BSR Policy Briefing series 9/2018

Future of Public Sector Governance and Digitalization

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CENTRUM BALTICUM

ISSN: 2342-3153

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Abstract

The Foresight Centre at the Estonian Parliament created five public sector governance scenarios for Estonia which paint different pictures of digitalization. The scenario "Ad Hoc Governance" sees rapid digitalization in some areas as priority while other areas are left behind because of government budget constraints. The scenario "Night-watchman State" is concerned about privacy and security concerns of excessive government digitalization while trying to use standardized approach for efficiency gains.

The scenario "Entrepreneurial State" is about building up highly digitalized state for entrepreneurial purposes and enhancing digital government platforms globally by relying heavily on public-private collaboration. The scenario "Caretaker State" is about the massive use of digital technologies in preventing the spread of social ills and intervention for benefit of citizens' well-being. The scenario "Networked Governance" pictures decentralized public sector governance with high degree of use of digital technologies by different actors. As a result digitalization of public sector is diverse and uneven.

Our current understanding may indicate that some of these scenarios are more or less likely depending the specific economic, social and political contexts. However, these scenarios do allow breaking-up linear logic in thinking about future and widening the view of potential futures of governance digitalization. The discussion of scenarios is followed by highlighting key tradeoffs for policy-makers.

Keywords

Digitalization, public sector governance, digital governance, e-governance, e-government, Estonia, scenario planning

Introduction

The aim of developing future governance scenarios for Estonia is to increase awareness of potential future developments and highlight main critical junctures for decision-makers in the Estonian Parliament as well as in the executive branch. In order to do so, the Foresight Centre at the Estonian Parliament created in cooperation with international and Estonian experts alternative scenarios about the future of governance in Estonia by 2030. The scenarios rely on interaction of both institutional and technological factors affecting potential developments in the future (Arenguseire Keskus 2018).

The aim is to answer to the question: "How to create efficient, equitable and agile governance model in Estonia by combining interaction of institutional and technological factors?" In order to do so, the project identified key drivers for future developments on the basis of literature review, empirical analysis on Estonia as well as focus groups with experts.

This short overview relies on both academic sources and non-academic sources such as leading consultancies and think-tanks. This is so because consultancies and think-tanks have been discussing more future trends affecting public sector governance than academic literature. Governance scholars tend to be focused more on long-term or near-term historical developments. Scholars in their modesty understand uncertainties involved in discussing future trends. However, certain trends do emerge from the academic literature as well.

Before starting to discuss scenarios, it is crucial to highlight main reasons for exploring future of governance. KPMG (2014) has identified nine global megatrends shaping governments in its report "Future State 2030". These trends are demographics, rise of the individual, enabling technology, economic interconnectedness, public debt, economic power shift, climate change, resources stress and urbanization (KPMG 2014).

Another prominent consulting company McKinsey identified ten global trends affecting public sector ten years ago with significant overlap of trends discussed by KPMG. McKinsey consultants added social tradeoffs between equity and efficiency, economics of knowledge sharing and rapidly changing industry structures as important trends driving the change (Barber et al. 2007).

Obviously, the relative importance of these trends varies across regions and countries. In many developing countries demographic trends are associated with rapid population growth while in developed countries the challenge is population decline. For some governments, public debt is a non-issue. However, economic interconnectedness in organizations such as European Monetary Union may imply that excessive debt of other governments may become an important issue for prudent governments as well.

In many ways, there are considerable similarities in discussing implications of these global trends (Barber et al. 2007; KPMG 2014). Governments have to become more productive and efficient, engage more in international cooperation, utilize data in decision-making for evidence-based policy making, increase transparency and accountability as well as respond to the changing relations between governments and citizens by increasing citizens' involvement through co-creation of public services or other means.

These implications suggest on abstract level some directions for transformation of public sector governance. Nevertheless, many of these ideas and concepts have been around for decades but for various reasons governments have been slow and reluctant to change. Hence, it is crucial to discuss only "what must change" but how transformation takes place in public sector.

Furthermore, many of global megatrends are not shaped by policy-makers, especially in small open economies. Rather these trends shape policy-making and governance. In the scenario building exercise, it is crucial to highlight both outside factors shaping public sector governance as well as how governments can adopt and transform in an environment characterized by turbulence, uncertainty, novelty and ambiguity (Ramirez & Wilkinson 2016).

Even though the Estonian governance scenarios tackled wide range of issues, the focus in this brief will be on governance digitalization. The term "digital governance" is purposefully used throughout the text. The concept includes also digital government but it is wider by encompassing stakeholder involvement in addition to online service delivery.

The attention given to digital governance is not surprising. Digitalization has a huge impact on cultural, economic, political and social aspects of our life. Hence, it is natural to see enormous potential of digitalization in public sector

governance. Digitalization has a promising appeal for making governance more efficient, equitable and agile. Yet the progress of digital governance has been slow and uneven. This is certainly so if different countries are compared. The UN E-Government Survey demonstrates countries have a tremendous gap in the implementation of government online - even though the World Wide Web has been around for almost 30 years (United Nations 2008, 2014 & 2016).

The digitalization gap is also wide in comparing different aspects of digital governance within countries. While some services are highly digitalized, others are not. In general, digital service delivery has received more attention, than online political participation.

