Unbounded government

– Opportunities for developing new government practices

PUBLICATION ON THE PRECONDITIONS FOR HUMAN-CENTRIC DIGITAL ERA GOVERNANCE

DEMOS HELSINKI

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PUBLICATION on the preconditions of digital era governance

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THE OBSERVATIONS AND CONCLUSIONS presented in this publication were developed through a co-creation process. The participants of the process were experts from the Ministry of Finance and other public servants responsible for and working in ICT projects in various Finnish government bureaus. The co-creation process included interviews and workshops, and has brought valuable viewpoints to this publication. The examples are based on Finnish experiences in digitalising public governance, but we hope the preconditions presented in this publication inspire government organisations around the world to see the opportunities that new technologies offer to build inclusive, effective and human-centric public governance.

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Purpose of the publication

THIS PUBLICATION OUTLINES the main theses of digital era governance and brings forward inspirational opportunities for the governments of the future. An unbounded government is organised around people's needs, implements digitalisation in all domains of governing for precision, better communication and effectiveness and integrates goals and practices of various branches of government.

Contents

The main thesis of this baseline report is presented on this page and the next.

Introduction: Unbounded Government

DIGITALISATION, continuously in progress, offers significant opportunities to organise services offered by governments in a completely new way. This new approach enables serving people in a more effective, inclusive, and safer way than today, simultaneously improving the effectiveness of government. Seizing these opportunities requires

- cooperation,
- digitising services on a large scale,
- designing services that prioritise people's needs, and
- developing new operational models and leadership in government.

Governments have a responsibility to ensure the realisation of basic and human rights in a highly turbulent environment. They must organise their services to meet people's needs, and to create the conditions to meet its people's expectations. All this, in a time where the everyday life of citizens has changed rapidly in the last decades and where the onslaught of new technologies, from the internet of things, networks, machines and sensors are enabling a transformation of practices by collecting and analysing information on different platforms using machine learning tools. The demands of the future require governments to acquire the ability to apply the best available technology in a relevant way. In order for a government to fulfill its duty, it must keep up with these developments.

See chapter 'Why does governance need digitalisation?'

TO OPERATE SUCCESSFULLY in this changing world, the government must be able to change too. With the help of technologies and changes in administrative practice, it is possible to improve the quality, effectiveness, and efficiency of its services. Improvements in effectiveness can be achieved by improving current operational models. However, to improve its quality, government needs a systemic change towards understanding the actual needs of people.

Systemic change requires rethinking the ways services are organised and produced, and also changing the structures and steering mechanisms of administration. A baseline for development should be ensuring opportunities for people to participate in defining the common goals of digitalisation and service development. Participation can happen as a part of the formal legislative process, but people also have a growing number of opportunities to influence and participate in developing services through the use of their data streams. In order to avoid fragmentation and organisation-centricity in enhancing tasks, practices, and operational models, common goals and executive guidelines must be shared and articulated. This shared understanding places emphasis and resources on those services and measures that support reaching the established goals, further increasing impact. The most essential task in order to reach these common goals, however, is to collectively develop a perspective on *digital era governance.*

The essential features of digital era governance include organising services comprehensively around the people, integrating the goals and practices of different parts of government, and improving the effectiveness of governance through digitalisation.

See chapter 'Promise: continuously-improving services'

GOVERNMENTS CAN TRULY THRIVE when services are organised around people's needs, government practices are optimised in a variety of ways enabled by developments in digitalisation, and governments strive toward a common goal. Increasingly versatile data streams enable more accurate analyses than before, which helps to develop a more accurate and higher quality service. With the help of these digital services, it is possible to identify new data streams in unexplored areas of life. **Through this kind of cycle governments can develop services continuously and more rapidly.**

See chapter 'Government in the future'

SERVICES PROVIDED by the governments of the future use the opportunities enabled by digitalisation:

- Improvements in effectiveness can be achieved by identifying resources better[1]. With the help of machine learning methods, analyses of the most effective ways to use resources in governance practice will become an everyday reality.
- Proactive and automatic public services designed around life events will help people to encounter government comfortably, with service needs as a genuine, established priority.
- In Finland the use and continuous improvement of a real-time, national incomes register[2] can enable uniform, predictable models for taxation. Combined with increased fluidity in establishing and dissolving companies, the borders between entrepreneurship and employment may lose their meaning.
- Government creates increasingly agile ways of transparently regulating digital platforms as a kind of platform of platforms. Regulation can be evaluated and authored together. For example, in Taiwan, legislation concerning online alcohol sales was developed together with citizens on an artificial intelligence platform[3].

1 For example, the city of Las Vegas conducts health inspections into restaurants based on risk evaluations done on Twitter.

2 Finland launched an real-time electronic database of all incomes information in January 2019: https://www.vero.fi/en/incomes-register/

3 Barry, L. (11.8.2016). vTaiwan: Public Participation Methods on the Cyberpunk Frontier of Democracy. Retrieved 23.1.2018 from https://civichall.org/ civicist/vtaiwan-democracy-frontier/. Civic Hall.

See chapter 'Preconditions for digital era governance'

THE BENEFITS of new digital era governance – more efficient, inclusive, effective, and unbounded government – can be achieved if the preconditions can be purposefully satisfied. These preconditions can be recognised along with three central features of digital era governance:

First, organising services around real needs can be realised if

1. people can opt to be informed about the use of their data streams in accordance with mutually established rules (laws)
2. primary focus on the people has evolved from a government value to concrete practices and
3. services are designed through the lens of life events and business events

Second, full-scale digitalisation of government can be realised if

4. people trust that the government will look after its people and their information
5. the services assigned to be carried out by government are executed in a way that suits the people and
6. the government learns to use information increasingly better e.g. with artificial intelligence (machine learning)

Third, commensurability between the goals and practices of the government can be realised if

7. governance is developed over government terms with the help of a common information policy,
8. cooperation that crosses boundaries between different parts of government increases and
9. contradictory goals between different parts of government and different people can be overcome with mutually agreed policy experiments.

This chapter describes how the operational environment around government has changed.

Why does digitalisation need governance?

WHEN YOU ARRIVE at a restaurant suggested to you by an algorithm, you pay for a GMO-farmed coffee by showing your phone to the cashier. You sit down and start working. Your chat app tells you which of your colleagues in government is working on the same project as you. The app is a shared work space for you, into which it has already linked the most important files of the project.

All of this can happen to you today. Even though none of the things mentioned above (aside from the restaurant) existed seven years ago, you do not think this environment is particularly strange. These days, this is how things are.

Currently, there is a lot of talk and writing about a change[4, 5, 6, 7, 8], but less discussion about the forms the world will take after. Most public organisations spend a substantial amount of effort to build their own digital systems. They strive to ensure that they can, at least in some way, meet the continuously growing needs of people smoothly, easily and conveniently. But the efforts of government organisations pale beside the corresponding investments of global digital business giants. These huge platform companies are currently building a global service infrastructure for digital participation and information exchange. Thanks to their innovations, they can collect information from an enormous number of data streams. These plentiful data streams enable matchless training of deep-learning analytic systems and ultimately, completely new, personalised, and targeted services.

Currently, it seems like no one dares to ask what kind of relationship will form between public institutions and people when the platform economy companies can offer significantly more noticeable and apt solutions for health, mobility, zoning, and education than any entity in the public sector. How is the special status of the public sector or high taxation justified in this future?

If the legitimacy of government erodes because its services are no longer competitive,

4 Hanson, R. (2016). The Age of Em: Work, Love, and Life when Robots Rule the Earth. Oxford University Press.
5 Parker, G. G., Van Alstyne, M. W., Choudary, S. P. (2016). Platform Revolution: How Networked Markets Are Transforming the Economy – And How To Make Them Work For You. W. W. Norton & Company.
6 Brynjolfsson, E. (2016). The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. W. W. Norton & Company.
7 Mason, P. (2016). Postcapitalism: A Guide to Our Future. Farrar, Straus and Giroux.
8 Rifkin, J. (2015). The Zero Marginal Cost Society: The Internet of Things, the Collaborative Commons, and the Eclipse of Capitalism. St. Martin's Griffin.

OPPORTUNITY: DECENTRALISED AUTONOMOUS CO-OPERATIVES AS A NEW WAY OF POLITICAL PARTICIPATION

Benefits:
Strengthening democracy through a new way of part**ICIPATION**

DEScription:
Decentralised autonomous organisations (DAO) typically act like companies: they require ownership and market structures to function. Even though DAOs are currently mainly a financial innovation, the DAOs of the future could be a decentralised, non-hierarchical tool for future political movements. Blockchain-based DAOs appear to be scalable infrastructure that works for enacting democracy. For the purposes of governance and democracy, DAOs could be structured as co-operatives instead of co*mpanies.*

In theory, decentralised autonomous co-operatives can solve a difficult problem in democracy: they offer the possibility to form associations quickly and supply them with clear, binding and incorruptible decision-making methods. In a DAO, members can present resolutions and raise important perspectives. The DAO ensures a sufficient time for deliberation and decision-making. With the help of these structures, mutual decision-making can succeed safely and securely, even without every participant needing to be physically present (cf. General Assembly of the Occupy movement).

In practice, decentralised autonomous co-operatives can offer the possibility to form consensus in motions initiated by citizens. In these cases, 'single-issue movements', like developing a specific neighbourhood or creating a local caretaker network, can be built with the DAO model. In this case, forming a consensus and activating change are achieved through the same structure.

At their best, these motions can complement democratic decision-making. It is useful for the government to help determine the logic of the practices. Ultimately, these kinds of platforms can only succeed if they have a mandate for change supported by the government.

For more see: Ethereum Foundation, DAO: https://ethereum.org/dao Rau, J. (2017). Platform co-op governance: deep democracy on scale. Medium. Available at: https://medium.com/@JenRau/ platform-co-op-governance-deep-democracyon-scale-c934f-523b80e.

a significant amount of power will be shifted away from democratic institutions to private, global companies. Can we really trust the benevolence of these companies and their will to serve all people, the entire society, and future generations? What are our actual, shared abilities to guide and determine the direction of the parties involved?

Plausible suggestions for publicly administered, competitive, and digital services, regulation of digital platforms globally, and new, egalitarian partnerships between government organisations and platform companies are missing.

The major players of the platform economy and the practices enabled by new technologies increase the aggregate productivity of society and, consequently, its well-being. At the same time, they cause short-term tensions: new technologies arriving on the market often lead to monopolies, industry and company labour cutbacks, and challenges for regulation to keep up with new technologies. Market bubbles and social disruption might follow. Digitalisation needs governance to solve these tensions.

Carlota Perez visualises the time span of technological innovations (figure 1). According to Perez, the tensions generated by new technologies slow down wide-scale adoption of the technologies' benefits. This leads to a period of insecurity. The full-scale benefits of new technologies can be distributed into society only when the institutions using the technologies are reformed, and the societal system is updated to limit the negative aspects of the technology and enable its wide-scale benefits.[9]

The gap between current practices and new practices enabled by technology is currently considerably wide[10]. Finnish government has been exceptionally open-minded in digitising the activities of different organisations. From the perspective of individual government organisations, these measures have resulted in an increase of efficiency. However, this is not enough, as full adoption of new technologies requires reforming the organisation and practices of government. Trends in administration policy currently include large-scale structural changes, increasing productivity, increasing transparency, digitalisation, seizing the benefits of technological development, utilising information, cutting regulations, and co-operation between public and private sectors.[11]

Now we need administration policy that crosses organisational boundaries, creates human-centric services and service modes based on the co-operation of public and private sector entities. That changes the whole operational environment and thus forms unforeseeable new value for everyone involved.[12] The discussion for a broad paradigmatic reform of government must start now.

