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Examiner

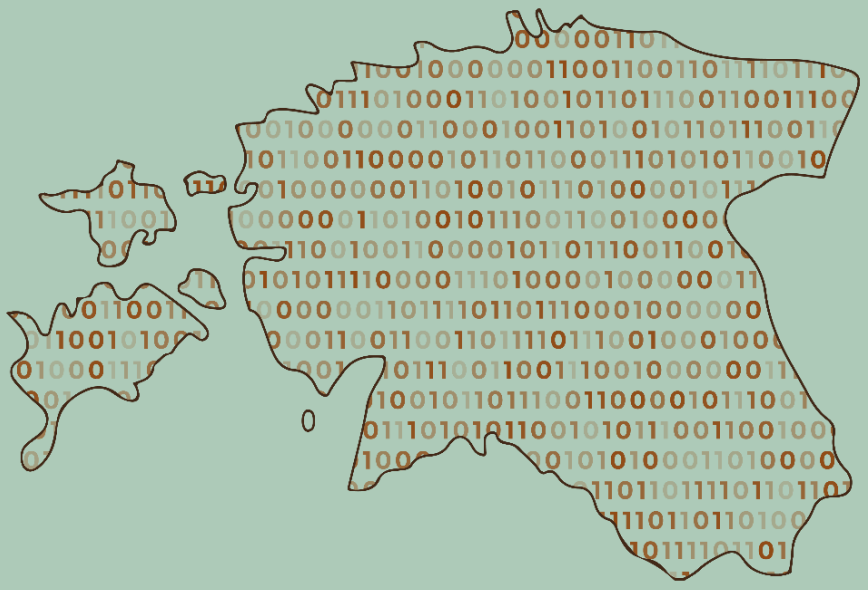
Facing the digital divide in E-stonia

A field study on the inclusion of senior citizens in the digital society of Estonia

Karolina Boyoli

Lund University
Department of strategic communication

Master's thesis



Abstract

With the vast processes of digitalization and digitization taking place in many countries in the world, the small northeastern European country Estonia has managed to make incredible advancements in the field of technology and in creating a digital society. Today, the most digitized country and government in the world provides a vast majority of governmental services online, presents the most unicorns per capita in the world and is establishing digital embassies. But what do these processes mean for some of the most vulnerable groups in society? The Estonian population is declining annually while the population is getting older. Today, the societal group above 65 years of age constitutes the largest single group in Estonia, although official statistics of internet usage stops at the age of 74. The following research has been conducted with the intention to answer how the increased technological governmental communication in the form of e-Governance has affected the senior citizens of Estonia as well as how Estonia works in order to make sure that senior citizens can participate in high technological activities on equal terms as the rest of the population. This has been done through a qualitative field study where the material has been based on semi structured interviews with theoretical perspectives based on governance theory and a stakeholder approach. The results of this research show that there is still a present digital divide in Estonia and that individual citizen responsibilities in combination with the possibility of still handling public services physically characterize the landscape of digital and public services.

Keywords: Estonia, e-Government, e-Governance, digital literacy, digital exclusion, digital inclusion, digitalization, senior citizens, strategic communication.

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1. Introduction

Estonia, a small country in northeastern Europe bordering Russia and Latvia along with a maritime border towards Finland, has made incredible developments within digitalization since singing itself independent from the Soviet Union. In 2021, Estonia celebrated 30 years of independence as a sovereign nation state. Upon leaving the Soviet Union, Estonia was faced with challenges in the field of digitalization being much further behind than other European neighbor countries. When large parts of the world had begun using computers and cellphones, Estonia was still using typewriters and landlines in order to be able to make phone calls. In order to catch up with other European countries Estonia's tactic needed to be bold (e-Estonia 2021a). Instead of only investing in already existing technology, the young Estonian state, not yet bound by the chains of heavy bureaucracy or trapped in a large nest of laws, had the potential and possibility to create something completely new and different when deciding how its governance should work (e-Estonia 2020a).

> After restoring our independence, we had to build the state from zero very quickly and with very limited resources. Traditional solutions were just not thinkable in Estonia. We had to manage much faster and more efficiently. We saw a solution in the digitalisation of processes and since then, we have continued to progress alongside technological advances (e-Estonia 2021b).

What started out as a national educational project in 1996 named Tiger Leap, that worked to equip all schools in the country with internet access, ended up being the Estonian breakthrough and entryway into becoming a world leading actor within digitalization matters (e-Estonia 2021b). After the Tiger Leap project many new initiatives for further digitalization of government and state practices followed. In the year 2000, Estonia adopted mobile parking, e-Cabinet and an e-Tax Board

(e-Estonia 2021c). The following year, 2001, X-Road "a distributed information exchange platform" was adopted which connects different government offices to each other so that, for example, the police can communicate with and view data from the health sector, business registry or tax board and the other way around (e-Estonia 2020b). In 2002, Estonia adopted its e-School, digital signatures and digital ID-cards (e-Estonia 2021c). The state portal eesti.ee, through which Estonian e-Services can be made, was adopted in 2003 (e-Estonia 2021d). In 2005, the e-Police system and the processes of i-Voting (electronic voting) were implemented. Many other digital solutions have since been implemented in Estonia, such as e-Justice, mobile-ID, e-Notary, e-Health system, e-Prescription and e-Residency along with a data embassy located in Luxembourg (e-Estonia 2021c).

Today Estonia is one of the most digitalized countries in the world. About 99% of government services are conducted online and they continuously rank high in global indexes that center around digitalization (e-Estonia 2021c; e-Estonia 2021e). Out of the 1.3 million people in Estonia 94% repeatedly use the internet, 90% of households have access to and are covered by broadband internet, 87% of households further have a computer and there are 1,484,054 operating and active ID-cards (e-Estonia 2021e). The Estonian digital ID-cards and the state portal eesti.ee combined with a mobile identity make up the foundation of the whole digital state of Estonia on a citizen level and lets citizens access government services (e-Estonia 2021a). Overall there is a 99% ID-card coverage with 70% of the population using the cards regularly (e-Estonia 2020c).

Estonia is continuously striving to become more digitized and for governmental services to be less of a bureaucratic hassle and more of a shift towards a transparent and easy society for the citizens to operate within in order to increase well-being and the competitiveness of the nation (e-Estonia 2021f). "Today, a shift in the service delivery approach provides the basis for a truly seamless digital state." (e-Estonia 2020d). Government communication to the population as a whole, or directly to individuals, has been a central objective in developing the

Estonian system and increasing governmental services. Each citizen holds a government regulated E-mail address in which they get personalized information about government matters that needs to be communicated directly to the individual citizen. Examples of such communication are information about retirement, notifications of a soon to be expired license or matters that regard health insurance (e-Estonia 2021d).

> Estonians trust e-solutions and use them eagerly as virtually all state-related operations can be completed digitally – prescriptions are issued digitally and only two in every one hundred people submit income tax return claims on paper (e-Estonia 2020e).

This trust and transparency is centered around Estonia's use of blockchain technology, the ‘once only principle’ and the digital defense dust trace that accessed data obtains whenever somebody has viewed the data of an individual. Already from a low age young Estonians are taught the value of cybersecurity and coding, knowledge that is set to enhance knowledge and trust in their highly digitized system (e-Estonia 2020f; e-Estonia 2020g). Blockchain technology is a form of cyber security technology that aims to protect data. With its foundation in mathematics, the blockchain technology ensures that traces are left in the code of the data that can track who has accessed it without flaws (e-Estonia 2020h). With this technology the Estonian state exercises transparency towards its citizens in order to protect personal data and have the individuals know who has accessed what information about them. The ‘only once principle’ ensures that the citizen only needs to present their data or certain information once to a government office, the rest of the access will be from within the system using blockchain technology which ensures that the individual is up to date with any changes in access to their data which in turn creates governmental trust (e-Estonia 2020i; e-Estonia 2020j; e-Estonia 2020d).

Having become so invested in technology Estonia has also become more prone to cyberattacks and other forms of digital outside threats. Instead of seeing this as a

weakness, Estonia narrates it as a learning experience and claims to have become world leading within the field of cybersecurity as a positive consequence of the attack since it meant that Estonia invested in blockchain technology and founded an international coalition to prevent future cyber threats (e-Estonia 2020k; e-Estonia 2019; e-Estonia 2021g).

> When Estonia was hit by a wave of cyber attacks in April 2007, we could focus on deflecting the attacks because we were thoroughly prepared and all parties knew how to behave. Estonia was hit by one of the largest coordinated cyber attacks against a single country. Regardless of the coordination and sheer volume of the attacks, they caused no major damage, and ultimately our response proved more important than the attacks themselves (e-Estonia 2020k).

With the rapid digital developments and game changing outcomes occurring within this small nation a lot of questions arise that have yet to be answered within the currently existing research. Estonia's declining population numbers and an ever growing batch of senior citizens, due to the fact that the increase in life expectancy in Estonia is getting longer, leaves Estonia with 19.6% of its citizens over the age of 65 (Leppiman et al. 2021: 410). An increasingly aging population creates basic challenges in not creating a divide in the processes that entail digitalization of essential services (Leppiman et al. 2021: 410). Leppiman et al. (2021) argue that there is a need for social solidarity within a digital society if it wants to strive to become a socially sustainable digital society, they further argue that there is a need for "bridging the gap" between different societal groups that have different prerequisites for using and practicing digital technologies (Leppiman et al. 2021: 415).

In Estonia, a public survey is conducted with the aim of finding out more about the internet usage in the population, as commissioned by the Ministry of Economy and executed by Statistics Estonia. Leppiman et al. 2021 problematize that the survey only includes respondents under the age up to an age of 74, thereby excluding parts of the elderly population that constitute 10% of the population

(Leppiman et al. 2021: 414). As public policy is central for reducing the digital divide between age groups (Leppiman et al. 2021: 410) it is highly problematic that the data results that are to reflect the Estonian population are so skewed since it can lead to decision makers making decisions with flawed and biased background information. With the lack of information, Leppiman et al. 2021 state that "the bias in such data collection may lead policy makers and commercial organisations to over-estimate the number of people who can access online services, and to under-estimate the need for alternative delivery channels and support" (Leppiman et al. 2021: 414). With such a blank spot in information this subject is increasingly important to study with the current technological developments in society.

1.1 Purpose and research questions

As society and the world continues to evolve in the era of technology it is ever so important to continuously study the social patterns and society that lives with that technology. The aim of this thesis is to further contribute to, the today under researched, academic literature about digital inclusion within e-Governance in Estonia that falls within the topic of strategic communication. Strategic communication can be defined as the usage of communication with a conscious purpose to "engage in conversations of strategic significance to its goals" by an organization or other form of governing body (Zerfass et al., 2018: 493). As Estonia is the most digitalized society in the world many other countries and governments could draw off of the knowledge that Estonia has developed. Therefore another aim of this research is to provide insights into how the increased digitalization has been both positive and negative and thereby produce knowledge that other actors could use in their implementation of more digital and technological societal structures.

Research questions:

1) How has the increased technological governmental communication in the form of e-Governance affected the senior citizens of Estonia?

2) How does Estonia work in order to make sure that senior citizens can participate in high technological activities on equal terms as the rest of the population?

1.2 Delimitations

This research will be limited to studying the Estonian context and the digital democratic landscape of Estonia, with a specific focus on how inclusion in these processes work for the senior citizens of Estonia. With the high amount of digitalization in other countries and with other vulnerable groups in society present in Estonia (such as stateless ethnic Russians or refugees) it should be noted that those subjects are beyond the scope of this research and will therefore not hold the focus of this thesis. Rather, with the demographic divide of roughly one fifth of the 1.3 million total of the population ranging over the age of 65 (Leppiman et al. 2021: 410) this grouping of individuals will be constituting the main focus of this research.

1.3 Disposition

The disposition of this thesis will be based on six main chapters. In this first chapter an introductory background on Estonia and its digital transformation has been presented along with the research problem and questions as well as the purpose that underlies the thesis itself. In the following second chapter a literature review will be presented where the academic literature on democracy and e-Democracy will be explored along with an overview of the research field of digital exclusion. This will be followed by the third chapter that focuses on the theoretical framework that will guide the research which will be based on governance, inclusive management and stakeholder theories. After that the fourth section on methodology and research design comes which includes sections on field work, sampling, etcetera. That is followed by the fifth chapter with results and analysis before the concluding sixth chapter that focuses on discussing the findings.

2. Literature review and theory

In this chapter an overview of the academic literature that regards democracy and European governance, e-Democracy and e-Government as well as social exclusion within digitalization is presented. This section further presents the theoretical framework that has made up the foundation and perspective of this research. As this thesis is centered around the inclusion of senior citizens in governmental structures, more specifically digital structures, state governance and inclusive management are central terms and theories for the given research area. Aiming to contribute further to the academic literature regarding inclusion within e-Government that falls under strategic communication research, the stakeholders approach that specifically focuses on e-Governments contribute with further theoretical perspectives that have guided the theoretical curiosity of this research.

2.1 The development of European governance

'Democracy' which originally started on the agoras, the town squares of ancient Athens, in the fifth century BCE has taken many shapes and forms throughout history (McCormick, 2016: 38). A trip back in time takes us to the bustling streets of the old Athenian society, to the cradle of democracy and democratic thinking. A simple raise of hands of, what was then considered to be, the righty citizens - adult men whose parents also could show proof of citizenship sufficed as a vote in the executive council where over 500 representatives on rotational one year mandates were invited to partake (McCormick, 2016: 40). Long from today's modern democracies where people of all genders, ethnicities, social classes of the right ages with the right citizenships get to tick the little square of their choice and cast their votes.

