forename and surname should automatically appear in the third box (Image 1.3.1). The proposal for the name to appear automatically after the two first steps of the process was based on the Swedish (see in Appendix, Automated Online Process (Moving within Sweden)) and

the Finish online forms (see in Appendix, Automated Online Process). In the last cases, the user is authenticated via a BankID or other types of eIDs, and his or her personal data, (full name, personal identity number -national identity number-, current address, etc.) appear automatically. This proposed feature serves a dual purpose. The first is the limitation of required steps to complete the process and the second is to avoid errors, e.g., in case a user erroneously inserts a wrong digit when providing his or her national identity number, the box that should automatically present his or her name would point out the error in order for the user to correct the given information and proceed with the rest of the process. An additional reason for the proposal is to enhance user-centricity. In other words, the goal is to recommend a process that is more user-friendly.

In the fourth box of the form, the user has to insert a unique code that he or she would automatically receive, by the system operating behind the form, on his or her mobile phone. (Image 1.3.1).

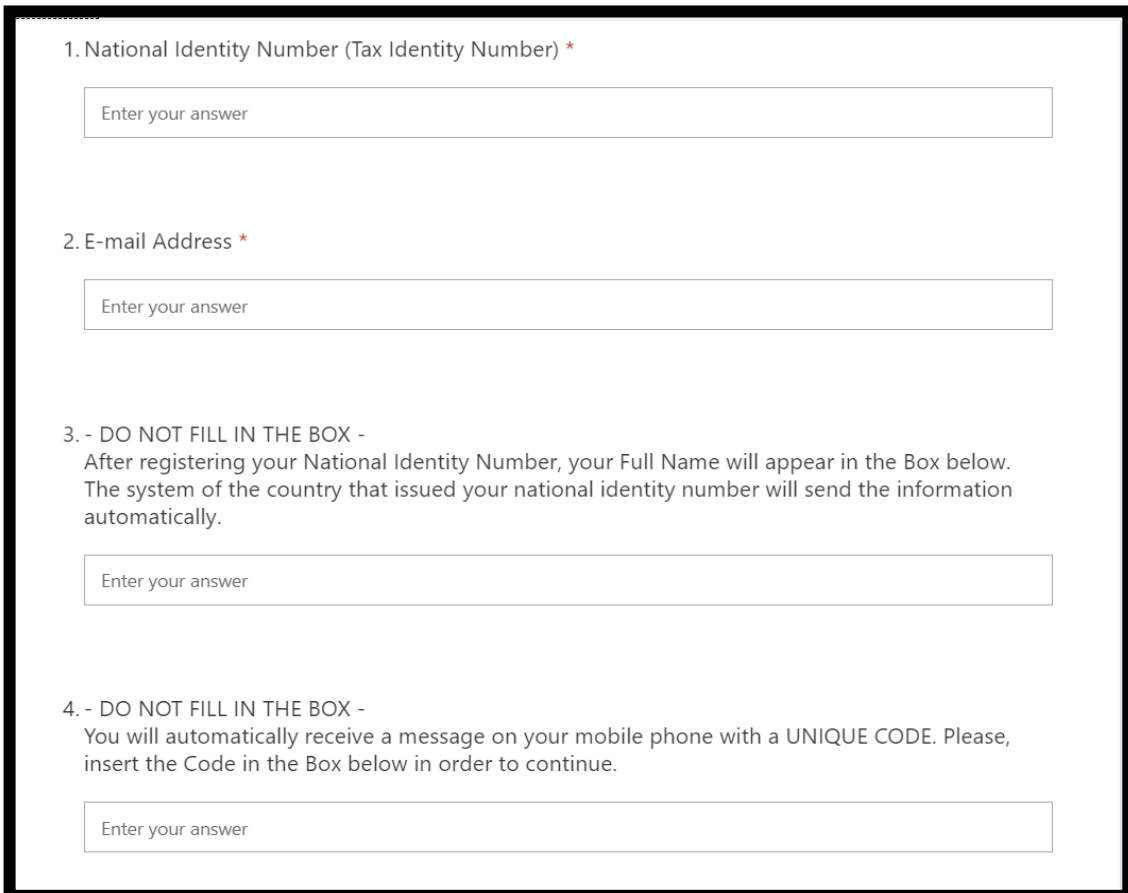
The unique code uses as an additional safeguard since the submitter of the form does not use an eID provided by a private or public organization in order to be authenticated. This type of electronic identities usually helps avoid any wrongdoing or fraud. So, in this case, instead of the eID solutions mentioned above, the user's electronic identity would consist of his or her national identity number, e-mail, full name, and unique code, taking as a given that data as national identity number, e-mail, full name, and telephone number is already registered in a national database containing population data and will be exchanged through the system that links the countries to each other. In other words, the user would not log in to an organization's eID application in order to be authenticated. The identification of the user would take place after the combination of the four aforementioned types of data (national identity number, e-mail, full name, unique code). The proposal for the unique code was based on the e-services in Greece that can be accessed electronically through being authenticated with a BankID (38). In the previous case, except for the authentication process through the BankID, the user also receives a unique code on his or her mobile phone to insert in order to be able to proceed further with the e-service (2,31).

Image 1.3



1. National Identity Number (Personal Identity Number) \*

Image 1.3.1



1. National Identity Number (Tax Identity Number) \*

2. E-mail Address \*

3. - DO NOT FILL IN THE BOX -  
After registering your National Identity Number, your Full Name will appear in the Box below.  
The system of the country that issued your national identity number will send the information automatically.

4. - DO NOT FILL IN THE BOX -  
You will automatically receive a message on your mobile phone with a UNIQUE CODE. Please, insert the Code in the Box below in order to continue.

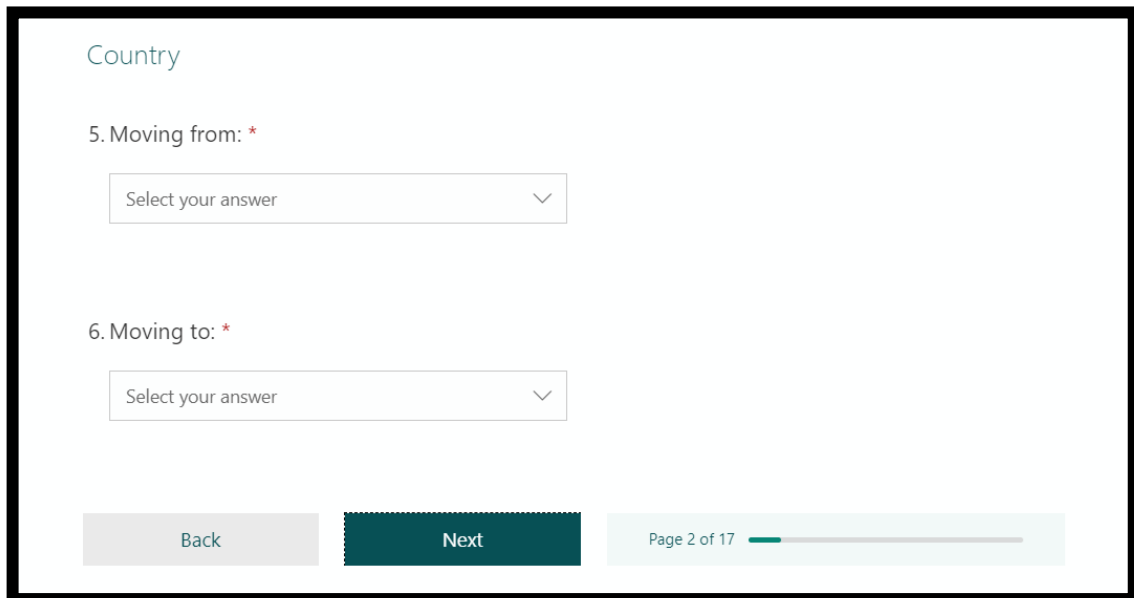
The second part of the proposed digital form/process requires that the user inserts the country from and to which he or she is moving (Image 1.4).

This part is based on the attributes identified in Tables 1.3, 1.4, and 1.6 about the current/old address and the new address.

In this step, the user should select the country from which he or she is moving, from a drop-down list containing all 27 member states of the European Union in

alphabetical order, and then select the country to which he or she is moving, from a similar list including an additional option -along with the 27 member states- called “Same Country”. This option is placed on the top of the list to facilitate the process for the user if he or she is moving to a new address within the same country.

Image 1.4



The screenshot shows a web form titled "Country". It contains two dropdown menus. The first is labeled "5. Moving from: \*" and the second is labeled "6. Moving to: \*". Both dropdown menus have the text "Select your answer" and a downward arrow. At the bottom of the form, there are three buttons: "Back" (light gray), "Next" (dark teal), and "Page 2 of 17" (light green) with a progress bar.

The third part of the form would not require the user to fill in his or her current address (Image 1.5). The user’s current/old address should appear automatically in the first box of this part. The suggestion is that since the user has already been authenticated in the first part of the process, the data concerning his or her address should be provided by the country in which he or she is registered. The reasoning is that the user’s data is already registered in a national database and are provided through the abovementioned system that is linking all member states to each other.

The only case the user would have to fill in information about the current address should be if the data was mistaken or missing. This step was borrowed by the Swedish and Finnish online processes for change of address. As can be seen in Images 1.1 and 1.2 the current address appears automatically after the user logs in to the platform using his or her eID. Also, there are options for the correction of false or missing data. Furthermore, the required data in this part were selected based on the attributes that were identified as the most common ones in Table 1.4.

Image 1.5

Current/Old Address

7. - DO NOT FILL IN THE BOX -  
Your Current/ Old Address will appear in the Box automatically.  
The system of the country that issued your national identity number will send the information automatically.

Enter your answer

8. If the Address is incorrect, register your Current/Old Address in the Boxes below:

8a. Street Address

Enter your answer

9. Street Number (and Letter(s), if any)

Enter your answer

10. Postal Code

Enter your answer

11. City

Enter your answer

In the fourth part of the online form (Image 1.6) the user should fill in the new address to which he or she is moving. The required data are street address, street number and letter(s) -if any-, postal code, city, and moving date. These attributes were selected based on findings from Tables 1.3 and 1.6.



According to the findings from the tables mentioned above, the examined evidence included the attributes previously mentioned. Data concerning street address, street number and letter(s) -if any-, postal code and city/region was required in all examined forms and processes concerning both moves within the same country and abroad, however the date of move attribute was identified in fewer cases than the other attributes.

Image 1.6

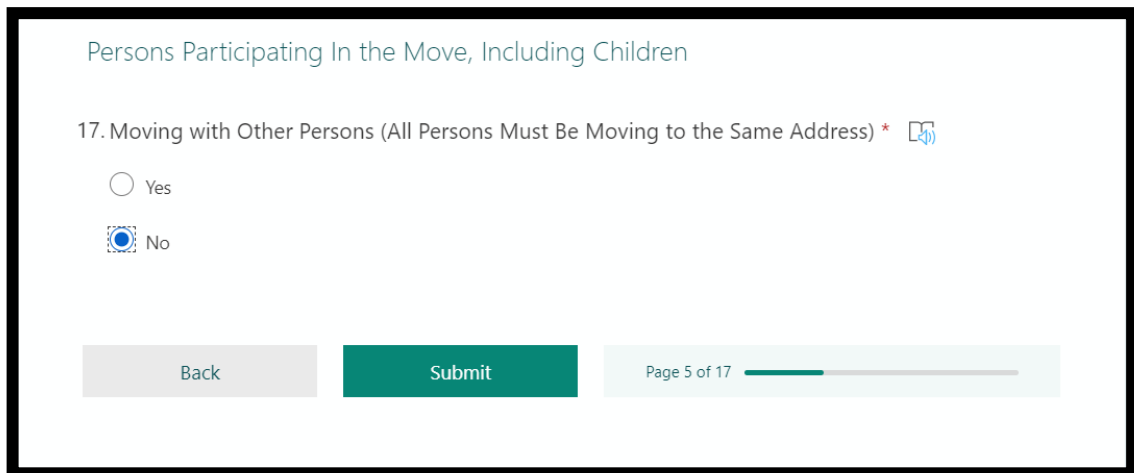
The image shows a digital form titled "New Address" with a light blue header. It contains five numbered input fields, each with a red asterisk indicating it is required. The fields are: 12. Street Address, 13. Street Number (and Letter(s), if any), 14. Postal Code, 15. City, and 16. Moving Date. Each field has a placeholder text "Enter your answer". The "Moving Date" field includes a specific instruction "Please input date in format of M/d/yyyy" and a small calendar icon on the right side of the input box.

In the last part of the form, the user would be able to register all persons moving together with him or her (Image 1.7). For example, if a family was moving to a new address, one family member could register the move of all family members through the same form (see in Appendix, Finland, Sweden, Estonia). Although, a requirement would

be that all persons participating in the move should be moving to the same address. This would apply both in cases of a move abroad and within the same country.

Moreover, this part was included in the form since Table 1.5 showed that a high percentage of the examined evidences included an option to register a move concerning other persons besides the submitter. Additionally, in this part, the user would be provided with two options, “yes” and “no”. If the person would be moving alone, he or she should select the “no” option and submit the form to the system. But, if the person would be moving together with other persons (including children) to the same address, he or she should select the “yes” option and continue further with the process (Image 1.8).

Image 1.7



Persons Participating In the Move, Including Children

17. Moving with Other Persons (All Persons Must Be Moving to the Same Address) \*

Yes

No

Back Submit Page 5 of 17

In this section (Image 1.8) the user should select from a drop-down list the number of persons moving together with him or her and continue to the next section of this part to fill in the required data about the other persons (Image 1.9). This is a step, where the user declares how many individuals participate in the move, to minimize the risk for mistakes in the submitted data concerning the people that are moving. For example, if the user declares that he or she is moving together with three other persons, and inserts data for two people instead of three, then the operating system behind the form should inform him or her about the mistake.

Image 1.8

Persons Participating In the Move, Including Children

17. Moving with Other Persons (All Persons Must Be Moving to the Same Address) \*

Yes

No

18. Number of Persons Moving (do not include yourself) \*

Select your answer ▼

Back Next Page 5 of 17

In this part (Image 1.9) the user should fill in the national identity number, forename, surname, and e-mail of all persons moving to the new address. The combination of data was selected based on two factors. The first factor was that these attributes were identified in most examined forms and processes through Table 1.5 and the second factor was that this data is the most common for identification of a person (Table 1.2).

Another proposal for this part of the digital form is that the people that are registered, as people that are moving together with the submitter, should receive a notification (e.g. in their e-mail) before their data would be updated in the national registry or registries if the move occurs across borders.

According to the answer provided in the previous part, the number of boxes that appear in this part, to be completed, is adjusted. For example, if the user chooses two in the previous part, there will be two sets of four boxes requiring national identity number, forename, surname, and e-mail address for both persons.

Image 1.9

National Identity and Names of All Persons Participating in the Move, Including Children

19. National Identity Number (Personal Identity Number or Tax Identity Number) \*

20. Forename \*

21. Surname \*

22. E-mail Address \*

In the previous part (Image 1.9), the submitter should fill in the personal details of all persons participating in the move, including children. The “including children” option led subsequently to the following part presented in Image 1.10. If the move involves children, it must be stated clearly in order for the user to fill in additional data, before submitting the form.

Image 1.10

Minors

23. Does the Move Include Minors? \*

Yes

No

Back Next Page 16 of 17

Based on the Swedish, Finnish, and Estonian forms (see in Appendix, Sweden, Finland, Estonia), the proposal here is that both parents must submit their data and be notified in order for the children to be registered at the new address (Image 1.11). The part concerning the consent of both custodial parties was inspired by the aforementioned forms. However, the part of the parent's acceptance of the electronic notification was added for practical reasons, as the legal basis about children that are moving is significant and relevant in this case (78).

Image 1.11

The image shows a digital form titled "Custodial Parents". At the top, there is a heading "Custodial Parents" in blue. Below the heading, there are four lines of instructional text: "Both custodial parents' details should be stated", "Do not fill in your personal details if you are one of the custodial parents", "The custodial parent(s) will receive a notification with the details of the move", and "The notification must be accepted by the other party (custodial parent) in order to be submitted". Below the text, there are four numbered questions, each followed by a text input field:

- 24. National Identity Number (Personal Identity Number or Tax Identity Number) \*  
Input field: Enter your answer
- 25. Forename \*  
Input field: Enter your answer
- 26. Surname \*  
Input field: Enter your answer
- 27. E-mail Address \*  
Input field: Enter your answer

Consequently, the proposed data model (digital form) could assist (semantic) interoperability, as it proposes a common data model, a piece of evidence, that can be requested and used by all EU countries. This model comes together with specific attributes and a common interpretation of the exchanged data (common metadata), e.g., a

common markup language, facilitating the exchange of evidence between the member states.