THE LIFE AND TIMES OF A TECHNOLOGY

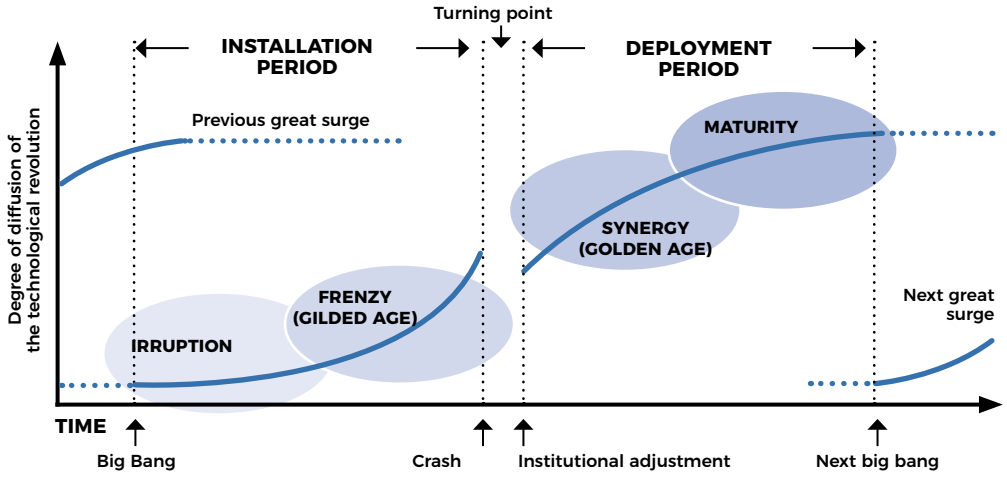


FIGURE 1: Technologies cause tensions, whose solutions require institutional change

9 Perez, Carlota. (2003). Technological revolutions and financial capital. Edward Elgar Publishing.
10 Valtiovarainministeriö (2016). Pilkahduksia tulevaisuuteen – digitalisaation ja robotisaation mahdollisuudet. Valtioneuvoston hallintoyksikkö. Retrieved 27.12.2017 from http://vm.fi/documents/10623/3507992/Pilkahduksia+tulevaisuuteen+%E2%80%93+digitalisaation+ja+robotisaation+mahdollisuudet+-raportti/e7154bd3-910a-4f99-89ee-4f9299043d3c.
11 The duties of governance policy include rationalisation, effectiveness, and productivity of governance; developing guidance; and participating and listening. From Päivi Nerg's talk at Ekosysteemifoorumi 26.1.2018.

12 Valtiovarainministeriö (2016). Pilkahduksia tulevaisuuteen – digitalisaation ja robotisaation mahdollisuudet. Valtioneuvoston hallintoyksikkö. Retrieved 27.12.2017 from http://vm.fi/documents/10623/3507992/Pilkahduksia+tulevaisuuteen+%E2%80%93+digitalisaation+ja+robotisaation+mahdollisuudet+-raportti/e7154bd3-910a-4f99-89ee-4f9299043d3c.

Why does governance need digitalisation?

There is a growing trend for deregulation in governments[13]. At the same time people and organisations have increasingly begun to utilise private digital platforms, which are in practice collections of rules. That gives platform companies great power over our lives (figure 2). The contradiction between these trends is confusing and important to understand.

It might sound even absurd how much digital platforms sometimes regulate the behaviour of their users. In the early days of the Lyft (an Uber-competitor), the customer submitted to giving a so-called fist bump to the driver, tapping her knuckles with one's own, because Lyft wanted to standardise their service with a reputation as a 'relaxed' competitor. Such extensive regulation by a modern government is difficult to imagine. Regardless, people and organisations want to use these services. What is happening here?

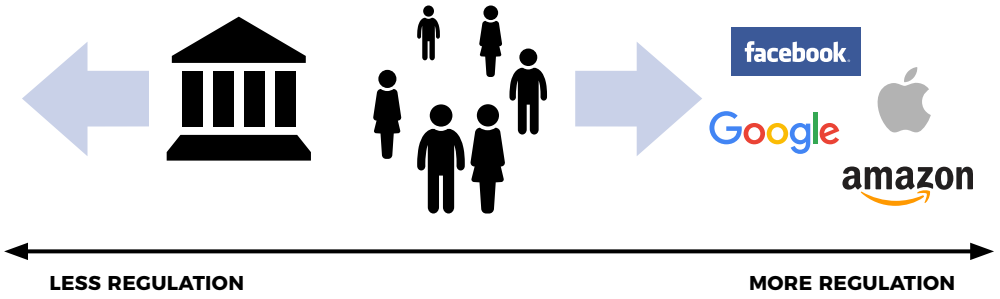
At least three things:

1. Municipal government webpages and digital services haven't actually increased citizens' possibilities to participate[15]. At the same time, sensors and omnipresent data streams enable leading with knowledge. Governments need to ask: "How can we really start moving towards digitalisation of public services?"
2. A key reason why Finland has not been fully able to meet the possibilities of digitalisation for increasing participation[16] is the lack of human-centricity. Digital platforms enable more capable citizens than ever before. Governments need to ask: "How do we ensure primacy for electronic interactions that still suits all citizens?"
3. Services are still developed largely from the perspective of individual agencies or municipalities, instead of systematically taking into account the needs of the people.[17] Ultimately, digitalisation enables combining different branches of government and building a human-centric society. Governments need to ask: "How do the boundaries and functionalities of government change as information and analyses improve?

13 Valtioneuvosto. (2015). Toimintasuunnitelma strategisen hallitusohjelman kärkihankkeiden ja reformien toimeenpanemiseksi. Retrieved 25.1.2018 http://valtioneuvosto.fi/hanke?tunnus=LVM034:00/2017.

15 Valtioneuvoston selvitys- ja tutkimustoiminta. (2017). Julkishallinnon digitalisaatio – tuottavuus ja hyötyjen mittaaminen. Retrieved 21.12.2017 from http://tietokayttoon.fi/julkaisu?pubid=16202.

FIGURE 2: While governments aim to cut regulation, people move towards regulation in the platform economy



16 There are many digitalisation measures regarding participation in Finland. Some of these measures have reached their goals. Still, digital participation takes place primarily outside government channels.

17 Valtioneuvoston selvitys- ja tutkimustoiminta. (2017). Julkishallinnon digitalisaatio – tuottavuus ja hyötyjen mittaaminen. Retrieved 21.12.2017 from http://tietokayttoon.fi/julkaisu?pubid=16202.

THE FUNCTIONS OF GOVERNMENT

TRADITIONAL FUNCTIONS of a government include securing the safety of citizens and their property, and providing various services concerning education, culture, and well-being. The Finnish constitution[14], for example, outlines the obligation of public power to ensure everyone sufficient social and health services, the right to work and a healthy environment, possibilities to participate in social activities, possibility for education past basic schooling, and the fulfillment of other basic and human rights. The public service obligation requires producing specified services for people.

In many societies, the central activities of government consist of upkeeping the production of services for citizens, companies, and communities – the clients of government. The government produces these services with the help of regulation, specific business activities, and other supporting practices.

14 Finlex. (2018). Suomen perustuslaki 731/1999. Retrieved 24.1.2018 from https://www.finlex.fi/fi/laki/ajantasa/1999/19990731.

with incentives, regulation, and laws, or we can aim to solve familiar disputes and meet changed service needs with new opportunities while still preserving our values.

Some of the duties of government might disappear when digitalisation changes practices. The private and third sectors, citizens, and even machines can carry out tasks that have traditionally been duties of the public sector. These entities can execute tasks faster, more naturally, and by offering better user experiences than the public sector.[23] Additionally, it is possible that some governance duties may disappear altogether. They no longer have to be carried out by anyone.

Although many governance duties survive, government may in many cases disappear from citizens' sight. In a digital society, for many citizens government is equivalent to governmental information systems and social media presence. They are the only parts of government that a significant portion of the population interact with.[24]

On the other hand, achieving reciprocal interaction between government and the people, digitalisation enables the active participation of the people. This is one of the central opportunities in changing government practises[25]. Denhardt and Denhardt[26] have argued that the values of governance are changing. They highlight the significance of the values of democracy, active citizenship, and equality in the governments of the future. The role of governance in society is seen as flexible and context-specific.[27]

Most people solve their problems primarily with their own resources.[28] On the other hand, as the world becomes increasingly more digital, the ability of government to support people weakens, if digitalisation is thought of as only making the activities of government more efficient. Instead, digitalisation measures can be used to change governmental activity significantly. Measures taken in Finland that have changed the role of government include a continuously up-to-date census[29], automatic passport application, checking health information online, electronic prescriptions, and pre-completed tax forms. These examples show how technology is secondary in developing digitalisation: what is essential is the ability of government to work together with the people in the digital world.[30]

WHAT DOES DIGITALISATION MEAN TODAY?

TYPICALLY, digitalisation and especially its objectives are not precisely defined. Its progress is not estimated quantitatively, and the investments and amount of labour directed toward it cannot be evaluated. At the same time, we know that digitalisation will change work, reallocate resources, generate business, and enhance practices.[18]

Digitalisation must not be seen narrowly as only making existing processes electronic.[19] From the perspective of public power, digitalisation means **reforming practice**. This definition is good, because the challenges related to developing practices have not related to technology itself for a long time, but rather how technology can be utilised.[20]

Therefore, digitalisation means a broader change than digitising information. It is a change in the actions of individuals, organisations, and society that utilises digital solutions.[21, 22]

ROUGHLY TWO DIFFERENT ATTITUDES towards digitalisation can be recognised: we can either protect the current structures

18 Valtioneuvoston selvitys- ja tutkimustoiminta. (2017). Julkishallinnon digitalisaatio – tuottavuus ja hyötyjen mittaaminen. Retrieved 21.12.2017 from http://tietokayttoon.fi/julkaisu?pubid=16202.
19 Valtioneuvoston selvitys- ja tutkimustoiminta. (2017). Julkishallinnon digitalisaatio – tuottavuus ja hyötyjen mittaaminen. Retrieved 21.12.2017 from http://tietokayttoon.fi/julkaisu?pubid=16202.
20 Valtiovarainministeriö (2016). Pilkahduksia tulevaisuuteen – digitalisaation ja robotisaation mahdollisuudet. Valtioneuvoston hallintoyksikkö. Retrieved 27.12.2017 from http://vm.fi/documents/10623/3507992/Pilkahduksia+tulevaisuuteen+%E2%80%93+digitalisaation+ja+robotisaation+mahdollisuudet+-raportti/e7154bd3-910a-4f99-89ee-4f9299043d3c.
21 Valtioneuvoston selvitys- ja tutkimustoiminta. (2017). Julkishallinnon digitalisaatio – tuottavuus ja hyötyjen mittaaminen. Retrieved 21.12.2017 from http://tietokayttoon.fi/julkaisu?pubid=16202.
22 Valtioneuvoston selvitys- ja tutkimustoiminta. (2017). Julkishallinnon digitalisaatio – tuottavuus ja hyötyjen mittaaminen. Retrieved 21.12.2017 from http://tietokayttoon.fi/julkaisu?pubid=16202.

23 Accenture. (2017). Government as a Platform: Coming Soon to a Government Near You. Retrieved 3.1.2018 from https://www.accenture.com/t20171218T065609Z__w__/us-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Local/en/Accenture-GaaP-POV.pdf.
24 Dunleavy, P., Margetts, H. (2015). Design principles for essentially digital governance. LSE Research Online. Retrieved 28.12.2017 from http://eprints.lse.ac.uk/64125/1/Essentially%20Digital%20Governance.pdf.
25 Chun, S., A., Shulmanb, S., Sandovalcand, R., Hovy, E. (2010). Government 2.0: Making Connections Between Citizens, Data and government. Retrieved 15.1.2018 from https://www.researchgate.net/publication/262211389_Government_20_Making_Connections_Between_Citizens_Data_and_Government.
26 Denhardt, J. V., Denhardt, R.,B. (2011). The New Public Service: Serving, Not Steering. 3rd ed. Armonk, NY: M. E. Sharpe. Ref. Bryson, J. M., Crosby, B. C., Bloomberg, L. (2014). Public Value Governance: Moving Beyond Traditional Public Administration and the New Public Management. Public Administration Review (4), vol. 74, 445-456.
27 Bryson, J. M., Crosby, B. C., Bloomberg, L. (2014). Public Value Governance: Moving Beyond Traditional Public Administration and the New Public Management. Public Administration Review (4), vol. 74, 445-456.
28 Illich, I. (2007). Tools for Conviviality. Retrieved 28.12.2017 from http://www.mom.arq.ufmg.br/mom/arq_interface/3a_aula/illich_tools_for_conviviality.pdf.
29 Only in Denmark and Finland do citizens not need to participate in the census themselves by for example answering a postal survey. (ibid)
30 Noveck, B. S. (2010). How Technology Can Make Government Better Democracy Stronger, and Citizens More Powerful. Brookings Institution Press.