Today, there are many definitions to the term democracy, but most relate back to the word's historical meaning: "The core principle of democracy is self-rule; the word itself comes from the Greek *demokratia*, meaning rule (*kratos*) by the people (*demos*)." (McCormick, 2016: 38). McCormick et al. (2016) further describe democracy as a political system in which the appointment of leaders of state are based on free and fair elections where citizens are not restrained from participation. In other words, all citizens of age have the possibility of affecting how the state is governed through their votes. Democracy is described as a system in which the citizens have a possibility to demand responsibility from those elected to be in power. Citizens in a democracy should have the possibility to demand responsibility, punish and remove those who have not conducted their operations in accordance with how it should have been conducted (McCormick et al., 2016: 38). The foundation of democracy should be that the people have the right to be a part of affecting the government. (Teorell, 2010: 5).

'The three waves of democratization' as argued by Samuel Huntington (1993) have in many ways increased the number of countries in the world that are viewed as democracies today. "Much as a wave breaks on the beach, democratization has come in ebbs and flows [..]" (Mair, 2014: 80). The first and longest wave of democracy, including many of the 'Western' countries which as a minimum established smaller democratic institutions within their state, some also granting their citizens general suffrage lasted between 1828-1926 (McCormick, 2016: 49). The second wave occurred between 1943-1962 and included many of the countries actively involved in the second world war such as Japan, Italy, Western Germany and Austria (McCormick, 2016: 50). The third wave went on between 1974-1991, including countries in Latin America, parts of Africa, Southern and Eastern Europe, Estonia included - that democratized after the fall of the Soviet Union (McCormick, 2016: 50).

Following the third wave of democracy many European nations have joined forces and united as member states of the European Union as a step towards creating a more integrated region, built upon collaboration to prevent conflict (Cini &

Borragán, 2016: 2). In November of 1993, two years after the last year of the third wave, the European Union was founded (Phinnemore, 2016: 12). The peaceful foundation built on intentions to reconstruct the European economy after being warridden has led to a highly integrated and interconnected region in many fields and which defines the landscape in which its member states operate and govern today (Cini & Borragán, 2016: 2-3).

2.2 e-Government and digital governance

The old Athenian idea of democracy, in its direct format, has regained its importance with the current digital developments and components of internet movements (McCormick, 2016: 41). Democratic governments all over the world are using digital technologies to their advantage. The functions and view of e-Democracy and e-Government have in many ways expanded outside of these mere electoral borders to include further state responsibilities and services. Already in the year of 2000, Kenneth Hacker and Jan van Dijk defined digital democracy in line with the development of more advanced technologies, they defined it as:

> A collection of attempts to practice democracy without the limits of time, space, and other physical conditions, using information and communications technology or computer-mediated communication instead, as an addition, not a replacement for traditional [..] political practices (Hacker & van Dijk, 2000: 1).

Some scholars describe e-Government not only as an online technology that furthers the digital development of a state but rather also as a means through which we are able to "harness digital technology" and create more interactive societies within a technologically advanced society (Sweetser, 2011: 302). e-Governing is about bettering relations between the government and its citizens (Sweetser 2011: 302). Through e-Governing it is anticipated that the citizens would gain better views and relations by partaking in activities such as filing taxes online, gaining access to medical charters or renewing different types of registrations through the internet (Sweetser 2011: 301). There is further mostly an

academic consensus within the literature that e-Governance entails both e-Government as well as e-Democracy. Therefore, these two concepts are highly intertwined (Fang, 2002: 5; Chadwick, 2003: 444).

In literature, the online presence of Governments has been described through many different terms from the 'virtual state', 'electronic government', 'e-Government' or the 'digital government' (McLoughlin & Wilson, 2013: 6). For the purposes of this thesis e-Government will be used as the central term throughout. Howell-Moroney (2012) states that "e-government has a multiplicity of meanings, but beyond its specific functional applications it carries the notion of using ICT as a means of improving and transforming government." (Howell-Moroney, 2012: 196). Sweetser (2011) defines the concept in a similar manner but specifically centers the usage of ICT as instruments that help facilitate the "business of government'" (Sweetser, 2011: 301).

All around the world, online provisions of governmental services have been carried out since the start of the century (Falk et al., 2017: 14). Fang (2002), predicted that an increase in e-Governance would alter the relationship between citizens and their governments completely, through such a transition new traditions and understandings of what being a citizen means would arise - as well as when talking about citizen responsibilities and its needs (Fang, 2002: 5). As Spiro Kiousis and Jesper Strömbäck (2011) state, the political public relations will continue to develop throughout with technological advancements being made constantly (2011: 322).

The transition into e-Governance for Estonia has ultimately led the country to great successes in regards to its digital infrastructure (Kattel & Mergel, 2019: 144). The success story of Estonia follows a national strategy, *Principles of Estonian Information Policy* that was adopted in the late nineties which since acted as a stepping stone for further digitalization processes in the country (Kattel & Mergel, 2019: 144-145). Several factors have played a role in the digital success in Estonia, among them "investment in future-oriented emerging

technologies rather than in legacy technology" (Kattel & Mergel, 2019: 148), the nearby Scandinavian and Nordic countries that contributed with the new standard of telecommunications in Estonia after its gained independence and the small sized and geographically centered population (Kattel & Mergel, 2019: 149 & 155; Ernsdorff & Berbec, 2006: 172).

In early stages of the digital development era, government IT was described as somewhat of a disappointment in the eyes of policy makers since it did not manage to correspond with what originally was expected although they posed a great challenge to the more traditional approaches (Dunleavy et al., 2006: 216). Today, countries such as Estonia have shown the world that policy and extensive digitalization can go hand in hand and that the results of a higher grade of digitalization can fulfill and exceed the expectations of the decision makers. However, as the Estonian developments have furthered, studies have shown that the development of the e-Government in Estonia has rather been connected to technocracy and "development-driven" rather than merely strategic - meaning that the much technology has been created without them necessarily being regulated by policy documents or strategy plans but a product of Estonian innovation (Kalvet, 2012: 145).

Even if a decision to become a 'smart state' technically was never made the original bill that contained the *Principles of Estonian Information Policy* has guided the country on its digital development into a future in which the decision makers did not know which the role of technology would be (Valdmaa & Udikas 2020: 18). "The bill stated the future digital society would comprehend the social sphere" (Valdmaa & Udikas 2020: 18). The central part of the policy contained parts on aiding the growth of the private sector, the form of relationship between the Estonian state and its inhabitants along with spreading information to draw attention to the digital society as a governing form (Valdmaa & Udikas 2020: 18). Geographically, within Estonia, the different regions, municipalities and cities have gone through different stages and gained different aims in the process of digital innovation. A such example is Tartu City which has had a great focus on

developing and implementing mobile services (Kalvet, 2012: 143; Kalvet, 2007: 15).

2.3 Governance and inclusive management

Among a wide spread field of definitions of the term governance, Lynn et al. (2000) choose to define the concept as "the means for achieving direction, control, and coordination of wholly or partially autonomous individuals or organizations on behalf of interests they jointly contribute" (Lynn et al., 2000: 2). In this definition they argue that they cover structures from the European Union to individual governmental institutions and structures (Lynn et al., 2000: 2). The achievement of so-called public purposes by the government, state and other stakeholders is underlying and foundational since the individuals residing in said state are greatly affected by how it is governed (Lynn et al., 2000: 1). Studies within governance aim to explain "how, why and with what consequences public-sector activity is structured and managed" (Lynn et al., 2000: 1). Another key perspective that this perspective takes into consideration is the purposeful limitation of civil servants. Civil servants work within spaces that leave them with less accountability than the elected officials that sit throughout regulated mandates (Lynn et al., 2000: 6). Within the governance research and actual governance, these individuals are sometimes framed or perceived as a threat due to their limited accountability under a flag they might not support. Thereby, in certain forms of governance, the limitations of these individuals in ranges of free management of their operations are narrowed down in order to restrain such individual powers (Lynn et al., 2000: 6).

Research with a theoretical base in governance should acknowledge the roles of relationships and contextualize them in a hierarchical setting (Lynn et al., 2000: 14). In this research, the relationships between the following will be made central:

1. The relationship between governing initiatives and the outcome.
2. The relationship between formalities and traditions within governmental organizations and governing preferences.

3. The relationship between technology and the Estonian governmental administration.
4. The relationship between a senior citizen's preferences and political decisions (Lynn et al., 2000: 14).

Feldman and Khademian (2004) write about inclusive management, a democracy promoting model that focuses on citizen participation in policy processes (Feldman & Khademian, 2004: 4 & 15). In the state-citizen building relationship as well as in policy making it is important to recognize the multitude of relationships that exist within these governmental structures (Feldman & Khademian, 2004: 4). These relationships are a part of forming decisions, as well as their results. Some of these relationships are a result of given structures within the system while others are formed along with the line of interest or with a certain purpose (Feldman & Khademian, 2004: 4).

2.4 Stakeholders approach in an e-Government context

The Stakeholder theory (ST) has its roots in business and management, further developed in the 1980's in order to fill what was then a theoretical gap. In ST, organizations are viewed as the "property of their owners" with the owners being perceived as shareholders (Freeman et al., 2010: 3-4). The word 'stakeholder' is, in fact, a word play on the word 'stockholder' and aims to contribute with a more developed understanding of strategic management that does not only target purely economical targets that play on the economic traditions of the stockholders. Instead, a stakeholder is defined as "any group or individual who is affected by or can affect the achievement of an organization's objectives" (Freeman & McVea, 2001: 2).

According to Rose et al. (2018), e-Governments tend to fall short when it comes to addressing and handling the wide range of interests of a variety of stakeholders (Rose et al., 2018: 362). Relevant stakeholders range from individual citizens to civil servants, companies or such. In this context, different stakeholders can be

grouped into different categories. Namely internal stakeholders and external stakeholders (Rose et al., 2018: 362). The internal stakeholders are stakeholders that have a more direct relationship with the e-Government such as civil servants or internal managers. The external stakeholders on the other hand concern individual citizens, companies or the like (Rose et al., 2018: 362).

In researching e-Governments with the stakeholder perspective, Rose et al. (2018), state that there are three main aspects that should be analyzed. Namely: a normative aspect, a descriptive component and an instrumental aspect (Rose et al., 2018: 362). The normative aspect can be summarized into the ideals, aims and objectives which put the interest of stakeholders in center in order to establish each group of stakeholders individual interests in relation to the e-Government (Rose et al., 2018: 362). The descriptive component regards the concretization and definition of who the stakeholders in a certain framework are, what they want, where their interests lie and which stakeholders that are big and influential on that arena (Rose et al., 2018: 362). The instrumental aspect centers around how stakeholder engagement can affect project results. In other words, how the involvement of stakeholders that all have different purposes of their involvement and perhaps also different wishes when it comes to results actually affect the results and outcomes of projects, actions and other forms of activities (Rose et al., 2018: 362).

2.4.1 Estonian stakeholders and governance

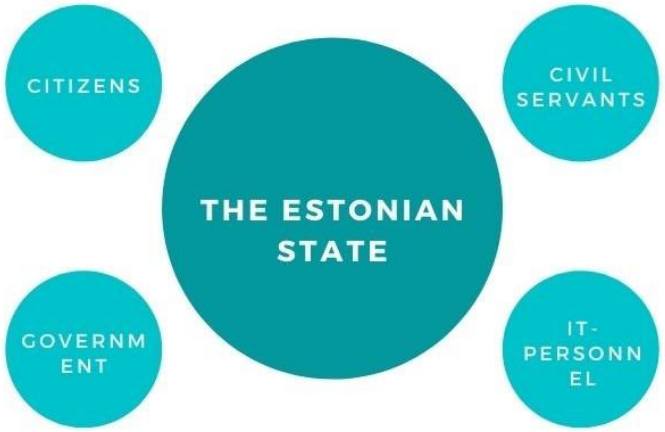

Illustration A: Stakeholders.

Freeman (2010), expresses the importance of mapping out all stakeholders in the form of groups or individuals that are affected by the organization's operations (Freeman, 2010: 25). As illustrated in illustration A, the different stakeholders the different stakeholders in this thesis are: the Estonian state (the main organization), the Estonian government (the main facilitator and strategist), IT-Developers (the developers of the programs and platforms), civil servants (the executors of decisions and the closest to the bottom level) and the citizens of Estonia, here specifically targeting the age groups above 65 years of age (the shareholders and receivers of actions).

2.5 Social exclusion and the "digital divide"

The borders of time and space will get erased as society is on a new path of digitalization, which will ultimately change the foundation of society (Söderström & Holgersson, 2018: 2) As we are entering into a new era, technology constitute the running motors of the new digital reality. With the shift, a growing fear that not everybody will be able to participate on equal terms within this new transition

into a digital landscape arises - especially among seniors (Söderström & Holgersson, 2018: 2). Changes are visible within all fields of society and of economy: in leisure, in transportation, in the medical field etcetera (Vigouroux et al., 2021: 136). Technologies are not only changing our interaction with the world around us but also how we perceive it. For seniors, the new digital technologies pose challenges in daily life, especially when it comes to practice and being able to access them (Vigouroux et al., 2021: 136). With an ever increasing population of older citizens in the world, issues of including them in digitalization processes will be more relevant than ever before. In the years to come it is estimated that the world population over the age of 60 will increase from 900 million to 2 billion, a significant increase leading to this group expanding from 12 percent of the world population to 22 percent of the world population in 2050 (Vigouroux et al., 2021: 136).