The brief is structured in the following way. It will start by offering overview of scenario planning process and five governance scenarios. This will be followed by highlighting some policy implications stemming from scenarios and developments in Estonia.

1. Five Governance Scenarios

The following governance scenarios combine both external and internal factors which may or may not contribute to the realization of specific scenarios. Fiscal pressures and tough budget constraints limit the range of possible scenarios. However, budget constraint can be both endogenous and exogenous. It can be outcome of developments in the world economy, reduction in the inflow of structural funds of the European Union, consequences of Brexit and a number of other developments that Estonian policy-makers do not control and influence.

At the same time, the budget constraint can be self-imposed and thus endogenous. Policy-makers with certain ideological leanings may become dominant in the policy sphere and hence impose strict limits on public spending and reduce the number of government officials. The bottom line is that scenarios emerge as a result of endogenous and exogenous as well as more and less objective and subjective factors.

Furthermore, endogenous and exogenous drivers of change are constantly interacting. Hence, exogenous drivers will impact also endogenously set priorities. Universally best governance models do not exist. The real life developments will quite likely lead to a combination of various scenarios discussed below. However, the use of ideal types in the form of scenarios offers clarity and simplicity which contribute to the understanding of interaction of key drivers and potential outcomes.

Five scenarios allow to understand the interplay of different approaches to public sector governance and potential routes to the realization of different scenarios. Scenarios are specifically meant for policy-makers in order to broaden their horizons and generate useable, concrete policy solutions for advancing digital governance as well public governance in general. Scenarios serve as risk assessment tool as they identify potential bottlenecks in the implementation of policy. Hence, one of the central question is which conditions facilitate certain breakthroughs in governance reforms.

In other words, scenarios are not end in itself but a tool for citizens, politicians, officials, experts, activists and other stakeholders for advancing public governance. The real value of scenarios depends on their use. Will scenarios contribute for a clearer strategy formation in public governance and will they help to generate new ideas for better governance? The fundamental goal is to make governance more agile, equitable and efficient. This implies that scenarios are normative. They are also provocative. However, all scenarios consist costs and benefits. Whether costs exceeds benefits or vice versa in the context of a specific scenarios depends on a perspective.

Certain current trends may also indicate that realization of some scenarios are more probable in the future. Other scenarios are plausible but not probable. Nevertheless, it does not imply that the aim of exercise is to predict the future. First, predicting or forecasting future developments, especially in the long run, has severe limitations. Hence, it is important to consider not only small variations but fundamentally different developments, which are exogenous. We do not know whether scenario A or scenario B will realize in the future. However, we can comprehend to some degree what are implications of scenario A and that of scenario B. Scenario planning as a method is about developing alternative, equal scenarios. Most important is to be prepared for different developments.

Second, the realization of specific scenario or combination of scenarios depends on exogenous factors. Pre-condition for realization of certain developments is priority setting by policy –makers and mobilization of resources for that purpose. Certainly, this is necessary but not sufficient condition. Unintended consequences stemming from uncertainty may undermine best plans. The road to hell is paved with good intentions. Nevertheless, there are certain benefits for pro-active approach to policy-making rather than reactive or fatalist state of mind. It is about mental models which are prepared for emergence of new external environments. Having thought about different

scenarios should contribute to policy space which is more adoptive and adaptive to changes. The scenarios are following.

1.1 Ad Hoc Governance

This scenario combines strong budget constraint, centralized and fast decision-making processes. The budget constraint implies either need to cut public sector spending because of external or internal developments or dominant ideological position among decision-makers that public sector governance must be managed within limited financial resources. The scenario is characterized by top-down fast decision-making in order to overcome economic crisis and to exploit emerging new opportunities. Budget constraint implies also privatization of public services in some areas which implies that government does not have sufficient leverage to change situation in every area.

Citizens may benefit from this scenario as long as government's priorities match their own priorities. However, they are left out of decision-making processes as it would imply significant slow-down. Citizens have also deal with uneven delivery of public services where some services advance rapidly while others do not get enough attention and deteriorate as a result of resource constraints. Dissatisfied number of citizens may grow as a result of suboptimal services and inappropriate government priorities. The scenario may become a self-fulfilling prophecy where dissatisfaction with limited involvement of citizens feeds into need to keep decision-making centralized as policy-makers are afraid of opening up so-called genie's bottle.

1.1.1 Governance

Since budget imposes significant constraints, then ministries and agencies will be consolidated and number of ministers reduced. These processes will simplify decision-making. The cost-cutting also implies that number proportion of public sector employees will be reduced in total workforce. However, as the government will continue supporting some areas on ad hoc basis, then public sector expenditure as a percentage of GDP may increase. Furthermore, it can be assumed that the central government will increase public sector debt to GDP ratio. Government budgeting will be made more results driven.

The role of legislative branch in setting agenda in strategic priorities will be modest. The parliament will be an instrument of representative democracy rather than participatory democracy. The role of local governments will be reduced. The central government will try to reduce number of local governments by exploiting fiscal incentives. Fiscal autonomy of local governments will be reduced. Local governments will become basically agents of central government which is their main function – rather than representing interests of local population and getting them involved in decision-making processes. This governance framework implies that in principle it is easier to implement strategic projects in some areas as long as budget constraints allow it. For delivery of public services it implies uneven development where some areas are prioritized while others lack necessary resources. On the one hand, ad hoc governance values experimentation with new services and its delivery methods. However, focus is constantly shifting from one priority are to other which implies challenges in the implementation of new ideas.