OPPORTUNITY: DIGITAL IDENTITY THROUGH BLOCKCHAIN[31]

BENEFITS:
An opportunity for identity verification for vulnerable demographic groups

DESCRIPTION:
Economic inclusion does not cover everybody. For example, those who lose their credit standing have difficulties to access many economic services. Blockchain can be used to create a cheap digital identity that can be used to access some of these services. Digital identities can be secured for example with mobile devices through blockchain. These devices can enable users to receive for example government benefits directly without banks or local authorities. This enables for example an asylum seeker to join the local economic system.[32]

Blockchain-based identity can create security and anonymity for vulnerable groups, but also provide government the opportunity to collect anonymous data from the use of the digital identity. The government can, for example, follow which trends are present in monetary movements among users and develop support services from the basis of this understanding.

Digital identity based on blockchain is already in use in the Finnish Immigration Service[33], which enable asylum seekers to receive money from salaried work. This kind of activity helps raise people from poverty and away from dependence on social security benefits.

For more see: Finnish Immigration Service's blockchain based application for distributing money to asylum seekers 'How Blockchain Is Kickstarting the Financial Lives of Refugees'. MIT Technology Review. 5.9.2017 https://www.technologyreview.com/s/608764/how-blockchain-is-kickstarting-the-financial-lives-of-refugees/

FINLAND DISPLAYS many shortcomings when it comes to participation and acting in a digital environment. As an illustrative example on the commercial side, only 15 percent of Finnish companies sell products online, even though citizens have good preconditions for electronic purchasing.[34] Although digital service usage has increased, generalisation is proceeding unevenly between population groups.[35]

On the other hand, Finland is on the right track: many measures have been undertaken as a reaction to digitalisation. Publicly produced knowledge is increasingly more commonly open and annotated, and the Population Register Center of Finland has created a Data Exchange Layer[36] , where different government agencies can utilise each others' information. Shared knowledge and easy access to it are preconditions for utilising machine learning in government.

DIGITALISATION CHANGES THE WORLD and thus it is beneficial for government to change[37]. When government seizes new opportunities, the tasks of government are also altered.[38] So, what does a digital era government look like[39]?

31 Of course, the same goal can be reached with other distributed ledgers than blockchain.
32 UK Government Office for Science. (2016). Distributed Ledger Technology: beyond block chain. Retrieved 15.1.2018 from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/492972/gs-16-1-distributed-ledger-technology.pdf.

33 Orcutt, M. (2017). How Blockchain Is Kickstarting the Financial Lives of Refugees. MIT Technology Review. Retrieved 15.1.2018 from https://www.technologyreview.com/s/608764/howblockchain-is-kickstarting-the-financial-lives-ofrefugees/.

34 Valtioneuvoston selvitys- ja tutkimustoiminta. (2017). Julkishallinnon digitalisaatio – tuottavuus ja hyötyjen mittaaminen. Retrieved 21.12.2017 from http://tietokayttoon.fi/julkaisu?pubid=16202.
35 Koiranen, I, Räsänen, P. Verkkopalvelujen käytön ja käyttäjien muutos. Suomidigi. Retrieved 28.12.2017 from https://suomidigi.fi/wp-content/themes/suomidigi/assets/attachments/digitaalinen-suomi-1995-2015/osa2/33%20_%20Verkkopalvelujen%20kayton%20ja%20kayttajien%20muutos.pdf.
36 Valtiovarainministeriö. Palveluväylä. Retrieved 15.1.2018 from http://vm.fi/palveluvayla.

37 Jacobzone, S., Mickoleit, A. (2015). Supporting Wider Public Sector Reform: Digital Government and Cross-border Services. OECD. Retrieved 15.1.2018 from http://vm.fi/documents/10623/307541/2015+02+24+-+Helsinki+-+digital+government+-+for+public.pdf/ef820e00-3108-4e2a-9f40-e4929a8790a6.
38 Valtiovarainministeriö. (2010). Hallinto hyvinvoinnin ja talouden tasapainottajana – Hallintopolitiikan suuntaviivat vuoteen 2020. Retrieved 15.1.2018 from http://vm.fi/documents/10623/307541/Hallinto+hyvinvoinnin+ja+talouden+tasapainottajana+-+Hallintopolitiikan+suuntaviivat+vuoteen+2020pdf.pdf/8cea4349-7f57-4a4a-9b5a-136b5a4cd123.
39 Section 7 of the constitution states: 'Everyone has the right to life, personal liberty, integrity and security.' But what is digital security? Digital liberty? And in the end: what form is digital life taking?

Promise: Digital Era Government is Unbounded and Learning Continuously

UNBOUNDED AND CONTINUOUSLY-LEARNING GOVERNMENT is based on three essential factors: *data streams, analytics, and the development of the coverage and quality of governmental services.*

WHAT DOES PUTTING PEOPLE IN THE CENTER OF GOVERNANCE MEAN?

All of us are users of different public services throughout our life: we receive an education, get hospital treatment, get a pre-completed tax return, and perhaps fill out a police report. Human-centric approach raises the people's service experience into the centre of service instead of focusing on the process.

Human-centricity is best understood as a goal for governance, where people's needs are met as well as possible without bothering them. An essential way to reach this goal is to create services based on people's life events. Big life changes often connect with a need for different kinds of services, and by focusing on life events these services can be given to the person in an integrated and proactive way. This way the burdensome task of individuals to search for different services decreases. (See infobox: What are life and business events?).

In practice, human-centricity demands to give up services based on strong sector boundaries. This means that the service providers of governments must extensively cooperate in providing services to the people, so people would not even need to know which service provider or sector/agency they are dealing with.

WHAT ARE DIGITAL PLATFORMS? [40,41]

- Digital platforms are digital infrastructures that enable interaction between one or more groups.
- The platform is a technically implemented collection of rules and standards.
- Even though platforms are often presented as empty spaces for interaction, in reality they contain policies and power structures.
- The owner of the platform (typically a company) decides the rules and standards. It decides who gets to interact with whom and how.

40 Parker, G. G., Van Alstyne, M. W., Choudary, S. P. (2016). Platform Revolution: How Networked Markets Are Transforming the Economy – And How To Make Them Work For You. W. W. Norton & Company.
41 McAfee, A., Brynjolfsson, E. (2017). Machine, Platform, Crowd: Harnessing Our Digital Future. W. W. Norton & Company.

Governance as a platform of platforms

FROM THE PERSPECTIVE of platforms and public policy, governance[42] is kind of metaprogramming: the boundaries of acceptable action are built by governance.[43] As suddenly in addition to public authorities, there are for example platform economy entities regulating and directing people's behaviour, we need to investigate in what ways government can act as a regulative platform[44 45] – for people, for organisations, and for platform companies.

42 Governance can also be thought of as a Human Activity System (HAS, Checkland 1981: Systems Thinking, Systems Practice), where different subsections would be the government's goal, practices (including structure), relations (including resources and support for usage), governance system as a part of whole society, government's connections (for example trust), and government as an open part of an operational environment (including external relations).
43 Ehrsam, F. (2017). Blockchain Governance: Programming Our Future. Medium. Retrieved 15.1.2018 from https://medium.com/@FEhrsam/blockchain-governance-programming-our-future-c3bfe30f2d74.
44 Accenture. Government-as-a-Platform – Coming Soon to a Government Near You. Retrieved 15.1.2018 from https://www.accenture.com/us-en/insight-government-platform.
45 O'Reilly, T. Chapter 2. Government As a Platform. In Open Government. (2010), eds. Lathrop, D., Ruma, L. Creative Commons: USA. Retrieved 2.1.2018 from http://chimera.labs.oreilly.com/books/1234000000774/ch02.html.

GLOBAL PLATFORM ECONOMY COMPANIES act in many industries and increasingly dictate consumer's choices in the long run. If the government is to keep up with this development, digital era government must be able to develop itself multi-sectorally and for longer term, across more than individual government terms. From the perspective of platforms, the central issues of the decision-making of the digital era governance in regards to decision-making are for example API politics[46], prerequisites to access and to exit services[47], transparency of algorithms and decision-making[48], ownership of data streams[49], ownership of commodities[50], production of local value[51], taxation[52], new capabilities[53], public servants' rights[54] and the rights of the people using the platforms[55].

By platform governance, a government is able to look after people's basic rights. However, because of its nature as a service provider, government has a lot to learn from the logic of platforms, where better services are constantly developed for people based on people's data streams. The biggest promise of change for government is based on this logic: at its best, public services can significantly be improved with growing data streams and improved analytic abilities.

From data streams to centralised analytics

AS OUR SOCIETY is becoming hyperconnected, the quantity and the accessibility of data streams is continuously growing. The number of connections in time and in space between people and things is multiplying faster and faster. We speak of the internet of things, of people, of networks, of machines, and of sensors, which will enable a transformation of practice by collecting and analysing data streams on platforms through tools of machine learning.[56 57 58 59] At the same time, new, deep-learning analytic systems based on machine learning ('artificial intelligence') are able to produce improved analyses from this constantly increasing number of data streams. This steadily improving analysis can be used to improve the services. With the improved digital services, continuously better commensurable and beneficial data streams can be recognised and collected (figure 3).

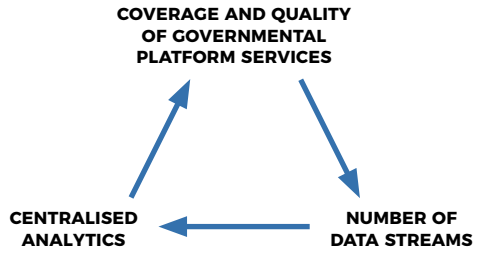


FIGURE 3: The virtuous cycle of learning government

The preconditions for digital era governance, laid out in the next chapter, are preconditions for achieving the virtuous cycle of continuously-learning government. With the help of data streams, services can be brought as close as possible to the realities and everyday life of people. Services are offered from one place or even from one digital surface, usually without specific request and according to needs. At the same time, information is gathered of what services are requested for at what time. This information is used to improve services even further. On the one hand, we can speak of government that anticipates service needs and on the other hand of government that learns from its own practice increasingly effectively.

46 How are other entities, organisations, and people able to access, utilise, and use the information, services, and algorithms that the government has created? What are the principles for third party access?
47 How are reputation (understood broadly as a feature of digital platform use, cf. Reddit's Karma and Uber's reviews) and access achieved in different parts of government? How do people get the right to use different services?
48 How can algorithms control human behaviour? Can the user affect them? How? And how can private information be utilised?
49 How are ownership of information, algorithms that affect people, and information collecting sensors' licenses agreed upon? And how is information or analyses of it in use of others, for example private and public services?
50 Who owns the physical assets, like buildings, cars, and tools? Who pays for their update and upkeep?
51 How does the value created by various services produce benefits also for local communities, like municipalities?
52 How are internal transfer payments managed on the government platform? How are citizen rights and opportunities to utilise services guaranteed?
53 How are the new skills that emerge from the characteristics of the platforms put fully to use?

54 How is the boundaries of the public servant's job drawn if a platform enables momentary participation for many people from the perspective of the service provider?
55 How can people modify and influence governmental operational principles?