The elderly, seniors or older adults - all examples of common terminology within academic literature to describe individuals that have surpassed the age of 65. For the sake of this thesis the term seniors, or senior citizens, will be used since the researched societal group will consist of individuals of retirement age in Estonia. However, to view senior citizens over the age of 65 as a homogenous group would be a simplification of reality (Niehaves & Plattfaut, 2014: 722). Van Deursen and Helsper (2015) express that “older adults” should not be viewed as one group but rather as a diverse cluster of people in which there are different important factors that have a role in how an individual targets and participates in digital activities, such as social environment and psychological characteristics (van Deursen & Helsper, 2015: 184).

Within the research field that focuses on seniors' usage of digital technology much of the academic literature focuses on exclusion and how to bridge the gap between seniors and the digital world. Already in 2001, Marc Prensky wrote about what he called ‘digital natives’ and ‘digital immigrants’ (Prensky, 2001a). In comparing younger generations that have grown up with technology to older generations that did not to the traditional culture and language learning process of immigrants,

Prensky dubbed students of the younger generations digital natives and those who had to learn it mid-life digital immigrants (Prensky, 2001a: 2-3). Specifically in highlighting trends in watching television or playing games online Prensky underlined digital activities as "integral parts of their [the digital natives] lives" (Prensky, 2001a: 2).

> As Digital Immigrants learn – like all immigrants, some better than others – to adapt to their environment, they always retain, to some degree, their "accent", that is their foot in the past. The "digital immigrant accent" can be seen in such things as turning to the Internet for information second rather than first, or in reading the manual for a program rather than assuming that the program itself will teach us how to use it (Prensky, 2001a: 3).

Prensky further problematized the fact that teachers in 2001 were a part of the generations of digital immigrants and thereby teaching the digital natives their own native language with a heavy accent (Prensky, 2001a: 3). He claims that the thinking patterns of an individual that vary depending on different factors of exposion in childhood are also visible in technical aspects which leads different generations to think in very different ways which affects the learning process and intake of information (Prensky, 2001b: 4). Ellen J. Helsper and Rebecca Eynon do not share the view that the so-called 'net generation' or the 'Google generation' only would be digital natives due to factors of age (Helsper & Eynon, 2010: 503). Instead, they believe that "breadth of use, experience, self-efficacy and education" also are central factors that have an important role and outweigh the factor of age in becoming a digital native (Helsper & Eynon, 2010: 504). Helsper and Eynon define a digital native as somebody that originates from a so-called "media-rich household", as someone who instinctively searches for information online, as someone that uses Information and Communications Technology (ICT) and the internet, specifically for activities related to learning (Helsper & Eynon, 2010: 515). Drawing a straight line between age groups and separating them as "two distinct, dichotomous generations" must be problematized since it might create more stigma than actual understanding (Helsper & Eynon, 2010: 515 & 517-518).

The digital native/immigrant discourse is just one of many that contributes to stigma and exclusion based on seniority and interactions with ICTs. It is central to understand the term digital exclusion when discussing the way that seniors have, or do not have, the possibility to be a part of the digital world and society. In digitizing a society, potential consequences and support for seniors need to be taken into account in policy making in order for them to be able to be a part of society on equal terms. Helsper (2009) expresses that digital exclusion concerns aspects or components that are not in the direct control of an individual that somehow confines their access and possibility to use ICTs (Helsper, 2009: 28). She also provides us with a later, more refined definition of the term digital exclusion as being that the term is: "multifaceted consisting of access, literacy, and participation through ICTs and embedded in traditional inequalities" (Helsper, 2017: 223-224). In contrast to the term 'digital choice', which entails an active choice made by an individual in not engaging with ICTs due to a lack of interest, rather than the exclusion of the digitally excluded that are excluded from the digital world involuntarily (Helsper, 2009: 28). The technological anxiety of seniors needs to be countered with other means in order to be able to reach inclusion and that a disengagement with ICTs rather stems from a choice than a forced state (Helsper, 2009: 33).

Holgersson and Söderström (2019) define digital exclusion as "limited internet access due to a deficient digital infrastructure, or to citizens' abilities to use the internet and digital devices, e.g. smartphones and tablets, in order to access and use digital services provided" (Holgersson & Söderström, 2019: 2). They claim that there is an overrepresentation of seniors that are digitally excluded among groups of digitally excluded individuals (Holgersson & Söderström, 2019: 2). While seniors constitute the societal group that has the biggest need for government services, they also make up the group that is least likely to actually operate the electronic and technological tools created for such services which poses a problem for policy makers in societal digitalization processes (Holgersson & Söderström, 2019: 2; Holgersson & Ellgren, 2020: 118).

Another central term within this research field is the ‘digital divide’. The digital divide refers to the division of groups that are active with new technologies and those that are not. Niehaves and Plattfaut (2014) describe the term as: “[..] the gap between those who have effective access to and exploit the potential of IT and those who do not.” (Niehaves & Plattfaut, 2014: 712). According to Helsper and Reisdorf (2017) initial research about the digital divide primarily focused on how socio-economic factors like: the degree of education, salary, gender, job and age referred to how an individual uses the internet, as well as how individuals do not use the internet because of these very same factors (Helsper & Reisdorf, 2017: 1254). However, that view of the digital divide has now been dubbed the “first-level digital divide” which is binary in its nature meaning that individuals are either connected or not - with the connected individuals then being as on the “right side” of the divide (van Deursen & Helsper, 2018: 2334). Later, other factors such as practical knowledge and engagement have come to constitute the “second-level digital divide”, shifting the focus from a pure practical access to the technology into other aspects of exclusion (van Deursen & Helsper, 2018: 2334).

Niehaves and Plattfaut (2014) further state that the digital divide can have two aspects, it can firstly refer to research that differentiates between different nation states, but it can also be about individual factors that focuses on the personal level and the reason for individual exclusion from digital life (Niehaves & Plattfaut, 2014: 712). A consequence of this divide is that seniors do not experience the same advantages, in terms of life quality/societal participation/economical advantages, as younger population groups (Niehaves & Plattfaut, 2014: 709). With the considerable power that the internet provides in staying an independent individual for a longer period of time in life it is critical that the providers supports seniors and older generations in staying active online to take part of benefits that come by being a part of a digital system that centers around e-Government, e-Democracy and e-Commerce (Niehaves & Plattfaut, 2014: 714).

The digital divide in practice differs depending on where in the world we look. For example, Datta et al. (2019) differentiated between Norway and India (Datta et al., 2019: 79). Norway, which was described as a country in "a state of digital maturity" still has large issues when it comes to the inclusion and involvement of senior citizens in digital activities (Datta et al., 2019: 79). Whereas India struggles with general illiteracy which contributes to even higher and more widespread challenges when it comes to digital literacy (Datta et al., 2019: 79). At the same time, Sweden and Britain's "digital underclasses" have been explored which take their form in vulnerable population groups, often centering around senior citizens (Helsper & Reisdorf, 2017: 1265 & 1267) and around 19 percent of the population over the age of 65 do not have access to internet in their home in the Netherlands (van Deursen & Helsper, 2015: 172).

There are many potential reasons for why seniors are not interacting with digital technology, or why they choose not to interact with it. Van Deursen and Helsper (2015) have identified a range of common denominators within research for why seniors tend to disengage from using digital technologies that are: "a lack of Internet attitude, feeling too old, a lack of Internet experience or Internet skills, insufficient time and high connection costs" (van Deursen & Helsper, 2015: 173-174). A lack of internet attitude relates to the motivation of an individual to engage with digital technology, once ending up with a negative attitude towards using software or engaging with technology it becomes increasingly harder to be included which can be related to internet anxiety and the inaccessibility or exclusion from the digital life rather than the active choice (van Deursen & Helsper, 2015: 174). With the age spans for senior citizens ranging from 65 to over a hundred in some cases the age should be accounted for as an important factor in research when researching why an individual "feels too old", along with other complementing factors that contribute to the social demography of that individual (van Deursen & Helsper, 2015: 174). The same goes for internet experience, if the individual has previous experience or not will account for the motivation and attitude towards using technology in a successful way with less technological anxiety (van Deursen & Helsper, 2015: 174-175).

2.5.1 The Estonian divide

All around the world and in Estonia's European neighbor countries processes of digitalization are taking place. All around countries are struggling with inclusion of certain societal groups. According to Florian Marcus (2020), Digital Transformation Adviser at the e-Estonia Briefing Center, the user friendly Estonian e-Government along with the educational resources provided early on in the country's digital transformation has provided Estonian senior citizens with the needed prerequisites for participation in the digital society (Marcus, 2020). He exemplifies by stating that 34.000 individuals over the age of 65 voted online in 2019 and that: "96% of income tax declarations are submitted online in Estonia. It is, therefore, statistically impossible that the majority of the elderly do not use the system." (Marcus, 2020). Yet, Solvak et al. (2019) found a direct link between technological diffusion and age when studying a dataset of approximately 2.1 billion rows of data derived from Estonian systems (Slovak et al., 2019: 52). Furthermore, returning to the concerns as presented by Leppiman et al. (2021) in the introduction of this thesis, there are still several areas in need of development in Estonia in order to provide a nuanced picture of how senior citizens' access to digital technology in Estonia is expressed. With an individually based social structure that promotes self-responsibility and refrains the government from intruding in its citizens lives there is a need for "more effort and investment in digital solutions" in order to safeguard equal possibilities and equal inclusion in the digital society (Leppiman et al. 2021: 409 & 417).

3. Methodology and research design

In this section, the used research design will be described along with the symbolic interactionist perspective on which this research has been based as well as ethical considerations that were accounted for in the research.

3.1 Ontological positioning: Symbolic interactionism

Within the symbolic interactionism (SI) perspective humans play a central role and the process of constructing reality is based on the " [..] capacity to objectify oneself, that is, to "see" oneself in social situations" (Prasad, 2017: 20). The people and its society are highly intertwined and interdependent in their existence from this perspective (Prasad, 2017: 20). In society all human beings take on certain "roles", whether it be as a grandparent, as a communications manager or as a schoolchild (Prasad, 2017: 22). Depending on the role that we currently have, we interpret the world and society around us in different ways with different perspectives. Hence, different values will be central to us at this point in life. At the same time, different needs will arise that should be catered to by society depending on what individuals in our current role need (Prasad, 2017: 22). Furthermore, in the roles we take on we also tend to consciously start acting in a certain way to fulfill these roles in order to meet the expectations from our surroundings (Prasad, 2017: 20).

Within the SI perspective symbols and objects and how humans interact with them play a large part in constituting this viewpoint. In the role the individual takes on, symbols and objects will signify different things and the interaction between them will also therefore differ (Prasad, 2017: 21). "[..] objects, events,

and actions always hold meanings for different individuals." (Prasad, 2017: 21). However, the prescribed meanings like the societal roles are continuously changing and developing through interactions (Prasad, 2017: 21-23). In this research the focus lies on individuals, more specifically on senior citizens. Therefore, the interaction between them and digital technology, e-Government websites and other e-Solutions will be connected to their role as senior citizens. That is, that digital technology is not merely a tool that can be used to accomplish different tasks but it also represents futuristic living, e-Government is not merely a way for the government to lower costs and increase societal efficiency but also a value that represents individual freedom (Prasad, 2017: 21 & 23-24).

3.2 Research design

3.2.1 Case study

"Symbolic interactionists seek an intimate understanding of social situations largely from the standpoint of participants themselves." (Prasad, 2017: 23). Within research based on the SI tradition, oftentimes the central focus lies on how ordinary people in different social situations interact with the society around them through studying everyday activities and the people who conduct them (Prasad, 2017: 23). The studied 'case' in this thesis is the relationship between senior citizens and Estonia's government along with their interactions with e–Government services. In this research the intention is to get a deeper understanding for how this group of people create value and meaning from their own perspective when interacting with the e-Government services along with an understanding for which obstacles there are when in comes to their inclusion and interaction (Svensson & Teorell, 2007: 10-11). Further, the societal aspect of how society seeks to cater to these individuals will be researched. The aim of using this method is to research the digitization processes in Estonia more in depth (Hammond & Wellington, 2020: 22). By using the qualitative case study approach and a so-called small N study, the aim was to receive detailed and deep material (Hammond & Wellington, 2020: 22) on how the systems were created,

how the state works towards this group along with how these systems and work are perceived by the target group.

3.2.2 Field work

In conducting this field research it is important to recognise that as a researcher I am researching a different community than my own - a community that has strong historic bonds to my own. In doing this work I am further targeting four different groups, namely: IT-Developers, civil cervants that directly work with senior citizens, senior citizens themselves as well as private sector digitalization experts. Scheyvens and Storey (2003) mainly write about field work in a developing context, however many of their points can be applied to this study as well, seeing as one of the target groups of this study is the senior citizen population of Estonia which can be defined as a vulnerable societal group. They write that "Ethical issues which arise in relation to cross-cultural situations [..] need to be considered and questioned seriously by all scholars pondering fieldwork [..]" (Sheyvens & Storey, 2003: 140). Furthermore, they state that in conducting field work, the relationship between the researcher and the participants are central and that it is crucial to try to create relationships with the participants that are reciprocally beneficial to both parties. In creating such relationships it is also important to treat the participants in a respectful and delicate way (Sheyvens & Storey, 2003: 140).