Another advantage of the proposed digital form is that it could contribute to the reduction of the need for manual validation, as the users are being exempted from providing the public authority with various pieces of evidence in order to confirm their identity and current (address) data. The personal details of the user are being validated automatically as the data are directly being exchanged between the public administrations at a national level or between the public administrations of different countries. This could be particularly helpful in cross-border public service delivery as the procedure does not require the physical presence of the individual that is requesting the service. Furthermore, the users would be further enabled to access cross-border public services, because choosing to register a change of address through the proposed form, would exempt them from searching for the competent public authority to request the service.

Finally, the proposed data model could assist cross-border public service provision as the procedure does not require eIDs provided by public or private organizations as authenticators. Thus, the fact that mutual recognition of national eID schemes between member states is currently not fully accomplished does not affect the proposed procedure.

#### ***4.5 Usability and User-Experience Questionnaire - Collected Data & Analysis***

Furthermore, the proposed data model was presented to a non-random sample of people reached through social media and by e-mail, together with a “Usability and user-experience questionnaire” (see in Appendix, Usability & User-Experience Questionnaire), and screenshots of the evidence that were selected for examination (Swedish “moving abroad” form, Finnish online “Posti” process, Estonian form, etc.) (see in Appendix, Finland, Sweden, Estonia, Greece). The form and questionnaire were answered by 60 people in total. Additionally, the instructions given to the participants were to quickly view the evidence included in the case study, that were sent to them, in order to have a reference point before completing the online form.

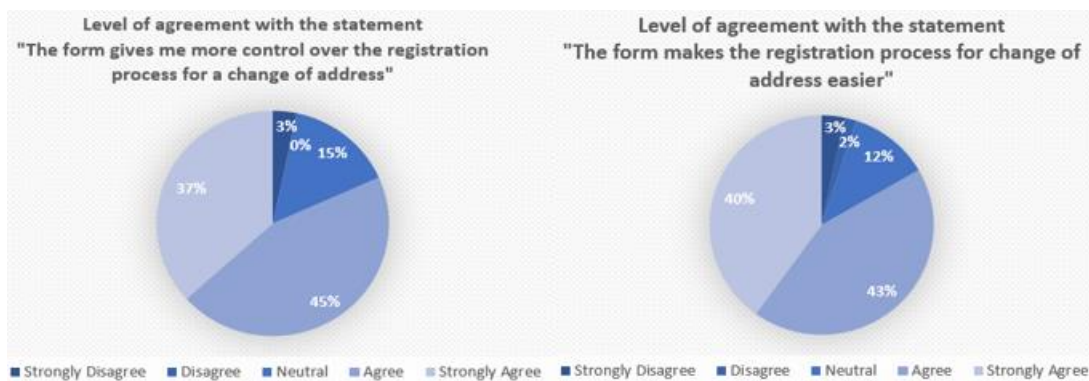
The questionnaire consists of 17 Likert-scaled questions aimed to find out if the form is considered to be useful and user-friendly. The following pages present the level

of agreement of the participants with the statements concerning the usability, ease-of-use, learnability, and degree of satisfaction with the form.

#### 4.5.1 Usability Part

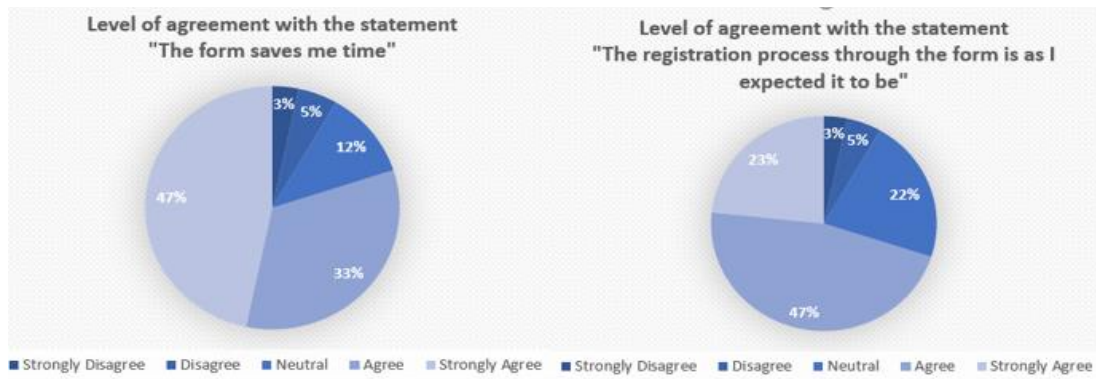
The percentage of people that agreed that the form gives them more control over the registration process for a change of address was 82%, while the percentage of people that answered that they were neutral towards this statement was 15%. However, people that completely disagreed were only 3% (Image 2.1). Next, 73% of the participants declared that the proposed data model makes easier the registration process for change of address, while 12% neither agreed nor disagreed. Additionally, 5% disagreed that the form makes the process easier at all (Image 2.2).

Images 2.1 & 2.2



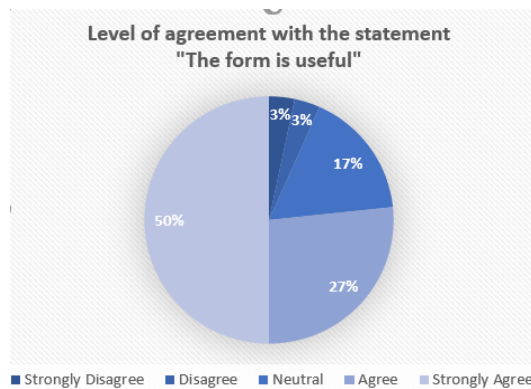
Furthermore, the participants were asked if they agreed that the form is time-saving. 80% of them agreed that the form saves them time, 8% disagreed, and 12% was neutral (Image 2.3). They were also asked if the registration process through the form was as they expected it to be, and 70% of them answered that it was, while a relatively big percentage answered that they were neutral towards this statement, 22%, and 8% disagreed (Image 2.4).

Images 2.3 & 2.4



The last question concerning the usability of the data model was about the usefulness of the form. The majority of the participants, 77%, answered that they agreed that the form is useful, while 6% disagreed, and 17% neither agreed nor disagreed (Image 2.5).

Image 2.5



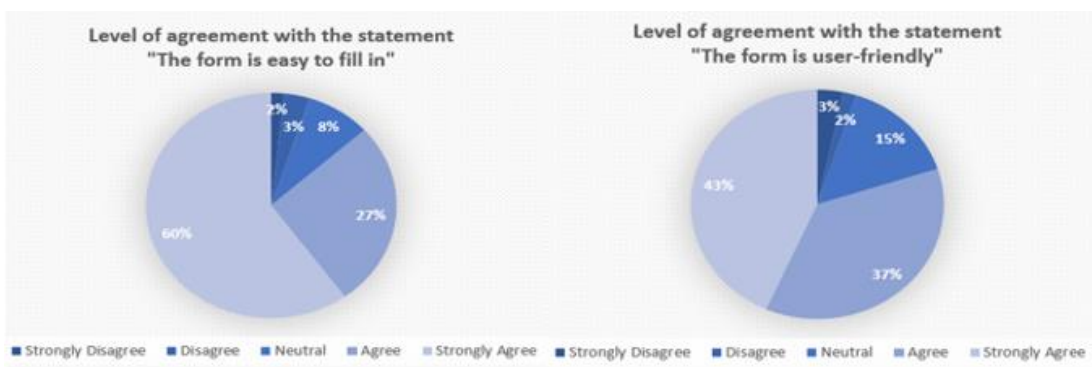
All the indicators concerning the usability of the form were generally high (over 70%). The lowest percentage (70%) was reached in the fourth statement ("the registration process through the form was as I expected it to be"), while the percentage of people that neither agreed nor disagreed with the statement was relatively high (22%) as well (Image 2.4). That could mean that the end-users expected that a digital form for change of address would work differently or include other steps than the proposed ones. However, the fact that the level of agreement was high for all statements could indicate that the people that saw and tried the form were satisfied with the overall usability of the form.



#### 4.5.2 Ease-of-Use Part

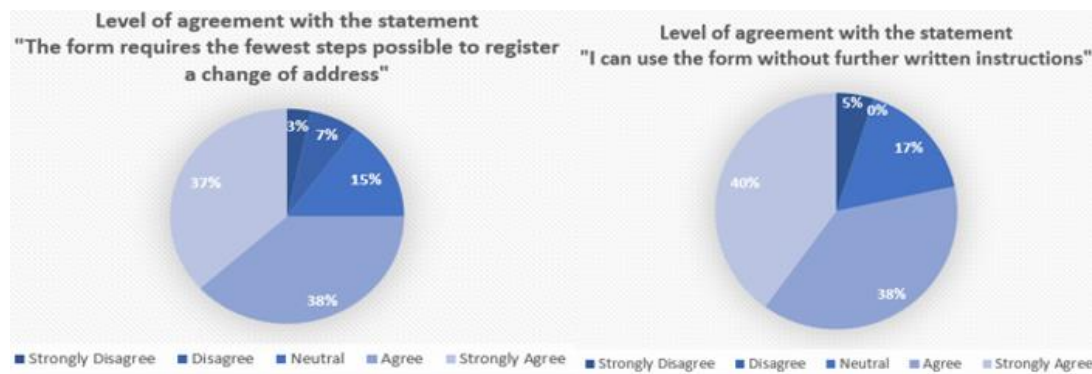
In this part of the questionnaire, the participants were asked if the form is easy to fill in. The majority of participants, 87%, agreed that the form can easily be filled in, while 5% of them disagreed, and 8% were neutral (Image 2.6). Furthermore, they were asked if they agreed that the form is user-friendly. 80% of the participants agreed, 15% answered that they were neutral towards this statement, and 5% disagreed (Image 2.7).

Images 2.6 & 2.7



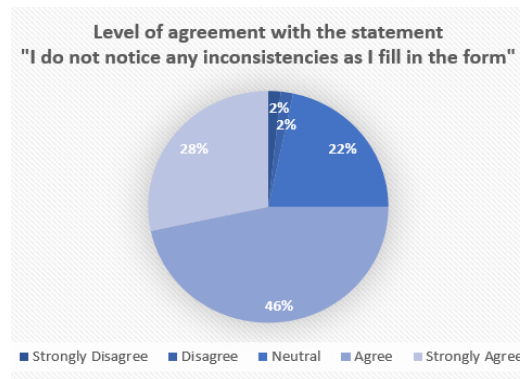
Additionally, 75% of the people asked, agreed that the form requires the fewest steps possible to register a change of address, while 10% disagreed with the statement, and 15% neither agreed nor disagreed. The participants were also asked if they agreed that they can use the form without further instructions, with 78% of them answering that they agreed, 5% that they disagreed, and 17% that they were neutral (Images 2.8 and 2.9).

Images 2.8 & 2.9



Last, in the same part, the participants were asked if they agreed that there were not any inconsistencies in the form. 74% of them answered that they agreed with the statement, while 22% of them answered that they were neutral, and the last 4% answered that they found inconsistencies in the form (Image 2.10).

Image 2.10

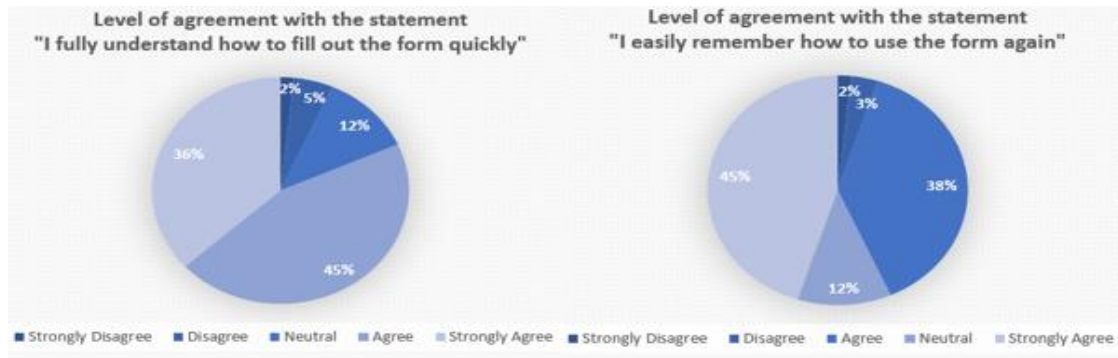


In this part, the level of agreement with the statements concerning the ease of use of the form was generally high (over 74%). Nevertheless, for four out of five statements the percentage of people that neither agreed nor disagreed marked over 15%. That could indicate that the overall ease of use of the form was considered adequate. Moreover, the level of disagreement with the statement “the form requires the fewest steps possible to register a change of address” was the highest (10%) compared to all 17 statements. That could suggest that some of the participants believed that the form included too many steps in order to be completed.

#### 4.5.3 Learnability Part

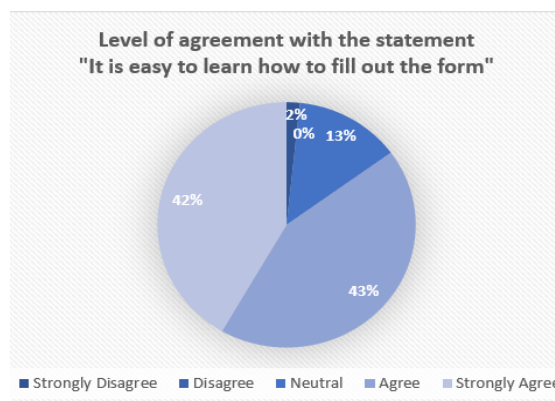
Next, in the learnability part, 81% of the participants agreed that they fully understand how to fill out the form quickly, while 12% were neutral towards the statement, and 7% disagreed (Image 2.11). Furthermore, they were asked if they agreed that they would easily remember how to use the form again, and only 57% agreed, while a significantly big percentage, 38%, stated that they neither agree nor disagree and last, 5% disagreed (Image 2.12).

Images 2.11 & 2.12



The last question of the learnability part was if the participants agreed that learning how to fill out the form is easy. 85% agreed that it is easy, 13% were neutral towards the statement, and 2% completely disagreed (Image 2.13).

Image 2.13



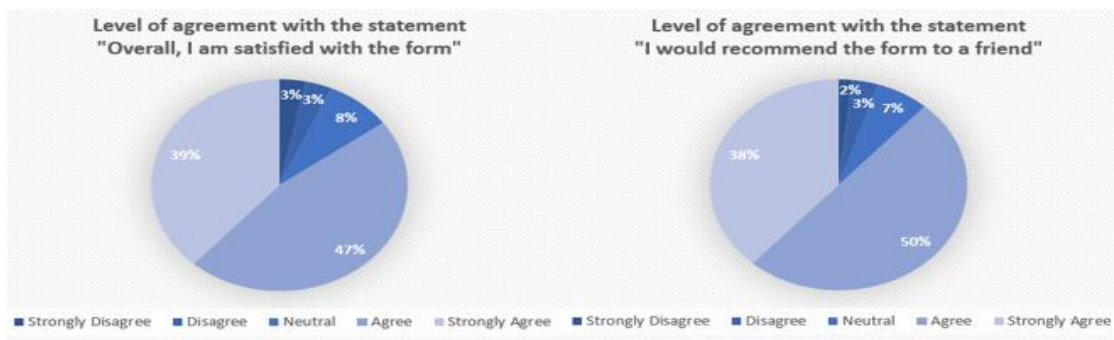
The learnability part indicated relatively big differences in the level of agreement with each of the three statements. The percentage of people that agreed that they would easily remember how to fill in the form again was comparatively low as it reached only 57% (Image 2.12). That could mean that the form was perceived as complicated or difficult to be memorized. Additionally, a great part of the participants answered that they were neutral towards the same statement (Image 2.12). That could imply that they were not sure about remembering how they should fill in the form the next time. However, the level of disagreement with the last statement of the learnability part ("it is easy to learn how to fill out the form") was the lowest compared to all 17 statements

(2%), while the level of agreement reached 85%. That could mean that the participants thought that the form has a simple and user-friendly layout that indicates clearly which is the next step to follow.

#### 4.5.4 Degree of Satisfaction Part

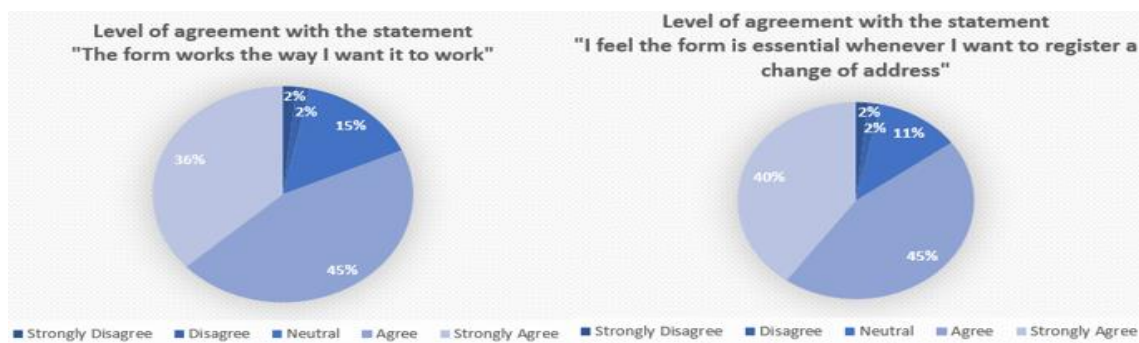
In this part of the questionnaire, the participants were asked if they were overall satisfied with the form, with 86% of them agreeing that they were satisfied, 8% stating that they were neutral, and 6% disagreeing (Image 2.14). Additionally, they were asked if they would recommend the form to a friend. 88% of them stated that they would recommend it to a friend, 7% were neutral towards the statement, and 5% disagreed (Image 2.15).