56 Demos Helsinki, Avanto Helsinki, Aalto yliopisto (2015). Design for Government: Human-centric governance through experiments. Retrieved 15.1.2018 from https://www.demoshelsinki.fi/wp-content/uploads/2015/09/Design-for-Government-%E2%80%93-Governance-through-experiments.pdf.
57 Sitra. Megatrendit 2017. Retrieved 15.1.2018 from https://www.sitra.fi/aiheet/megatrendit/.
58 Sitra. Governments for the Future. Retrieved 15.1.2018 from https://www.sitra.fi/en/projects/governments-future/.
59 Demos Helsinki. The Future as Told Through the Garden and the Streets -Scenario Publication. Retrieved 15.1.2018 https://nakedapproach.fi/publications/the-future-as-told-through-the-garden-and-the-streets-scenario-publication/.

The role of people in a learning government

AT ITS BEST, the trade between sharing information and better services is fair for people. Personal data streams are not very valuable without the ability to compare analyses to others' data streams. People give government the opportunity to use their data streams, and in return they receive functional perspectives and new routines to achieve a good, curious, and capable life. The promise of government can be to refine low-value, personal, and dappled information first to analyses, then to functional perspectives for different life events, and then to routines and behaviours that improve life and business. When people are served by offering increasingly improved services, trust in government persists, and the cycle does not break. To develop practices further, a government should produce diverse services in order to understand people's needs continuously better.

However, it is not enough that we get an analysis from diverse data streams. Take for example a data stream of a person's dietary habits. Data is only useful in that it can aid in producing an analysis of the dietary habits. Analysis can help to get an insight or two on these habits. But even the insight is not too valuable, because this insight to be put into action for people to gain from it. And this action still needs to generate a routine or behaviour to make the analysis, information, and devices truly useful (figure 4). This is the other side of the life events and business approach, through which it is possible to evaluate for example new laws or operational models[60].

Improvement of service practices happens with the help of data streams and centralised analytics, but it does not mean that people would be excluded from participating in designing those services. When data streams are transparent, people can use their own activity for political influence. It is possible to imagine a radical feedback loop system based on this kind of conscious exploitation of data streams, with which government functions, modifies its activities and recognises new things belonging to the sphere of government. This feedback loop system can be broader than just a system that handles official activity. For example, it can contain democratic features like voting[61]. Additionally, part of the feedback can be gathered automatically[62]. Imagine that city government could decide on the need for bike lanes based on information where people are currently bicycling on car roads. This makes cycling itself an act of political influence. Respectively, any action can be feedback for the government – in this kind of system, everyday life becomes political[63].

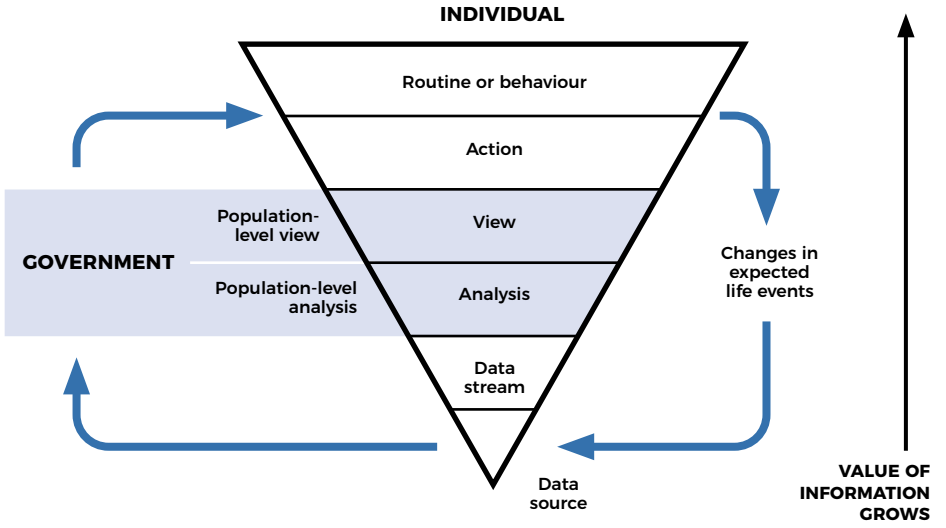


FIGURE 4: The value of information grows as it is refined. Population-level analysis and views are the most value-producing kind of refinement also from the perspective of the individual, because they enable changes in practices and routines justified on the population level.

Continuously-learning government combines three features of digital era governance – focus on people, full-scale digitalisation, and good co-operation in government – to reach three goals – effectiveness, inclusiveness, and necessary transformation of governance. This is a holistic approach, where government collaborates with people to achieve improved, mutually defined conclusions. In the changing environment, with more advanced technologies, like blockchain, augmented reality, and artificial intelligence, it is possible to accomplish a more effective, influential, and safer society than today. This kind of society is achievable if government organisations take measures together to fulfill the preconditions for digital era governance identified in this publication.

60 cf. Valtioneuvoston selvitys- ja tutkimustoiminta. (2017). Julkishallinnon digitalisaatio – tuottavuus ja hyötyjen mittaaminen. Retrieved 21.12.2017 from http://tietokayttoon.fi/julkaisu?pubid=16202.
61 Schiener, D. (2015). Liquid Democracy: True Democracy for the 21st Century. Medium. Retrieved 2.1.2018 from https://medium.com/organizer-sandbox/liquid-democracy-true-democracy-for-the-21st-century-7c66f5e53b6f.
62 O'Reilly, T. Chapter 2. Government As a Platform. In Open Government. (2010), eds. Lathrop, D., Ruma, L. Creative Commons: USA. Retrieved 2.1.2018 from http://chimera.labs.oreilly.com/books/1234000000774/ch02.html.
63 Demos Helsinki. The Future as Told Through the Garden and the Streets -Scenario Publication. Retrieved 15.1.2018 from https://nakedapproach.fi/publications/the-future-as-told-through-the-garden-and-the-streets-scenario-publication/.

OPPORTUNITY: PERSONALISED PROGRESSIVE PIGOVIAN TAX

BENEFIT:

Total benefits passes onto personal taxation, and creates incentives for rational choices.

DESCRIPTION:

Building taxation on blockchain and on decentralised accounting enables an automatically functioning tax system, where the payers and recipients would not need to consider the role of tax collection. Machine learning applications would continuously monitor transactions, which enables taxation in real time, and mistaken transactions and tax evasions are significantly easier to spot. At the same time, the system learns efficiently based on the information it gathers. Based on this information, new tax structures can be tried and tested.

Technological structure would enable for example progressive Pigovian taxes, where individuals can negotiate the behavioural impact of their taxation with the tax authorities and optimise suitable targets for taxation. In practice, a person's taxation would be predefined, but a person could give a preference for his/her taxation. Someone aiming for a healthy life could place a progressive sugar tax on themself (the third donut of the day would have a higher tax than the first). When government gathers data on the influences of taxation on behaviour and their long term market impact costs for government expenditure (e.g. diminishing health care costs), taxation can be lowered based on personal savings, resulting in a greater economic incentive for the individual.

For more see:
Ainsworth, Alwohaibi, Cheetham (2017); VATCoin: The GCC's Cryptotaxcurrency. Boston Univ. School of Law, Law and Economics Research Paper No. 17-04 Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2916321

Preconditions for an unbounded and continuously-learning government

IN THE PAST ONE HUNDRED YEARS, governments have gone through three ways of organising governance. The first of these, still influential today, is a Weberian model, whose main features are unambiguous tasks for different parts of an organisation and hierarchical supply chains. The public service career of a Weberian bureaucrat began already in the university and continued through life. The practices of these public servants were limited by a broad code of conduct, which guided the public servant machine to fulfill all its bureaucratic duties. This bureaucracy strived for equal treatment of citizens.[64]

Another approach, the so-called New Public Management (NPM), started gaining ground in the eighties. Its central feature is adapting modern business leadership principles to government: dividing large departments into smaller ones, increasing competition within the public sector, outsourcing, and establishing reward systems familiar from the private sector.[65]

Neither of these interconnected ways of organising governance enables fully seizing the benefits of digital development[66]. The Weberian approach, which guides the general organisation of bureaucracy and the practices of centrally hierarchical and effective organisations[67], generated some database-enabling standardisation and automation. On the other hand, New Public Management moved activities related to digitalisation into different departments and outsourced its development efforts. This lead to a lack of strong digitalisation know-how inside the government.

The third approach to organising governance, which supports the benefits of digital applications and technologies spreading into government better than the previous two, is so far only emerging. According to Dunleavy and Margetts, its central features are

A) 'Citizen-based holism', i.e. reorganisation of services around 'digitally enabled citizens'[68]

B) Re-aligning the goals and activities of government from the fragmentation created by New Public Management[69]

C) Full-scale digitalisation of governmental operations[70]

This stage of governance has been called *Digital era governance*[71], but the Weberian and New Public Management traditions have so far prevented this approach from completely actualising[72, 73]. Only a move towards digital era governance of the governmental operational principles will enable the use of new technologies in the services offered by the public sector. If the digital governance of the future is based only on New Public Management principles, true technology-enabled development based on the needs of people will only be achieved in part[74].

Human-centricity means reorganising public services into comprehensive citizen services. In the first stage of digitalisation of the government, this entails a promise of a one-stop-shop service model. An example of this is the one-stop-shop environmental permit project implemented in Finland, which aims to streamline different environmental permits.[75] Natural next steps to organise services are comprehensive citizen accounts like the Suomi.fi service portal. When aiming at human-centricity, it is important to understand citizens' life events more accurately and cut overlapping responsibilities and services in order to offer the most effective and clear service path as possible.

64 Dunleavy, P., Margetts, H. (2015). Design principles for essentially digital governance. LSE Research Online. Retrieved 28.12.2017 from http://eprints.lse.ac.uk/64125/1/Essentially%20Digital%20Governance.pdf.
65 Dunleavy, P., Margetts, H. (2015). Design principles for essentially digital governance. LSE Research Online. Retrieved 28.12.2017 from http://eprints.lse.ac.uk/64125/1/Essentially%20Digital%20Governance.pdf.
66 Dunleavy, P., Margetts, H. (2015). Design principles for essentially digital governance. LSE Research Online. Retrieved 28.12.2017 from http://eprints.lse.ac.uk/64125/1/Essentially%20Digital%20Governance.pdf.
67 Especially military and police organisations. On the other hand, all government sectors have inherited the central features of Weberian bureaucracy. The shift to digital era governance can be understood as the creation of a new digital layer instead of a paradigm shift. For example Dunleavy and Margetts describe digital era governance and New Public Management 'quasi-paradigms'.
68 "A citizen-based holism where services are reorganized around digitally enabled citizens"
69 "A reintegration of governmental organizations fragmented after years of NPM change"
70 "The complete digitalization of paper and phone-based systems [in governance]"
71 Dunleavy, P., Margetts, H. (2015). Design principles for essentially digital governance. LSE Research Online. Retrieved 28.12.2017 from http://eprints.lse.ac.uk/64125/1/Essentially%20Digital%20Governance.pdf.
72 Dunleavy, P., Margetts, H. (2015). Design principles for essentially digital governance. LSE Research Online. Retrieved 28.12.2017 from http://eprints.lse.ac.uk/64125/1/Essentially%20Digital%20Governance.pdf.
73 Dunleavy, P., Margetts, H. (2010). The second wave of digital era governance. LSE Research Online. Retrieved 28.12.2017 from http://eprints.lse.ac.uk/27684/1/The_second_wave_of_digital_era_governance_(LSERO).pdf.
74 Tassabehji, R., Hackney, R., Popovic, A. (2016). Emergent digital era governance: Enacting the role of the 'institutional entrepreneur' in transformational change. Government Information Quarterly (2), vol. 33, 223-236. Retrieved 15.1.2018 from https://www.sciencedirect.com/science/article/pii/S0740624X16300338.
75 Valtioneuvoston selvitys- ja tutkimustoiminta. (2017). Ympäristöllisten lupamenettelyjen yhden luukun lainsäädäntöhankkeen vaikutusten arviointi. Retrieved 15.1.2018 from http://tietokayttoon.fi/documents/10616/3866814/71_YLP_arviointi_final.pdf/154d8435-93f1-497c-824e-af4538a6fa27?version=1.0.