In conducting field research, or research in general, the reflection and positionality of oneself is a central matter to take into account in order to not speak for somebody or to take in what the other person says to alter their story to tell it better yourself (Sheyvens & Storey, 2003: 168). Sheyvens and Storey state that "A danger is that rather than valuing our informants and the knowledge they possess, we pity them if they are marginalised [..]" (Sheyvens & Storey, 2003: 169). A conscious intention to not feel sorry for the participants but rather value them as a sort of activism is instead preferable (Sheyvens & Storey, 2003: 169). As field work often not only turns into a research study but becomes something that leads to personal development of the researcher it is necessary to take into

account how data will be ethically managed before leaving the field with the new experiences (Sheyvens & Storey, 2003: 217-218). In this process writing in a conscious way that will not harm the participants should always be taken into consideration as the data is being processed (Sheyvens & Storey, 2003: 227).

In preparation for the field work of this study the work with researching Estonia, Estonian actors and the physical arrangements such as traveling, accommodation and connections with local actors on the ground began early on in the research process in order to prepare for the month in the field. A specific focus on finding and connecting with participants was had before the trip in order to be able to secure an interpreter[1] or other support functions if needed since older generations might not feel as comfortable conducting an interview in English as younger generations. The above-mentioned problem areas as mentioned by Sheyvens and Storey were continuously taken into consideration throughout the research process in gathering and processing the data. Furthermore, with a base in the consent form the participants had the possibility to get a transparent insight in how the material gathered during the interview was handled. The field work method was chosen in order to be able to become immersed in the country of research which possibly can provide deeper insights and perspectives that would not be possible to gain through conducting such a study from a distance.

3.3 Sample, Data collection and Coding

The sampling method used in this research is based on a snowball sample which is a type of convenience sample. A snowball sampling method is characterized by the fact that participants might be harder to get a hold of and include in research. Therefore, this sampling method is used for finding participants through other, existing participants networks through a systematic referral (Adams et al., 2007: 88). The convenience sampling method is characterized by the simplification of finding participants in the study. As the name suggests, within convenience sampling the interview subjects are individuals that have been easy to identify

[1] In the end, interpreters were only used in order to translate the consent form into Estonian, not during interviews.

and reach and people who are willing to participate in the research study (Adams et al., 2007: 87). The reasons this sampling method was chosen was because of the limitations of this thesis that come with the scope of the assignment and timeframe of time spent in Estonia as well as the fact that I, as a researcher, do not speak the local language nor have any connection to Estonia as a country. Through using this method I could first find initial participants which fit the criteria and spoke any of the languages that I speak conveniently and could consider participating and could later, with help from the first participants network, find further participants for my research.

A snowball sampling method can have the tendency to lead to similar results since a person in another participant's network has the probability of being demographically similar to the first participant (Adams et al., 2007: 87). The empirical material has been gathered from senior citizens, from professionals with the responsibility of creating said IT-solutions, from Private sector experts working with digitalization matters and from individuals working closely to the senior population as civil servants. Furthermore, experts from the private sector have been included in order to represent the strong public-private partnership views on the subject. This study relies on data from 16 interview participants where 5 belong to the group of IT-professionals, 6 belong to civil servants, 2 belong to experts from the private sector and 3 belong to senior citizens. Out of the three senior citizens one participant was a user, one was a semi-user and one was a non-user. The combination of different levels and representatives is important to not only get a top-down perspective on the issue through interviewing the people who create and support others within the system but also to combine that perspective with a bottom-up perspective in order to include individuals that operate it as well as to be able to include a variation of different stakeholders. The data for this thesis has been gathered in Tallinn, Tartu and Pärnu.

The coding of the raw data has been done with a total of 19 codes (the full coding chart can be found as Appendix 3). The majority of the codes (13) were based on

the theoretical perspectives and keywords and concepts from academic literature while the others (6) were based on themes that emerged throughout the interviews when the data was processed and transcribed. The 16 interviews with civil servants, IT Developers, private sector experts and senior citizens were transcribed. Out of the transcriptions the raw data was gone through and what was intended to be used in the analysis was sorted into 230 individual relevant units of data that were matched with the 19 codes. The data connected to the codes "Societal change" and "History" are presented under 5.1. The data connected to the codes 'e-Services', 'Digital exclusion', 'Digital divide', 'Digital skills', 'Digitalization/digitization', 'Technology', 'Role in the digital society', 'Technical experience', 'Attitudes', 'Work Life background' and 'Family life' are presented under 5.2. The data connected to the codes: 'Citizen participation', 'Digital inclusion', 'Technological design', 'Stakeholders', 'e-Governance' and 'Projects' are presented under 5.3 along with perspectives from local governments in the cities Tartu and Pärnu. Each participant has been given a code name in order to reference the specific interview (Code name chart can be found as Appendix 4).

3.4 Interview method

The material used for this research is based on in-depth semi-structured interviews. Semi-structured interviews were used in order for the participants to be able to answer within a more flexible structure and not be restrained to the questions that were set out beforehand in case any other interesting data arose from a small sidetrack or additional question. Interviews were held in English and Swedish[2] and each participant signed a form of consent prior to partaking in the study (can be found as Appendix 2a/2b). The consent forms were provided in both English and Estonian, the participant was free to choose which language they wanted to receive it in. The consent form was translated by a registered translator between Estonian and English, a specific emphasis on culture and nuance in text was had. Interviews have been conducted one-on-one and the

[2] Due to the common history between Sweden and Estonia there is a small minority that speaks Swedish as their mother tongue.

questions have been formulated openly in order to try to incite the participants to talk unreservedly about them (Guthrie, 2010: 119).

The different groups' interviews were based on different interview guides that guided the interviews, one separate for each group with the exception for IT-Developers and private sector experts that received similar questions (can be found as Appendix 1a, 1b & 1c). The interview guides all stemmed from the same overarching themes of questions with alterations depending on the nature of the group itself. As for the IT-Developers and private sector experts, questions that were more technically centered were asked, along with how the inclusion process worked in creating a pedagogical tool for all citizens, including seniors, were created. As for civil servants closely working with seniors, questions about support, inclusion, exclusion and stigma were asked. As per the perspective of symbolic interactionism, the interviews with senior citizens focused on the individuals and how they "make sense of specific situations" (Prasad, 2017: 26). In this, questions were asked in order to understand the individuals own positioning within the system and how they perceive themselves as members of the digital society.

Brinkmann and Kvale (2015) write about interviewing across cultures. They state that oftentimes so-called 'cross-cultural interviewing' can imply a higher cultural barrier between the interviewee and the interviewer in that some culturally based factors might be missed in the interaction between them (Brinkmann & Kvale, 2015: 168). Such factors include "habits, practices, positions [and] narrative resources" (Brinkmann & Kvale, 2015: 168). They therefore argue that it is important that the researcher takes the time to gain a deeper understanding for the culture in question in order to better understand the interviewees' communication, both verbally and non verbally (Brinkmann & Kvale, 2015: 168). Similar reasoning surrounds the usage of translators, the role of a translator, be it as an interpreter or text translator, should include cultural understanding and acceptance as well (Brinkmann & Kvale, 2015: 169). Therefore, prior to the data collection, efforts were made to learn more about the culture in order to try to

counter such cultural differences. Furthermore, culture in translation was taken into consideration.

The interviews were recorded on my personal phone recorder as well as on another device to provide backup should the first recording fail. The second device was either a computer or a camera. After the recording and the interview process finished the transcription was done through the transcription tool Sonix and double checked and later categorized and coded in an excel sheet.

3.5 Ethical considerations

There are a lot of important ethical considerations that need to be made prior to conducting research. The work upon which this thesis resides has been conducted in accordance with the ethical guidelines as stated by the Swedish Research Council. The ethical guidelines are principles for how research within the social sciences and humanities should be executed (Svensson & Teorell, 2007: 21). According to the principles, ethical research is conducted in a way that does not mentally or physically hurt the participant - nor causes any humiliation or violation toward any of the participants (Svensson & Teorell, 2007: 21). The protection of individuals that participate in research are based on four principles. Namely: the demand for information, the demand for consent, the demand for confidentiality and the demand for usage (Svensson & Teorell, 2007: 21). The demand for information requires the researcher to inform the participants in the study about its purpose. The demand for consent requires the participants to actively approve their participation in said research. The demand for confidentiality requires an assurance that the personal information and data gathered from the participants is not shared to external parties that are not a part of the research as well as to provide the highest level of confidentiality possible. The demand for usage regulates that gathered information should only be used for research purposes (Svensson & Teorell, 2007: 21).

All the participants in this study have signed a consent form in their preferred

language (can be found in Appendix 2a/2b) that explains the purpose of this research, a presentation of the researcher, the intended usage of the collected data, who will be able to access the data, how the data will be stored as well as the terms and rights of the participants (Sheyvens & Storey, 2003: 143-144). The usage of names and other personal information that could be used to trace the information back to the person has in the largest extent possible been avoided.

3.5.1 Reflexivity statement

Research problems are not mere wild creatures that are 'out there', waiting for somebody to find, but they are subjective and exist from the perspective of the researcher - which will be perceived and addressed subjectively (Van de Ven, 2007: 73-74). To bear this in mind is essential to further understand research (Van de Ven, 2007: 73). The subjectivity present in the world further implies that research is not conducted in any other way than how it is perceived by the researcher since "No one can possibly represent all aspects and viewpoints of a problem domain." (Van de Ven, 2007: 74). In regards to the positionality in this research I, as a researcher, am a part of what is classified as the "second wave of digital natives", perhaps making me personally not as exposed to the obstacles that senior citizens face in a digital world which might lead to me not fully understanding what it is like to be in that role or position. Furthermore, as I am not a part of the Estonian society but a Swedish citizen, I might lack certain insights in how the Estonian citizens communicate with their government on a daily basis and within their society and culture as a whole. As a Swede it is possible that I have been spoken to especially about Sweden as a common denominator due to Sweden's impact and role in the digital development of Estonia or common history, highlighting this in the answers of the respondents and therefore consequently affecting the results.

4. Results and analysis

The following chapter will present the results and analysis of this research. As stated in the beginning, the aim of this thesis is to further contribute to the literature about digital inclusion within e-Governance as well as to provide insights into how the increased digitalization in Estonia has been both positive and negative. This is done through answering the following research questions: How has the increased technological governmental communication in the form of e-Governance affected the senior citizens of Estonia? As well as, how does Estonia work in order to make sure that senior citizens can participate in high technological activities on equal terms as the rest of the population? The results will be presented below under three main headlines that zoom in on certain key areas that have stood out as central or important during the data collection process.

4.1 The Estonian context

> I think the elderly are much more hands on somehow. They have grown up in a Soviet system which was [..] very focused on technology. They were pretty strong when it came to engineering and physics, chemistry and stuff like that. **EX1**

In order to understand the situation of the e-Elderly (or the non e-Elderly) of Estonia today in a nuanced way, the developmental phase, some historical key stakeholders and the history of the country need to be mapped out further. The current level of digitalization in Estonia did not happen overnight but has been a continuous process of development, feedback and further development of systems in order for the country to get where it is today. History and the whole societal development therefore plays a key role in understanding how their e-Governance

works today. In the digital development of Estonia the main focus was on creating societal change and development. As much of the technology did not exist in the 1990's and many people in general did not know how to use new technologies the inclusion or targeting of certain societal groups have not been a main focus in this process. As a country Estonia is liberally grounded in the sense that citizens are expected to be drivers of their own sustenance which also plays a key role in how the matter has been viewed throughout the years.

Much of what Estonia is today is a direct reflection of the country's history, like many other countries. For Estonia, becoming free from the Soviet Union not only meant that Estonians were free to conduct their operations as they wished but it also meant that they got the opportunity to start over and create their own new slate with all the already existing and new potential competences among their population. The new slate resulted in Estonia's digital journey of the last three decades and the Soviet heritage has had a great impact on the outcome. Coming from the machinery of the Soviet Union, Estonian engineership was a greatly developed cog in the wheel that was ready to start spinning for a new future.

> If we go back to the early eighties, there were very few computers in Estonia at all. Basically you had very few at some research institutes. You had some kind [..] close to secret Soviet laboratories, and then you had very few at some other point, for example, my mom worked for the Governmental Department of Roads [..] They only had one computer for like 200 people. And I don't even know what they did on that computer, because it was very basic. [..] The access was very limited because the Soviets were very afraid. Copy machines and computers were used for copying propaganda materials and spreading the propaganda propaganda materials, anti-Soviet propaganda material. [..] So even like a copy machine, they had an assigned person who did copies and only that person could do the copies and nobody else had access to a copy machine because they were so afraid of that. **IT1**

The Soviet baggage did not only leave Estonia and Estonians with bigger limits when it came to technological access but becoming free in 1991 also led to further possibilities and freedoms for individuals to actually use such tools, in the limited

quantity that they were then available in Estonia. A large part of the earlier digitization initiatives took place in or had a connection to the realm of education. Two IT-developers described the early stages of this exploratory developmental phase as:

> Almost everybody who had Internet was involved either at university or school, very few private people. And so there were 9300 people only on the Internet in Estonia. So maybe it was like between 100-200 hundred [that had internet points], but basically it was just very, very few. **IT1**

> We had in the first half of the nineties, it was like, only a small group of enthusiasts, so I was one of them, but we were like, I don't know, maybe 20 guys around Estonia. And this, this was the group who was setting up the first Internet connections in schools. So my rural school, 60-65 kilometers from Tallinn, was the fifth school in Estonia to get internet access. But because we got a modem from our Finnish friends. [..] and then did student exchange for three years [..] they once brought as a gift this modem and a Macintosh classic. And then we were able to set up this Internet connection in 1993. **IT3**

A lot of the early digital education was done by "trial and error". With the Soviet Union being very focused on engineership and natural sciences the technical competences and mindsets were in ways already present in society. Although many learned how to code and use a computer on paper before on the actual machines, there was a pool of competent individuals that were able to contribute to getting things moving and getting such knowledge out from the beginning. The early stages of digital development took place inside of classrooms between the teachers and students, most of whom had never used a computer before.