Images 2.14 & 2.15



Furthermore, the participants were asked if they agreed that the form works the way they want it to work, and 81% of them agreed with the statement, 15% neither agreed nor disagreed, while 4% disagreed (Image 2.16). And lastly, 85% agreed that they feel that the form is essential whenever they want to register a change of address, while 11% were neutral towards the statement, and 4% disagreed (Image 2.17).

Images 2.16 & 2.17

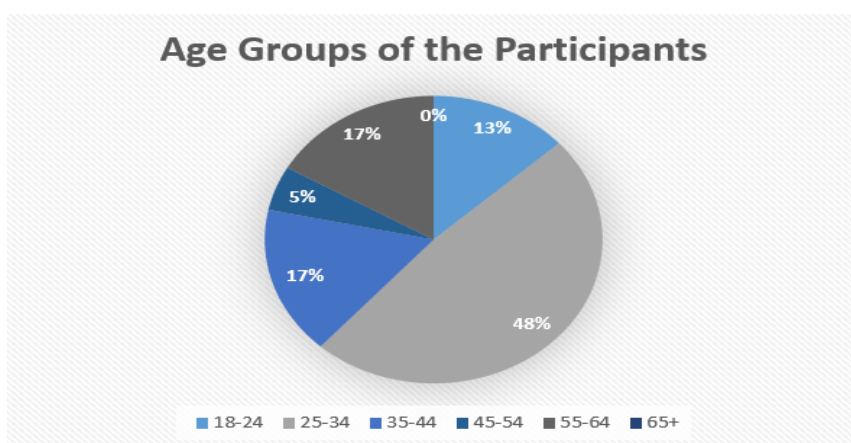


Generally, in this part of the questionnaire, the level of agreement with the statements, concerning the degree of satisfaction with the form, was the highest (over 81%) compared to the other three parts. Furthermore, the statement “I would recommend the form to a friend” reached the highest level of agreement among all 17 statements (88%). That could mean that even though a number of participants thought that some parts of the form could be different, they still believed that the overall performance of the form was satisfactory. That might be true, taking into consideration that 86% of them answered that they were overall satisfied with the form.

#### 4.5.5 Age

Additionally, the pie graph in Image 3.1 shows that the majority of people that answered the questionnaire were between the age 25-34 (48%). Next, the people from the age groups 35-44 and 55-64 were each 17% of the participants. Furthermore, the participants aged between 18-24 were 13%, while the lowest percentage belonged to the age group 45-54 (5%). Last, no one over the age of 65 answered the questionnaire.

Image 3.1

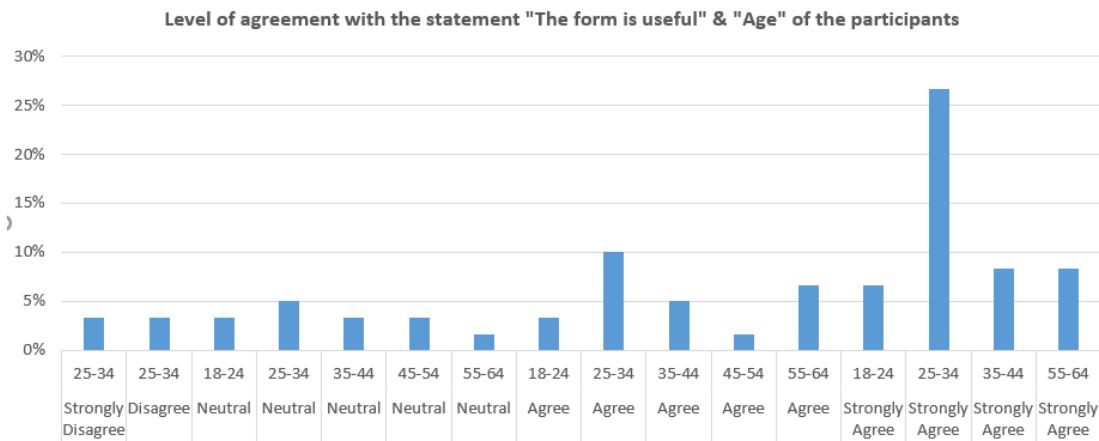


Furthermore, four histograms present the level of agreement with four indicative statements from each thematic part of the questionnaire, divided by age groups. This part aims to gain further insight into what each age group believed about the form.

In the first histogram, no one below the age of 25 or over the age of 34 agreed that the form is not useful. While all age groups had a percentage of people that were

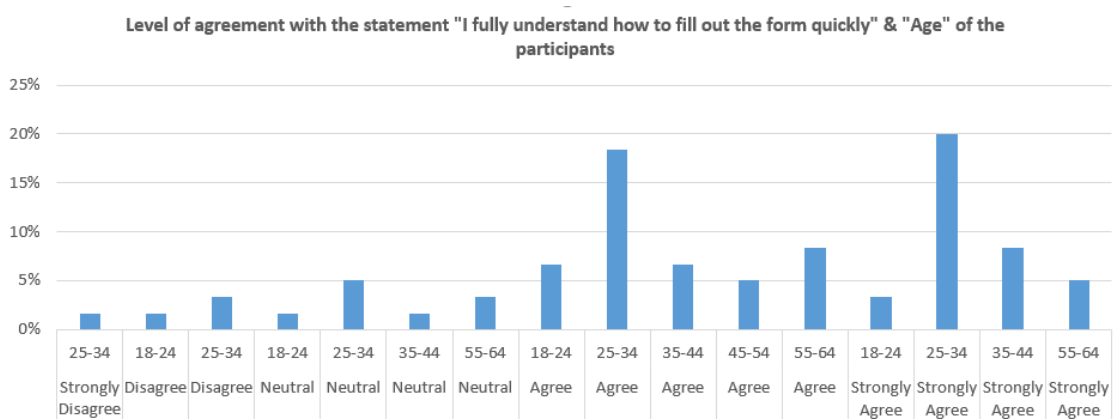
neutral towards the statement. The majority of participants stating that they strongly agreed that the form is useful were from the age group of 25-34. This might be because the participants between 25-34 were the majority. However, no one from the age group 45-54 agreed strongly with the statement (Image 3.2).

Image 3.2



Next, the second histogram indicates that there are not any participants over the age of 34 that disagreed that they can fully understand how to fill out the form quickly. Additionally, all participants from the age group 45-54 agreed with the statement, while a high percentage from the 55-64 age group agreed as well (Image 3.3).

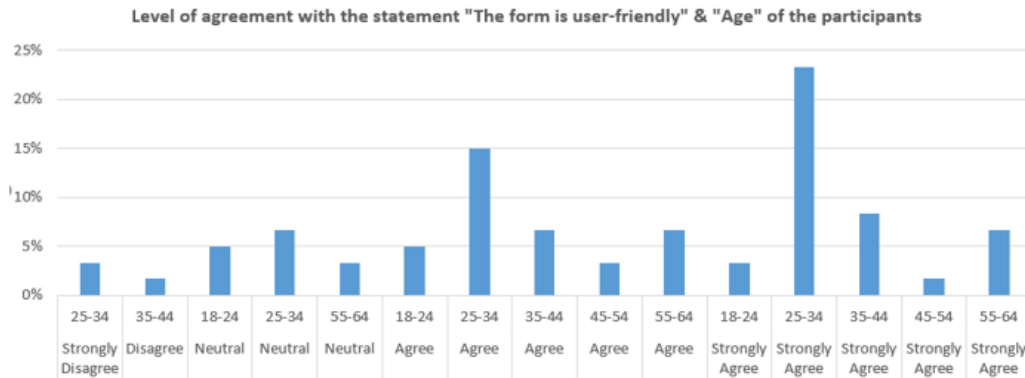
Image 3.3



The third histogram shows that no one from the age groups 18-24, 45-54, or 55-64 disagreed that the form is user friendly. However, only participants from the age groups 18-24, 25-34, and 55-64 stated that they neither agree nor disagree with the

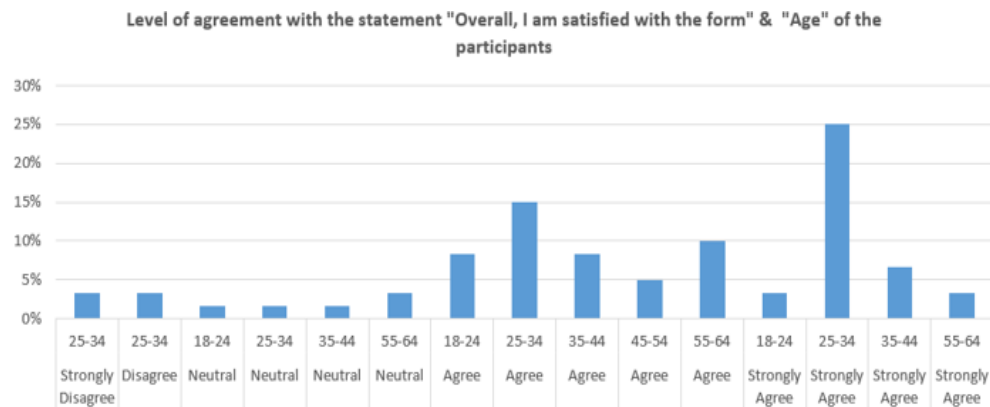
statement. Additionally, there were participants from all age groups who strongly agreed that the form is user-friendly, with the highest percentages belonging to the age groups of 25-34 and 35-44 (Image 3.4).

Image 3.4



And last, the fourth histogram shows that only participants belonging to the age group 25-34 were not overall satisfied with the form. Additionally, all participants between 45-54 agreed with the statement. Last, the percentage of people that neither agreed nor disagreed was low for all age groups (Image 3.5).

Image 3.5



However, the fact that the histograms are not followed by further statistical analysis as hypothesis testing to find out if there is a relation between age group and the level of agreement with the statements, allows only to describe each age group's level of agreement with the four selected statements (Images 3.2, 3.3, 3.4, 3.5).

#### 4.5.6 Comments & Questions Part

In the fifth part of the questionnaire, 28% of the comments left in the open-ended question box were neutral with nothing further to add, 65% of the comments were positive, while 1.7% of the comments were negative. Furthermore, 3.4% of the comments were recommendations on the form, and 1.7% were questions about the form.

Some interesting positive comments for the form was that “The form is very user-friendly since the user can fill all the information required in a quick and easy way. I didn't come up with any proposal for its further improvement, since it successfully met my needs and expectations”, “The form is quite easy to use. The steps are clear and understandable. The time needed to complete is very short. I totally recommend it.”, “I strongly believe that this form is really useful for someone who wants to change his/her address inside or outside a Member State of the European Union and it saves time.”, “Simple and helpful”, and “Completely user-friendly, good layout”. However, the negative comment that was retrieved from the answers was that the form is “unclear at times”, while the recommendations on the form were that “It would be great if both public and private databases would be updated” and that “If I had the opportunity, I would like to change not only my address with this form but also all the contact info from one country to another”. And last, the only question posed was “Why and for what the form is used”.

The positive comments suggest that the form is easy to use, user-friendly, and simple. The only negative comment was that the form is not clear about its requirements, while the question also shows that the form was unclear. Last, the recommendations implied that the form could be improved or used for supplementary purposes by adding functions.

All in all, the collected data indicated that the proposed data model is perceived as effective, user-friendly, and useful by the vast majority of the participants. However, there is no clear indication that the level of acceptance towards the proposed data model is related to the age of the user. This could be examined in the future with further statistical analysis. Also, the user experience and usability of the form can be further investigated through focus groups in order to detect which functions of the digital form could become more efficient.



## 5. Conclusions

In conclusion, Europe seems to be heading towards the digitization of the European Union. The Digital Single Market (DSM) strategy significantly focuses on improving eGovernment and cross-border public services. In most cases, cross-border public services require electronic transactions with public administrations. For example, when a citizen requests a public service from another country than the one in which he or she is located, usually the only channel to request the service is the digital one. Consequently, the absence of available online cross-border public service delivery hinders citizens and businesses from easy access to public services across borders. Interoperability between EU countries, at all levels, is a prerequisite for effective cross-border public services and eGovernment in general. Hence the Union is leading all the efforts towards this direction. One of the most remarkable European initiatives for improved interoperability between EU members was the adoption of the European Interoperability Frameworks (EIF). These frameworks aim to guide the member states to implement interoperable ICT solutions based on guidelines that are common for all countries in order to enhance interoperability between them. The most recent EIF suggests that the countries should focus on four layers of interoperability, organizational, technical, semantic, and legal. Except for the EIF, cross-border interoperability is assisted by the European Interoperability Strategy (EIS), the European Interoperability Reference Architecture (EIRA), the European Interoperability Cartography (EIC), and other similar initiatives. Moreover, all these initiatives are supported by the ISA<sup>2</sup> Programme (Interoperability Solutions for Public Administrations, Businesses, and Citizens) that works as an enabler for the development of digital solutions for the Union.

Another European initiative towards the digitization of the DSM was the adoption of the Single Digital Gateway Regulation (SDGR) in 2018. The SDGR stipulates that a list of 21 essential administrative procedures will be available entirely online in all European members by 2023. Additionally, another part of the SDG is the Once-Only Principle (OOP), which provides the option of reusing and sharing data and documents supplied previously by European citizens and businesses to a country's public authority. Moreover, a number of real-life pilots have been launched in the context of the Once-Only

Principle Project (TOOP) and the Digital Europe for All (DE4A) project during the last years, aiming to reinforce and examine the real-life application of the OOP Technical System under the SDGR while assessing the effect of innovative technologies and their advantages in relation to the OOP.

Furthermore, Electronic Identification (eID) and Trust Services are significant drivers for cross-border public service delivery. The eIDAS (electronic identification, authentication, and trust services) regulation was adopted a few years ago to provide a common legal framework for European members to mutually recognize national eID solutions, so citizens and businesses would be able to be seamlessly identified in other countries when requesting a cross-border public service.

The objectives of the case study were formed considering the gaps and problems in cross-border public services, cross-border mobility mainly for citizens, and interoperability between countries at all levels. The first objective was to find out how eGovernment is evolving in the EU, and what is its current state, its weaknesses, and its achievements. The literature review indicated that the Union has undertaken various initiatives concerning eGovernment both at the national level and across borders. For example, the “EU eGovernment Action Plan 2016-2020” is a political instrument that supports the digitization of European public services, aiming to reduce and avoid new digital barriers involved in the process of digitizing the European Single Market. The Action Plan establishes various principles on which the member states’ future eGovernment initiatives should be based. Furthermore, the eGovernment performance in each member state is monitored every year in the eGovernment Benchmark reports. The eGovernment Benchmark reports for 2018, 2019, and 2020, compared to each other, indicated that eGovernment experienced an upturn. All top-level benchmarks (user-centricity, transparency, cross-border mobility, use of key enablers) have been significantly increased in two years, while the gap between more technologically developed countries and the countries that were left behind was drastically improved as well. However, despite the improvement, cross-border mobility has been the lowest indicator of the four. Cross-border mobility is higher than before but still remains low. Moreover, all reports showed that citizen cross-border mobility is lower than business cross-border mobility. That signifies that moving from one European country to another is harder for citizens than for businesses.

The second objective of the research was to discover how common data models or common metadata for evidence exchange between public administrations, in the context of electronic cross-border public services, could assist interoperability between EU member states. This goal was mainly met through the construction of the proposed data model and the findings in Chapter 4 and secondarily from the literature review in Chapter 2. The assessment of the findings in Chapters 2 and 4 indicated that common data models or common metadata in evidence are essential for interoperable systems, as the evidence exchanged between the member states carry only the necessary data. Additionally, the evidence arrives together with common metadata so that the country receiving the evidence can automatically interpret the carried data. Therefore, incompatible ICT systems that interpret data differently often hinder interoperability. Also, different countries involve different attributes in evidence required to complete an administrative process.

Consequently, a data model including only the common attributes identified in the evidence used in each country could serve as an effective semantic solution that would assist interoperability. For example, the data consumer country would ask the data provider country for specific data about the submitter of the request for the service. Furthermore, this data would be exchanged and interpreted automatically for both parties involved in the process, enabling, in this way, interoperability between them.