Unbounded and integrated governments meet the system demands of human-centricity. Governments must function unanimously when the services to citizens are aimed to be delivered as uniformly as possible, like the previously stated one-stop-shop principle. On one hand, operational principles of unbounded governments are based on centralised data management and analytic services where citizen services are developed from data streams, and on the other hand, there are decentralised, local services. Integration is based on centralised responsibility for analytics and a strong collaboration at the local level.

Full-scale digitalisation cuts across *digital era governance*. Other features of digital era governance will not be realised without full-scale digitalisation. At first, the digitalisation of different public services and 'digital by default' strategies[76] enable governmental digital services and data transfer. In the future, data sharing platforms and purchasing platforms of public centralised ICT services, like Great Britain's G-Cloud[77], enable full-scale integration of different parts of government.

In order to get the full benefits from governmental digital applications, these three features must be fulfilled simultaneously. In other words, we will not achieve all the possible benefits of digital era governance by focusing on one feature only. From this perspective, these three features can also be seen as service levels. Human-centricity is an operational principle for the service interface, unbounded integration guides the coordination of different parts of government, and full-scale digitalisation ensures that the service infrastructure will meet the new requirements.

It is important to note that this publication does not argue that the approach to governance should be fully 'moved' from one way of thinking (NPM) to another (digital era governance, DEG). Governance is about combining goals of different scales. However, it is clear that moving towards the operational principles of *digital era governance* guarantees the best way for the benefits of digital technologies to spread throughout government[78].

TABLE 1. Paradigm change from new public management (NPM) to digital era governance (DEG)

	NEW PUBLIC MANAGEMENT	DIGITAL ERA GOVERNANCE
Approach towards public sector services	Effective and decentralised services for citizens	Unbounded service paths for citizens in different life events
Principle of organisation	Decentralised silos efficient in single issues	Centralised analytics, decentralised service provision
Logic of operations	Competition and market incentives	Full-scale digitalisation
Most important steering mechanisms	KPIs, performance management, outsourcing	Strong functioning co-ordination and shared digital infrastructure

TABLE 2. Preconditions for digital era governance

	PRECONDITION: Human-centricity	PRECONDITION: Full-scale digitalisation	PRECONDITION: Co-operation and unbounded government
GOAL: effectiveness	People have control over data.	Data benefits the people both individually and collectively.	Cohesive, long-term information policy.
GOAL: inclusiveness	Focus on people.	Government is a reliable partner.	Services cross governmental boundaries.
GOAL: Structures to meet needs of people.	Contact points through life events and business events.	There's a best practice for everyone to interact with government when needed.	Government modifies and optimises its activities and tests new operational models.

In order to shift to a continuously-learning government that fulfills the preconditions of digital era governance, governments must really change through the digitalisation projects and cross-sectoral collaboration.

Next, the preconditions for digital era governance are itemised in more detail. The preconditions are described in the table below adapting Margetts' and Dunleavy's[79] threefold division (compare OECD[80]).

76 McKinsey Center for Government. (2016). Digital by default: A guide to transforming government. Retrieved 15.1.2018 from https://www.mckinsey.com/~/media/mckinsey/industries/public%20sector/our%20insights/transforming%20government%20through%20digitization/digital-by-default-a-guide-to-transforming-government-final.ashx.

77 UK Government. Digital Marketplace. Retrieved 15.1.2018 from https://www.digitalmarketplace.service.gov.uk/.

78 Margetts and Dunleavy (2015) have compiled a list of nine principles, based on the change in digital era governance, that should be considered when building good future government. They emphasise the significance of free services, sharing and utilising existing information between governmental databases, centralising services and growing them through competition. Additionally, the significance of how active users of government services are, is made central in government. Margetts and Dunleavy also think the equality of outcome, ensuring the rights of people including privacy, freedom, accessibility, and issues of good governance issues, as well as the significance of presence in social and information sharing networks are all essential value choices for government. Presence in the networks is especially central due to their continuously rising status. The value of learning from experience is also understood to be essential in developing digital governance.

79 Dunleavy, P., Margetts, H. (2010). The second wave of digital era governance. LSE Research Online. Retrieved 28.12.2017 from http://eprints.lse.ac.uk/27684/1/The_second_wave_of_digital_era_governance_(LSERO).pdf.

80 OECD. (2016). Digital Government Strategies for Transforming Public Services in the Welfare Areas. Retrieved 10.1.2018 from http://www.oecd.org/gov/digital-government/Digital-Government-Strategies-Welfare-Service.pdf.

A. Organising services around needs of people

THE REORGANISATION OF SERVICES digitally around the needs of capable people and organisations (needs-based holism[81)] implies human-centric structures for agencies and departments. The goal is to re-plan the entire service path from the perspective of data streams and needs of people. It is crucial to build agile and resilient governmental structures that follow the one-stop-shop principle. The structures can solve problems immediately when they arise. This kind of government stands out in how the people will benefit compared to inflexible and complex silo structures created by the New Public Management paradigm.[82]

At least three preconditions have to be met in order for services to truly organise around the needs of people. Firstly, people need to be able to control their own data streams. Secondly, human-centric governance principles have to be implemented clearly into governmental practice, for example through training. Thirdly, people–government interactions have to be moved to occur through life events and business events.

1. PEOPLE ARE ABLE TO GET INFORMATION ON HOW THEIR DATA STREAMS ARE USED.

CITIZENS' CAN PARTICIPATE in society life through three competing citizenships[83]: the first is participating via voting rights, the second is voting with consumer choices, and the third is data citizenship. Companies' and other organisations' ways of participating in society have also diversified in similar ways.

Currently, the challenge is that consumer citizenship also controls activities under data citizenship. As Nesta's report *Me, my data and I: The future of the personal data economy*[84] describes, we have lost control of our personal information. Certain companies benefit significantly from people's and other companies' information. How our information is used to achieve profits is not easy to uncover. Consequently, companies aim to protect their data streams[85].

As Nesta's report notes, in the future, information must be dealt with differently than before. It must not be treated as a commodity that is purchased and sold, but as common property or public good, which can help achieve great personal and public benefits.[86] Organising needs of people around service needs often requires government access to data streams of people. Government must offer something in return for this access: meeting needs of people or supporting citizenship. In a way, access to data streams can be understood like taxes: access to data streams is a legitimate request, but only if people get to know who uses their information[87], when the information is used, how the information is used, and in what way and what kind of reasonable end results can be achieved by granting access. The government's justified right to access data streams can include data streams other than those between the people and the government. For example, access to private health bracelet manufacturer data can be beneficial from the perspective of public health. In this case, government has reason to trust information received from a third party at least to some degree. A central question for both national and EU level regulation is, after all, how big digital entities can agree on the usage of citizens' information and meta-information.

2. HUMAN-CENTRIC GOVERNANCE HAS MOVED FROM VALUE TO ACTION

IN THE NEAR FUTURE, the capabilities of an average Finn in the digital world will increase. People live longer than before, and are increasingly healthier and more educated. On the other hand, part of the population is not educated and does not speak any of Finland's domestic languages as their mother tongue. Educated people are able to maintain their ability to work and social problems pile up on some demographic groups. The number of people who speak primarily foreign languages is growing in Finland. This growth can have a negative impact on integration and may polarise distribution of capabilities even more. Likewise, practical problems brought on by climate change pile on those in the weakest social positions.

There is no typical 'Finn' for whom services can be designed. As services are designed for the healthy, long-living, and educated portion of the population, we must take into account accumulated poverty, health issues, and in-

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81 Margetts, H., Dunleavy, P. (2013). The second wave of digital-era governance: a quasi-paradigm for government on the Web. Philosophical Transactions of the Royal Society. Retrieved 10.1.2018 from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.662.5234&rep=rep1&type=pdf.
82 Margetts, H., Dunleavy, P. (2013). The second wave of digital-era governance: a quasi-paradigm for government on the Web. Philosophical Transactions of the Royal Society. Retrieved 10.1.2018 from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.662.5234&rep=rep1&type=pdf.
83 "Pantzar, M. (30.10.2017). Lecture: Datakansalaisen äänioikeustaistelu." Retrieved 10.1.2018 from https://courses.helsinki.fi/sites/default/files/course-material/4523978/Datakansalaisen%20äänioikeusTieteessätapahtuu2017.pdf
84 Nesta. (2017). Me, my data and I: The future of the personal data economy. Retrieved 10.1.2018 from https://www.nesta.org.uk/publications/me-my-data-and-i-future-personal-data-economy.
85 Protecting data is the only way AI-utilising platform companies can protect themselves against competition. See for example: Koponen, J. (2017). Available at https://medium.com/@johanneskoponen/platform-economy-is-not-for-startups-anymore-you-can-only-win-with-a-corporate-data-stack-c5018c7e0a9f.
86 Nesta. (2017). Me, my data and I: The future of the personal data economy. Retrieved 10.1.2018 from https://www.nesta.org.uk/publications/me-my-data-and-i-future-personal-data-economy.
87 Mäkinen, E. (2018). Rakensitte sitten atk-järjestelmän, jota käytetään Kelasta saatavilla paperilomakkeilla. Helsingin Sanomat. Retrieved 15.1.2018 from https://www.hs.fi/mielipide/art-2000005522666.html.

heritance of social status. Digitalisation enables personalisation. The ability to participate in the digital society must be evaluated and enabled from the starting points of each person manually.

Of course, human-centricity is not a new idea for governance. Human-centricity is a traditional value of Finnish government. For example, a strategy document by the Finnish Ministry of Finance from 2013 describes its vision for the year 2020 in the following way: *'In the year 2020, services and information stemming from users' needs will ideally be easily and safely accessible and usable in different ways and tools. Accessible ways to receive services and knowledge will ideally be available for every single person when needed.'*[88] Those familiar with Finnish government services might surmise, for example when using another country's services, that this particular long-term goal of government has progressed in Finland. Still, it is not finished.

Governance whose services are more difficult to use for part of the population or organisations is clearly not human-centric for everyone. A digital government brings new ways of comprehensively fulfilling the goal of human-centric government, but human-centricity is possible only if the change in the culture of practice continues, and people are offered suitable ways to use the service. A digital interface can be a channel for people to use government services. But data can be derived also from services that are from the people's point of view carried out similarly to what was done before. A good way to achieve human-centric government is building governmental boundaries around people's life events. This will be described in the next chapter.

3. PEOPLE ENCOUNTER GOVERNMENT THROUGH LIFE EVENTS AND BUSINESS EVENTS

HOW ARE needs-based holistic services implemented?[89]

In this life, we get pregnant, are born, go to daycare, get sick, return from parental leave, learn to read, go to confirmation school, work summer jobs, complete military service, begin studies in a new town, graduate, move in together, become entrepreneurs, get divorced, change jobs, build a house, get a loan, go bankrupt, buy a car, retire, become caretakers, become widowed, move into a retirement home, and sooner or later, pass away. The ways we interact with government for example within these kind of life events will change.

Currently, government organisations' practice is typically to react to people's requests for service. Other ways of organising services do not really exist.

When a person requires a service, they must know how the service production for what they need is organised. They must know of a government or private entity that produces the specific service they need. The assumption is that those who use the services search and find what they need in the mix of departments and bureaus. How often is the right service not found? How often does the individual even know how to ask for the service they need? Why should the consumer know which function belongs for example to which branch of healthcare? When using a service, people do not want to meet a specific public servant. Instead, they want to solve some need that they have.[90] A life events based government interacts with citizens to serve a purpose that the citizen currently has.[91] [92]

88 Valtiovarainministeriö. (2013). Palvelut ja tiedot käytössä – Julkisen hallinnon ICT:n hyödyntämisen strategia 2012–2020. Retrieved 10.1.2018 from http://vm.fi/documents/10623/360816/Julkisen+hallinnon+ICT-strategia/4148ad4f-157e-4aa6-aa44-aaf395b63532.