1.1.2. Digitalization

Digitalization is valued in this scenario because it allows to cut costs and start new projects. It facilitates improvements in service delivery, collect data for policy-making as well as direct citizens to needed services and react to changing circumstances. Since budget imposes significant constraints and decision-making is centralized, then ad hoc governance scenario implies that most services are standardized and special circumstances are rarely considered. Standardization implies so-called forced digitalization where the use of digital services might be only option. On ad hoc basis some areas will receive special attention and these pet projects will be developed differently.

Government will prioritize the use of big data but as the approach is not systematic many institutional barriers do not allow to exploit the benefits. The use of open data does not get sufficient systemic attention which implies not improvement in comparison with other countries. The combination of data from different public and private sources is possible in some areas but not in some other areas. The government does not see the whole picture in its data policy by focusing in some areas but ignoring others. The government digital identity use in different services will increase but unevenly. Various private and public sector digital identities will emerge and many citizens will rely increasingly on private sector solutions.

1.2 Night-watchman State

This scenario combines strong budget constraint, centralized and analytical decision-making processes. The underlying aim is to reduce the role of state in many areas and focus on the areas where state intervention and

provision of services is absolutely necessary. The government will cut expenditure, reduce number of public sector employees and will privatize services. The scenario implies that systemic framework will be created for governance of public sector where limited role of government intervention in private sector and lives of individuals is the key priority.

Citizens will have considerable freedom in directing their lives but their opportunities to get involved in public sector decision-making processes are limited to the elections. Access to public education and health will be limited. The scenario also implies that the government response to substantial changes in external environment such as environmental, geopolitical and economic will be limited because of narrow policy-making perspective and small public administration capacity. At the same time, the dominant fiscal prudence may allow to react properly to some external economic shocks such as global financial crisis.

1.2.1. Governance

Since severe budget constraints mean significant self-imposed fiscal constraints, then ministries and agencies will be substantially consolidated and number of public sector employees significantly cut. The government wants Estonia to have the lowest public sector expenditure as a percentage of GDP and lowest proportion of public sector employees of total workforce. The government will keep budget balanced and will furthermore reduce already low public sector debt-to-GDP ratio.

The role of prime minister will increase in this scenario. Responsibility in managing public sector will be clear and simplified which may imply greater trust. However, decision-making will be efficient in predictable circumstances but may face considerable delays and bottlenecks in unforeseen circumstances. The parliament does not carry substantial role in this scenario. Its budget will be cut and number of members reduced by one third. Furthermore, term limits will be imposed which will reduce professional politicians in parliament but may make decision-making more complicated in areas where political skills are required. The self-imposed budget constraint implies that the role of local governments and their fiscal autonomy will be reduced. Their number and employees will be decreased.

The government in principle will not engage in large public sector projects because risk-taking involved and management of such projects does not fit with the role of minimalist state. Public services are standardized and characterized by universal basic services with no allowance for special requirements. Every citizen has its own public service account where they can see financial limits and options for service use. The government issues vouchers for education, social and health-care which can be used for both at private and public providers. This implies that service delivery can vary significantly across geographic regions and socio-economic groups resulting from differences in wealth and social capital.

1.2.2. Digitalization

On the one hand, digitalization is valued in this scenario because it allows to cut costs and reduce bureaucracy. On other hand, several barriers will be created for digitalization because of privacy and security concerns. The minimalist government is worried about data collection because it might enhance government intervention in individual lives and private sector.

As cost-cutting is key driver of digitalization, then it would imply high degree of standardization and universal basic solutions. The lack of customized solutions which consider specific needs may lead to dissatisfied users. Both open data and big data use is not advanced sufficiently. Barriers stem from institutional factors as government is concerned about misuse of data. Combination of different public and private sector databases is mired in complexity or impossible. The use of government issued digital identity is limited because of privacy and security concerns. Increasing number of citizens will rely on private solutions, including those provided by global digital platforms from the United States and China.

1.3 Entrepreneurial State

This scenario combines fast centralized decision-making strong with generous budget constraints. The flexibility with resources allows government to invest more in service delivery as well as large projects, often in the form of Public Private Partnerships (PPP). The government will behave as a large enterprise by developing and investing into some key priority areas. The government's mission is to enhance economic development and improve country's position in the international division of labor.

The risks involve overinvestment of public funds in failed projects which will become so-called white elephants. Radical external shocks may impose severe budget constraints which, in turn, may mean activation of "Ad Hoc Governance" scenario instead of entrepreneurial state. This scenario is also sensitive to changes in government as

well as quality and strategic agility of government top management.

1.3.1. Governance

Since flexible budget constraints imply more public sector investments and spending, then proportion of public sector employees in the total workforce and public sector expenditure as a percentage of GDP will increase. The central government will borrow funds for its priority projects which implies increase in public debt to GDP ratio as well as annual budget deficits.

The role of prime minister will increase and he will act as chief strategist in the government. Some ministries and agencies will be consolidated while new agencies might be created for developing priority areas such as infrastructure projects. Involvement of different stake-holders and interest groups in the decision-making processes will be reduced because the government values fast processes. The role of parliament will be secondary to the executive branch as the logical implications of the scenario do not support long-term calculation approach with unlimited discussions. Some parliamentary commissions may be become more important sources of legitimacy than the general assembly.