The third objective was to find out how automated evidence exchange between the EU member states could reduce manual validation for European citizens and facilitate their access to cross-border public services. This goal was met in Chapter 4, through the findings and proposed data model, that indicated that automated exchange of evidence significantly reduces the need for manual validation as the users are being exempted from providing the public authority with various pieces of evidence to confirm their identity and current data. The data concerning the user is validated automatically as it is directly exchanged between public authorities.

The fourth objective of the research was to construct the data model, which was previously mentioned, as a proposed semantic interoperability solution. The proposed data model is a digital form concerning the registration process for a change of address. The creation of this electronic form aims to present a proposal for improvement of

semantic interoperability between public administrations and to facilitate citizens to register online a change of address with the fewest steps possible to complete the process.

The data model was constructed and presented to a group of people in order to validate its usability to an extent. The people that tried out the proposed digital form answered a questionnaire concerning their experience with the form and its usability. The overall results were encouraging as the majority of participants stated that they were overall satisfied with the form and that they would use it and recommend it to a friend. The percentage of people that were not satisfied with the form was extremely low. Nevertheless, the reasons for some peoples' dissatisfaction with the form could be investigated in the future, through focus groups, in order to detect potential errors and improve the functions of the form.

The barriers encountered in the research process were mainly related to time-limitations and difficulty in accessing useful information about the case studies. The limitations in finding online available information about administrative procedures occurred because most online services required national eID schemes in order to access them. Thus, identifying procedures from every EU member would be extremely time consuming. Another issue was that many forms for change of address that were found during the research process were, in most cases, only available in the language of the country from which the form was retrieved. An additional problem was that many of the evidences retrieved from each of the examined countries were significantly different with each other. This issue was identified both in compared evidence from the same country and from other countries.

A suggestion for future work related to this case study could be to improve the proposed data model by examining the attributes in evidence from all member states. Likewise, further functions could be added, so that the proposed data model could serve additional purposes besides the registration of a new address. And last, the form could be adjusted in order to be used in other countries than the 27 member states of the EU, e.g. Europe's 27+ countries.

All in all, despite the European initiatives, cross-border public services are yet very limited, as there is still a lack of interoperability between countries at many levels.

However, the pan-European coordinated actions aim to solve persisting interoperability issues that undermine the public service delivery across borders.

## Bibliography

1. Aleksandrova Z. Improving semantic interoperability in European eGovernment systems [Internet]. ISA<sup>2</sup> - European Commission. 2016 Nov 22 [cited 2020 Dec 25]; Available from: [https://ec.europa.eu/isa2/actions/improving-semantic-interoperability-european-egovernment-systems\\_en](https://ec.europa.eu/isa2/actions/improving-semantic-interoperability-european-egovernment-systems_en)
2. Alpha Bank. What is myAlpha Code? | ALPHA BANK [Internet]. [cited 2020 Dec 29]; Available from: <https://www.alpha.gr/en/retail/support-center/e-banking/asfaleia-kai-kodikoi/ti-einai-to-myalpha-code>
3. bankid.com. BankID application [Internet]. [cited 2020 Dec 26]; Available from: <https://install.bankid.com/>
4. Beetzen K. What is Freja eID [Internet]. Freja eID. [cited 2020 Dec 26]; Available from: <https://frejaeid.com/en/what-is-freja-eid/>
5. Capgemini., Sogeti., IDC., Politecnico di Milano. eGovernment benchmark 2018: securing eGovernment for all : insight report. [Internet]. LU: Publications Office; 2018 [cited 2020 Dec 28]. Available from: <https://data.europa.eu/doi/10.2759/371003>
6. Capgemini., Sogeti., IDC., Politecnico di Milano. eGovernment benchmark 2019: empowering Europeans through trusted digital public services : insight report. [Internet]. LU: Publications Office; 2019 [cited 2020 Dec 28]. Available from: <https://data.europa.eu/doi/10.2759/950318>
7. Capgemini., Sogeti., IDC., Politecnico di Milano. eGovernment Benchmark 2020: eGovernment that works for the people : insight report. [Internet]. LU: Publications Office; 2020 [cited 2020 Dec 28]. Available from: <https://data.europa.eu/doi/10.2759/24753>

8. CEF Digital. Once Only Principle [Internet]. CEF Digital. [cited 2020 Dec 25]; Available from: <https://ec.europa.eu/cefdigital/wiki/cefdigital/wiki/display/CEFDIGITAL/Once+Only+Principle>
9. Council of the EU. Tallinn Declaration on eGovernment [Internet]. 2017 [cited 2020 Dec 28]. Available from: [http://ec.europa.eu/newsroom/document.cfm?doc\\_id=47559](http://ec.europa.eu/newsroom/document.cfm?doc_id=47559)
10. Davies R. eGovernment: using technology to improve public services and democratic participation : in depth analysis. [Internet]. LU: Publications Office; 2015 [cited 2020 Dec 25]. Available from: <https://data.europa.eu/doi/10.2861/150280>
11. De Ganck A. About ISA<sup>2</sup> [Internet]. ISA<sup>2</sup> - European Commission. 2016 Nov 25 [cited 2020 Dec 28]; Available from: [https://ec.europa.eu/isa2/isa2\\_en](https://ec.europa.eu/isa2/isa2_en)
12. De Ganck A. The New European Interoperability Framework [Internet]. ISA<sup>2</sup> - European Commission. 2017 Feb 16 [cited 2020 Dec 25]; Available from: [https://ec.europa.eu/isa2/eif\\_en](https://ec.europa.eu/isa2/eif_en)
13. DE4A. Project | Digital Europe For All [Internet]. DE4A. [cited 2020 Dec 26]; Available from: <https://www.de4a.eu/about-project>
14. DE4A. Technology | Digital Europe For All [Internet]. DE4A. [cited 2020 Dec 26]; Available from: <https://www.de4a.eu/technology>
15. Digital and Population Data Services Agency. Digital and Population Data Services Agency - Digital and population data services agency [Internet]. Digi- ja väestötietovirasto. 2020 [cited 2020 Dec 29]; Available from: <https://dvv.fi/en/digital-and-population-data-services-agency>
16. Digital and Population Data Services Agency. Digital and Population Data Services Agency [Internet]. [cited 2020 Dec 29]; Available from: <https://asio-inti.dvv.fi/#!/login>

17. Digital and Population Data Services Agency. Personal identity code - Digital and population data services agency [Internet]. Digi- ja väestötietovirasto. [cited 2020 Dec 29]; Available from: <https://dvv.fi/en/personal-identity-code>
18. eesti.ee. Registering residence | Eesti.ee [Internet]. 2020 [cited 2020 Dec 26]; Available from: <https://www.eesti.ee/en/housing-and-environment/services-related-to-housing/registering-residence/#additionaladdressesinthepopulation-register3>
19. Ermis. Εθνική Πύλη Δημόσιας Διοίκησης ermis - Ηλεκτρονικές Υπηρεσίες [Internet]. [cited 2020 Dec 29]; Available from: <http://www.ermis.gov.gr/portal/page/portal/ermis/elServices>
20. Estonian Information System Authority. For partners | Estonian Information System Authority [Internet]. 2020 [cited 2020 Dec 29]; Available from: [partners.html](#)
21. europa.eu. Search [Internet]. Your Europe. [cited 2020 Dec 29]; Available from: [https://europa.eu/youreurope/search/index\\_en.htm](https://europa.eu/youreurope/search/index_en.htm)
22. European Commission. COM/2015/0192 final [Internet]. EUR-Lex - 52015DC0192 - EN - EUR-Lex. 2015 [cited 2020 Dec 28]; Available from: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52015DC0192>
23. European Commission. Trust Services and Electronic identification (eID) [Internet]. Shaping Europe's digital future - European Commission. 2015 Feb 25 [cited 2020 Dec 26]; Available from: <https://ec.europa.eu/digital-single-market/en/policies/trust-services-and-eidentification>
24. European Commission. European interoperability strategy (eis) governance support (2016.33) identification of the action [Internet]. European Commission; 2016 [cited 2020 Dec 24]. Available from: <https://ec.europa.eu/isa2/sites/isa/files/eis.pdf>



25. European Commission. EU eGovernment Action Plan 2016-2020. European Commission [Internet]. 2016;(2016). Available from: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016DC0179&from=EN>
26. European Commission. The European single market [Internet]. Internal Market, Industry, Entrepreneurship and SMEs - European Commission. 2016 Jul 5 [cited 2020 Dec 26]; Available from: [https://ec.europa.eu/growth/single-market\\_en](https://ec.europa.eu/growth/single-market_en)
27. European Commission. New European interoperability framework: promoting seamless services and data flows for European public administrations. [Internet]. LU: Publications Office; 2017 [cited 2020 Dec 24]. Available from: <https://data.europa.eu/doi/10.2799/78681>
28. European Commission. The single digital gateway [Internet]. Internal Market, Industry, Entrepreneurship and SMEs - European Commission. 2018 Nov 16 [cited 2020 Dec 24]; Available from: [https://ec.europa.eu/growth/single-market/single-digital-gateway\\_en](https://ec.europa.eu/growth/single-market/single-digital-gateway_en)
29. European Commission. Single market [Internet]. European Commission - European Commission. [cited 2020 Dec 28]; Available from: [https://ec.europa.eu/info/policies/single-market\\_en](https://ec.europa.eu/info/policies/single-market_en)
30. European Commission. TAX IDENTIFICATION NUMBERS (TINs) Country Sheet: Greece (EL) [Internet]. [cited 2020 Dec 29]. Available from: [https://ec.europa.eu/taxation\\_customs/tin/pdf/en/TIN\\_-\\_country\\_sheet\\_EL\\_en.pdf](https://ec.europa.eu/taxation_customs/tin/pdf/en/TIN_-_country_sheet_EL_en.pdf)
31. European Commission. Strong customer authentication requirement of PSD2 comes into force [Internet]. European Commission - European Commission. [cited 2020 Dec 29]; Available from: [https://ec.europa.eu/info/publications/190913-safer-payment-services\\_en](https://ec.europa.eu/info/publications/190913-safer-payment-services_en)
32. European Commission (DG Informatics). About EIRA | Joinup [Internet]. About EIRA | Joinup. [cited 2020 Dec 25]; Available from: <https://joinup.ec.europa.eu/collection/european-interoperability-reference-architecture-eira/solution/eira/about>

33. European Parliament. Public Undertakings/Services in the EU: Summary - Part 2 (DG4 Study ECON W21) - Public Undertakings and Public Services in the European Union: Summary - Part 2 [Internet]. [cited 2020 Dec 25]; Available from: [https://www.europarl.europa.eu/workingpapers/econ/w21/sum-2\\_en.htm](https://www.europarl.europa.eu/workingpapers/econ/w21/sum-2_en.htm)
34. European Parliament, Council of the EU. EUR-Lex - 32015D2240 - EN - EUR-Lex [Internet]. 2015 [cited 2020 Dec 25]; Available from: <https://eur-lex.europa.eu/eli/dec/2015/2240/oj>
35. European Parliament, Council of the EU. Directive (EU) 2016/680 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data by competent authorities for the purposes of the prevention, investigation, detection or prosecution of criminal offences or the execution of criminal penalties, and on the free movement of such data, and repealing Council Framework Decision 2008/977/JHA [Internet]. 2016 [cited 2020 Dec 25]. Available from: <http://data.europa.eu/eli/dir/2016/680/oj/eng>
36. EY, Danish Technological Institute. Final Report: Study on eGovernment and the Reduction of Administrative Burden (SMART 2012/0061) [Internet]. Shaping Europe's digital future - European Commission. 2014 Apr 8 [cited 2020 Dec 25]; Available from: <https://ec.europa.eu/digital-single-market/en/news/final-report-study-egovernment-and-reduction-administrative-burden-smart-20120061>
37. General Secretariat of Information Systems of Public Administration. ΓΓΠΣΔΔ [Internet]. [cited 2020 Dec 29]; Available from: [https://login.gsis.gr/mylogin/login.jsp?bmctx=1DB55AB50C08F2B418903DE4EB7466AD47038BC455E39B9EA82B1EB28CE52BC6&contextType=external&username=string&password=secure\\_string&challenge\\_url=https%3A%2F%2Flogin.gsis.gr%2Fmylogin%2Flogin.jsp&ssoCookie=disablehttponly&request\\_id=-8863081640545178328&authn\\_try\\_count=0&locale=el\\_GR&resource\\_url=https%253A%252F%252Fwww1.gsis.gr%252Ftaxisnet%252Fmytaxisnet](https://login.gsis.gr/mylogin/login.jsp?bmctx=1DB55AB50C08F2B418903DE4EB7466AD47038BC455E39B9EA82B1EB28CE52BC6&contextType=external&username=string&password=secure_string&challenge_url=https%3A%2F%2Flogin.gsis.gr%2Fmylogin%2Flogin.jsp&ssoCookie=disablehttponly&request_id=-8863081640545178328&authn_try_count=0&locale=el_GR&resource_url=https%253A%252F%252Fwww1.gsis.gr%252Ftaxisnet%252Fmytaxisnet)

38. General Secretariat of Information Systems of Public Administration. eGov-KYC βήμα-βήμα | Γενική Γραμματεία Πληροφοριακών Συστημάτων [Internet]. [cited 2020 Dec 29]; Available from: <https://www.gsis.gr/en/egov-kyc-bima-bima>
39. Hans van der Burght,, Bart van Bekkum. D4.5 Doing Business Abroad - Use Case Definition & Requirements. 2020;95. Available from: [https://b0b3923b-028b-4cc4-aa23-7b874a2ae593.filesusr.com/ugd/2844e6\\_06009964818747a0824f7dd2f9f75fde.pdf](https://b0b3923b-028b-4cc4-aa23-7b874a2ae593.filesusr.com/ugd/2844e6_06009964818747a0824f7dd2f9f75fde.pdf)
40. Independent Authority for Public Revenue. Χάρτης ΔΟΥ | ΑΑΔΕ [Internet]. [cited 2020 Dec 26]; Available from: <https://www.aade.gr/map-doy>
41. Independent Authority for Public Revenue. Αλλαγή στοιχείων μητρώου φορολογούμενων [Internet]. Gov.gr. [cited 2020 Dec 26]; Available from: <https://www.gov.gr/arxes/anexartete-arkhe-demosion-esodon-aade/anexartete-arkhe-demosion-esodon-aade/allage-stoikheion-metroou-phorologoumenon>
42. Independent Authority for Public Revenue. Αλλαγή στοιχείων μητρώου | ΑΑΔΕ [Internet]. [cited 2020 Dec 29]; Available from: <https://www.aade.gr/polites/mitroo/allagi-stoiheion-mitrooy>
43. Juncker J-C. President Juncker’s Political Guidelines [Internet]. European Commission - European Commission. 2014 Jul 15 [cited 2020 Dec 25]; Available from: [https://ec.europa.eu/commission/publications/president-junckers-political-guidelines\\_en](https://ec.europa.eu/commission/publications/president-junckers-political-guidelines_en)
44. Kadadi A, Agrawal R, Nyamful C, Atiq R. Challenges of data integration and interoperability in big data. In: 2014 IEEE International Conference on Big Data (Big Data). 2014. p. 38–40.doi:10.1109/BigData.2014.7004486
45. Kalvet T, Toots M, van Veenstra AF, Krimmer R. Cross-border e-Government Services in Europe: Expected Benefits, Barriers and Drivers of the Once-Only Principle [Internet]. In: Proceedings of the 11th International Conference on Theory and Practice of Electronic Governance. New York, NY, USA: Association for Computing

- Machinery; 2018 [cited 2020 Dec 25]. p. 69–72. Available from:  
<https://doi.org/10.1145/3209415.3209458>
46. [kep.gov.gr](http://www.kep.gov.gr). Διευθύνσεις Κ.Ε.Π [Internet]. [cited 2020 Dec 29]; Available from:  
<http://www.kep.gov.gr/portal/page/portal/kep/kepfind>
  47. Kvasnicova T, Kremenova I, Fabus J. From an Analysis of e-services Definitions and Classifications to the Proposal of New e-service Classification. *Procedia Economics and Finance* [Internet]. 2016 [cited 2020 Dec 25];39:192–196. Available from:  
<https://linkinghub.elsevier.com/retrieve/pii/S2212567116302829>  
doi:10.1016/S2212-5671(16)30282-9
  48. Lund A. Measuring Usability with the USE Questionnaire. *Usability and User Experience Newsletter of the STC Usability SIG*. 2001 Jan 1;8.
  49. Meiyanti R, Misbah M, Napitupulu D, Kunthi R, Nastiti TI, Sensuse DI, et al. Systematic review of critical success factors of E-government: Definition and realization. In: *2017 International Conference on Sustainable Information Engineering and Technology (SIET)*. 2017. p. 190–195. doi:10.1109/SIET.2017.8304133
  50. Miller AR, Tucker C. Health information exchange, system size and information silos. *Journal of Health Economics* [Internet]. 2014 Jan 1 [cited 2020 Dec 29];33:28–42. Available from: <http://www.sciencedirect.com/science/article/pii/S0167629613001367> doi:10.1016/j.jhealeco.2013.10.004
  51. Ministry of the Interior. Population register [Internet]. [cited 2020 Dec 29]; Available from: <https://www.rahvastikuregister.ee/>
  52. Nam T. Determining the type of e-government use. *Government Information Quarterly* [Internet]. 2014 Apr 1 [cited 2020 Dec 25];31(2):211–220. Available from: <http://www.sciencedirect.com/science/article/pii/S0740624X14000483> doi:10.1016/j.giq.2013.09.006
  53. Nielsen MM. Identifying eGovernment success factors: An analysis of selected national governance models and their experiences in digitising service delivery