89 Dunleavy, P., Margetts, H. (2010). The second wave of digital era governance. LSE Research Online. Retrieved 28.12.2017 from http://eprints.lse.ac.uk/27684/1/The_second_wave_of_digital_era_governance_(LSERO).pdf.

90 Valtiovarainministeriö (2016). Pilkahduksia tulevaisuuteen – digitalisaation ja robotisaation mahdollisuudet. Valtioneuvoston hallintoyksikkö. Retrieved 27.12.2017 from http://vm.fi/documents/10623/3507992/Pilkahduksia+tulevaisuuteen+%E2%80%93+digitalisaation+ja+robotisaation+mahdollisuudet+-raportti/e7154bd3-910a-4f99-89ee-4f9299043d3c.

91 Valtioneuvoston selvitys- ja tutkimustoiminta. (2017). Julkishallinnon digitalisaatio – tuottavuus ja hyötyjen mittaaminen. Retrieved 21.12.2017 from http://tietokayttoon.fi/julkaisu?pubid=16202.

92 Valtiovarainministeriö. (2016). DigiNYT: Miten digitalisointia Suomessa johdetaan? Retrieved 10.1.2018 from http://vm.fi/documents/10623/2423177/Heinonen_SpringSplash_260416.pdf/11f28d9f-848f-498e-84fe-65ccf578b502.

WHAT ARE LIFE EVENTS AND BUSINESS EVENTS?

THERE IS NO official, established definition for life events[93] yet. Life events refer to comprehensive changes in life situations, which arise often in every person's different stages of life. Life events lead to a change in how a person acts and interacts with others and the environment, and therefore they generate new service needs. Almost all life events are connected to or presuppose dealing with officials. Sufficient cross-governmental services and a genuine availability of support both before and after the event are central to preserving the feeling of control of one's life and ability to function. This is how a life event is successful.[94]

Examples of life events include employment, getting sick, starting and finishing studies, or a child's birth. The spectrum of life events changes as society changes. The life events approach is increasingly common also on the international level.

The European Union has also recognised the importance of human-centricity offered by life events and the potential for regional common market around them. The possibility of MyData can lead to expansion of information-based service markets on many sectors. Anticipatory services enable the more likely success of life events.[95]

New Zealand is an example of a country that has set as its goal reorganisation of public services around citizens' life events so that the statistical data received from people, like age and other status information, trigger offers of different public service proactively. By 2025, the country's objective is to unify public services around life events and thus enable accessibility of public services smoothly in a digital environment. It is expected that this will lead to savings and an improved image of government[96].

Business events[97] are life events for businesses. They refer to changes that have a significant effect on businesses, organisations, and their entities as a whole. Like life events, business events generate diverse cross-governmental needs. Examples of business events include founding a business, its internationalisation, and its bankruptcy.[98]

CURRENTLY, there is a lack of common goals in government agencies. Digitalisation efforts in e.g. Finland are done by multiple individual organisations such as government agencies, municipalities and ministries. The life events approach enables a significantly more uniform way to produce services than before. The life events and business events approach can also have long-term consequences. It can for example influence how ministerial mandates are distributed. What if each ministry were responsible for a group of life events?[99] Then co-operation between public servants and offices would start significantly earlier than it does now, and would meet people's needs more directly.

93 DigiNYT-sihteeristö. Kohti ihmiskeskeistä yhteiskuntaa. (unpublished).
Suomidigi. Kehitämme palvelut asiakaslähtöisesti. Retrieved 4.1.2018 from https://suomidigi.fi/pelikirja/digiperiaatteet/kehitamme-palvelut-asiakaslahtoisesti/.

94 DigiNYT-sihteeristö. Kohti ihmiskeskeistä yhteiskuntaa. (unpublished).
Suomidigi. Kehitämme palvelut asiakaslähtöisesti. Retrieved 4.1.2018 from https://suomidigi.fi/pelikirja/digiperiaatteet/kehitamme-palvelut-asiakaslahtoisesti/.

95 DigiNYT-sihteeristö. Kohti ihmiskeskeistä yhteiskuntaa. (unpublished).
European Commission. (2016). EU eGovernment Report 2016 shows that online public services improved unevenly. Retrieved 15.1.2018 from https://ec.europa.eu/digital-single-market/en/news/eu-egovernment-report-2016-shows-online-public-services-improved-unevenly.
Suomidigi. Kehitämme palvelut asiakaslähtöisesti. Retrieved 4.1.2018 from https://suomidigi.fi/pelikirja/digiperiaatteet/kehitamme-palvelut-asiakaslahtoisesti/.

96 New Zealand Government. (2017). Birth of a Child Life Event. Retrieved 15.1.2018 from https://www.ict.govt.nz/programmes-and-initiatives/government-service-innovation/easier-access-to-government-services/birth-of-a-child-life-event/.

97 Suomidigi. Kehitämme palvelut asiakaslähtöisesti. Retrieved 4.1.2018 from https://suomidigi.fi/pelikirja/digiperiaatteet/kehitamme-palvelut-asiakaslahtoisesti/.

98 Suomidigi. Kehitämme palvelut asiakaslähtöisesti. Retrieved 4.1.2018 from https://suomidigi.fi/pelikirja/digiperiaatteet/kehitamme-palvelut-asiakaslahtoisesti/.

99 Of course, there are things that fall under the responsibility of government that are not life or business events, like national defence and environmental protection. The life and business events approach is suggested for consideration specifically in organising services, not all of government.

B. Full-scale digitalisation of government

AS THE *'Why does government need digitalisation?'* chapter outlined, digitalisation means changing practices within the boundaries set by technology. In digital era governance, digital operational models are at the centre whenever possible. This kind of full-scale digitalisation includes for example identifying data streams from people's interactions regardless of whether they interface digitally or not. Full digitalisation also includes the use of robotic process automation (RPA), other kinds of process automation, and eliminating unnecessary intermediary processes, like having to go from counter to counter to satisfy a service need. This also partially means that people can operate autonomously in governmental issues more often if they are able to do so[100].

Full-scale digitalisation can be realised, but only if certain preconditions are satisfied. Firstly, people must trust government, so that government can credibly and justifiably request access to personal data streams. For this reason, the role of information security is especially important. Additionally, a digital government is only possible if digital and non-digital services are not placed in opposition to each other. This means offering services also to those that do not have the ability or possibility to use the newest or technologically most advanced way of interacting with government. Full-scale digitalisation is useless if abilities to utilise the huge amount of information are not built for both improving personal service and developing the services even further. Especially using artificial intelligence, i.e. different machine learning systems, in analysing governmental data streams, is a great opportunity.

4. INFORMATION SECURITY IS A PRECONDITION FOR PEOPLE TO KEEP TRUSTING THE GOVERNMENT: THE GOVERNMENT TAKES CARE OF ITS PEOPLE AND THEIR INFORMATION

SOCIETAL TRUST has an interdependent relationship with digitalisation. The facelessness of electronic services makes trust a central element in their use and development. Further, decreased societal trust may influence how new technological possibilities are utilised. Common and open rules must be created for the information kept by the government. Trust in society and towards government also partly affect the adoption of new technologies and whether electronic services increase insecurity instead of security. The level of trust varies in demographic groups and these differences need to be taken into account especially in developing electronic services.[101]

In governance, it is important to understand that trust is reciprocal. Government must first trust citizens, companies and communities, before it can demand trust from them. **Decreasing obligatory reporting** in the future is one clear way to concretely show the existence of reciprocality. Currently, the information needed does not always travel smoothly between different parties, which has lead to the copiousness of obligatory separate reporting. In practice, from the perspective of companies, decreased reporting would mean that as new information is generated onto a company's system, that information could be trusted by public officials without the need for separate reporting. From the citizens' perspective, this implies that in the future, when for example a hypothetical well-being bracelet produces a certain kind of information, health officials could directly trust its quality and utilise the information. Thus, officials could use and follow information from other entities without the need for separate reporting.

Additionally, it would be important to **recognise different demographic groups' varying needs** and the facts that affect the formation of societal trust on their part. This would also enable strengthening national unity, preventing social exclusion, and advancing participatory democracy.

The **transparency** of government data use and activities is essential for maintaining the trust of citizens. Citizens should have enough knowledge of how officials work, their modes of operation, and future plans. Citizens should understand why their information is being used and how their information is being mixed with others' information. In governance, this is also connected with fulfilling the generally recognised principle of transparency. Additionally, operational transparency enables citizens to trust the fact that government will secure their human and basic rights. In this case, granting government access to personal data streams feels fair. This way of thinking warrants people's respect towards government's activities.

The ongoing erosion of societal trust has a clear consequence: the erosion of the preconditions for organising and operating future oriented digital governance. The development of digitalisation and the strides already taken by many forerunner public organisations will amount to nothing without the strong, necessary base created by trust in society.

100 Margetts, H., Dunleavy, P. (2013). The second wave of digital-era governance: a quasi-paradigm for government on the Web. Philosophical Transactions of the Royal Society. Retrieved 10.1.2018 from, osoitteesta http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.662.5234&rep=rep1&type=pdf.

101 Kasvi, J. (2017). Digitaalista kaikkien valtaa. Suomidigi: Digitaalinen Suomi 2017, 493-502. Retrieved 2.1.2018 from https://suomidigi.fi/digitalisaatio/digitaalinen-suomi-2017/.

TRUST has many components that must be attended to. In digital era governance, the digital components of security are highlighted: information security and cyber security. In the future, information security must be engineered so that it is a built-in part in all activity. In addition to these digital security categories, governance must generally enable participation and access to services. This kind of governance warrants the legitimacy and trust between government and the public.

TRUST AND SECURITY

ALREADY SINCE THE 19TH CENTURY, trust has been understood to weave society and its members together. Trust has been thought to be an essential starting point for a well-functioning society, economy, democracy, and effective government. Trust includes social order and governance of diverse social groups simultaneously, and, from the perspective of the party placing their trust, always contains the risk of being let down.[102]

Societal trust is understood as the belief held by members of society that others will not try to deliberately cause them harm, but instead strive for compromise as overlapping interests are recognised. This includes trust towards both other citizens and institutions and support aimed at them. Societal trust is especially important when we come across unanticipated situations.103

Societal trust or the lack of it experienced by the public has been seen to correlate with other factors, which also have mutual causal directions. It can be seen to be connected with an individual's personal or social characteristics, cultural viewpoints, and, on the other hand, the practices of society and its main institutions. Societies with diverse organisational practices have typically been seen to have a stable trust base, but causal relations that affect trust have not been able to be studied indisputably. Minimized differences in living standards and equality in opportunity have been observed to correlate positively with social cohesion.104

It is worth noticing that distrust towards government does not automatically weaken the institutions essential for a good society: in some cases, distrust can act as a catalyst for necessary changes.105

Trust affects security. Security can be understood as both a feeling and an objective state. Defining the concept indisputably is problematic. Security refers to the state where no threats are directed at an agent or where an agent has the opportunity to protect herself from the threats. Security can be seen holistically for example from political, social, economic, military and environmental perspectives or more narrowly from the perspective of some specific point of view or entity. Security can additionally be for example a quality of an individual or society.106

102, 103, 104, 105 "Jyväskylän yliopisto. Kansalaisyhteiskunnan tutkimusportaali: luottamus. Retrieved 3.1.2018 from http://kans.jyu.fi/sanasto/sanat-kansio/luottamus.
Kela. (2010). Luottamus ihmisiin ja luottamus instituutioihin Euroopassa. Retrieved 3.1.2018 from https://helda.helsinki.fi/bitstream/handle/10138/16514/Nettityopapereita12.pdf?sequence.
Sitra. (2013). Luottamus on yhteiskunnan liima. Retrieved 3.1.2018 from https://www.sitra.fi/artikkelit/luottamus-yhteiskunnan-liima/.