The top-down logic of the scenario also implies that the number of local governments and their fiscal autonomy will be reduced. Exception will be two largest cities Tallinn and Tartu with whom the central government is interested in cooperation involving large-scale projects. This also implies that scenario is very favorable for massive public investment projects such as tunnel between Helsinki and Tallinn, bridge between Muhu island and mainland and four-lane highway between two largest cities. The scenario also allows to increase spending on public service delivery, where priority areas such as education will received most of investment. As the development of services will be still uneven due to priorities, then differences may cause dissatisfaction among citizens.

1.3.2. Digitalization

Digitalization plays fundamental role in this scenario because it allows to collect data, offer better services and enhance anticipatory policy-making. As the government spending is generous and fast decision-making is appreciated, then digitalization can occur rapidly in many areas. However, government priorities imply that some areas receive more funding than others which will lead to uneven outcomes. Overinvestment and misallocation of investment may also lead to failures in large scale projects.

Big data and open data use is highly encouraged by breaking down so-called silos among agencies. Government designs policies for combination of different public and private databases. The government's mission is not only focus on domestic projects but to enhance digital data projects globally in order to understand trends and developments world-wide. This means active cooperation with international organizations, private and public sector actors.

One of the key priorities is to develop further Estonian government issued digital identity by offering solutions globally. Government prioritizes e-residency as a global digital platform as through this platform other Estonian public sector platforms can be diffused to other countries.

1.4 Caretaker State

This scenario combines generous budget constraint, centralized and analytical decision-making processes. Improved living standards and economic development means increased demand for high quality public services. The government aims to meet this demand by increasing social spending and employing more officials. The main mission of government is to improve well-being of its citizens. For these purposes government intervenes in many areas of life, protects people from evils and ills and regulates different economic and social activities.

Citizens benefit from a good access to high quality services in education and health-care. At the same time, their ability to shape public governance is limited. Government intervention in private lives may create the feeling that citizens live in a police state. The focus on current issues to citizen's wellbeing may also imply that the government may lack capacity to deal with large-scale strategic challenges, particularly in the external environment top management.

1.4.1. Governance

Since flexible budget constraints imply more public sector investments and spending, then proportion of public sector employees in the total workforce and public sector expenditure as a percentage of GDP will increase. The central government will borrow funds for improving well-being of citizens. It implies increase in public debt to GDP ratio as well as annual budget deficits.

The governance will be centralized but analytical and focuses on increasing legitimacy. The number of regulations

will increase as government tries to solve problems in every aspect. The assessment of impacts of various laws and regulations will increase which keeps government departments busy. Involvement of different stake-holders and interest groups in the decision-making processes will be increase at least formally because the government values legitimacy.

The role of parliament will be important source of legitimacy – at least formally - as the logical implications of the scenario do long-term analytical approach with detailed parliamentary discussions. However, key decisions will be made by executive branch in reality.

The top-down logic of the scenario also implies that the number of local governments and their fiscal autonomy will be unchanged. However, their importance will be emphasized in political rhetoric. This also implies that scenario is unfavorable for massive public investment projects because government is concerned about environmental impact and well-being of citizens affected by these projects. Analytical, calculative decision-making processes and increase in regulations will also reduce likelihood of such projects.

The scenario also allows to increase spending on public service delivery, where focus is improving both quality and access to services. As the development of services will be even due to holistic approach, then satisfaction among citizens will grow.

1.4.2. Digitalization

Digitalization plays an important role in this scenario because it allows to collect data, offer better services, direct citizens towards better choices and enhance anticipatory policy-making. As the government spending is generous and analytical decision-making is appreciated, then digitalization will occur evenly in different areas. However, technological lock-in and path-dependence may lead to difficulties in adopting solutions in some areas.

Big data use is encouraged by breaking down so-called silos among agencies. Government designs policies for combination of different public databases. However, government is reluctant to cooperate with private sector in this field because of risks and security concerns. Government does not encourage open data projects for the same reason. Instead of offering public data to private sector government will design incentives and regulations for ensuring access to private sector data.

The government's mission is to focus on domestic services and not to enhance digital data projects globally which will carry unknown risks. This implies that one of the key priorities is to develop further Estonian government issued digital identity for domestic users. E-residency as a global digital platform will be closed down because domestic online service delivery may suffer from new risks and overcrowding of platforms.

1.5 Networked Governance

This scenario combines generous budget constraint, de-centralized and analytical decision-making processes. The government aims to get citizens involved in decision-making processes and public service delivery through co-creation. For these purposes decisions are made in bottom-up fashion, closest to citizens and without unnecessary bureaucracy.

Citizens benefit from opportunities to get involved in policy-making as well as in service delivery if they will. Their ability to shape public governance is visible and actual. At same time, it offers more opportunities for active citizens than passive. Areas with stronger social capital may benefit more than areas with limited ability to cooperate. Government spending may not be able to reduce the gap.

1.5.1. Governance

Since flexible budget constraints imply more public sector investments and spending, then proportion of public sector employees in the total workforce and public sector expenditure as a percentage of GDP will increase. The growth is unevenly distributed but comes primarily from local governments which will borrow funds. It implies increase in public debt to GDP ratio as well as annual budget deficits.