> So since school got some computers, they started to teach it to kids as well. And, of course, we didn't know how. They just did it by trial and error. And since they are not able to take so many classes, I helped them out as well. So I had a few classes at this gymnasium for like last grade students as well. And they [the computers] were not very reliable. They were breaking all the time. So we had about 15 of them. And it was constantly like basically you had to take them back to this institute. I mean, so

> we were constantly traveling between Tallinn and Tartu, Tallinn and Hiiumaa on the plane and I always had like two huge backpacks with computers on me. **IT1**

What later developed into the Tiger leap project that drove Estonian education forward on the digital playing field was joined by the Estonian decision of becoming the first ever paperless government in the world and later the development of e-Services. The aim of the project was to make government meetings more effective in minimizing paperwork and discussions on matters that did not need to be discussed. In the change the Estonian government went from piles and piles of paper and background on matters that there was little time to read before only for certain experts to debate it in plenum. In transitioning to a digital workspace the physical paper trail was eliminated and changed to a digital trail. In the system, the government representatives could mark their planned vote beforehand and see what had gained a majority that did not at all need to be discussed the next day but that instead directly could be presented at the next press conference as actions. They could now further leave comments in regards to certain matters, expressing their opinion leading to less time spent on discussions. The next step of the digitalization phase was to start working on transitioning the governmental services into electronic services that could not only benefit the citizens of Estonia but also the government offices in having to deal with less paperwork and saving more time for the average government employee.

> So in three years we covered all governmental offices. It started from a cooperation of border guards, police and tax offices, which needed the Internet most on the borders to secure our borders and to deal with local citizens' databases. But later, other departments joined as well, like the Agriculture Department, Social Security Department and many other departments. **IT1**

In the country's early digitalization several developmental steps were skipped. Instead of going from the abacai to cash registers and then to digital means the cash register phase was skipped over and Estonia therefore went directly from the abacus to computerized machines. The same thing occurred with payments,

whereas they directly went on to online payments instead of going from cash to preorder and then to online payments. In skipping the steps in between the country was able to gain a higher digital standard faster within several areas. One private sector digitalization expert describes the change not only as a technological change but also as a social change:

> It is a sort of social process. And when we talk about it through a social process, it is more complex, I would say. I think in Estonia it was also a gradual sort of you create this one service. People slowly start using and start to understand the benefits of it, then they get maybe a more comfortable ID service. Then one person tells another, like it's sort of these small things that kind of play together. **EX2**

It is hard to touch upon the earlier Estonian digitalization processes without including influences, inspiration and collaboration between Estonia and Finland as well as Estonia and Sweden. As Estonia gained its independence, Nordic support was highly regarded in several sectors. The common history between Estonia and the Nordics, along with cultural similarities, geographical proximity and, especially with Finland, similarities in language played a role in the digital success story. Finland was seen as the great example and the people began buzzing about "finding Estonia's Nokia". As Finland had found great success in telecommunications equipment Estonia began searching for their counterpart. In the beginning of the Swedish-Danish-Estonian child that is Skype, the software was perceived as Estonia's 'potential Nokia'.

> For a while it was [..] Skype, which people thought was nice [..]. Fortunately, there is not just one company like in the case of Nokia. But here it is the digital ambition, startups and the liberal market economy. Those factors together have become, so to speak, Estonia. **EX1**

After independence Telia Sonera went on the Estonian market to buy the Estonian companies. After a while Tele2 followed. With these and other companies established in Estonia modern telecommunication was developed in a similar way to the telecommunication in Sweden and Finland. Sweden was a central actor not

only in regards to telecommunications but also in regards to development through collaboration. A central example of Estonian-Swedish collaboration and knowledge exchange regarded the development of personal ID codes in both countries. At the time, Sweden was debating whether or not to implement personal ID codes nationwide in order to move on from the old registries and instead move in on single unique identifiers for all citizens. During joint collaborations and ventures between Tallinn and Stockholm City, knowledge was exchanged that inspired Estonia to build what is today the foundation of their whole e-Government and e-Governance system.

> At these times, Sweden was fighting with whether it will become mandatory or not and how to use that [personal ID codes]. And then I think what we got the best advice and a strong advice was to introduce a mandatory ID code for everybody in Estonia. And that is the cornerstone of all the services of all the e-Services [..]. Later, the ID card and the digital signature came into the picture, but it all was based on the ID code, and that clearly came from our cooperation with Sweden. **IT2**

The installment of a national ID code in Estonia was perceived as a technological change that had great support in the population. Once the first e-Services were implemented people started to use their digital identities in order to use them. This process created knowledge and a certain level of understanding with the population on how the services worked. Furthermore, some of the first services could be seen as a way to engage the population and inspire them to continue to use further services. Mostly, this was based on the fact that some of the first services, such as the tax service, showcased the benefits of using the digital means to get government services done in terms of time efficiency and return.

> It was done in a very clever way in the sense that you know, you can declare your taxes by having a pre-filled declaration. You just click a few things, make sure that it's all correct. And if you do it digitally, then you get [..] your tax return in [..] a shorter period of time than if you would do it manually. So that's like a very easy example of how you kind of get people hooked and start building on the impact that you create in this very concentrated space. **EX2**

4.2 The digital impact on the senior citizens of Estonia

It is important to note that the Estonian population thirty years ago consisted of fewer seniors than what it does today, much due to the different hardships of the past century leading to the early passing of many individuals in previous generations and the currently aging Estonian population. Furthermore, some individuals have been seniors for almost the whole digitalization processes while others were mid-life as it happened and have now become senior citizens, leading to certain differences in possibilities to learn digital skills through work or to be the target for many of the different life-stage e-Services, which is something to bear in mind in the continuance of this analysis. In the following sections, the senior citizen's role in the digital Estonian society and dividing societal factors will be presented.

4.2.1 Senior citizen's role in the digital Estonian society

The perception of the role of senior citizens in the digital Estonian society is highly determined by the network of the individual itself or of other family members or close relatives. During the interviews trends could be observed that were related to the perception of the digital divide in Estonia. Individuals who were, had worked with, were related to or in other ways had individuals in their networks on the 'other' side of the digital divide tended to recognize the divide while individuals who did not bring up such relations or stances did not recognize such a divide. In fact, the individuals who did not bring up any such relationships, or who did not feel excluded themselves, expressed a higher disregard for the existence of a digital divide. Several of those participants expressed that there is no digital divide in Estonia. None of the individuals that were non-users or had direct connections with non-users expressed similar opinions and instead all recognized that they thought that there was a digital divide in Estonia. This shows that the direct surroundings of an individual in ways create their expression and assumption and perceive it as the general norm and picture for the society as a whole. Furthermore, several civil servants expressed that they believe that the

seniors who are experiencing the digital divide today will be phased out eventually and that the next generation of seniors will be freed of such problems seeing as that generation will have been proficient in using technologies such as computers, smartphones and tablets. Below are two examples of statements from civil servants that work with digitalization and digital service provision that did not express any close relationship with somebody on the 'other' side of the spectrum followed by a statement from a participant with a close relationship with an individual that is digitally disconnected.

> I mean, the elderly, Estonia is so, so small. So the elderly, of course, have like friends and family around them or some kind of social workers, depending on their social status as well. So I think they are given all the opportunities that they might want. **CS1**

> But basically we hope that this generation will say when, for example, your mom or people who are a little bit younger, use these services and they are so used to that new world and they will be the elderly tomorrow already. So, actually, it's not a very high priority for our politicians to deal with elderly people because they see it's in the future, there will be no problem that they fear to use any IT service or any laptops. **CS4**

> For example, my mom is 82. At some point, like about 15 years ago, she was already retired, and she was able to use basic programs used for service insurance [..] But at some point she didn't use it for a year or two. And then later when I tried to teach her the use again, she got very confused. So basically currently she's able to use only the internet bank [..] somehow all this system doesn't connect in her head. **IT1**

Out of Estonia's 1.3 Million about 100.000 people are still defined as non-users. About 80% of the senior population is defined as non-users. One non-user senior stated that he did not keep up with the current digital development and that he was not a part of the digital society. He further expressed that he was not interested in getting more integrated or involved due to the amount of time that it takes from people's lives every day. Instead, the participant received help with tax

declarations and other such actions that were conducted online by others in his network. He further expressed fears maneuvering digital devices by himself that were grounded in pressing the wrong buttons and not being able to control the device if it opened an application or such that he was not used to operating or that system updates changed layouts and such which meant that he did not know how to find his way around the different platforms and that issues arose regarding user interface. The participant also stated that he preferred using older software that he knew which was more prevalent during his work life.

One of the participants recognized the same kind of technological anxiety with her mother. As a family member she expressed that she not only acted as a daughter but also as technical support in operating life in a digital society. She stated that her mother sometimes ended up clicking on the wrong buttons leading to pop-ups or other forms of messages on the screen of the computer that contained different messages. “It is not a one time effort” she said, pointing out that the help and support needed to be able to overcome digital obstacles were repeated. Another participant expressed that his father was a non-user and that he refused to have an e-mail address, a bank account or a bank card. The participant expressed that he had tried to help his father in becoming more integrated in the digital world but that his father was reluctant to do so due to fears of viruses that could potentially take the money in its digital format. Furthermore, he expressed that a trust in bank cards or other such digital tools was hard to integrate into the generation that his father belonged to due to the historical heritage and view of the government.

> So anyway, this is the point that I think that our older generation comes from Soviet time. When they were kind of dumbed down and made to get by with a very limited level of services, support and so on. So it means that they don't even have any desire. **IT3**

One of the participating seniors had a harder time to relate to the digital divide. He felt very well integrated in the digital society and stated that he used all

different governmental e-Services at the different points in life when he needed them such as e-Voting, online tax declarations, managing bookkeeping for his business and so on. He expressed that he used some more often than others due to the nature and frequency in terms of need for the service but commented that he generally did not fear or hesitate using or testing them, should he have to use a service that he had never used before. Furthermore, he expressed that he thought that platforms were pedagogically developed and that the help desk functions within the apps or on the different platforms were of high standard meaning that he could easily turn to them for help, should he need any. In his network he also expressed that there were others in his age (67) and up to 88 year olds that were digitally active and involved in matters that regard digitalization. The participant expressed that he never felt excluded from the digital society and put a special emphasis on the fact that all e-Services and platforms were available in Estonian, Russian and English making usage easier no matter which group in the population a person belongs to.

> So it's not just a matter of age, which it often becomes. I do not think that's really right. It's a lot about attitudes too. So there are many in Estonia who do not keep up, but most people keep up all the time. **SC2**

A semi-user expressed that she used several services regularly but that she sometimes had to get help and support from her family, friends or from the official hotlines of the service in question in order to be able to use it. She explained that she does not always understand the nature of the service or how to use it but that she does not feel any fear towards it because it is normal not to understand every part of the digital platforms or e-Services. She also expressed that she has been positive towards the digital development throughout and that she found it more convenient to be able to conduct such operations online instead of having to physically go to a location. She especially emphasized the timesaving aspect of not having to take time off from your work or such in order to be able to perform a certain task or to go through a government service. The participant told

that she believes that it depends on people rather than something else whether or not they wish to use said services.

One of the participants discussed a project that he is a part of working on that had the purpose of reaching out to non-users in Estonia. During the project non-users are targeted through previous or current or previous employers, relatives, local municipalities or social clubs such as knitting clubs or pensioner clubs. What the project has found is that individuals who in some way were still active and connected to a club or an employer were easier to get a hold of while those who were not active could not be reached. Even smaller pilot projects that provided such individuals with monetary compensation or free technical tools did not succeed due to what the participant describes as a lack of interest among the target group. From a government perspective, the amount of non-users should ideally be low in order to be able to create as cheap a government as possible. Two of the participating IT Developers saw risks in not acknowledging the digital divide in Estonia in operations that concern digital tools and development.

> But the question is much of that now we are at the level where the interest is not so big. Of course it's somewhat the elderly people but even not so we can't rely or take it that okay in 30 years they will be dead and we are rid of the problem. Now there are new passive people also coming up in different age groups. And these are simply the people who are somewhat away from that active services and an active digital society. **IT2**

> I think it's a topic obviously not just in Estonia but across Europe and across the world, you know, this sort of digital divide. Yeah, I think it is a very important topic because, you know, the pace of innovation has been, you know, has been accelerating. And we do run the risk of leaving some people behind if we're not careful. **IT4**

4.2.2 Dividing factors

There are many potential factors as to why some individuals might feel less inclined to participate in digital services than others. In the answers of the

participants of this study, several commonly brought up themes could be observed. The four main themes regarding digital dividends that were observed were: Technical experience, attitudes, work life background and family life.

Technical experiences and competences greatly affect how an individual behaves in the digital society. Today, the need for digital skills in order to participate in society is greater than ever before. Those that, for several reasons such as personal interest, work life background, through social clubs, networks or educations have managed to acquire sufficient knowledge and skills will not experience as big of a digital divide, if any, as those who lack knowledge and experience about digital technology. Even within the different age ranges of seniors actual digital knowledge gained through technical education or experiences show to be very important in if the individual is able to or wants to participate in digital activities.

Attitudes play a key role in acquiring knowledge and digital skills. Throughout the data collection process individuals from all participating groups have stated that it is not necessarily about the age of a person, but rather about the attitude. Some participants witness 65 year olds that are digitally disconnected while others at the same time see 95 year olds that are very active and that are able to operate and maneuver within the digital society.