- [Internet]. In: Proceedings of the 2014 Conference on Electronic Governance and Open Society: Challenges in Eurasia. New York, NY, USA: Association for Computing Machinery; 2014 [cited 2020 Dec 25]. p. 19–25. Available from: <https://doi.org/10.1145/2729104.2729111>
54. OECD. Sweden - Information on Tax Identification Numbers [Internet]. [cited 2020 Dec 29]. Available from: <https://www.oecd.org/tax/automatic-exchange/crs-implementation-and-assistance/tax-identification-numbers/Sweden-TIN.pdf>
  55. Ølnes S, Jansen A. What Is This Thing Called e-Service? Interoperability Challenges in e-Service Modelling. In: Tambouris E, Janssen M, Scholl HJ, Wimmer MA, Tarabanis K, Gascó M, et al., editors. Electronic Government. Cham: Springer International Publishing; 2015. p. 197–208. doi:10.1007/978-3-319-22479-4\_15
  56. van der Peijl S, Eichholtzer M, Ipparthi D, Nikolov M, Albichari K. D04.01 – Final Report Study on Data Mapping for the cross border application of the Once-Only technical system SDG\_Deloitte [Internet]. 2020 [cited 2020 Dec 29]. Available from: [https://sdg.mindigital.gr/uploads/Deloitte\\_final\\_report.pdf](https://sdg.mindigital.gr/uploads/Deloitte_final_report.pdf)
  57. posti.fi. Notification of change of address - Posti for Private Customers [Internet]. [cited 2020 Dec 29]; Available from: <https://www.posti.fi/changeaddress/>
  58. Riigi Autentimisteenus. National authentication service - Secure authentication for e-services [Internet]. Secure authentication for e-services. [cited 2020 Dec 29]; Available from: [https://tara.ria.ee/login?service=https%3A%2F%2Ftara.ria.ee%2Foauth2.0%2FcallbackAuthorize%3Fclient\\_id%3Derahvastikuregister%26redirect\\_uri%3Dhttps%253A%252F%252Fwww.rahvastikuregister.ee%252Foauth%26response\\_type%3Dcode%26client\\_name%3DCasOAuthClient&ui\\_locales=en](https://tara.ria.ee/login?service=https%3A%2F%2Ftara.ria.ee%2Foauth2.0%2FcallbackAuthorize%3Fclient_id%3Derahvastikuregister%26redirect_uri%3Dhttps%253A%252F%252Fwww.rahvastikuregister.ee%252Foauth%26response_type%3Dcode%26client_name%3DCasOAuthClient&ui_locales=en)
  59. Robkin M, Weininger S, Preciado B, Goldman J. Levels of conceptual interoperability model for healthcare framework for safe medical device interoperability. In:

- 2015 IEEE Symposium on Product Compliance Engineering (ISPCE). 2015. p. 1–8. doi:10.1109/ISPCE.2015.7138703
60. Serrat O. Bridging Organizational Silos [Internet]. In: Serrat O, editor. Knowledge Solutions: Tools, Methods, and Approaches to Drive Organizational Performance. Singapore: Springer; 2017 [cited 2020 Dec 25]. p. 711–716. Available from: [https://doi.org/10.1007/978-981-10-0983-9\\_77](https://doi.org/10.1007/978-981-10-0983-9_77)doi:10.1007/978-981-10-0983-9\_77
  61. da Silva Serapião Leal G, Guédria W, Panetto H. Interoperability assessment: A systematic literature review. Computers in Industry [Internet]. 2019 Apr 1 [cited 2020 Dec 25];106:111–132. Available from: <http://www.sciencedirect.com/science/article/pii/S0166361518303476>doi:10.1016/j.compind.2019.01.002
  62. Skatteverket. In English [Internet]. [cited 2020 Dec 29]; Available from: <https://www.skatteverket.se/servicelankar/otherlanguages/inenglish.4.12815e4f14a62bc048f4edc.html>
  63. Skatteverket. Make sure your mail reaches the correct address [Internet]. [cited 2020 Dec 29]; Available from: <https://www.skatteverket.se/servicelankar/otherlanguages/inenglish/individualsandemployees/reportingachangeof-address/makesureyourmailreaches.thecorrectaddress.4.5c1163881590be297b5192f3.html>
  64. Skatteverket. Flytta till Sverige | Skatteverket [Internet]. [cited 2020 Dec 29]; Available from: [https://www1.skatteverket.se/fhxp51/inv\\_anm/nyckelfragor](https://www1.skatteverket.se/fhxp51/inv_anm/nyckelfragor)
  65. Skatteverket. Skatteverkets inloggning [Internet]. [cited 2020 Dec 26]; Available from: <https://m06-mg-local.idp.funktionstjanster.se/mg-local/saml-ds/skv?entityID=https%3A%2F%2Flogin.skatteverket.se%2Foam%2Ffed&returnIDParam=providerid&return=https%3A%2F%2Flogin.skatteverket.se%2Foam%2Fserver%2Ffed%2Fsp%2Fsso%3Frefid%3Did-q9y7sYnwlnj7EHjP450P7ACU47w1adSKcqN3X42%26idpdisco%3D1>

66. Skatteverket. Electronic identification with the ID card [Internet]. [cited 2020 Dec 26]; Available from: <https://www.skatteverket.se/servicelankar/otherlanguages/inenglish/individualsandemployees/livinginsweden/idcard/electronicidentificationwiththeidcard.4.3810a01c150939e893f1dab6.html>
  
67. Skatteverket. Folkbokföringsregistret [Internet]. [cited 2020 Dec 24]; Available from: <https://www.skatteverket.se/privat/folkbokforing/attvarafolkbokford/folkbokforingdatabasen.4.3810a01c150939e893f16fe2.html>
  
68. Spalazzese R, Pelliccione P, Eklund U. INTERO: An Interoperability Model for Large Systems. *IEEE Software*. 2020 May;37(3):38–45. doi:10.1109/MS.2017.265100723
  
69. suomi.fi. Suomi.fi-tunnistus [Internet]. [cited 2020 Dec 26]; Available from: <https://tunnistaminen.suomi.fi/sivut/country-selection/?authMethdReq=eLoA3%3BeLoA2%3BFFI%3BfLoA3%3BfLoA2&conversation=e2s1&entityId=https%3A%2F%2Fwww.suomi.fi%2Fsaml-sp&pid=0d307339468807020ec7d637f7c1c45436040060cbbf89fc4c38ad98041b8ccd&tag=2012211537a997&tid=644923c3fucbpf8nd68al3t7ep&timeout=295>
  
70. swedenconnect.se. Foreign eID - Sweden Connect [Internet]. [cited 2020 Dec 29]; Available from: <https://connector.eidas.swedenconnect.se/idp/extauth?conversation=e1s1>
  
71. Symantec. Estonia Personal Identification Code [Internet]. [cited 2020 Dec 29]; Available from: [https://help.symantec.com/cs/DLP15.7/DLP/v130004553\\_v133697641/Estonia-Personal-Identification-Code?locale=EN\\_US](https://help.symantec.com/cs/DLP15.7/DLP/v130004553_v133697641/Estonia-Personal-Identification-Code?locale=EN_US)
  
72. tallinn.ee. Changing the residence address in the Population Register > Tallinn [Internet]. [cited 2020 Dec 26]; Available from: <https://www.tallinn.ee/Teenus-Changing-the-residence-address-in-the-Population-Register>

73. telia.se. Kom igång med Telia E-legitimation [Internet]. Telia.se. [cited 2020 Dec 26]; Available from: <https://www.telia.se/foretag/support/info/kom-igang-e-legitimation>
74. TOOP. The Once-Only Principle Project | TOOP.EU [Internet]. [cited 2020 Dec 26]; Available from: <https://toop.eu/info>
75. TOOP. TOOP Pilots | TOOP.EU [Internet]. [cited 2020 Dec 26]; Available from: <https://toop.eu/pilots>
76. TOOP. Pilot Area 1 | TOOP.EU [Internet]. [cited 2020 Dec 26]; Available from: <https://toop.eu/pilot-area1>
77. Valle PHD, Garcés L, Nakagawa EY. A Typology of Architectural Strategies for Interoperability [Internet]. In: Proceedings of the XIII Brazilian Symposium on Software Components, Architectures, and Reuse - SBCARS '19. Salvador, Brazil: ACM Press; 2019 [cited 2020 Dec 25]. p. 3–12. Available from: <http://dl.acm.org/citation.cfm?doid=3357141.3357144doi:10.1145/3357141.3357144>
78. Your Europe. Parental responsibility, custody and visiting rights after separation [Internet]. Your Europe. 2020 [cited 2020 Dec 29]; Available from: [https://europa.eu/youreurope/citizens/family/children/parental-responsibility/index\\_en.htm](https://europa.eu/youreurope/citizens/family/children/parental-responsibility/index_en.htm)
79. Your Europe. Residence rights when living abroad in the EU [Internet]. Your Europe. [cited 2020 Dec 29]; Available from: [https://europa.eu/youreurope/citizens/residence/residence-rights/index\\_en.htm](https://europa.eu/youreurope/citizens/residence/residence-rights/index_en.htm)
80. Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC [Internet]. 2014 [cited 2020 Dec 26]. Available from: <http://data.europa.eu/eli/reg/2014/910/oj/eng>



81. Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (Text with EEA relevance) [Internet]. 2016 [cited 2020 Dec 25]. Available from: <http://data.europa.eu/eli/reg/2016/679/oj/eng>
82. Regulation (EU) 2018/1724 of the European Parliament and of the Council of 2 October 2018 establishing a single digital gateway to provide access to information, to procedures and to assistance and problem-solving services and amending Regulation (EU) No 1024/2012 (Text with EEA relevance.) [Internet]. 2018 [cited 2020 Dec 28]. Available from: <http://data.europa.eu/eli/reg/2018/1724/oj/eng>
83. silo mentality. BusinessDictionary.com [Internet]. BusinessDictionary.com. [cited 2020 Aug 19]; Available from: <http://www.businessdictionary.com/definition/silo-mentality.html>
84. information silo. BusinessDictionary.com [Internet]. BusinessDictionary.com. [cited 2020 Aug 19]; Available from: <http://www.businessdictionary.com/definition/information-silo.html>
85. Posti [Internet]. [cited 2020 Dec 26]; Available from: [https://todentaminen.posti.fi/uas/authn/\\*/view?\\_id=9b8e7b55-2f43-4af0-9580-3e811ae8b375&entityID=urn%3Auuid%3Ad0d8c3ee-76ed-4563-bc88-93e79cc3973e&locale=en#\\_ga=2.225846554.1402474383.1608936271-202347119.1600596371](https://todentaminen.posti.fi/uas/authn/*/view?_id=9b8e7b55-2f43-4af0-9580-3e811ae8b375&entityID=urn%3Auuid%3Ad0d8c3ee-76ed-4563-bc88-93e79cc3973e&locale=en#_ga=2.225846554.1402474383.1608936271-202347119.1600596371)

# Appendix

## eGovernment Benchmark 2018

Image 4.1

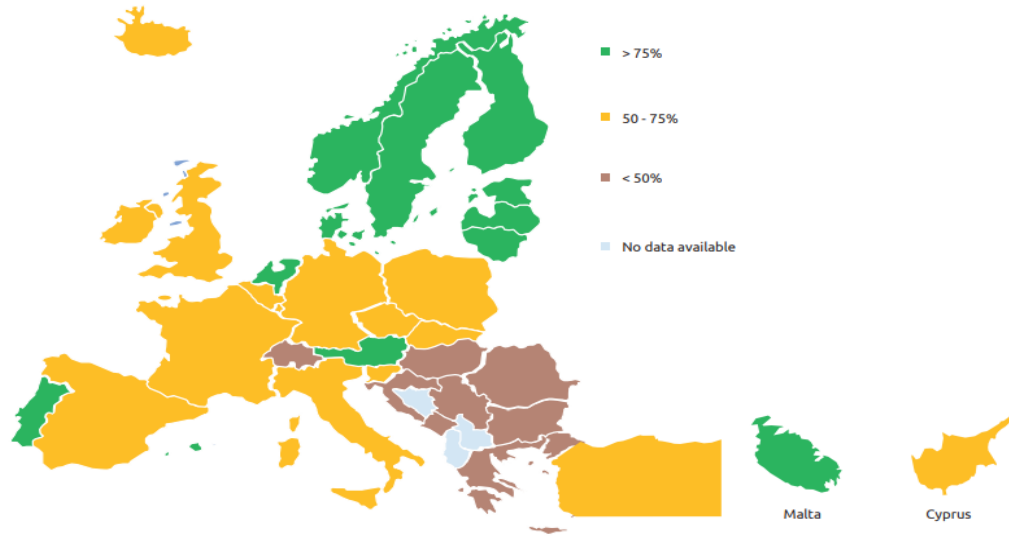


Figure 3.1: Overall eGovernment performance in Europe on the top-level benchmarks (biennial 2016+2017 averages)

Source: eGovernment Benchmark 2018 (5)

## eGovernment Benchmark 2019

Image 4.2

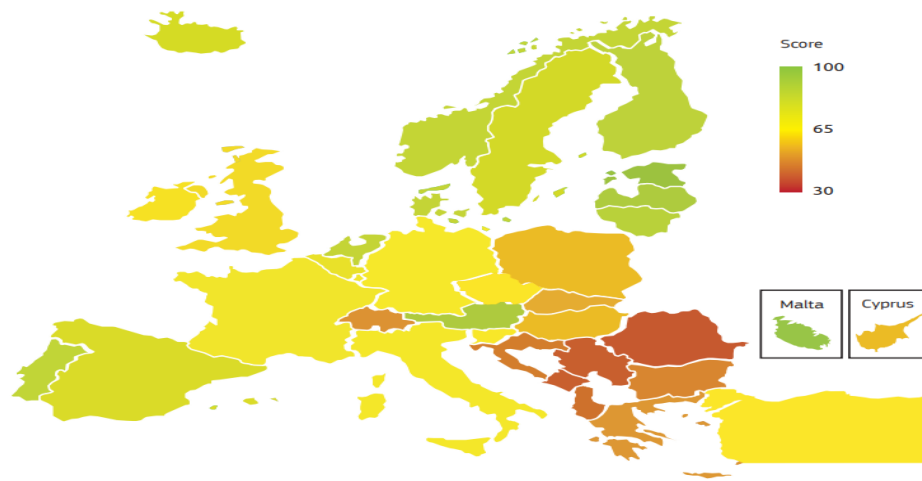


Figure 3.1: Overall eGovernment Benchmark scores (2018 biennial averages)

Source: eGovernment Benchmark 2019 (6)



## Finland

### i. Automated Online Process

Images 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9 present the Finnish online process for change of address. (Source: <https://www.posti.fi/changeaddress/>) (57)