The governance will be de-centralized but analytical and focuses on increasing legitimacy and satisfaction among citizens. Involvement of different stake-holders and interest groups in the decision-making processes will be increase considerably. The governance is pluralistic and diverse. Local governments and parliament will limit powers of central government considerably. Some areas the power of "silos" is dominant. While other areas are characterized by loose networks which collaborate across different domains.

The role of parliament will be important source of legitimacy and its role in strategic decision-making will be enhanced. As long as generous budget constraint prevails, it is possible to use more resources for improving

quality of decision-making by hiring experts and encouraging wider public to participate.

The bottom-up logic of the scenario also implies that the number of local governments will not be reduced and their fiscal autonomy will grow. They will take over crucial functions of central governments and will become true local governments. This scenario implies that scenario is unfavorable for massive public investment projects because difficult to reach consensus and different stakeholders have ability to block these projects for various reasons.

The scenario also allows to increase spending on public service delivery. However, bottom-up approach suggest different abilities to use these resources well. Some areas will be innovative while others will lag behind. As the development of services will be uneven due to decentralized approach, then satisfaction among citizens in some areas will grow while others it will be reduced.

1.5.2. Digitalization

Digitalization plays an important role in this scenario because it allows to collect data, offer better services and get citizens involved in policy-making. As the government spending is generous but decentralized decision-making is appreciated, then digitalization will occur unevenly in different areas. Different governance models will emerge in digital projects where some rely more on public sectors while others engage private sector and volunteers.

In this scenario, a direct trade-off between efficiency and equity may not be present if the increasing number of digital platforms in governance allow for a greater use of co-creation of public services by citizens. It is based on assumption that open government data is made available and its use is encouraged. Big data use and open data use is highly encouraged as well as combination of different public and private databases. However, many different models will emerge in their use. Digital identity and e-residency will be developed further by involving numerous stakeholders from public and private sector.

The following table summarizes key points concerning governance and digitalization of five scenarios.

Table 1. Summary of five digital governance scenarios.

Scenario	Governance	Digitalization
Ad Hoc Governance	Centralized and fast decision-making under strong budget constraints. Executive branch centric, reduced role for parliament and local governments.	Uneven digitalization. Cost-cutting and standardization in most areas.
Night-watchman State	Centralized and calculative decision-making under severe budget constraints. Executive branch dominance, minimal role for parliament and local governments.	Limited digitalization aimed at efficiency gains. Privacy and security concerns.
Entrepreneurial State	Centralized and fast decision-making under generous budget constraints. Executive branch aims at strategic agility and acts as a corporation. Limited role for parliament and local governments.	Strategically important areas are priority. Internationalization of government platforms.
Caretaker State	Centralized and analytical decision-making under generous budget constraints. Government focuses on welfare of all citizens. Parliament and local governments play formally important role but not in reality.	Even, holistic digitalization and quality of services and preventive policies through social analytics.
Networked Governance	Decentralized and analytical decision-making under generous budget constraints. Executive branch has limited role. Parliament, local governments, communities and citizens play important role.	Diverse digitalization with different models. Co-creation of services and many tools for participation.

Source: Author.

2. Policy Implications

Fundamental trade-offs in implementing digital governance will be highlighted below. These trade-offs or dilemmas should help to enhance an understanding the evolution of digital governance and its potential policy implications.

2.1 Scenario-planning vs Forecasting

Policy-makers should not rely on one vision, trend, forecast or prediction. The academic discussion seems to suggest that the current trend is a shift from the efficiency driven digital government to equity driven digital governance. A move from efficiency driven digital government to digital governance suggests that participatory aspects must be kept in mind while reforming public sector.

Even though many experts and scholars emphasize these trends, the future of digital governance is uncertain. Instead of emphasizing one prediction or forecast on the basis of previous developments and current trends, it would be wise to think about it in terms of alternative scenarios.

We have to think about options with lower likelihoods and consider weak signals because they may grow stronger over time. In the Estonian context, networked governance seems least likely scenario at the moment as the trends have been towards centralization in the past decades. However, it does not imply that these developments will not change in the future.

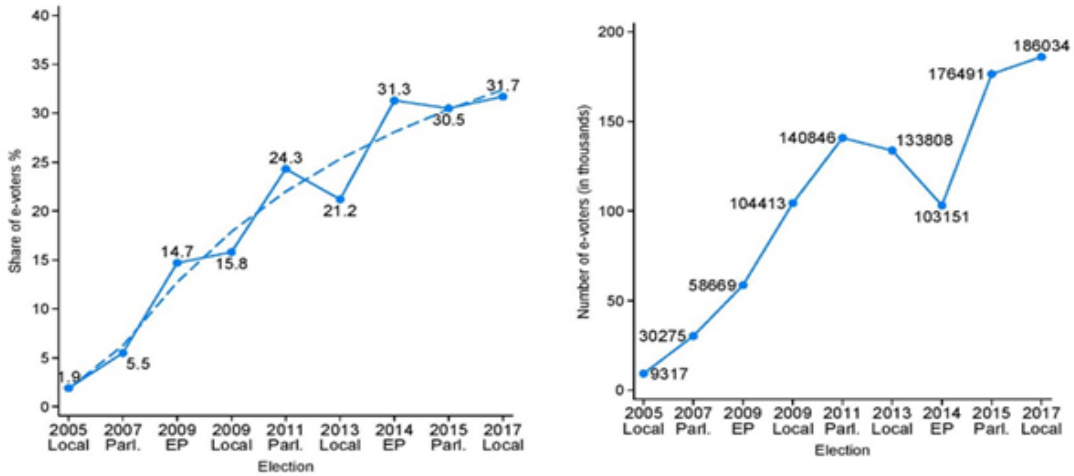
2.2 Digital Evolution vs Revolution

Often technological advancements are seen as revolutionary. In discussions of digitalization and its impacts terms like "digital revolution" is used. In fact, many changes enabled by the use of digital technologies are evolutionary. A google search for "digital revolution in public sector" generated 26 million results while a search for "digital evolution in public sector" generated almost 32 million results. Obviously, it may be dependent on how these terms are defined.