106 Maanpuolustuskorkeakoulu. (2008). Turvallisuus käsitteenä. Retrieved 3.1.2018 from http://www.doria.fi/handle/10024/74107.

CYBER SECURITY

CYBER SECURITY REFERS to the security of our parallel, digital reality. Cyber security intertwines closely together with the traditionally understood concept of security in the physical world. In fact, activities in the physical world are often dependent on activities in the digital world. Cyber security should be handled as an inseparable part of our comprehensive security. The idea of cyber security is relatively new: it had not been taken into use in national government officially until 2010, and the international cyber security strategy was published in 2013.[107]

107 Limnéll, J. Kyberturvallisuuden ja turvattomuuden kilpajuoksu. Suomidigi. Retrieved 3.1.2018 from https://suomidigi.fi/wp-content/themes/suomidigi/assets/attachments/digitaalinen-suomi-1995-2015/osa1/30%20Kyberturvallisuuden%20ja%20-turvattomuuden%20kilpajuoksu.pdf.
Valtiovarainministeriö (2016). Pilkahduksia tulevaisuuteen – digitalisaation ja robotisaation mahdollisuudet. Valtioneuvoston hallintoyksikkö. Retrieved 27.12.2017 from http://vm.fi/documents/10623/3507992/Pilkahduksia+tulevaisuuteen+%E2%80%93+digitalisaation+ja+robotisaation+mahdollisuudet+-raportti/e7154bd3-910a-4f99-89ee-4f9299043d3c.

PRINCIPLES BROADLY RELATED to cyber security can be summed up as the following: *secure by design, privacy by design, and safe by design*.[108, 109] These approaches mean that in regard to cyber secure activity, privacy, and automation, cyber security has already been taken into account in the planning phase of the project at hand. The central idea is that, for example, making operational principles secret does not achieve security. Instead, we must assume that information security problems and attempts at privacy breaches will happen inevitably, and programmes must be designed to strive for full security and privacy right from the beginning. For example, with the help of open source, the security of programmes can be extensively tested and evaluated.[110, 111]

5. SERVICES ARE PROVIDED TO SUIT THE PEOPLE

GETTING PAST the dichotomy of digital and non-digital services enables smoother public services. In the future, even services that do not appear as digital services to people also produce digital data streams.

"One of the first steps to increasing exploitation of these learning systems is to develop a 'data first' mind-set at a much earlier stage in the policy process [in the UK]."[112]

The range of services is always a continuum, and depending on the abilities of people, the digital interface can be situated in different places. Where some prefer self-service, others might do better with artificial-intelligence-aided vocal guidance or a personal helper whose markings are put into a digital system.

In the end, all services are digital services, but that does not entail users learning unreasonably many new ways of interacting with government. Digital interfaces can be complementary, streamlining, or make services easier. Savings generated from streamlining digital services must be invested wisely into chosen user interactions. This requires measuring and understanding administrative efficiency and impact in a new way.

6. GOVERNMENT USES DATA STREAMS BETTER FOR EXAMPLE BY UTILISING ARTIFICIAL INTELLIGENCE

UTILISING TECHNOLOGY FULLY to achieve governance that is both learning and anticipating is important. Otherwise governmental digitalisation efforts are all useless. This is why a central precondition for digital era governance is utilising technological possibilities. However, utilising possibilities is not straightforward. Current machine learning systems require huge amounts of data. Even governments might lack the data at its disposal to utilise all the available possibilities. At the same time, pioneering technological breakthroughs in for example anonymising data with the help of simulations[113] and devising semi-supervised learning methods that achieve equal machine learning results with smaller datasets[114] are being developed in Finland.

Another important precondition is getting the best talent to work in government projects. Those skilled in machine learning are especially in demand on the labour market. However, governments typically have just a few perks to offer. Large data sets offer an opportunity to be a part of a grand transformation, creating the world's best people-serving governance. Being a forerunner in this kind of government that can use data to anticipate and learn also has the potential to shape discourses and future projects on a global scale.

Furthermore, being a forerunner of government bolsters the country brand and attracts the best talent to realise the digital reforms. On the other hand, as a forerunner, we meet the accompanying challenges first, and will also probably make some mistakes. Becoming a forerunner should be considered carefully.

108 Valtiovarainministeriö (2016). Pilkahduksia tulevaisuuteen – digitalisaation ja robotisaation mahdollisuudet. Valtioneuvoston hallintoyksikkö. Retrieved 27.12.2018 from http://vm.fi/documents/10623/3507992/Pilkahduksia+tulevaisuuteen+%E2%80%93+digitalisaation+ja+robotisaation+mahdollisuudet+-raportti/e7154bd3-910a-4f99-89ee-4f9299043d3c.

109 See also O'Reilly, T. Chapter 2. Government As a Platform. In Open Government. (2010), eds. Lathrop, D., Ruma, L. Creative Commons: USA. Retrieved 2.1.2018 from http://chimera.labs.oreilly.com/books/1234000000774/ch02.html.

110 Käytännön esimerkkejä: Software Engineering Institute. (2009). Secure Design Patterns. Carnegie Mellon. Retrieved 10.1.2018 from https://www.sei.cmu.edu/reports/09tr010.pdf.

111 Cavoukian, A. Privacy by Design, the 7 Foundational Principles – Implementation and Mapping of Fair Information Practices. Retrieved 10.1.2018 from https://www.iab.org/wp-content/IAB-uploads/2011/03/fred_carter.pdf.

112 Nesta. (2015). Machines that Learn in the Wild – Machine learning capabilities, limitations and implications. Retrieved 28.12.2018 from https://www.nesta.org.uk/sites/default/files/machines_that_learn_in_the_wild.pdf.

113 Ks. esim. NIPS Foundation. (2017). Differentially private Bayesian learning on distributed data. Retrieved 4.1.2018 from https://papers.nips.cc/paper/6915-differentially-private-bayesian-learning-on-distributed-data.

114 Ks. esim. Rasmus, A., Valpola, H., Honkala, M., Berglund, M., Raiko, T. (2015). Semi-Supervised Learning with Ladder Networks. Retrieved 4.1.2018 from https://arxiv.org/abs/1507.02672.

C. Integrating the goals and practices of government

THE CONTINUOUS, developing cooperation between different parts of government flips the direction on the small operational silos caused by New Public Management thinking.

It is especially important to set themes, that have previously been either outside of government responsibility or the responsibility of an individual government organisation as a shared theme for the entire government. In the governance of the digital era, centralised operations have to conduct a task only once – a move away from conducting identical operations simultaneously in different parts of government. Costs decrease when support functions and services are shared, and communal and multiple hierarchies based on New Public Management thinking disappear. Additionally, policies and services are significantly simplified.[115]

To what extent are governmental organs really organised into silos? According to an audit by the National Audit Office[116] *'electronic services are developed as silos, and start from the needs of the government itself. The audit found the development of several services strongly led by technology. The development of services was not integrated into the development of operations. – – The customer-based developmental model has not been achieved in the development of electronic services.'*

It is impossible to reclaim the benefits of technology so long as operations and information systems are developed inside organisations, starting only from the organisation's own needs. However, the constitution decrees a strong right to self-determination for both municipalities and different sectors of government. This forms two-way silos for developing current operations.[117]

This kind of organisation-oriented approach obstructs human-centricity. It prevents identifying possibilities for acting otherwise when the service needs of people cross agencies and municipalities. Users do not operate and live in the silos that government is divided into. They are not particularly interested in who has the responsibility for producing whichever service, so long as it is produced. Furthermore, organisation-oriented digitalisation projects typically only strengthen current processes of service, even though they should surpass them. From a systemic perspective, sensible practices are found only by identifying the ways service users really behave, their causes, and the users' natural service needs. [118]

The nature of people's interactions make the complete prevention of silo-forming probably unrealistic, but reducing overlapping work structurally is possible and even probable in the unbounded government of the digital era. For example, building government service operations **around life events makes co-ordinating different governmental organisations based on the needs of people easier**.

In other words, currently horizontal problems, like working life development, children's and young people's well-being, and sustainable growth, are tackled with a vertical organisation structure. The problems mentioned are divided between each ministry. The same kind of silo formations are also visible in information systems, research, language, statistics, and data directories.[119]

Improving cooperation between different sectors of government and integrating their operations and goals is possible only when at least the three following preconditions are satisfied. First, cooperation between sectors of government is possible if information policy enabled by common services and co-operation is centralised. Second, mere coordination is not enough: integration happens when boundary-crossing collaboration between different sectors of government increases as the result of a genuine need. Third, running experiments is a precondition. These experiments can be used to lightly test co-operative operational models and operations whose effects are not accurately known.[120]

115 Margetts, H., Dunleavy, P. (2013). The second wave of digital-era governance: a quasi-paradigm for government on the Web. Philosophical Transactions of the Royal Society. Retrieved 10.1.2018 from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.662.5234&rep=rep1&type=pdf.

116 Valtionhallinnon tarkastusvirasto ref. DigiNYT: Miten digitalisointia Suomessa johdetaan? Olli-Pekka Heinosen alustus. Available at http://vm.fi/documents/10623/2423177/Heinonen_SpringSplash_260416.pdf/11f28d9f-848f-498e-84fe-65ccf578b502

117 Valtiovarainministeriö (2016). Pilkahduksia tulevaisuuteen – digitalisaation ja robotisaation mahdollisuudet. Valtioneuvoston hallintoyksikkö. Retrieved 27.12.2017 from http://vm.fi/documents/10623/3507992/Pilkahduksia+tulevaisuuteen+%E2%80%93+digitalisaation+ja+robotisaation+mahdollisuudet+-raportti/e7154bd3-910a-4f99-89ee-4f9299043d3c.

118 Valtiovarainministeriö (2016). Pilkahduksia tulevaisuuteen – digitalisaation ja robotisaation mahdollisuudet. Valtioneuvoston hallintoyksikkö. Retrieved 27.12.2017 from http://vm.fi/documents/10623/3507992/Pilkahduksia+tulevaisuuteen+%E2%80%93+digitalisaation+ja+robotisaation+mahdollisuudet+-raportti/e7154bd3-910a-4f99-89ee-4f9299043d3c.

119 DigiNYT: Miten digitalisointia Suomessa johdetaan? Olli-Pekka Heinonen's talk. http://vm.fi/documents/10623/2423177/Heinonen_SpringSplash_260416.pdf/11f28d9f-848f-498e-84fe-65ccf578b502

120 In Swedish, a useful term is målkonflikt, which supports initiating trials. Various goals can be openly admitted without the term 'conflict of interest', which exacerbates the conflict, and co-ordinating these goals can be attempted with experimental designs.

7. CO-ORDINATED INFORMATION POLICY IS A PRECONDITION FOR THE DEVELOPMENT OF DIGITAL ERA GOVERNANCE OVER GOVERNMENT TERMS

WHEN THE INFORMATION POLICY DISCUSSION[121] started to become more widespread, the necessity of the discussion became apparent[122]. This publication does not rehearse the views in these discussions. Instead, it focuses on how information policy can support the long-term development of digital era governance over individual government terms.[123]

In order to ensure the effective, useful, diverse, and safe use of information, policies regarding information should be clear. Currently, utilising information is especially limited by the inaccessibility of information or its accessibility in only the wrong form. Principles and rules concerning data collection are examined especially on the EU-level. Objectives are often contradictory: for example, currently data masses from non-public entities that are needed as teaching material for machine learning systems are not easy to utilise in for example protecting the entities' personal businesses or protection of privacy.