> It's not always age groups. So I think it's a mindset thing, education thing and mindset thing. We have 90 years old who have Twitter accounts and blogs and they Skype every day and they take photos with their smartphone and share with their grandchildren. They have Facebook accounts. And then of course we have 50 year olds too, who never had any email accounts or are not able to use the most simple online services. And it's sad, but, if these people don't want to use it, we cannot make them. **IT3**

> But so there are volunteers around and I know many small local places as well. You can go to your local computer tutor, you can ask your grandchild, you can ask anybody. People will help and there are possibilities. And when it's accessed, it's more about motivation. **IT1**

> It doesn't depend on how old you are, you just have to have these skills. **SC3**

Attitudes towards the digitalization in Estonia as a whole is also important in order for individuals to actively want to participate in the new forms of government activities and services. Generally the public attitude after independence and the start of the digital developments have been positive. A few parties have tried to counter and criticize the rule, however as a vast majority have greeted the digitalization with joy and a view that this is how Estonia can stand out and survive as a small nation. As the technical tools and platforms started to spread, even early on it was possible to observe positive attitudes in regards to the process.

> And at some point it was kind of like a status question as well. Like, do you have an email address on your business card or not? Or do you have your website on your business card or not? **IT3**

Work life background also has the potential of influencing how well digital tools can be used and how integrated a senior is in the digital world. What the results show is that seniors who continue to work in some way or form after retirement manage digital tools better and stay more connected with e-Services or other digital tools than those who do not. Even if this does not entail a strong knowledge base when it comes to digital tools or e-Services it can contribute greatly to proficiency within a certain field, database or area within technical usage. Such proficiency that has been brought up during interviews are for example specific competences in digital databases regarding ornithology or specific knowledge about different types of digital music files and audio. That means that the digital and technical skills within those specific fields might be more extensive than what an average person has. However, this does not necessarily correspond with being digitally literate in other fields or more generally speaking.

The results further show that individuals who worked or are working within sectors that are directly connected to engineering, IT, tech or similar are also more likely to be more integrated in the digital world. One civil servant that conducts digital workshops for seniors expressed that seniors who are or have previously worked within such areas have higher proficiency and more digital skills than those who do not. He stated that that group understands more "even if today's microchip world is a different place" (**CS2**). Furthermore, some seniors are experiencing discrimination in the jobmarket when it comes to the current need for mastering digital skills. One civil servant stated that seniors that he works closely with have been fired and replaced with younger people because they were not able to keep up with the digital skills and knowledge. He stated that he thought more work needs to be done when it comes to further training and educating seniors in order to make them more digitally competent to be able to move forward in society.

> And like those people above 50 years old, they seem to be, you know, they kind of were left behind when the whole digitalization started. And in a way, it started 20 years ago when they were 50 years old. So it's kind of like they lost 20 years, I think, for them in a way. And I think a lot of people didn't get the job opportunities they might have gotten if they would have also moved forward together with [..] digitalization in general. **CS2**

Family life in Estonia has been enhanced both by the senior participants but also by participants from the other researched groups that often act as the support person or technical guide for an older family member or acquaintance. Many projects and initiatives mentioned during the interviews connect teenagers or youth with senior citizens in an attempt to share knowledge across generations. The participating non-user as well as the participating semi-user both underlined the importance of digital support from their family. Especially from their children. The senior who was a full user instead stated that it is more often the opposite for him, generally his family tends to ask him for technical support and advice rather than the other way around.

There is like I feel there is still a lot of people who are learning from their children or who are getting help from their from their children that they their children have their ID cards and PIN codes and they can log into the e-Health system or whatever, whatever, and like just get them the stuff. And they're like, okay, you did it for me. I don't care anymore. But I also think there are a lot of people who are living alone, who are not living with their children and they are like more, I think, keen to maybe find that digital world where they could get like the news and things like that. **CS2**

I guess it's the best way if your family is helping out or somebody who you trust or has time to help out, which is all the best way because it's not a one time activity. I see what she [the mother of the participant] needs: Constant help. **IT1**

4.3 Digital state perspectives on inclusion

All around Estonia there are different levels and structures in which seniors partake in society or the digital world. Along with this come different projects, strategies or actions created on different levels from government to municipal or individual basis with the purpose of bridging the digital divide. Not all of these projects are purposeful in the sense that they are actively planned as a part of a larger strategy and some levels do not specifically focus such projects on seniors at all. In the following sections, the Estonian e-Governance structures that regard how Estonia works to bridge the digital divide and key stakeholders in digitalization processes will be presented.

4.3.1 Estonia's e-Governance support structures

The uptake of digital services is the key to success with digital development. So if you just lay the foundations, create the service and no one uses them, then it's useless. [..] But if you have services that people actually use and that's when the government can keep going and keep sort of providing more services and developing the infrastructure further. **EX2**

Digitalization is at the core of the Estonian state. Operating this digital nerve system is not only perceived as futuristic but also as the more economical alternative. The fewer and smaller offices and physical spaces needed, along with people who operate them, the cheaper for the Estonian taxpayers. With this in mind, one foundational principle in Estonia's e-Governance is that even with all these provided digital services, there is still a possibility of conducting them the traditional way, in person, as well. Many participants of the study have expressed that it is a matter of democracy within society and that keeping the option of physical services strengthens the freedom of the citizens. At one point, a set of rules changed, meaning that all citizens had to fill out their information themselves instead of having supporting staff fill it out. To illustrate the extreme ends of user needs that the service providers need to take into consideration when it comes to seniors one participating government representative provided an example of a senior citizen that had to go through the process and use a computer for the first time:

> And he asked, like, what mouse? Where's the mouse? What mouse are you talking about? **CS6**

The discourse around digital literacy and digital inclusion is acknowledged and a part of the current government strategies such as Digital Society Strategy for 2030 and the Education Strategy 2021-2035. On a government level, it is acknowledged that there is a need for greater action within the field, however as it is currently it is more focused on individuals who will continue working for the upcoming decades. The focus has not historically been to include a certain group in society but to get the majority of society to start participating in digital service provision, nor is it a larger focus today. Many participants from both the private and public sectors testify that the majority of services are developed for the broader community and are intended to work for all groups. Furthermore, development of digital public services and other forms of e-Governance strategies often do not specifically address the needs of senior citizens.

Within the digital Estonian society there are a wide range of e-Services on different levels. Some of the national services are mandatory for all municipalities to provide to the citizens. Further than that municipalities are able to develop more e-Services should they wish. The digital platforms and e-Services in Estonia are developed after a WCAG standard meaning that technology is created with operability and understandability in mind. Several of the participants that work with development of services and service design have emphasized that fewer clicks, infoboxes and short text is the most effective way to make sure that citizens get good preconditions to be able to operate the technology. When the digital services were created, many perceived the services as hard to operate leading to some traces of memory still of the earlier services which creates hesitation towards what is developed today.

Libraries have an increasingly important role in bridging the gap between non-users and users. Out of a range of projects in Estonia that focus on bridging the digital divide between seniors and the digital world, libraries have been the most mentioned. The new function of libraries is to provide a point of access to digital technologies and the internet, as well as a forum for support for those who are not comfortable with operating the technology at hand and want to learn digital skills. The old Soviet village libraries have gained a new function. However, one participant expressed concerns that librarians in Estonia had not been able to fully reinvent their importance which consequently has led to the recent termination of library education at higher education institutions which he believed would lead to a decline in educated librarians in the country and, as a long term consequence, fewer libraries in the country. Further projects such as classes, mentors, cross generational support and volunteer activities have also been mentioned as individual activities that aim to teach digital skills.

> When I was starting to teach people how to use email, we had a saying like everybody teaches one hundred people. So like everybody, who knows how to use the Internet, everybody will teach at least one hundred. **IT1**

4.3.1.1 Local perspectives: Tartu

Estonia's second largest city Tartu calls itself a smart city since 1632 when Gustav II Adolf founded Tartu University. Although with different connotations in history than today with Tartu City being one of the most digitally integrated cities in Estonia. Today, Tartu provides around 600 public services of which about 100 are provided digitally - with more than 50 different information systems providing services. Tartu University continues to have a central role in the city and often collaborates with the local government on projects where they get access to certain data and process it in various studies.

> The university often needs data to try to build [..] or analyze something and the city has a lot of data to offer. [..] our bike share data has been used in I don't know how many science projects already because there's a lot of data, a lot of things you can analyze. You can analyze where to add stations, which routes are most popular, who are the main users of the bikes and so on. **CS3**

In the Public Services Development Team business analysis, systems analysis and project management is carried out. Furthermore, they also have employees for data security, for personal information security, a general head of data, a manager of European projects, a geospatial team and employees who operate the document management system - the core system of Tartu City local government. The goal of this structure is to have all the competencies that a service owner would need while designing and improving their service.

> So [..] when you are improving your service and you need any sort of consultation, [..] If you need a technical specification for something like terms of procurement or something like that, then we are able to put together that technical document. Also, we can assist with project management if needed. If you are heavily dealing with personal information and you have GDPR-related questions and you can turn to data

> protection officer and so on. So we try to cover all the different aspects of developing and improving a [digital] public service. **CS3**

The provided services are quite decentralized among many of the 70 plus entities and organizations within the municipality. In this mix there are also a wide range of different developers that contribute to the development of e-Services and platforms. Tartu City rarely profiles the users of the e-Services, they therefore do not track how many senior citizens that use their services, which services they use and do not have statistics on the underlying reason as to why some might be more frequently used by seniors than others. Instead of actively profiling their users they look at the satisfaction rates and further develop or plan a service in accordance with the satisfaction rates. In order to try to create the best services possible Tartu City follows a set of general design principles that includes what types of fonts and colors to use. They further aim to simplify their forms in order to only ask for the minimum viable set of data that they need and not to litter the forms with additional fields.

> We came to the conclusion that we rarely design services for specific groups. I couldn't even think of services that are targeted directly to seniors because they are seniors. It's like when we try to design a service, we try to make it easy to understand for anyone. It doesn't matter if you are a senior or not a senior. It has to be easy for everyone. **CS3**

> It's like I feel like people 74 plus mainly use indirect services like, you know, street lighting and make sure the roads are good and clean for them and so on. **CS3**

4.3.1.2 Local perspectives: Pärnu

Estonia’s fourth largest city Pärnu has over 180 public services. Out of these services about 50 are offered in a digital format. As of currently Pärnu City is working towards creating more proactive services in order to be able to notify citizens of available services before the citizen itself actually needs to apply for a service. At the moment the participating representatives from Pärnu City describe

the services as reactive rather than proactive. The citizens are sending in feedback for the local government to take into consideration. In the future the representatives hope that this feedback can be made more proactive as to not start from the citizen's ignition but rather from Pärnu City's.

In Pärnu City's IT Department there are seven people working. In total there are 180 employees at the local government. With the limits in the IT department the municipality outsources and purchases the programming and development of services to stakeholders in the private sector. Rather than focusing on the mere technical aspects, the representatives within the municipality's IT department focus on what the needs for improving information systems are and how these can work better.

> We are now prioritizing [..] and analyzing which services can be converted into e-services. So I think that we are one of the very initiative of the city governments who have done many analyses about the public services. Only Tartu and Tallinn and a few more have done it. And it is pretty new in other [..] local governments. So I think that we are in pretty good shape in that area. **CS5**

In order to assist citizens with digital services the municipality offers library services along with access to a computer at the front desk of the municipality where the receptionist also works to support those in need of digital assistance. Furthermore, a hotline exists that allows citizens to call and get guidance on how to use a certain e-Service or platform. Within the city there are several educational programs that provide courses that enhance digital literacy and technical skills, however they are not provided by the municipality but by private actors. One of the representatives from Pärnu state that:

> Of course, nowadays, if some people want to learn, it's so easy to take e-Courses. You just have to log in and then start learning. **IT5**

Like Tartu City, Pärnu does not keep statistics of how many individuals are over the age of 65. When they work with services they do not only wish to improve the

services for the citizens but they also want that the specialists working within the local government have less work. The first e-Service was implemented in the city government around five or six years ago, meaning that it was quite recent in comparison to many other digital services that have been developed and implemented on the national level. The thought behind in-house digital-services came from a visit to Tartu City that inspired the municipality to further develop such digital services in Pärnu. The most innovative principals that work with public services in Pärnu and wish to further develop services and convert them into e-Services work together with the IT Department in order to create the best solutions.

> In our opinion, we believe that the senior citizens usually need social support and [that] our e-services are mostly used by the younger generation. We believe that senior citizens rather don't use e-services because, at this age, they don't have little children, and many services are about education. **CS5**

4.3.2 Stakeholders

In the context of Estonian digitalization and the digital Estonian society, there are a wide range of important stakeholders. First of all, the government itself plays a key role in furthering the development of services. Second, within the different layers and levels of the state in regions and municipalities there are also many central actors in the form of civil servants and local departments or organizations that through their internal development and/or partnerships with the private sector greatly contribute to the digital transformation and development. Third, the relationship between the private sector and the state is, and historically has been, central in the development of the digital state therefore many individual companies play a large role. Fourth, the citizens of Estonia constitute maybe what is the most important group, because if the platforms and services that are created are not received well or used by the citizens the development of further digital tools and platforms can not continue. Under this section, the key findings in regards to stakeholders will be presented.

State levels and civil servants

> The rules are made by politicians. We are not politicians. We only make it happen. **CS5**

On the municipal level in Tartu and Pärnu as well as on a government level civil servants illustrate that it is not always politics that move digitalization processes forward but that civil servants themselves have a lot of influence over the digital service provision and development. No matter if the technology is developed in-house or outsourced to the private sector, the civil servants have expressed that the frequency of larger decisions that have an impact is taken on a more infrequent basis, especially on municipal level. This entails that much of what the citizen meets is rather a product shaped by civil servants and the private sector making the services in many aspects develop organically depending on the need and scope of the service.