However, the main point is that digitalization of governance takes time and is rather evolutionary than revolutionary process. Often the building blocks for successful public sector digitalization outcomes were laid many years ago in the late 1990s and early 2000s when comparing different countries and governance within countries.

For example, even seemingly revolutionary development such as the internet voting has evolved over time. Currently, about of one third of votes are submitted online in different Estonian elections. However, internet voting was launched in 2005 when only 2 percent of votes were submitted online in the municipal elections. The following figure shows dynamics of internet voting in both relative (its share of total votes) and absolute terms (number of people).

Figure 1. Internet voting in Estonia from 2005 to 2017.



Source: Solvak (2018)

This a typical story of diffusion of innovations which was already described by Everett Rogers in 1962 where innovators are followed by early adopters and then early majority in adopting new innovations (Rogers 1962). Why is the adoption process of digital technologies so slow? The simple answer is because of institutions which have a strong impact on both demand as discussed by Rogers as well supply of technologies. That's why scenarios focused on institutional developments and as well as technology.

2.3 Institutions vs Technology

Often technological developments are analyzed from a perspective of technology optimists, if not technology determinists. They tend to believe that technology itself is sufficient for implementing changes. For instance, internet may mean that need for certain organizations may disappear. Instead of voting for members of parliament in every four years, people could vote directly online for various legislative proposals. Instead of government statistical offices, people could directly use data generated by various online transactions.

However, technology is necessary but not sufficient ingredient for digitalization of public sector governance. The diffusion of digital technologies depends on institutions and their change. Institutions are both formal and informal rules of the game as has been emphasized by Douglass North, a Nobel Prize winner in Economics (North 1990 & 2005). The public sector governance is interdependent on formal institutions such as laws and regulations as well as on informal institutions such as habits, norms, customs and values.

Furthermore, the diffusion of digital technologies takes time because of various institutions interact and their impact on digitalization stems not from a single rule but from the sum of rules of the game and from the specific context where these rules operate. Certainly, institutions are products of human action but it does not imply that they can all be changed overnight for enhancing digitalization. Institutions affecting digitalization, as in any other area, are complex, built through time and may have unanticipated developments. Therefore, institutional change is often gradual. This helps us to understand why digitalization of public sector governance is evolutionary process.

In addition to institutional complexity, digitalization is affected by path-dependence. This means that our choices today are limited by choices made in the past. For instance, many digital government efforts in developed countries have faced challenges from so-called legacy information technology systems. Technology is changing rapidly but government cannot update their systems fasts because they are dependent on old systems and lack resources for complete overhaul. At the same time, some emerging democracies such as Estonia in the 1990s benefited from not having legacy systems and this allowed them to start from scratch (Kitsing 2017).