Image 5.1



Image 5.2

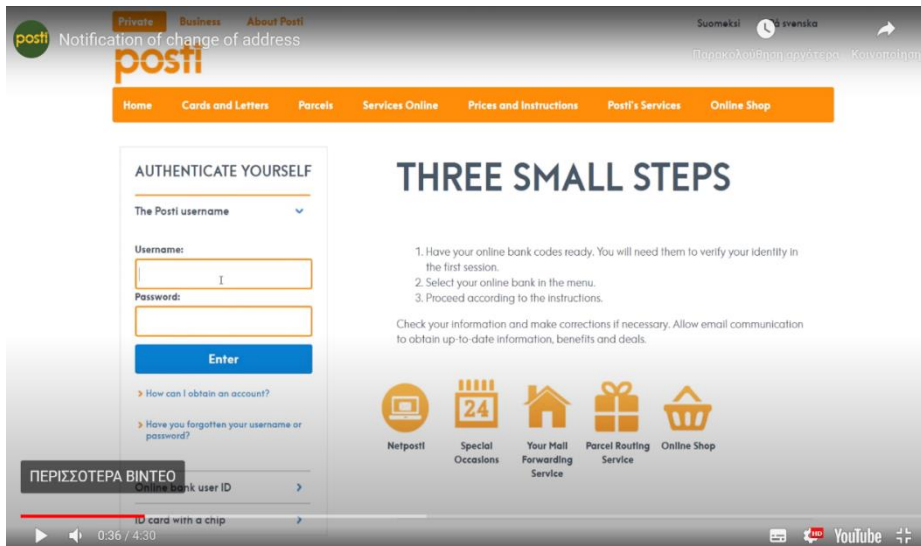


Image 5.3

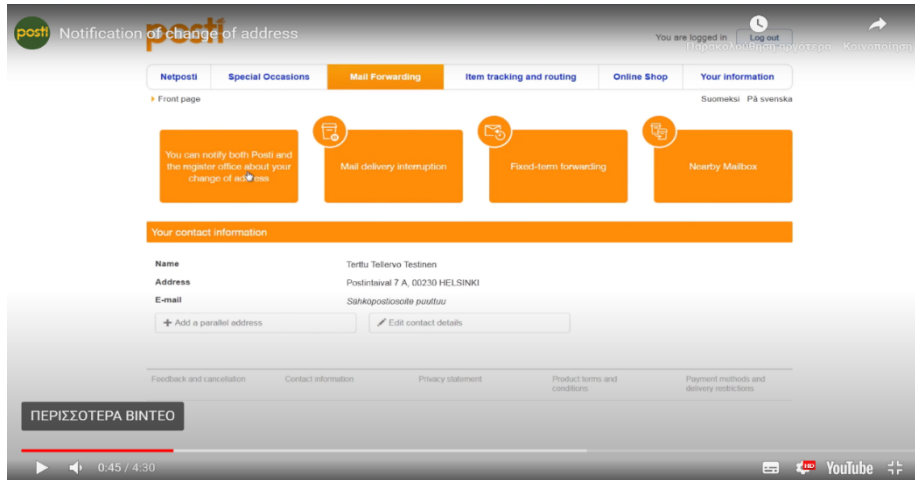


Image 5.4

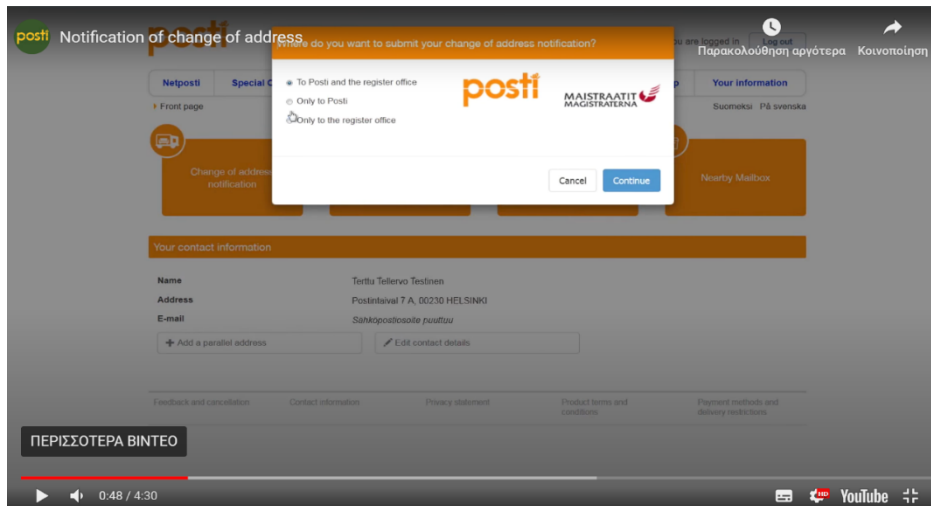


Image 5.5

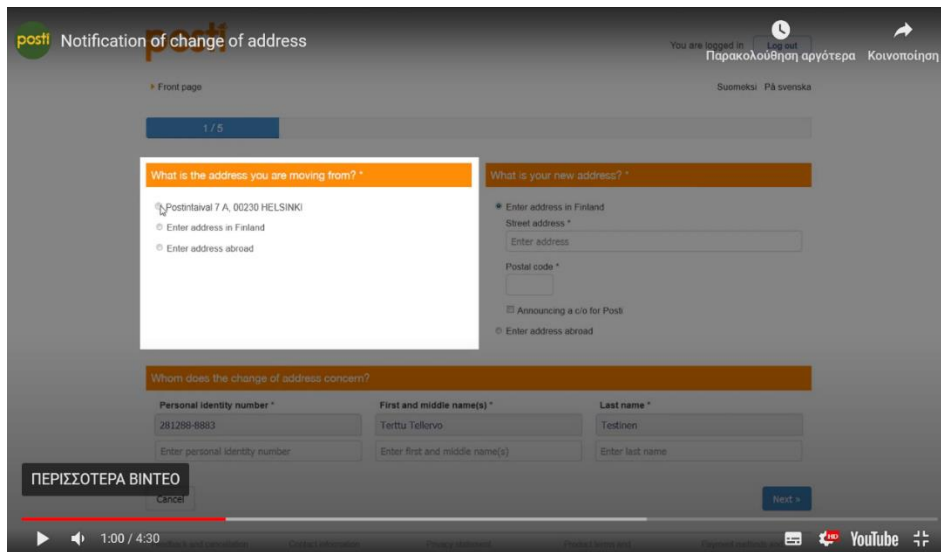


Image 5.6

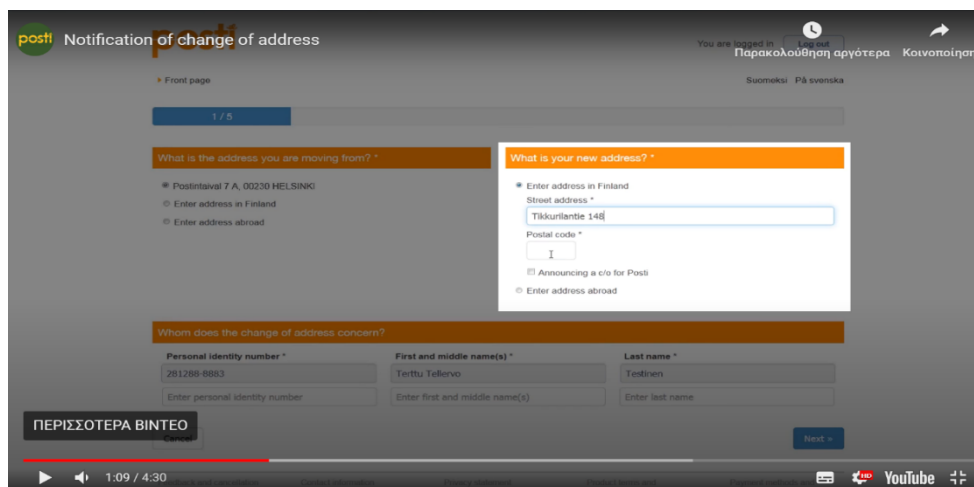


Image 5.7

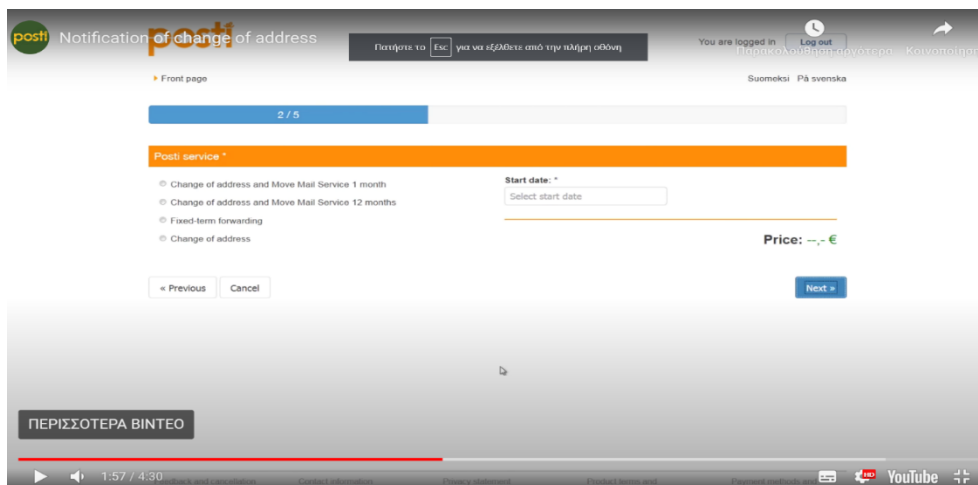


Image 5.8

posti Notification of change of address

3 / 5

Type of notification to the register office

- Permanent change of address
- Temporary change of address

Start \*  
[ ]

Information of those who are moving for the register office

Personal identity number	Name	First name primarily used	Occupation
281288-8883	Terttu Tolleruo Testinen	[ ]	Enter occupation

Additional information for the register office

Domicile after moving \*

- Municipality in Finland
- I am moving to live abroad permanently

Telephone during the day  
Enter telephone number [ ]

E-mail address  
Enter e-mail address [ ]

Additional information for the register office  
Enter any additional information for the register office [ ]

PERISSOTERA BINTEO

2:37 / 4:30

Image 5.9

posti Notification of change of address

Permanent change of address

- Permanent change of address
- Temporary change of address

Start \*  
3.6.2016

Information of those who are moving for the register office

Personal identity number	Name	First name primarily used	Occupation
281288-8883	Terttu Tolleruo Testinen	Terttu	Enter occupation

Additional information for the register office

Domicile after moving \*

- Municipality in Finland
- I am moving to live abroad permanently

Telephone during the day  
040123456789

E-mail address  
terttu@testinen.fi

Type of residence: \*  
Tenant


Additional information for the register office  
Enter any additional information for the register office here [ ]

PERISSOTERA BINTEO Cancel Next

3:28 / 4:30

ii. Moving to another address, when already living abroad PDF Form

Image 5.10




**DIGI- JA VÄESTÖTIETOVIRASTO**  
DIGITAL AND POPULATION DATA SERVICES AGENCY

This form should **not be used** when someone is moving abroad from Finland or from abroad to Finland.

**NOTIFICATION**  
**Change of address for a person living abroad when registered in the Finnish population information system**

Submit the form and its appendices to the Digital and Population Data Services Agency: **dvv.fi/contact-information**. If the notification concerns a Finnish citizen, you can submit the form and its appendices to a Finnish diplomatic mission or send it to the following address: **PL 168, FI-60101 SEINÄJOKI, FINLAND**



**PERSONAL DETAILS**

Finnish personal identity number. If there is not one, date of birth in the format: dd.mm.yyyy	Forenames (Given names)
Surnames (Familyname) and Former Surnames	
Email address	<input type="checkbox"/> I allow my e-mail address to be entered in the Population Information System

Finnish personal identity number. If there is not one, date of birth in the format: dd.mm.yyyy	Forenames (Given names)
Surnames (Familyname) and Former Surnames	
Email address	<input type="checkbox"/> I allow my e-mail address to be entered in the Population Information System

Finnish personal identity number. If there is not one, date of birth in the format: dd.mm.yyyy	Forenames (Given names)
Surnames (Familyname) and Former Surnames	
Email address	<input type="checkbox"/> I allow my e-mail address to be entered in the Population Information System

Finnish personal identity number. If there is not one, date of birth in the format: dd.mm.yyyy	Forenames (Given names)
Surnames (Familyname) and Former Surnames	
Email address	<input type="checkbox"/> I allow my e-mail address to be entered in the Population Information System

**ADDRESS ABROAD**

Old street address abroad	
Postal code / Post office	Country / state
New street address abroad	
Postal code / Post office	Country / state

**MIGRATION DATE AND PERMANENCE OF RESIDENCE**

Date of move	<input type="checkbox"/> We live abroad permanently. We are not resident in Finland. <input type="checkbox"/> temporarily. We have a municipality of residence in Finland.
Reason for the temporary stay abroad and any additional information for the Local register office*	

**DECLARANT'S DETAILS AND SIGNATURE**

E-mail (work)	Telephone Number During Office Hours**
E-mail (home)	Telephone Number Evenings**
Place and date	Signature and clarification of signature

\* Additional information for the registration authority: Please state the purpose of temporary stay abroad and other necessary information (e.g.) working abroad for not longer than one year, studying, living abroad for less than a year, service in a Finnish embassy or a consulate, development project, or missionary work abroad). You can also specify some other additional information.

\*\* Telephone numbers are contact information and will not be registered through this form.

DVV05.02.05C\_en\_122019



Image 5.11

DIGITAL AND POPULATION DATA SERVICES AGENCY

## Provision of information on the processing of data in the Population Information System in accordance with Article 13 of the EU General Data Protection Regulation

**Name of register:** Population Information System

**Data controller and contact information:** Digital and Population Data Services Agency and State Department of Åland. Digital and Population Data Services Agency, [www.dvv.fi/contact-information](http://www.dvv.fi/contact-information), telephone (switchboard) +358 295 536 000, email [kirjaamo@dvv.fi](mailto:kirjaamo@dvv.fi). State Department of Åland, Torngatan 16 B, PO Box 58, AX-22101 MARIEHAMN, telephone +358 18 635 270, email [info@ambetsverket.fi](mailto:info@ambetsverket.fi).

**Data protection officer:** Contact details of the Data Protection Officer at the Digital and Population Data Services Agency: [tietosuoja@dvv.fi](mailto:tietosuoja@dvv.fi). The contact details can also be found at: <https://dvv.fi/tietosuoja>.

**Purpose and legal basis for processing of personal data:** The Population Information System is maintained by virtue of the Act on the Population Information System and the Certificate Services of the Population Register Centre. The Population Information System is maintained to facilitate, implement and ensure society's functions and information services as well as the rights and obligations of its members.

**Disclosure of data:** Information listed in the Act or Regulation will be disclosed to state and municipal authorities as well information necessary for the performance of their statutory or required duties. Individuals or communities are given access to data from the Population Information System when they need this information to exercise their rights and fulfil their obligations. Data can also be disclosed for the purposes of direct marketing, opinion and market surveys, address services, updates of customer registers, historical or scientific studies and/or other comparable purposes.

As a rule, the data contained in the Population Information System is not disclosed to parties outside the EU.

**Personal data retention period:** Personal data contained in the Population Information System is retained permanently with the exception of information on cases where social services have taken a child into care, which is deleted when the child is returned to his or her parent or when the child turns 18, and information on a foreign citizen's residence permit, which is deleted when the person receives Finnish citizenship.

As the information contained in the Population Information System is retained permanently, you do not have the right to request that your data be removed from the system.

**Access to data:** You have the right to know what information that applies to you is stored in the Population Information System. You can check your own personal data at [www.suomi.fi/your-data](http://www.suomi.fi/your-data). You can also check your data by visiting one of the local units of the Digital and Population Data Services Agency or the State Department of Åland in person, or in writing by using a form to request that your data be checked.

**Correction of data and limiting the processing of data:** You have the right to request correction of any incorrect data on you in the Population Information System. The request for correction must be submitted to the Digital and Population Data Services Agency or the State Department of Åland. You cannot demand a restriction of the processing of your data while the request for correction is pending.

You, as a data subject, can submit the following data by signing into your own data at [www.suomi.fi/your-data](http://www.suomi.fi/your-data): mother tongue and communication language (if your mother tongue is a language other than Finnish or Swedish), profession, preferred given name, e-mail address, prohibitions on the disclosure of data (with the exception of orders of non-disclosure for personal safety reasons) and resignation from a religious community.

**Right to object:** You do not have the right to oppose the processing of your data in the Population Information System, as the data is processed pursuant to the law. However, you have the right to prohibit the data controller from disclosing your data contained in the Population Information system for the purposes of direct advertising, distance selling and other direct marketing, market research and opinion surveys, public registers or genealogical research. You can prohibit the disclosure of your address as an address service. You can submit prohibitions on the disclosure of personal data to the Digital and Population Data Services Agency or the State Department of Åland in the web service [www.suomi.fi/your-data](http://www.suomi.fi/your-data) after you have logged in, or by phone or in writing. For more information and the relevant forms, go to the website of the Digital and Population Data Services Agency at [www.dvv.fi](http://www.dvv.fi).

A prohibition on information disclosure is register-specific. In other words, a prohibition registered in the Population Information System will not be relayed to other registers such as the postal service, and, for this reason, you must submit a prohibition on the disclosure of data separately for each register you want it to apply to.


**Right to transfer data to another system:** As processing of data in the Population Information System is based on the law and does not require your consent, you do not have the right to have your personal data transferred in electronic format from the Population Information System to another system.

**Right to lodge a complaint with the supervisory authority:** The data subject has the right to lodge a complaint with the supervisory authority regarding the processing of their personal data. The complaint is submitted to the supervisory authority: Office of the Data Protection Ombudsman, PO Box 800, FI-00521 Helsinki, email: [tietosuoja@om.fi](mailto:tietosuoja@om.fi).