Information policy can give clear guidelines for how the use of data streams and the adoption of digital technologies is monitored and how the success of the policies accompanying them is measured. The task of information policy is to keep getting more and more value from data. This is essential already for responsible accounting in the public sector. However, to enable the shift to digital era governance, it is critical to also define other measures of influence than just economic attributes.[124]

Information policy guides different government sectors' tasks regarding information and digitalisation. It is natural that data banks and data-based service development is centralised nationally, whereas responsibility for providing services and their quality is naturally set on the municipality and regional levels, close to the citizens. Additionally, the digital architecture can be secured in a centralised way, and lessons should be sought also from international networks like the EU and OECD. However, it is essential for co-operation that all levels of government are included in developing services through shared development projects. Participation through ecosystems and co-creation are a way to improve user-orientedness. This way the units and parties at user interfaces get to define the direction of operations, which improves operational quality even further. Co-operation between the public, private, and third sectors is built especially around shared knowledge.

Control of each individual's data streams will increase in the future.[125] Consequently, in the future a central task of information policy will be to ensure people's and governments' access to data streams. It is also important to allow people to follow who uses their personal information. In Finland, the crown jewels are the Finnish basic registers, and if they cannot be utilised and updated to the digital era governance fully, a significant opportunity to build a better society will be lost.

8. CO-OPERATION OVER BOUNDARIES BETWEEN DIFFERENT PARTS OF GOVERNMENT HAS INCREASED SIGNIFICANTLY THROUGH DIGITAL COLLABORATION

AT THEIR BEST, cooperation between different parts of government, integration of digital systems, and active information sharing about the adoption of digital applications inconspicuously make the boundaries between organisations more permeable. However, this requires a lot of boundary-crossing cooperation from each government organisation.[126, 127]

For people, digital services prove useful if they increase the quality of services and decrease the time and effort used to get the service. For this reason, the resources reserved for services must be used as effectively as possible and must avoid overlap. The integration of services must also be advanced as much as possible (see precondition 3). For these goals, it is important that smooth, concrete collaboration arises between the different parts of government in addition to a co-ordinated information policy. For example, this means

121 Information policy is a set of long-term policies and principles, which concern information production, acquisition, collection, maintenance, opening, sharing, moving, use, and storage. Information policies can target for example information production, treatment, sharing, combining, protecting, access rights, or responsibilities. From Olli-Pekka Rissanen's talk at Tietopolitiikan ekosysteemifoorumi.

122 For example: more information than ever is available, but utilising it is still fragmented. This and other good justifications can be found for example in The Ministry of Finance publication 39/2017: 'Suomi tarvitsee tietopolitiikkaa' ('Finland needs information policy').

123 Cf. Denmark's ICT-strategy: Digitaliseringsstyrelsen. (2017). New strategy for ICT management in central government to raise quality of national ICT management. Retrieved 15.1.2018 from https://www.digst.dk/Servicemenu/English/News/New-strategy-for-ICT-management-in-central-government-to-raise-quality-of-national-ICT-management.

124 Valtioneuvoston selvitys- ja tutkimustoiminta. (2017). Julkishallinnon digitalisaatio – tuottavuus ja hyötyjen mittaaminen. Retrieved 21.12.2017 from http://tietokayttoon.fi/julkaisu?pubid=16202.

125 Cf. The EU General Data Protection Regulation (GDPR).

126 OECD. (2015). Whole-of-Government Strategy Steering: Towards a Blueprint for Reform. Retrieved 15.1.2018 from http://vm.fi/documents/10623/307541/FINEST+COG+Recommendation+Helsinki+Launch.pdf/703af47f-8dd4-492b-a986-b9e5e63262b1.

127 OECD. (2015). OECD Public Governance Reviews: Finland – Fostering Strategic Capacity across Governments and Digital Services across Borders. Retrieved 15.1.2018 from https://www.oecd.org/gov/key-findings-finland.pdf.

common digitalisation projects between municipalities or seamless co-operation between coordinating ministries and service-offering counties and municipalities. Both horizontal and vertical collaboration and information sharing eliminate the number of overlapping operations, decrease unnecessary use of labour resources, and save costs.

Co-operation between different parts of government is also critical from the perspective of the public sector's equality objectives. If the different parts of government act alone on their own projects, services provided for the people may vary significantly depending on for example the size and resources of their town of residence.

Obstacles for collaboration are often simple. Key individuals do not have time or resources to participate in doing things together or the concrete benefits of collaboration are unclear. It is important to find clear solutions for these well-known but difficult collaboration problems between people to allow successful collaboration.

9. CONTRADICTORY GOALS BETWEEN DIFFERENT PARTS OF GOVERNMENT AND DIFFERENT PEOPLE CAN BE OVERCOME WITH EXPERIMENTS

IN RECENT YEARS, institutions like the OECD[128], the European Commission[129] , and the White House[130] have encouraged their member states to utilise experiments in connection with their policies. Experiments carry many benefits. At their best, experiments speed up development, help understand the final user, enable developing large wholes better by splitting them into smaller parts, and produce evidence for the functionality of new policies and services before they are implemented on a large scale[131]. Government experiments have been used to achieve significant benefits. For example, the British BIT managed to save approximately 300 million pounds in public sector spending in five years[132].

However, many experiments conducted by governments have so far been usually misunderstood or understood very narrowly. The OECD[133] notes in its publication that experiments are utilised currently mostly in testing the functionality of services. This is because most governments, such as the governments of the United States and Great Britain, have positioned experiments as a tool to be used at the end of the policy design process. Consequently, experiments have mainly had the opportunity to modify or improve the public service or policy slightly, or, in other words, merely strengthen existing policy. So far, policies have not been able to be used to create significant internal societal or governmental reforms.

In the future, this will change, and experiments will be central in reforming governments. Finland has good starting points for utilising experiments, because currently Finland is one of the top countries in public sector experiments. The government programme of Prime Minister Juha Sipilä (2015) highlights experiments as a tool for reforming society. In a short time, Finns have founded experiment agencies (Prime Minister's Office and Finnish National Agency for Education), experiment networks (Trafficlab and 'experiment godparents'), an ethical code for societal experiments (Aalto university and Demos Helsinki, 2016), a juridical code for experiments, and a digital experiment platform that supports experiment suggestions from citizens[134]. The experiment programme has been raised into the government programme and many ministries now execute experiments influenced by the government programme. The OECD[135] recently highlighted the experiment model of Finnish government as one of the world-leading examples of how a government can operate better in an increasingly complex environment. The first version of the Finnish experiment model has been documented in the Design for Government report created for the Prime Minister's Office[136].

The new experiment practices developed in Finland can be a significant part of a critical period where government moves towards a new paradigm. An exceptional feature of the model is that the experiments have been raised on the highest political agenda in the country.

128 OECD. (2017). Embracing Innovation in Government – Global Trends. Retrieved 23.1.2018 from https://www.oecd.org/gov/innovative-government/embracing-innovation-in-government.pdf.
129 Euroopan komissio (2013). Powering European Public Sector Reform: towards a new architecture. Report of the Expert Group on Public Sector Innovation. Luxemburg: Publications Office of the European Union. Available at: https://ec.europa.eu/digital-single-market/en/news/powering-european-public-sector-innovation-towards-new-architecture.
130 The White House. (2015). Executive Order – Using Behavioral Science Insights to Better Serve the American People. Available at: https://obamawhitehouse.archives.gov/the-press-office/2015/09/15/executive-order-using-behavioral-science-insights-better-serve-american.
131 Demos Helsinki. Liikennekokeilijan opas. Retrieved 10.1.2018 from https://www.lvm.fi/lvm-site62-mahti-portlet/download?did=190083.

132 Cabinet Office, Government of UK. (2012). Government's nudge unit goes global. Retrieved 23.1.2018 from https://www.gov.uk/government/news/governments-nudge-unit-goes-global.
133 OECD. (2017). Behavioural Insights and Public Policy – Lessons from Around the World.

134 Kokeilun paikka (Place to experiment): https://www.kokeilunpaikka.fi/fi/.
135 OECD. (2017). Systems Approaches to Public Sector Challenges. Retrieved 10.1.2018 from http://www.oecd.org/publications/systems-approaches-to-public-sector-challenges-9789264279865-en.htm.
136 Demos Helsinki. (2015). Design for Government: Humancentric governance through experiments. Retrieved 10.1.2018 from https://www.demoshelsinki.fi/en/julkaisut/design-for-government-humancentric-governance-through-experiments/.

The prominence achieved by the experiment methodology has enabled advancing substantial, bold, new policies: for example, universal basic income has been advocated in various political parties' plans and discussions since the 1960s. Universal basic income has not been able to progress before the experiment programme because there has been no guarantee of its functionality, and, due to its scale, the possible failure of the policy is too great. Experiments have created a safe space for studying the functionality of radical and uncertain, but possibly very beneficial policies.

The Finnish experiment model is also special because it has enabled wide-scale collaboration in policies that are stagnated due to disagreement and conflicts of interest as well. For example, the TAIKA project of the National Ministry for Education and Culture has brought the social and health sectors together with the cultural field to outline the conditions in which art could be integrated sustainably into social and health services. TAIKA involves seven small experiments and two verificatory experiments, which test different ways of producing well-being with art in traditional social and health service environments. The broad goal of the TAIKA project stems from the government programme, but the experiment model has enabled the partial opening of the agenda. Because the goals of the experiments are planned together with over 40 different stakeholders (including both art and social and health groups) and final users are actively listened to throughout the experiment phase, prefabricated legitimacy for building policy has been created even before the experiment results are ready. The Finnish model of open and shared planning experiments is starkly different to for example the British model, which has been criticised for example for bypassing democracy and generating distrust[137].

A central feature of digital era governance is the ability to learn quickly and make decisions based on the lessons learned. However, learning is not only about testing services' and policies effectiveness. Preparing policies and reforming governance is about different perspectives, beliefs, values, and valuations. Complexity within government and its goals is decreased in the Finnish experiment model through co-development. When the entities linked to policy goals can be made to understand each other, it is possible to define what kind of things should work in order to keep the policy desirable. Small preparation teams do not need to make many assumptions, instead the perspective on different aspects of goals and challenges is broader. The complexity of the fickle world shrinks when goals are not overplanned, but approached by doing and learning from doing. Field experiment designs can be used to reliably test whether a specific policy can work and, if so, under what conditions. This way experiments can build a human-centric, openly developed, and evidence-based new governance piece by piece.

137 The Guardian. (2014). Nudging is anti-democratic and anti-political. Retrieved 15.1.2018 from https://www.theguardian.com/politics/2014/may/02/nudging-anti-democratic-anti-political.

Towards a sustainable digital information society

DIGITAL GOVERNANCE CAN IMPROVE accessibility, transparency, and openness. However, it is worth noting that digitalisation also builds control mechanisms[138]. A good example of this is China's social credit system.[139] To restrain structures of digital control, the government must be built on trust.

The concept of sustainable digital information society refers to building forms of service and an operational environment where a selection of services that utilises data and abilities is adapted to the opportunities and needs enabled by digitalisation. This adaptation must take place from as sustainable a basis as possible. Building forms of service must begin from needs of people – cost-effectively, information-securely, respecting privacy, and enabling broader inclusion.

Enabling sustainable digital information society requires building governance on a shared digital platform. With the help of a shared digital platform, governments, the people, and private service providers can easily and safely utilise information from each other for the benefit of the individual and the community. People must have the opportunity to control their own information and primarily utilise government services and algorithms automatically. Enabling sustainable digital information economy requires reciprocal trust between government, people, and third parties.

In the sustainable digital information society, government and its constituent private service providers must be able to anticipate people's service needs. This happens for example through examining people's life events. This requires cross-governmental collaboration and taking differences of people into account. Additionally, digital and other services must support each other as services are primarily digital. The task of officials will remain supporting people actively if necessary, for example by strengthening their abilities.

The sustainable digital information society is capable of adapting to the large-scale changes present in our current operational environment. In the government of the sustainable digital information society, the primacy of digital services, the foresight of service selections, and effective use of shared information are emphasised. Consequently, the government will be able to adapt quickly if necessary. Still, the basic duty of government has not changed: it must provide crucial, specified services even as the world changes.

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139 Hvistendahl, M. (2017). Inside China's Vast Experiment in Social Ranking. Retrieved 15.1.2018 from https://www.wired.com/story/age-of-social-credit/.

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