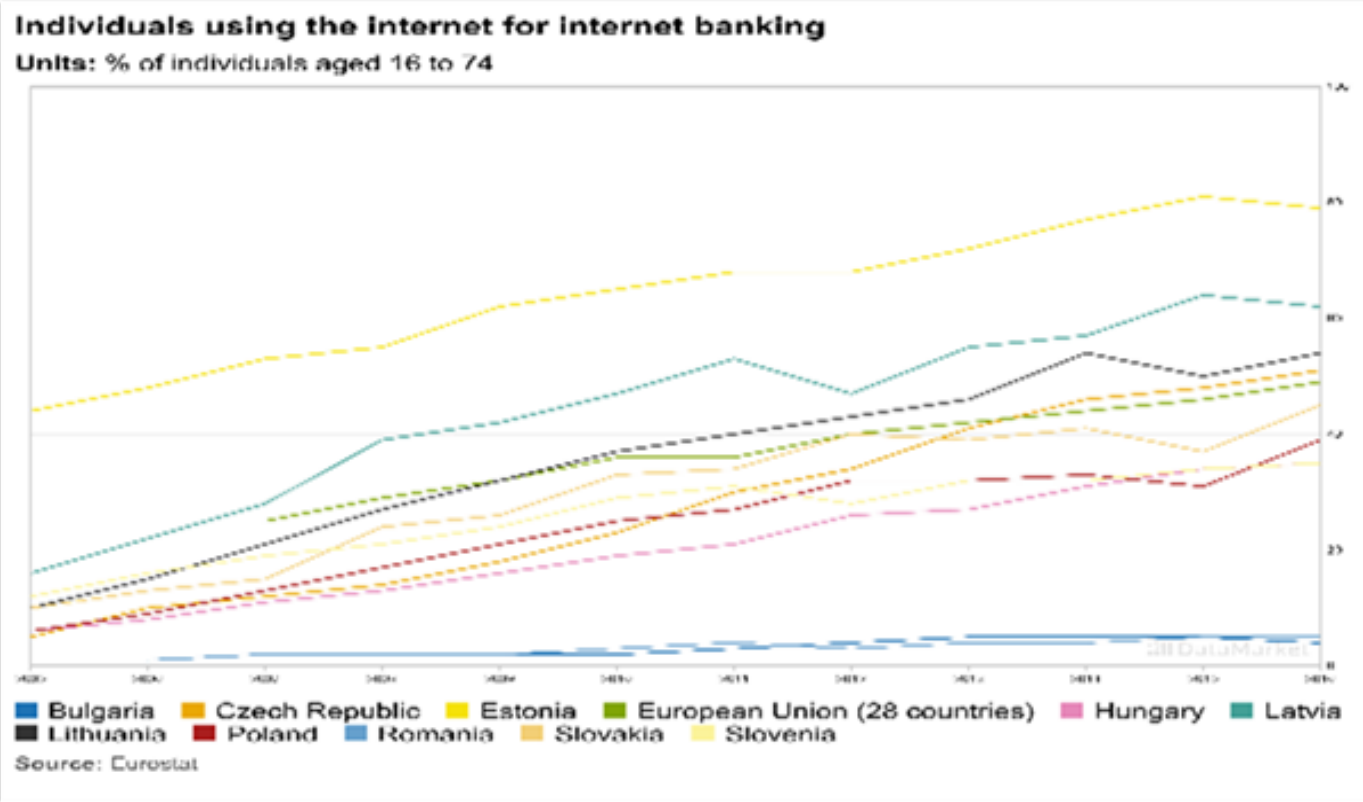
All of this implies that technology use context-specific and digitalization of governance follows different paths in different political, economic, social and cultural context. For instance, Helen Milner, professor at Princeton University has shown how through political institutions "winners and losers from the technology can translate their preferences into influence" (Milner 2006). Losers from technology adoption may use political institutions to slow down the spread of internet. This begs the question about the role of decision-makers and to what extent they can impact digitalization in specific institutional contexts.

2.4 Bottom-up vs Top-down Decision-making

Often individual decision-makers and governments receive credit for successful outcomes in public sector digitalization. Usually, their insights and strategies are seen as a reason for the success. At the same time, many grand government digitalization projects have also failed and ended up in creating so-called white elephants – costly projects that are no use for anyone.

On the basis of various digitalization efforts it seems that governments have to find a certain balance between top-down decision-making and bottom-up entrepreneurial discovery processes in digitalization. For example, one the most successful and early digitalization efforts was introduction of online tax declarations by the Estonian Tax Authority in 2000. The Tax Authority provided this service on the basis of internet banking which was already introduced in 1996. The following figure shows how the use of internet banking has grown in Estonia in comparison with the EU average and selected Central and Eastern European (CEE) countries. The use of internet banking in Estonia has considerable exceeded the use in other countries.

Figure 2: Individuals using Internet for Internet banking in selected CEE countries and EU on the basis of data from Eurostat (2017).



By this public and private cooperation between banks and Tax Authority identification of taxpayers' identity was made simple. Most importantly, it was not a result of grand strategy of central government but entrepreneurial approach by the Tax Authority's management. The central government did not intervene (Kitsing 2017).

2.5 Policy Entrepreneurship vs Conformity

Relying more on bottom-up decision-making processes facilitates also degree of entrepreneurship in public sector which is an important ingredient for digitalization of governance. Of course, it carries also risks such as rent-seeking. This means that public means are used for private benefits.

Nevertheless, policy entrepreneurs always operate in institutional context. In this sense entrepreneurial discovery process and policy entrepreneurship is important, but as Marie-Laure Djelic, Dean of the School of Management and Innovation at SciencesPo emphasized in 2010 that role of policy entrepreneurs is always "soft" one and "institutional entrepreneurship is rarely a case of individual heroism" (Djelic 2010).

The key take-away is that institutions should not be seen only as constraints but also resources to be utilized by policy entrepreneurs. This is particularly important for inter-agency cooperation or ability of government to work across so-called silos, and cooperation between private and public sector. Without such cooperation there will some islands of excellence in digitalization but general development will be uneven.

Greater cooperation allows also take advantage of digitalization and benefit from network governance. As Jane Fountain, a professor at University Massachusetts Amherst, pointed out in 2016 in the context of policy-making in the United States "the future of government relies not simply on greater efficiency, but also on increasing capacity to work effectively across agency boundaries to gain traction on pressing, inherently cross-boundary challenges" (Fountain 2016). This requires coordination and proper incentives for decision-makers at various levels but not top-down management. Increasingly, government as a platform is seen as a way to achieve this end.