Private sector

Estonian public-private sector cooperation has been a great driver in providing digital services, getting citizens to use them as well as to simplify the process for the people when getting used to them. As a stakeholder in digitalization in Estonia the private sector and private companies have been the most mentioned stakeholders often brought up in relation to the liberal market of Estonia as an aid in the development in this study. In terms of the general Estonian IT community, the private sector is formally consulted, taken into consideration or partnered with through different methods. The role of the private sector mainly centers around creating digital solutions or developing platforms that are later implemented and used as governmental platforms or e-services. In doing this the companies or stakeholders from the private sector sign and agree to nondisclosure agreements in order to protect the future technological governmental infrastructure and ensure company liability.

> I think the private public partnership [is] the cornerstone of our government and our society in general, because we couldn't build our country without the private sector,

> because these are the companies that invest in innovation a lot. You know, it's always about the money as well. But yeah, I mean, at the same time, they are forced to be more innovative if they offer services to the public sector. So it goes hand in hand in that sense. **CS1**

In the involvement of the private sector there are various steps in development. Often, the customers of the company are organizations or government entities on some level that have the need to digitize a service or to create some type of platform. This means that the clients are the middle hand between the developer and the citizen and 'consumer' of the product.

> If they don't have the technical capabilities [..] then they can implement a lot more stuff embedded on their website and then they control the user experience for their end users. So it kind of depends a little bit on who's controlling the experience, either the businesses or we control the user experience. **IT4**

Historically, the private sector also contributed to several social responsibility programs in making Estonians more digitally literate. An example of this is Intel who for example covered half of the costs for a program that taught general digital skills across Estonia. Examples of some of the main contractors for development of government technology, e-Services and platforms are Cybernetica and Nortal. There are further specific companies that specialize in creating similar technologies for certain fields such as transportation, health care or such.

Citizens

The ultimate incentive for citizens to actually use the digital services is efficiency. This way of service provision provides citizens with the possibility of communicating with the state in the comfort of their own homes or from abroad while saving citizens money and time. From the government's side, participating representatives in this study have shared that it is of importance to put the human into the center of certain developmental projects. In the case of the seniors, that entails understanding their assumptions, motivations and fears in regards to these

new technologies in order to be able to develop and deploy technology to support that picture and achieve goals.

> I think the first thing they would have is suspicion of what's going on. So you need to do a lot of, I think like onboarding and support work, like you need to get a lot closer to your target group. So here we're talking about elderly to understand their needs, understand their everyday life and understand how to deliver the service. And I think this is the service design mindset. **CS6**

5. Discussion and conclusion

The following chapter includes a discussion on the findings and how they relate to the theoretical perspectives had in this essay, how the findings correspond with previous academic literature as well as how the results contribute to already existing research. Furthermore, the two research questions as stated in the beginning of this thesis are answered and recommendations for further research are made.

5.1 Discussion

The aim of this thesis was to further contribute to the academic literature about digital inclusion within e-Governance in Estonia and to map out how this development has affected the citizens, more specifically senior citizens by using theoretical perspectives on stakeholders, inclusive governance and e-Governance. In using these theoretical perspectives a number of stakeholders and relations have been identified. When it comes to senior citizens, what has also been observed is the lack of relationships or direction in e-Governance in regards to digital inclusion on different levels. Furthermore, the main findings of this research centers around the strong importance of the private sector as a stakeholder in the digital Estonian economy, development and society. The connections between history, work life, attitudes and family life also constitute important factors as to why Estonia has developed in the way that it has and why the role of senior citizens in the digital Estonian society is perceived the way it is today.

In terms of e-Governing, the individuals faced with the cradle-stage of the again found Estonian state were faced with challenges in terms of how to finance such a

small state as well as how to gain trust in the state after leaving the harsh governing climate of the Soviet Union. As per previously presented by Sweetser (2011: 301-302), the digital methods of conducting governmental services tends to result in a higher level of trust in the government, as has it in Estonia. Stakeholders and e-Governance are highly intertwined in the sense that all presented stakeholders: The Estonian state, the government, civil servants, IT Developers, citizens and private actors are affected or involved in the e-Governance processes in some way or form. The results of this study suggest a greater importance of the private sector than initially expected.

Returning to relationships within governance that constructs an important area (Lynn et al., 2000: 14). As for the relationship between governing initiatives and the outcome the sense of the relationship varies with many actors claiming that Estonia does not actively and unitedly work for developing initiatives regarding senior's inclusion in digital life with the exception of certain strategic plans. As for the relationship between formalities and traditions within governmental organizations and governing preferences, the results show that formalities have not been the most central aspect and that innovation rather has had great impact on the development. As for the relationship between technology and the Estonian governmental administration, there are various stakeholders that are able to connect to how this has been developed. As for the relationship between a senior citizen's preferences and political decisions, the results of this study show that there have not been many instances where the seniors have been able to provide input on the matter. Nor do many of the large group of non-users engage at a high enough degree to be present in governance debates.

The role of civil servants in digitalization and e-Governance is central to the continued development. In their roles civil servants are a part of designing services and transitioning many already existing services into digital tools. Civil servants who participated in this study expressed that they have great freedom in their work, meaning that much of the actual execution lies in the hands of agents with less accountability than elected officials, disconnecting the politics and

practice somewhat. Both Tartu and Pärnu City representatives thought that politicians did not focus on or prioritize getting senior citizens active in e-Services since they believed that seniors are less likely to use digital public services in favor of regular public services. With this stance it seems implausible to be able to achieve a direction in which senior citizens' potential digital interests or needs are met. With such governing the largest group of non-users in Estonia will continue to struggle and will result in a further divide and potentially new groups of non-users that the state has not prepared itself for on all levels.

In researching this topic it is difficult not to focus on the development of the digital state as well as the history of the last century since the state today is a definitive product of just that. Estonia has clearly developed in a more individualistic direction than other nearby nordic countries that like Estonia scores high in digitalization indexes. It is possible that this direction is the reason for the rapid growth of the digital infrastructure along with attitudes, a high technological heritage and family life.

As for discourses on digital inclusion/exclusion, so called ‘digital natives’ and ‘digital immigrants’ and the digital divide, the results of this study show that senior citizens of Estonia do not necessarily become ‘digital immigrants’ because of their age, but rather because of their attitudes and other preconditions such as previous career, education or surrounding network. These results go in line with the results of Helsper and Eynon (2010) that argue that age is not the most important factor in favor of other factors (Helsper & Eynon, 2010: 503-504). The participating non-user furthermore expressed technological anxiety, as described by Helsper and van Deursen and Helsper (Helsper, 2009: 33; van Deursen & Helsper, 2015: 174), of pressing the wrong buttons or not being able to fully navigate the technical devices that show a technological stress and nervousness among non-users that would need to be met that was not present with the user or semi-user. This type of stress needs to be countered within Estonia to reach inclusion and counter the form of exclusion that does not stem from choice but from a forced state (Helsper, 2009: 33).

I thereby contribute to the already existing research by providing an outline of the Estonian digitalization and how this has affected the senior citizens. We can and should not assume that older people do not need state e-Services or they are unable to use them solely because of their age. As described by Helsper and Reisdorf (2017), factors in the first-level digital divide such as education, work, gender and age do affect an individual's likeliness to be able to operate technology, however with its binary nature the second-level digital divide is more applicable to Estonia where other factors also play a role in moving seniors up and down on the digital divide scale.

5.2 Conclusion

In the beginning of this thesis, the following research questions were asked: How has the increased technological governmental communication in the form of e-Governance affected the senior citizens of Estonia? As well as: How does Estonia work in order to make sure that senior citizens can participate in high technological activities on equal terms as the rest of the population? As for the first research question, the increased technological governmental communication, or the digital society, of Estonia has affected the citizens in every way and in many ways changed the structures of their lives and the character of governmental interactions. While the possibility remains to conduct governmental services in person, the digitalization has not only led to a simplification and effectivization of how individual citizens operate within the system but it has also brought them on a developmental journey. Some senior citizens that have not kept up with the digital transformation have been faced with being on the wrong side of the digital divide while those who for several reasons have kept up with digital developments enjoy life in a futuristic state. As for the second question, being a liberally grounded state citizens are expected to take high responsibility for their own lives and roles within the system. The need for support is recognized on governmental level and individual initiatives are happening throughout the country. However, it is not yet institutionalized within the system. A large part of

the digital support to seniors has been given by library services, what is now uncertain is how such services could come to be affected with the recent removal of higher education for librarians. Therefore, although sometimes communicated otherwise in official statistics, there is still a highly present digital divide in Estonia that must be addressed for citizens at large in a more strategic and planned manner on all levels in order to grant equal access and opportunities to operate within the government system.

5.3 Future research

This research has mapped out how the digital Estonian context has come to have the characteristics that it does and which role the senior citizens of Estonia have in this development. Future research should extend it by 1) Focusing on how to reach Estonian non-users and work towards them so that they become users, 2) How the Estonian state can work more strategically, effectively and inclusively in including seniors in e-Infrastructures, 3) Further research on a higher number of individual seniors of different ages in Estonia should be made by Estonian speakers as to not lose contexts or nuances in translation or a language that an individual does not feel as if they can express themselves as freely in as in their native tongue, 4) How the removal of the librarian educations will affect the digital support systems for senior citizens in Estonia and lastly 5) This research has specifically centered around Estonia, more research needs to be conducted in all contexts where citizens live in a digital or partly digital society in order to further find methods and solutions for how to adequately include senior citizens in these forums and contexts to bridge the digital divide.

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Appendices

Appendix 1a. Interview guide: IT-Developers

Interview guide: IT-Developers/Private sector experts	
Purpose	**Question**
Introduction and opening questions: Demographics	☐ Origins ☐ Place of residency ☐ Profession ☐ Level of education ☐ Age
Work description	☐ What does your work entail? ☐ Who orders you to produce/code/develop something? ☐ Follow up: Do you agree with what you produce? ☐ Follow up: Who sends the order to your manager? ☐ What are your responsibilities within your line of work? ☐ Which are your everyday work tasks? ☐ What does your employer expect from your position?
RQ1: How has the increased technological governmental communication in the form of e-Governance affected the senior citizens of Estonia?	☐ How does Estonia's e-Government work? ☐ How has Estonia worked with implementing e-Services? ☐ What is different for the average citizen today compared to twenty or thirty years ago? ☐ Follow up: What is different for the senior citizens specifically? ☐ How have citizens been a part of this development? ☐ Follow up: How have seniors specifically been a part? ☐ Follow up: Much of the statistics of the internet and e-Service uses of the population in Estonia stops at 74 years of age although the age group in 65 and over constitute the largest population group with Estonia's declining population. How do you ensure that you know what the senior citizens need in terms of support or what they use/do not use? ☐ Follow up: How do you work to ensure that you are aware of the digital needs of this age group?
RQ2: How does Estonia work in order to make sure that senior citizens can participate in high	☐ How has Estonia worked to make sure that certain societal groups got the same access as everybody else to e-Government services?

technological activities on equal terms as the rest of the population?	☐ Follow up: How has Estonia worked specifically to make sure that seniors got the same access? ☐ How have the digital government systems and platforms been created? ☐ Follow up: How have they been designed? ☐ Follow up: Have the platforms been designed with any specific societal groups in mind? ☐ Follow up: How have developers worked for making them more pedagogical and easy to use? ☐ What projects or initiatives that regard the inclusion of seniors in e-Government structures do you know of?
Stakeholders	☐ In whose interest does developing these systems lie? ☐ Follow up: Does it vary between governments what is requested to be produced? ☐ Follow up: What companies are involved in the development phase? ☐ Follow up: What groups of citizens are involved in the developmental phase? ☐ Follow up: What groups are most influential when it comes to the end product? ☐ What interests do these different groups have in this matter?
Closing questions	☐ Is there anything that I didn't ask about that you would like to add that could be important for me to know?

Appendix 1b. Interview guide: Civil servants

Interview guide: Civil servants	
Purpose	**Question**
Introduction and opening questions: Demographics	☐ Origins ☐ Place of residency ☐ Profession ☐ Level of education ☐ Age

Work description	☐ What does your work entail?
	☐ Who orders you to execute activities or decides what operations you are involved with?
	  ☐ Follow up: Can you choose what you are involved with?
	  ☐ Follow up: Who sends the order to your manager?
	☐ What are your responsibilities within your line of work?
	☐ Which are your everyday work tasks?
	☐ What does your employer expect from your position?

RQ1: How has the increased technological governmental communication in the form of e-Governance affected the senior citizens of Estonia?	☐ How does Estonia's e-Government work?
	☐ How has Estonia worked with implementing e-Services?
	☐ What is different for the average citizen today compared to twenty or thirty years ago?
	  ☐ Follow up: What is different for the senior citizens specifically?
	☐ How have citizens been a part of this development?
	  ☐ Follow up: How have seniors specifically been a part?
	  ☐ Follow up: Much of the statistics of the internet and e-Service uses of the population in Estonia stops at 74 years of age although the age group in 65 and over constitute the largest population group with Estonia's declining population. How do you ensure that you know what the senior citizens need in terms of support or what they use/do not use?
	  ☐ Follow up: How do you work to ensure that you are aware of the digital needs of this age group?