Source: <https://dvv.fi/en/digital-and-population-data-services-agency> (15)

i. Moving within Sweden PDF Form (SKV 7845)

Image 6.1



**Skatteverket**

**Flyttning inom Sverige** **M**  
**Anmälan**

Skicka blanketten till  
**Skatteverkets inläsningscentral**  
**FE 2001**  
**205 76 Malmö**

Datum

Kontrollera att blanketten är rätt ifylld och skriv under den. Under Upplysningar finns viktig information om hur du skriver under. Skicka sedan in den till Skatteverkets inläsningscentral, se adress ovan. Din nya adress är anmäld först när du har skrivit under anmälan och den har kommit in till Skatteverket.

**Observera:** Har du anmält dig till tjänsten "Spärra obehörig adressändring" ska du i stället för den här blanketten anmäla din nya adress i e-tjänsten på [Skatteverket.se](http://Skatteverket.se).

**Personnummer och namn på alla som flyttar, inklusive barn**  
(Om raderna inte räcker använder du en till blankett.)

Personnummer (ÅÅÅÅMMDD-NNNN)	Namn

**Bostadsadress efter flyttning**

Gatuadress, nummer och bokstav		Lägenhetsnummer
Postnummer	Postort	
Hyresvärd/Fastighetsägare/Inneboende hos (ange namn och telefonnummer)		
Fastighetsbeteckning		
Inflyttningsdatum (ÅÅÅÅ-MM-DD)	Den nya adressen beräknas gälla <input type="checkbox"/> tills vidare	Alternativt antal månader

**Underskrift**  
På sidan 2 av blanketten finns viktig information om hur blanketten ska skrivas under. Läs den innan du skriver under.

Underskrift	Underskrift
Namnförtydligande	Namnförtydligande
Telefon, dagtid (även riktnummer)	Telefon, dagtid (även riktnummer)
Mejladress	Mejladress
Underskrift	Underskrift
Namnförtydligande	Namnförtydligande
Telefon, dagtid (även riktnummer)	Telefon, dagtid (även riktnummer)
Mejladress	Mejladress

SKV 7845 05 av web 03 1

Image 6.2

## Upplysningar

Skriv under blanketten och skicka den till adressen som står på framsidan.

**Observera:** Om du har anmält dig till tjänsten **Spärra obehörig adressändring** kan du inte använda den här blanketten. Anmäl i stället din nya adress med hjälp av e-legitimation på [www.skatteverket.se](http://www.skatteverket.se) i tjänsten för flyttanmälan.

### Varför ska du anmäla flytt?

När du gör en flyttanmälan registreras din nya adress i Skatteverkets folkbokföringsregister. Detta innebär att banker, sjukhus och myndigheter får information om din nya adress. Det är därför viktigt att det finns rätt uppgifter om dig i Skatteverkets folkbokföringsregister. Det kostar inget att göra en flyttanmälan.

### Om hela familjen flyttar

Anmäl flytt för dig själv och dina familjemedlemmar som bor på samma adress. Om ni flyttar till olika adresser ska ni fylla i en blankett för varje ny adress.

### Gör anmälan senast en vecka efter flytten

Gör anmälan innan du ska flytta, eller senast en vecka efter att du flyttat. Då gäller din nya adress från den dag du flyttar in. Om du gör flyttanmälan senare än en vecka efter flytten gäller din nya adress från den dag som anmälan kom in till Skatteverket.

### Om du flyttar utomlands

Den här blanketten ska du bara använda om du flyttar inom Sverige. Om du flyttar utomlands ska du fylla i blanketten Anmälan - Flyttning till utlandet (SKV 7885).

### Bostadsadress efter flytten

Skriv adressen som du ska flytta till.

Du som är inneboende eller hyr lägenhet i andra hand ska inte ange c/o (care of) i din flyttanmälan. Du ska i stället se till att ditt namn finns på dörren och på postboxen i entrén om det finns en sådan. Om du anger c/o kommer detta inte att registreras hos Skatteverket.  
Läs mer på [www.pts.se](http://www.pts.se).

### Lägenhetsnummer

Du hittar lägenhetsnumret på ditt kontrakt. Numret är fyrsiffrigt och kan även finnas i husets entré eller på ditt postfack. Om din lägenhet saknar lägenhetsnummer skriver du antalet trappor och sedan "TR" (trappor). Du kan också skriva "BV" (bottenvåning) eller "NB" (nedre botten).

### Fastighetsbeteckning

Här skriver du fastighetsbeteckningen. Om du bor i hyresrätt får du fastighetsbeteckningen av din hyresvärd. Om du har en bostadsrätt eller villa står den i köpebrevet.

### Underskrift

Här ska alla som flyttanmälan gäller och som har fyllt 18 år skriva under blanketten. För personer som inte har fyllt 18 år gäller följande:

- Barn som inte har fyllt 16 år  
Vårdnadshavaren ska skriva under för barn som inte har fyllt 16 år. Om barnet har två vårdnadshavare ska bägge skriva under.
- Barn som har fyllt 16 år men inte 18 år  
Barn som har fyllt 16 år men inte 18 år kan antingen skriva under själva eller så kan deras vårdnadshavare göra det (båda vårdnadshavarna om barnet har två).

**Observera:** Varje person, oavsett ålder, ska bara skriva under en gång.

### Observera!

Du kan inte lämna några meddelanden på den här sidan

ii. Moving Abroad PDF Form (SKV 7665)

Image 6.3



**Flyttning till utlandet**  
**Anmälan**

Blanketten sänds till  
Skatteverkets inläsningscentral  
FE 2005  
205 76 Malmö

**Upplysningar - se sidan 2.**  
Blanketten är avsedd för den som ska  
bo utomlands under minst ett år.

<b>Namn på den flyttande och alla medföljande familjemedlemmar</b>	Fullständigt namn (titelnamnet stryks under)		Personnummer
<b>Nuvarande adress i Sverige</b>	Utteiningsadress		
	Postnummer och postort		
<b>Datum, adress i utlandet m.m.</b>	Utredatum	Land (vid flyttning till nordiskt land anges även kommun)	
	Adress i utlandet		
<b>Vistelsens längd, avsikten med vistelsen m.m.</b>	Vistelsens längd (beräknad varaktighet)		Ange tid
	<input type="checkbox"/> Ett år eller mer <input type="checkbox"/> Annan		
	Avsikten med vistelsen (arbete, studier e.d.)		
	Arbetsgivare under vistelsen utomlands (namn och adress)		
<b>Underskrift (För barn underskrift av båda vårdnadshavarna)</b>	Datum och underskrift		
	Namnförtydligande		Telefon dagtid (även riknummer)
	Datum och underskrift		
	Namnförtydligande		Telefon dagtid (även riknummer)

SKV 7665 09 sv 00 11 1

Image 6.4

## Upplysningar

Om du flyttar från Sverige för att bo utomlands **under minst ett år** ska du senast en vecka före utresan anmäla detta till **Skatteverket**. Om utresan ställs in eller skjuts upp anmäler du detta till Skatteverket senast den tidigare uppgivna utresedagen.

Samtliga familjemedlemmar som omfattas av anmälan ska tas med på blanketten. Om utrymmet inte räcker till används flera blanketter. När anmälan omfattar barn under 18 år ska vårdnadshavaren skriva under anmälan. Är båda föräldrarna vårdnadshavare ska båda skriva under anmälan. Barn som fyllt 16 år får själva underteckna anmälan.

Du blir registrerad som utflyttad från Sverige i folkbokföringen om du ska bo utomlands **under minst ett år**. Om du bor både i Sverige och utomlands kan det innebära dubbel bosättning. Din folkbokföring bedöms då med hänsyn till samtliga omständigheter

Du som är utsänd för anställning på utländsk ort i svenska statens tjänst ska fortfarande vara folkbokförd i Sverige under denna tjänstgöring. Samma sak gäller för medföljande familjemedlemmar.

Vid flyttning till annat nordiskt land registreras du som utflyttad från Sverige när du registreras i det andra landet.

Om du ska bo utomlands **under kortare tid än ett år** och vill ha din post till annan adress än din bostadsadress, kan du göra anmälan till Skatteverket om särskild postadress på blankett Anmälan - Särskild postadress SKV 7844.


*Observera att du inte nödvändigtvis upphör att vara skattskyldig i Sverige när du avregistreras från folkbokföringen. De uppgifter som lämnas i utflyttningsanmälan kan komma att användas vid bedömningen av eventuell skattskyldighet.*

### OBS!

Du kan inte lämna några meddelanden på den här sidan.

- iii. Moving to another address, when already living abroad/remain a voter PDF Form (SKV 7842)

Image 6.5

**Skatteverket**

**Ny adress/röstlängd för utvandrad**  
**Anmälan**  
Datum

Läs först bifogade upplysningar.  
Blanketten skickas till  
Skatteverkets inlämningscentral  
FE 2001  
205 76 Malmö

**Personuppgifter** (Är utrymmet inte tillräckligt kan även baksidan användas)

Personnummer (ÅÅÅÅMMDD-XXXX)	Fullständigt namn (var god texta)

**Adress**

Ny adress. Fyll den nya adressen nedan.  Kvar i röstlängden

c/o

Utdelningsadress

Ort, region eller liknande

Land (skriv landets svenska namn)

**Underskrift**

Underskrift
Namnförtydligande (var god texta)
Telefon, dagtid (även riktnummer)
E-postadress

**Underskrift**

Underskrift
Namnförtydligande (var god texta)
Telefon, dagtid (även riktnummer)
E-postadress

**Myndighetens anteckningar** (Fylls i manuellt)

--	--

SKV 7842 03 sv web 02

┌

## Image 6.6



### Upplysningar om ny adress/röstlängd för utvandrad

Du kan använda **Ny adress/röstlängd för utvandrad** (SKV 7842) om du är utflyttad från Sverige (utvandrad) och vill

- anmäla ny adress när du flyttar under vistelsen i utlandet eller
- anmäla dig till röstlängd.

För dig som har anmält utvandring registrerar Skatteverket din adress i utlandet. Du behöver därför bara anmäla om du byter adress i utlandet eller om du efter 10 års vistelse i utlandet vill vara kvar i röstlängden.

**Detta gäller om rösträtt för svenska medborgare bosatta i utlandet**  
För att få rösta måste du vara med i röstlängden. Rösträtten gäller vid val till riksdagen och till Europaparlamentet samt till landsomfattande folkomröstningar.

Du kommer automatiskt med i röstlängden i tio år från dagen för utvandringen från Sverige om du

- är svensk medborgare
- har fyllt eller fyller 18 år senast på valdagen och
- har flyttat utomlands.

Det är uppgifter om personnummer, namn, adress och medborgarskap i Skatteverkets folkbokföringsdatabas 30 dagar före valdagen som ligger till grund för röstlängden. Valmyndigheten sänder röstkort till den adress som finns registrerad för dig.

Det upprättas en ny röstlängd inför varje val och har du varit bosatt i utlandet i mer än tio års tid, måste du själv anmäla att du vill vara kvar i röstlängden. En ny tioårsperiod startar om du anmäler ny adress i utlandet eller anmäler att du vill vara kvar i röstlängden.

Flera personer i en familj kan samtidigt göra anmälan om röstlängd och anmäla ny adress i utlandet på blankett SKV 7842.

Anmälan ska vara skriftlig och ha kommit in till Skatteverket senast 30 dagar före valdagen, för att gälla vid det valet.

Ytterligare information om folkbokföring och adress i utlandet finns på Skatteverkets webbplats: [www.skatteverket.se](http://www.skatteverket.se). Har du frågor ring Skatteupplysningen på telefon 0771-567567 (inom Sverige) eller +46 8 564 851 60 (från utlandet).

Mer information om val och rösträtt finns på Valmyndighetens webbplats [www.val.se](http://www.val.se).

#### Så här fyller du i blanketten

Texta tydligt på blanketten eftersom uppgifterna läses maskinellt. Det är även viktigt att alla uppgifter är fullständiga och korrekta.

#### 1. Personuppgifter

Här fyller du i svenskt personnummer och namn för samtliga familjemedlemmar som gör anmälan. Kom ihåg att ta med sekelsiffran i personnumret.

T.ex. så här

**Personuppgifter** (är utrymmet inte tillräckligt stort kan även baksidan användas)

Personnummer (ÅÅÅÅMMDD-XXXX)	Fullständigt namn (var god och texta)
19770602-2386	Maria Larsson
19780321-2393	Per Jansson Larsson

SKV 7815 03 sv exw 01 1

iv. Automated Online Process (Moving within Sweden)

Images 6.7, 6.8, 6.9, 6.10 show the first three steps of the Swedish online process for change of address.

Images 6.7 & 6.8

The image shows two screenshots of the Swedish online process for change of address. The first screenshot (left) is titled "Anmäl flyttning inom Sverige" and shows step 1, "Start". It displays the user's current address: "Länningens väg 1, 700 00 Uppsala". It also shows the date of registration (2016-01-20) and the property designation (Kungälv 47:1). A message informs the user that they should provide a four-digit apartment number when moving. The second screenshot (right) is titled "Anmäl flyttning inom Sverige" and shows step 2, "Personer". It asks the user to select the people they want to move. There are two rows of checkboxes and input fields for "Personnummer" and "Namn". The first row has a checked checkbox, and the second row has an unchecked checkbox. A "Nästa" button is visible at the bottom.

Images 6.9 & 6.10

The image shows two screenshots of the Swedish online process for change of address. The first screenshot (left) is titled "Anmäl flyttning inom Sverige" and shows step 3, "Ny adress". It asks the user to provide the new address. The fields include "Gatunamn och nr", "Postnummer", "Postort", "Lägenhetsnummer", "Fastighetsbeteckning", and "Fastighetsägare". The second screenshot (right) is titled "Inflyttning" and shows step 4. It asks for the "Inflyttningsdatum" (YYYY-MM-DD), the "Adressen gäller" (Tills vidare or Antal månader), and "Kontaktuppgifter" (Telefonnummer and E-postadress). A "Nästa" button is visible at the bottom.

Source: <https://www.skatteverket.se/servicelankar/otherlanguages/inenglish.4.12815e4f14a62bc048f4edc.html> (62)





Image 7.2

**8. ADDITIONAL DETAILS** *Take the number of the person from section 3 on the previous page*

	Person submitting the notice of place of residence	PERSON 1	PERSON 2	PERSON 3
<b>E-mail</b>				
<b>Telephone</b>				
<b>Additional address</b> <i>Complete if you also live in other place of residence than the one stated in section 2</i>				
<b>Complete if you arrived in Estonia from abroad</b> <i>The previous place of residence abroad (at least the state) and the time of departure to that state from Estonia</i>				
<b>Complete if you have a personal identification code of a foreign state</b> <i>The state that issued the personal identification code and the personal identification code</i>				
<b>Nationality</b> <i>The nationality with which you associate yourself ethnically and culturally the most</i>				
<b>Native language</b> <i>The language that you learnt in early childhood as the first language, and the one that you know best</i>				
<b>Highest level of acquired education</b> <i>Write at least one number from the following:</i> A0 <i>Less than primary education</i> A1 <i>Primary education</i> A24 <i>Lower secondary general education</i> A25 <i>Lower secondary vocational education</i> A34 <i>Upper secondary general education</i> A35 <i>Upper secondary vocational education</i> A4 <i>Post-secondary non-tertiary vocational education</i> A5 <i>Short-cycle tertiary education</i> A6 <i>Bachelor's or equivalent level</i> A7 <i>Master's or equivalent level</i> A8 <i>Doctoral or equivalent level</i>				

**9. SIGNATURES**

I hereby confirm that the details submitted by me are correct, and I am aware that these details will be entered into the Population Register. I am aware that submission of false details is punishable.

date

signature

submitter of the notice of place of residence

person 1

person 2

person 3

**\* Explanation of section 5**

1. If you have a document certifying the right to use the residence (e.g. a contract for lease), consent of the owner of the residence does not need to be attached to the notice of place of residence.
2. If you are not a joint owner, submission of details of a jointly owned residence requires consent of all joint owners or their representatives. If the joint owners concluded an agreement regarding the use of the residence, a document certifying such agreement can be attached instead of their consent.
3. Consent of the owner of the residence or a document certifying the right to use the residence is not required if you submit the address of a residence belonging to a family member (e.g. your spouse or minor) or the address of a place of residence located abroad.
4. Other bases for the use of the residence can include, for example the personal right to use the residence as a family member.