2.6 Platformization vs Pluralism

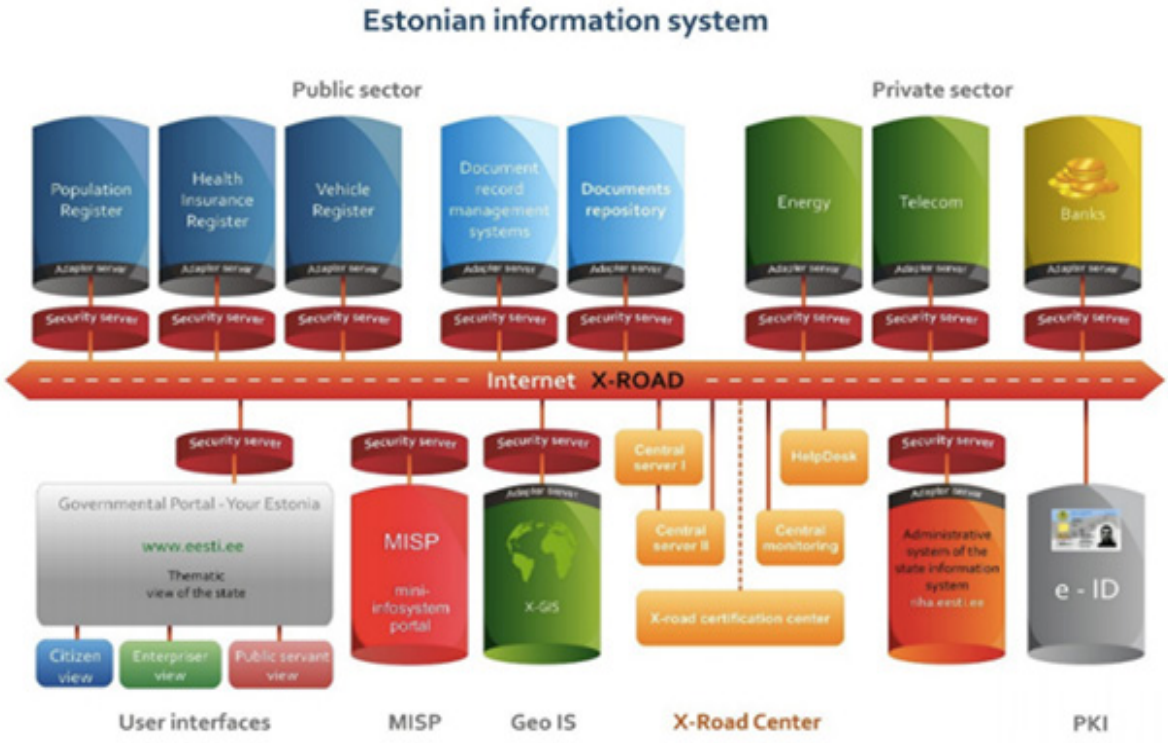
There has been the tension between efficiency and equity in digital governance where governments have focused more on efficiency of digital service delivery rather than citizens' involvement in decision-making processes. Nevertheless, the emphasis on co-creation by the emerging approach called Government as a Platform (GaaP) may reduce these tensions.

Obviously, it depend on what kind of government platforms will become dominant. Large centralized platforms are likely to be more efficiency driven while decentralized platforms may be capable of both enhancing efficiency and equity. Top-down platforms focus on uniformity while more decentralized platforms take advantage of pluralism. Both approaches have pros and cons.

Obviously, digital platforms as such are not new but the recently the importance of the rise of platforms in economic, social, cultural and political affairs and interactions has become fundamental. This is particularly so in considering systemically important platforms such as Facebook, Amazon, Uber and others with dominant market positions (Kenney & Zysman 2016).

Most importantly, platforms are also crucial in governance as digital governance experts and scholars have increasingly started to discuss digital government as a platform and emphasized the importance platform-based governance. For instance, Estonia launched its digital governance platform X-Road in 2001 and it has been also exported to other countries ranging from Finland to Azerbaijan. The following figure offers schematic structure of X-road.

Figure 3: Estonian Information System based on X-Road adopted from the State Information Agency (2015).



2.7 Co-creation vs Unilateral Service Delivery

The benefits of co-production and co-creation, open government data (OGD) can be facilitated by the rise of platforms in public sector. Elinor Ostrom, Nobel Prize winner in economics, already discussed co-production of public services on the basis of policing in Los Angeles in 1972 (Ostrom 1972). It was based on a simple observation that citizens' cooperation created more value for law enforcement services. Hence, the value of a public service was influenced by the interaction between the consumer and the provider not only by the provider. In a way Ostrom's contributions in 1972 as well as in 1990 correspond well with network-based governance which can be enhanced by digitalization (Ostrom 1972 & 1990).

Indeed, Ostrom's contributions has gained new relevance as scholars demonstrate how use of digital technologies and open government data (OGD) enables co-production of new public services. Government is able by making data and digital information available to citizens and other actors through platforms and as a result of bottom-up processes new services can be created. Co-creation also allows for higher levels of customization, citizen input, and citizen empowerment. However, it is also clear that in order for OGD driven public service co-creation to take place, it must be enabled. The emerging literature on GaaP seems to be suggesting a trend towards more network-based governance rather than use of traditional hierarchy-based approaches.

As the service co-creation is highly participatory, then information technology can be used by governments to support information provisioning to citizens and to engage and facilitate citizens to influence the government in their policy-formation and decision-making processes Furthermore, governance need not necessarily be conducted exclusively by governments. Private firms, associations of firms, nongovernmental organizations (NGOs), and associations of NGOs all engage in it, often in association with governmental bodies, to create governance; sometimes without governmental authority.

This widespread cooperation in governance is considered also crucial in the European Union as it can lead to so-called invisible government, where distinction between public and private services becomes blurred. The European Commission emphasized in 2013 that public sector services can be delivered in the context of existing work flow and pattern which can considerably reduce transaction costs in their use (European Commission 2013).

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