RQ2: How does Estonia work in order to make sure that senior citizens can participate in high technological activities on equal terms as the rest of the population?	☐ How has Estonia worked to make sure that certain societal groups got the same access as everybody else to e-Government services?
	  ☐ Follow up: How has Estonia worked specifically to make sure that seniors got the same access?
	  ☐ Follow up: How does Estonia work to include seniors in digital platforms and structures?
	  ☐ Follow up: Have you been involved in projects or activities have you been involved with that specifically regard seniors?
	☐ Are seniors offered some type of digital support?

	☐ What projects or initiatives that regard the inclusion of seniors in e-Government structures do you know of? ☐ What types of e-Services are most used by seniors? Do you know why? ☐ What types of e-Services are the least used by seniors? Do you know why?
Stakeholders	☐ In whose interest does developing such initiatives lie? ☐ Follow up: Does it vary between governments what is requested to be done? ☐ Follow up: What companies are involved in the planning and/or execution phase? ☐ Follow up: What groups of citizens are involved and included in the execution phase? ☐ Follow up: What groups are most influential when it comes to the final execution? ☐ What interests do these different groups have in this matter?
Closing questions	☐ Is there anything that I didn't ask about that you would like to add that could be important for me to know?

Appendix 1c. Interview guide: Senior citizens

Interview guide: Senior citizens	
Purpose	**Question**
Introduction and opening questions: Demographics	☐ Origins ☐ Place of residency ☐ Profession/Previous profession ☐ Level of education ☐ Age

Digital competences	☐ How do you feel about your own technical abilities?
	☐ How often do you spend time online?
	☐ How many of the e-Services do you use?
	☐ Do you get any help with using technology from family or friends?
	  ☐ Follow up: What sort of help do you get?
	☐ How do you use technology?
	  ☐ What do you/don't you use technology for?

RQ1: How has the increased technological governmental communication in the form of e-Governance affected the senior citizens of Estonia?	☐ How does Estonia's e-Government work?
	☐ What do you think of the digital governmental services in Estonia?
	☐ How has Estonia worked with implementing e-Services?
	☐ What is different for the average citizen today compared to twenty or thirty years ago?
	  ☐ Follow up: What is different for the senior citizens specifically?
	☐ How have citizens been a part of this development?
	  ☐ Follow up: How have seniors specifically been a part?
	☐ How has the increased technical focus affected you personally?
	☐ What role do you feel that you have in the digital society?
	☐ What type of e-Services do you use?
	  ☐ Follow up: What sort of e-Services don't you use and why?
	☐ Do you feel included in the digital society?
	  ☐ Follow up: Why/Why not?
	  ☐ Follow up: What could make you feel more/less included?

RQ2: How does Estonia work in order to make sure that senior citizens can participate in high technological activities on equal terms as the rest of the population?	☐ What projects or initiatives that regard the inclusion of seniors in e-Government structures do you know of?
	☐ Are seniors offered some type of digital support?
	☐ How do you feel about the amount of support for seniors to participate in e-Government services?
	☐ How do you feel about the e-Government platforms?
	  ☐ Follow up: Do you think that they are easy to maneuver around?
	  ☐ Follow up: What could make the platforms better?
	☐ Do you feel as if you are able to participate in these technological activities on the same terms as all other citizens?

Closing questions	☐ Is there anything that I didn't ask about that you would like to add that could be important for me to know?

Appendix 2a. Participant consent form in English

Participant consent form

This consent form is part of the process required for ethical treatment of participants in research. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about the research process or procedures, please don't hesitate to ask.

Research purpose

I am researching how the increased technological governmental communication has affected the citizens of Estonia and how Estonia works in order to make sure that senior citizens can participate in high technological activities on equal terms as the rest of the population. This research is conducted by me, Karolina Boyoli, as a part of my master thesis in the Master of Science in Strategic Communication Programme at Lund University.

Research method

If you decide to participate, I will invite you to participate in a semi-structured in-depth interview. This means, that I will ask open ended questions, like for example:

1. How do you interact with e-Government services?
2. What do you think of the digital governmental services in Estonia?

Benefit

By participating, you will contribute to an increased knowledge about how senior citizens adapt and interact with e-Government services and the digital society. By participating you will not personally benefit from participating in this study.

Confidentiality

If you decide to participate, your identity as a participant in this study, and any other personal information gathered about you during the study, will be kept strictly confidential and will never be made public. All data containing personal information from which you could be identified will be deleted after the data analysis. Electronic data will be password protected. When the study is completed, all data containing personal information will be destroyed. The published results of the study will contain only data from which no individual participant can be identified.

Voluntary participation

You are being asked to make a voluntary decision whether or not to participate in this study. If you decide not to participate, or if you later decide to discontinue your participation, your decision will not affect your present or future relations with the researcher. Upon request, a

copy of the information, data, and results will be made available to you. You will always be free to discontinue participation at any time, and all data collected up to that time as a result of your partial participation will be destroyed without being used in the study.

What your signature entails

Your signature on this Consent Form indicates that you have understood the information regarding participation in this research project and agree to participate as a participant. You are free to withdraw from the study at any time, without any consequences. Your continued participation should be informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

- I voluntarily agree to participate in this research study.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I have had the purpose and nature of the study explained to me and I have had the opportunity to ask questions about the study.
- I understand that participation involves sharing information in an interview which will later be used as data for the research explained above.
- I understand that I will not benefit directly from participating in this research.
- I agree to my interview being audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that in any report on the results of this research my identity will remain anonymous. This will be done by changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.
- I understand that disguised extracts from my interview may be quoted in the research paper.
- I understand that signed consent forms and original audio recordings will be retained in the personal computer, camera and phone of Karolina Boyoli (who is the sole person with access to the recordings) until the university examiner confirms the results of this research paper.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

_____	_____	_____
Participant Name	Date	Signature
_____	_____	_____
Researcher Name	Date	Signature

Contact information:

Karolina Boyoli,
E-mail: ka1488bo-s@student.lu.se
Phone number: +46732456825

Appendix 2b. Participant consent form in Estonian

Osaleja nõusoleku vorm

See nõusolekuvorm on osa protsessist, mis on vajalik uurimistöös osalejate eetiliseks kohtlemiseks. See peaks andma teile põhjaliku ettekujutuse sellest, mida uurimus käsitleb ja mida teie osalemine hõlmab. Kui soovite uurimisprotsessi või protseduuride kohta rohkem üksikasju teada saada, võite julgelt minu poole pöörduda.

Uurimise eesmärk
Uurin, kuidas on suurenenud tehnoloogilise riigikommunikatsiooni kasutamine mõjutanud Eesti kodanikke ja kuidas Eesti töötab selle nimel, et eakad inimesed saaksid osaleda kõrgtehnoloogilistes tegevustes ülejäänud elanikkonnaga võrdsetel tingimustel. Selle uuringu olen läbi viinud mina, Karolina Boyoli, osana minu magistritööst Lundi ülikooli strateegilise kommunikatsiooni programmi magistriõppes.

Uurimismeetod
Kui otsustate osaleda, kutsun teid osa võtma poolstruktureeritud süvaintervjuus.
See tähendab, et ma esitan avatud küsimusi, näiteks:

1. Kuidas suhtlete e-riigi teenustega?
2. Mida arvate digitaalsetest riigiteenustest Eestis?

Kasu
Osaledes aitate kaasa teadmiste suurenemisele selle kohta, kuidas eakad kohanevad ja suhtlevad e-valitsuse teenuste ja digiühiskonnaga. Osaledes ei saa te selles uuringus osalemisest isiklikku kasu.

Konfidentsiaalsus
Kui otsustate osaleda, hoitakse teie, kui selles uuringus osaleja identiteeti ja muud uuringu käigus teie kohta kogutud isikuandmeid rangelt konfidentsiaalsetena ega ei avaldata mitte kunagi. Kogu isikuandmeid sisaldav info, mille põhjal oleks võimalik Teid tuvastada,
kustutakse pärast andmete analüüsi. Elektroonilised andmed kaitstakse parooliga. Uuringu lõppedes hävitatakse kogu info, mis sisaldab isikuandmeid. Uuringu avaldatud tulemused sisaldavad ainult neid andmeid, mille põhjal ei ole võimalik tuvastada ühtegi osalejat.

Vabatahtlik osalemine
Teil palutakse teha vabatahtlik otsus, kas osaleda selles uuringus või mitte. Kui otsustate mitte osaleda või otsustate hiljem oma osalemisest loobuda, ei mõjuta teie otsus teie praegusi ega tulevasi suhteid uuringu läbiviijaga. Taotluse alusel tehakse teile kättesaadavaks teave,

kogutud andmed ja tulemuste koopia. Teil on alati õigus igal ajal osalemisest loobuda ning kõik teie kohta seni kogutud andmed hävitatakse, ilma et neid uuringus kasutataks.

Mida teie allkiri sisaldab

Teie allkiri sellel nõusolekuvormil näitab, et olete selles uurimisprojektis osalemise kohta esitatud teabest aru saanud ja nõustute osalejana osalema. Võite igal ajal uuringust loobuda, ilma tagajärgedeta. Teie jätkuv osalemine võetakse arvesse esialgse nõusolekuna, seega võite vabalt küsida täiendavat infot või uut teavet kogu uurimusprojekti vältel.

- Olen vabatahtlikult nõus selles uuringus osalema.
- Saan aru, et isegi kui nõustun praegu osalema, võin igal ajal loobuda või keelduda vastamast mis tahes küsimusele ilma igasuguste tagajärgedeta.
- Mulle on selgitatud uuringu eesmärki ja olemust ning mul on olnud võimalus uuringu kohta küsimusi esitada.
- Saan aru, et osalemine hõlmab intervjuus teabe jagamist, mida hiljem kasutatakse andmetena ülaltoodud uuringus.
- Saan aru, et ma ei saa selles uuringus osalemisest otsest kasu.
- Nõustun, et minu intervjuu helisalvestatakse.
- Mõistan, et kogu teavet, mille ma selle uuringu jaoks esitan, käsitletakse konfidentsiaalselt.
- Mõistan, et igas selle uuringu tulemuste aruandes jääb minu isik anonüümseks. Selleks muudetakse minu nime ja varjatakse kõik minu intervjuu üksikasjad, mis võivad paljastada minu identiteedi või inimeste identiteedi, kellest räägin.
- Saan aru, et uurimistöös võidakse tsiteerida minu intervjuu varjatud väljavõtteid.
- Saan aru, et allkirjastatud nõusoleku vorme ja originaalhelisalvestisi säilitatakse Karolina Boyoli (kes on ainus isik, kellel on juurdepääs salvestistele) personaalarvutis, kaameras ja telefonis seni, kuni ülikooli eksamineerija kinnitab käesoleva uurimistöö tulemused.
- Mõistan, et võin võtta ühendust kõigi uurimistööga seotud inimestega, et saada täiendavaid selgitusi ja teavet.

_____	_____	_____
Osaleja nimi	Kuupäev	Allkiri
_____	_____	_____
Uurija nimi	Kuupäev	Allkiri

Kontaktinfo:

Karolina Boyoli,
E-post: ka1488bo-s@student.lu.se
Telefoninumber: +46732456825

Appendix 3. Coding frame

Code (From literature/theory)	Definition
e-Services	The participant talks about a specific e-Service or the usage of e-Services
Digital skills	The participant discusses their own/ a family member's or senior citizens' digital skills
Digitalization/digitization	The participant describes the digitization process of Estonia and potential strategies that were implemented.
Citizen participation	The participant speaks of examples of citizen participation in the digital state development.
Digital inclusion	The participant discusses how senior citizens are included in the digital Estonian society.
Digital exclusion	The participant speaks of how senior citizens are excluded from the digital Estonian society.
Digital divide	The participant reflects on a digital divide in Estonia.
Technology	The participant discusses how e-Services, platforms or other forms of technology have been created and developed in Estonia.
Technological design	The participant expresses their thoughts on the design of e-Services, platforms or other forms of governmental technology used in Estonia.
Stakeholders	The participant reflects on the role of different stakeholders in the digitalization processes of Estonia.
e-Governance	The participant discusses how e-Governance is managed in Estonia and how the citizens view the state because of it.
Role in the digital society	The participant talks about their own/ a family

	member's or senior citizens' role in the digital society.
Technical experience	The participant discusses their own/ a family member's or senior citizens' experience with technical tools.
Code (New codes from data)	**Definition**
Societal change	The participant speaks about how the Estonian society has developed
History	The participant's reflects on the history of Estonia that has led the country to where it is today
Attitudes	The participant discusses the role of attitudes in digitalization in Estonia
Work Life background	The participant reasons on how the role of a previous or current employment of seniors affects their digital skills.
Projects	The participant talks about projects or initiatives that regard the support and inclusion of seniors in e-Government structures.
Family life	The participant reflects on the importance of family situations in regards to digital inclusion.

Appendix 4. Code name chart of participants

Code name	Date of interview	Role	Age (if applicable)
CS1	29-03-2022	Civil servant	-
CS2	13-04-2022	Civil servant	-
CS3	14-04-2022	Civil servant	-
CS4	14-04-2022	Civil servant	-
CS5	19-04-2022	Civil servant	-
CS6	20-04-2022	Civil servant	-
EX1	04-04-2022	Expert	-
EX2	20-04-2022	Expert	-
IT1	05-04-2022	IT-developer	-
IT2	11-04-2022	IT-developer	-
IT3	12-04-2022	IT-developer	-
IT4	18-04-2022	IT-developer	-
IT5	19-04-2022	IT-developer	-
SC1	08-04-2022	Senior citizen	80
SC2	07-04-2022	Senior citizen	67
SC3	08-04-2022	Senior citizen	67