Source: <https://www.eesti.ee/en/housing-and-environment/services-related-to-housing/registering-residence/#additionaladdressesinthepopulationregister3> (18)

**Greece**

i. Solemn Declaration for Change of Address PDF Form

Image 8.1

**ΜΕ ΤΗΝ ΥΠΕΥΘΥΝΗ ΔΗΛΩΣΗ ΠΟΥ ΑΚΟΛΟΥΘΕΙ ΜΕ ΤΗΝ ΟΠΟΙΑ ΔΗΛΩΝΕΤΕ ΤΗΝ  
ΑΛΛΑΓΗ ΔΙΕΥΘΥΝΣΗΣ ΣΑΣ ΘΑ ΠΡΕΠΕΙ ΝΑ ΚΑΤΑΘΕΣΕΤΕ:**

1. Συμβόλαιο ενοικίασης κατοικίας
2. Λογαριασμό ηλεκτροδότησης ή ύδρευσης ή τηλεφωνίας (για ιδιόκτητη κατοικία)

Σε περίπτωση που φιλοξενησθε θα πρέπει να υποβάλλετε Υπεύθυνη Δήλωση του ατόμου που σας φιλοξενεί με επικυρωμένο το γνήσιο της υπογραφής του μαζί με Λογαριασμό ηλεκτροδότησης ή ύδρευσης ή τηλεφωνίας στο όνομα του.

Image 8.2



ii. Solemn Certificate Declaration for Alterations in Registry Data/Tax Registration (M1) PDF Form

Image 8.3

**M1 TAXIS**

**ΔΗΛΩΣΗ**  
**ΑΠΟΔΟΣΗΣ Α.Φ.Μ. /**  
**ΜΕΤΑΒΟΛΗΣ ΑΤΟΜΙΚΩΝ ΣΤΟΙΧΕΙΩΝ**

ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ  
ΥΠΟΥΡΓΕΙΟ ΟΙΚΟΝΟΜΙΑΣ ΚΑΙ ΟΙΚΟΝΟΜΙΚΩΝ

Α.φ.Μ.:

Αρ. Δήλωσης:

Ημ/νία Δήλωσης:

Απόδοση Α.Φ.Μ.  Μεταβολή Ατομικών Στοιχείων

Ημ/νία Μεταβολής:

Υπηρεσία:

**α** **Α.Φ.Μ. ΠΡΟΣΩΠΙΚΑ ΣΤΟΙΧΕΙΑ**

Φύλλο  Α  Β

Επώνυμο Α  Όνομα

Επώνυμο Β  Επώνυμο Πατέρα  Όνομα Πατέρα

Πατρικό Επώνυμο Μητέρας  Όνομα Μητέρας

Ημερομηνία Γέννησης  Ημερομηνία Θανάτου  **Συμπληρώνεται από τους κληρονόμους**

Τόπος Γέννησης στην Ελλάδα (Δήμος Κοινότητα-Νομός)  Χώρα Γέννησης στο Εξωτερικό

**β** **ΣΤΟΙΧΕΙΑ ΤΑΥΤΟΤΗΤΑΣ**

Είδος  Αριθμός

Ημ/νία Έκδοσης

Εκδότρια Αρχή

**γ** **ΥΠΗΚΟΪΤΗΤΑ**

Υπηκοότητα

Επάγγελμα

Κατάσταση Φορολογουμένου

**δ** **ΟΙΚΟΓΕΝΕΙΑΚΗ ΚΑΤΑΣΤΑΣΗ**

Οικογενειακή Κατάσταση  Ημερομηνία

Α.Φ.Μ. Συζύγου

Όνοματεπώνυμο Συζύγου

**ε** **ΔΙΕΥΘΥΝΣΗ**

Ελλάδα

Διεύθυνση Κατοικίας

Οδός-Αριθμός

Νομός

Νέα Αρρίθμηση Δ.Ο.Υ.

Εξωτερικό

Χώρα Κατοικίας στο Εξωτερικό

Τ.Κ.- Περιοχή - Δήμος Κοινότητα

Τηλέφωνο  Fax

Νέα Αρρίθμηση Τοπικού Γραφείου

Συμπληρώνεται από την Υπηρεσία

ΣΥΝΥΠΟΒΑΛΛΕΤΑΙ ΔΗΛΩΣΗ ΣΧΕΣΕΩΝ  ΟΧΙ  ΝΑΙ

ΣΥΝΥΠΟΒΑΛΛΕΤΑΙ ΜΕ ΔΗΛΩΣΗ ΕΝΑΡΞΗΣ ΜΕΤΑΒΟΛΗΣ Φ.Π.  ΥΠΟ ΙΔΡΥΣΗ Φ.Π.

Ημ/νία Παραλαβής Δήλωσης

Ημ/νία Υποβολής Δήλωσης

Ημ/νία Παραλαβής Ιεράρχησης

Ο Υπάλληλος

Ο Δήλιος

Ο Παραλαβών

M1  
1/2

Image 8.4

**ΟΔΗΓΙΕΣ**

**I. ΓΕΝΙΚΕΣ ΠΛΗΡΟΦΟΡΙΕΣ**

- Το έντυπο Μ1 Δήλωση Απόδοσης Α.Φ.Μ. και Μεταβολής Ατομικών Στοιχείων συμπληρώνεται σε ένα αντίτυπο μόνον από Φυσικό Πρόσωπο. Υπογράφεται από τον δηλούντα ή τον νόμιμο, κατά περίπτωση, εκπρόσωπό του και επέχει θέση υπεύθυνης δήλωσης του Ν. 1599/86.
  - Οι ενδείξεις που αφορούν τα προσωπικά στοιχεία του πίνακα α, συμπληρώνονται πάντοτε με ΚΕΦΑΛΑΙΑ γράμματα (χειρόγραφα, γραφομηχανής, Η/Υ), χωρίς συντμήσεις.
  - Σε όλες τις ενδείξεις που αναφέρονται σε ημερομηνία, σημειώνονται αριθμητικά η ημέρα και ο μήνας με δύο ψηφία και το έτος με τέσσερα ψηφία (π.χ. 01/02/1998).
  - Τα Τετραγωνίδια με χρώμα συμπληρώνονται από την Υπηρεσία.
- Το έντυπο αυτό υποβάλλεται από τον δηλούντα ή τον νόμιμο, κατά περίπτωση, εκπρόσωπό του στον αρμόδιο προϊστάμενο της Δ.Ο.Υ. του τόπου κατοικίας του, αρχικά για την Απόδοση Α.Φ.Μ. και μετέπειτα για κάθε μεταβολή που επέρχεται στα στοιχεία του. **Εξωτερικό**, για τους κατοίκους Εξωτερικού υποβάλλεται στην Δ.Ο.Υ. κατοίκων Εξωτερικού και στην περίπτωση του Υπό Ίδρυση Φυσικού Προσώπου το οποίο κατοικεί στο Εξωτερικό στην Δ.Ο.Υ. του νομίμου εκπροσώπου του.
- Το έντυπο Μ1 Δήλωση Απόδοσης Α.Φ.Μ. και Μεταβολής Ατομικών Στοιχείων συνοποβάλλεται με Δήλωση Έναρξης/Μεταβολής Εργασίας Φυσικού Προσώπου όταν αυτό στερηθεί Α.Φ.Μ.
- Με το έντυπο Μ1 Δήλωση Απόδοσης Α.Φ.Μ. και Μεταβολής Ατομικών Στοιχείων μπορεί να συνοβληθεί και το έντυπο Μ7 Δήλωση Σχέσεων Φορολογούμενου ο δηλών υποχρεούται να δηλώσει τις σχέσεις του οι οποίες προκύπτουν από τα δηλούμενα στοιχεία (ζυγίου, ανήλικης, ανήλικητος κ.λ.π.).
- Οι μεταβολές που προκύπτουν στα αρχικά δηλούμενα στοιχεία, δηλώνονται με το ίδιο έντυπο στο οποίο συμπληρώνονται μόνον οι ενδείξεις που έχουν μεταβληθεί. Αν μεταβάλλονται και οι σχέσεις του δηλούντος, συνοποβάλλεται και το έντυπο Μ7 Δήλωση Σχέσεων Φορολογούμενου.

**II. ΣΥΜΠΛΗΡΩΣΗ ΕΝΔΕΙΞΩΝ**

Στην ένδειξη **Δ.Ο.Υ.** γράφεται η Υπηρεσία στην οποία υποβάλλεται η δήλωση διαγραφόμενα με Χ ανάλογα, αν πρόκειται για Απόδοση ΑΦΜ ή για Μεταβολή Ατομικών Στοιχείων, η αντίστοιχη ένδειξη "**Απόδοση ΑΦΜ**" ή "**Μεταβολή Ατομικών Στοιχείων**" αναγράφοντας επίσης στην ένδειξη "**Ημ/νία Μεταβολής**" την αντίστοιχη ημερομηνία της απόδοσης ή της μεταβολής.

**ΠΙΝΑΚΑΣ α**

Ο **Α.Φ.Μ.** χορηγείται από την Υπηρεσία με την πρώτη υποβολή της δήλωσης και αναγράφεται από τον δηλούντα στο 8-ψήφιο διαγραφισμένο πλαίσιο, σε κάθε περίπτωση υποβολής δήλωσης Μεταβολής Ατομικών Στοιχείων. Οι ενδείξεις του πίνακα συμπληρώνονται με τα στοιχεία όπως αυτά αναγράφονται στα αντίστοιχα δικαιολογητικά (ταυτότητα, πιστοποιητικό γέννησης). Η ένδειξη "**Ημ/νία Θανάτου**" συμπληρώνεται από τους κληρονόμους του θανόντος σύμφωνα με τα στοιχεία των δικαιολογητικών και συνοποβάλλεται έντυπο Μ7 Δήλωσης Σχέσεων Φορολογούμενου στην οποία δηλώνονται οι κληρονόμοι του θανόντος κατά την ημέρα της υποβολής της δήλωσης, όπως αυτό αποδεικνύεται από συνοποβλλόμενα δικαιολογητικά.

**ΠΙΝΑΚΑΣ β**

Στην ένδειξη "**Είδος**" γράφονται τα αρχικά του είδους της ταυτότητας σύμφωνα με τον παρακάτω πίνακα:

<b>ΑΤ</b> Αστυνομικές Ταυτότητες	<b>ΑΙ</b> Ταυτότητες Αμενικού Σώματος
<b>ΕΣ</b> Ταυτότητες Ελληνικού Στρατού	<b>ΠΣ</b> Ταυτότητες Πυροσβεστικού Σώματος
<b>ΠΝ</b> Ταυτότητες Πολεμικού Ναυτικού	<b>ΔΙ</b> Διαβατήρια
<b>ΠΑ</b> Ταυτότητες Πολιτικής Αεροπλοΐας	<b>ΚΑ</b> Ταυτότητες Κέντρου Αλλοδαπών
<b>ΕΑ</b> Ταυτότητες Ελληνικής Αστυνομίας	<b>ΧΤ</b> Χωρίς Ταυτότητα <b>(μόνο για ανήλικους)</b>

Σε περίπτωση που ο δηλών είναι ανήλικος συνοποβάλλεται και έντυπο Μ7 Δήλωση Σχέσεων Φορολογούμενου στην οποία δηλώνεται ο κατά περίπτωση νόμιμος εκπρόσωπος του ανήλικου (ασκούν γονική μέριμνα, ασκούν επιμέλεια, κηδεμόνας). Οι υπόλοιπες ενδείξεις του πίνακα συμπληρώνονται με τα στοιχεία όπως αυτά αναγράφονται στα αντίστοιχα δικαιολογητικά.

**ΠΙΝΑΚΑΣ γ**

Η ένδειξη "**Υπηκοότητα**" συμπληρώνεται σύμφωνα με όσα αναγράφεται στην ταυτότητα ή το διαβατήριο του δηλούντος. Η ένδειξη "**Κατάσταση Φορολογούμενου**" συμπληρώνεται με τις αντίστοιχες τιμές σε περίπτωση που ο δηλών βρίσκεται "Υπό Δικαστική Αντίληψη" ή "Υπό Δικαστική Διαγράφηση" ή "Νόμιμη Απογράφηση" όπως συνοποβάλλεται και έντυπο Μ7 Δήλωση Σχέσεων Φορολογούμενου στην οποία δηλώνεται ο νόμιμος εκπρόσωπός του.

**ΠΙΝΑΚΑΣ δ**

Η ένδειξη "**Οικογενειακή Κατάσταση**" συμπληρώνεται ανάλογα με μία από τις τιμές: Άγαμος/η, Έγγαμος/η, Σε διάσταση, Διαζευγμένος/η, Σε Χηρεία. Παράλληλα με τη συμπλήρωση της Οικ. Κατάστασης (με εξαίρεση την τιμή "Άγαμος") συμπληρώνονται και τα στοιχεία του/της Συζύγου στις αντίστοιχες ενδείξεις του πίνακα δ. Στην ένδειξη "**Ημερομηνία**" αναγράφεται η ημ/νία έναρξης της σχέσης (π.χ. Ημ/νία γάμου).

**ΠΙΝΑΚΑΣ ε**

Διαγραφόμενα η ένδειξη "**Ελλάδα**" αν ο δηλών κατοικεί στην Ελλάδα όπως συμπληρώνεται υποχρεωτικά η "**Διεύθυνση Κατοικίας**". Σε περίπτωση που ο δηλών κατοικεί στο Εξωτερικό, διαγραφόμενα η αντίστοιχη ένδειξη "**Εξωτερικό**" και, συμπληρώνεται υποχρεωτικά η ένδειξη "**Χώρα Κατοικίας στο Εξωτερικό**".

**ΣΤΟΙΧΕΙΑ ΣΥΝΥΠΟΒΟΛΗΣ ΔΗΛΩΣΗΣ**

Εφόσον προκύπτουν από τις αντίστοιχες ενδείξεις Σχέσεις του δηλούντος με άλλα Φυσικά Πρόσωπα, διαγραφόμενα με Χ η αντίστοιχη ένδειξη "**ΣΥΝΥΠΟΒΑΛΛΕΤΑΙ ΔΗΛΩΣΗ ΣΧΕΣΕΩΝ**". Αντίστοιχα διαγραφόμενα η ένδειξη "**ΣΥΝΥΠΟΒΑΛΛΕΤΑΙ ΜΕ ΔΗΛΩΣΗ**" όταν η δήλωση Απόδοσης Α.Φ.Μ. συνοποβάλλεται με δήλωση Έναρξης/Μεταβολής Εργασίας Φ.Π. ή Υπό Ίδρυση Φ.Π.

Με την καταχώρηση των στοιχείων του εντύπου Μ1 Δήλωση Απόδοσης Α.Φ.Μ. και Μεταβολής Ατομικών Στοιχείων στο Μηχανογραφικό Σύστημα της Υπηρεσίας, χορηγείται η σχετική βεβαίωση στο Φορολογούμενο που αποτελεί **πλήρη απόδειξη** για την υποβολή της δήλωσης απέναντι σε αποικονόμους τρίτου. Η Υπηρεσία μας είναι στη διάθεσή σας για κάθε πληροφορία και διευκρίνιση που αφορά στη συμπλήρωση του Εντύπου Μ1 Δήλωση Απόδοσης Α.Φ.Μ. και Μεταβολής Ατομικών Στοιχείων.

**Παρακαλούμε απευθυνθείτε στο Τμήμα Μητρώου της αρμόδιας για την υποβολή του εντύπου Δ.Ο.Υ.**

**M1  
2/2**

Source: <https://www.aade.gr/polites/mitroo/allagi-stoiheion-mitrooy>

## ***Usability & User-Experience Questionnaire***

### Section 1

1. Below you are presented with a list of statements about the usability of the form for registering a "Change of Address".

Please, indicate to what extent you agree or disagree by checking the appropriate option next to each statement. (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree)

- i. The form is useful.
- ii. The form gives me more control over the registration process for a change of address.
- iii. The form makes the registration process for change of address easier.
- iv. The form saves me time.
- v. The registration process through the form is as I expected it to be.

2. Below you are presented with a list of statements about the ease of use of the form for registering a "Change of Address".

Please, indicate to what extent you agree or disagree by checking the appropriate option next to each statement. (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree)

- i. The form is easy to fill in.
- ii. The form is user-friendly.
- iii. The form requires the fewest steps possible to register a change of address.
- iv. I can use the form without further written instructions.
- v. I do not notice any inconsistencies as I fill in the form.

3. Below you are presented with a list of statements about the learnability of the form for registering a "Change of Address".

Please, indicate to what extent you agree or disagree by checking the appropriate option next to each statement. (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree)

- i. I fully understand how to fill out the form quickly.
- ii. I easily remember how to use the form again.
- iii. It is easy to learn how to fill out the form.

4. Below you are presented with a list of statements about the degree of satisfaction with the form for registering a "Change of Address".

Please, indicate to what extent you agree or disagree by checking the appropriate option next to each statement. (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree)

- i. Overall, I am satisfied with the form.
- ii. I would recommend the form to a friend.
- iii. The form works the way I want it to work.
- iv. I feel the form is essential whenever I want to register a change of address.

5. Please, leave some additional comments and/or questions about the "Change of Address" form.

- i. Enter your answer

## Section 2

### Demographics

#### 6. Age

- i. 18-24
- ii. 25-34
- iii. 35-44
- iv. 45-54
- v. 55-64
- vi. 65+



7.What is your profession?

- i. Studying
- ii. Working
- iii. Unemployed
- iv. Other