EUROPEAN DIGITAL FORUM

Government of the Future

How Digital Technology Will Change the Way We Live, Work and Govern

DIGITAL INSIGHTS: SPECIAL EDITION

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Just another Tuesday?

Tuesday, 01 January 2030 began like any other. Throughout the world's most advanced economies, people awoke in a digitally-satiated environment, surrounded by wearable and voice-operated devices.[1] Wireless Internet connection had become ubiquitous 10 years before; by the 2030s, wireless was the common standard for power transmission too, largely eliminating the need for cables of any sort.[2] Many people rode that day in electric cars, quite a few of them self-driving.[3]

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1 Marc Curtis, "Wearables, Hearables and Nearables Won't Dethrone Smartphones," *The Guardian*, 10 February 2015. http://www.theguardian.com/media-network/2015/feb/10/wearables-hearables-nearables-smartphones

2 The Economist, "Wireless Charging: Coiled and Ready to Strike," *The Economist*, 27 June 2015. http://www.economist.com/news/science-and-technology/21656134-electronics-has-already-cut-data-cord-can-it-now-cut-power-cord

3 Ibid., "The Economist Explains: Why Autonomous and Self-Driving Cars Are not the Same," *The Economist*, 01 July 2015. http://www.economist.com/blogs/economist-explains/2015/07/economist-explains

Most work was no longer tied to any specific physical location or jurisdiction. "e-Residency," a transnational digital identity for citizens and non-residents, spearheaded by the Republic of Estonia in 2015, was now provided by many jurisdictions.[4] Human-machine and human-algorithm interaction interplays had dramatically changed work place and organisational governance. Digital technology powered billions of microbusinesses that operated seamlessly across borders and workforces. Many jobs, such as word processor, typist and switchboard operator, had disappeared as digital devices, gadgets, computers and robots took over these routine tasks. The remaining occupations were heavily digitised so that almost 90% of jobs required digital skills (which were taught routinely in advanced economies to children from their infancy). For example, farmers had become white-collar specialists leveraging digital technologies to effectively manage cattle and crops, called "precision farming manager."[5] Meanwhile, a new breed of occupations emerged and grew in popularity, largely compensating for the jobs lost. They were drone navigator, augmented reality operator, data scientist and others.[6]

Given all the exciting transformational developments in the economy and society, government – an institution that had existed in one form or another since the early days of humankind – reassessed its mission to meet the demands of a vastly better educated, more demanding and digitally literate population. This involved not just a technical, but a full political paradigm shift. In an era of constant human mobility and business operations transcending national borders, governments in most advanced economies embraced a "client-oriented" and "user-centric" approach. Governments also reassessed what they did, putting more emphasis on competitiveness. They competed for talents and firms by offering stable platforms for enterprise and enhanced public services for citizens and residents in their jurisdictions.[7] Centralised administrative hierarchies gave way to flexible networked structures. And, while advanced economies were still deeply democratic societies, with more people voting directly in real time on real issues from the comfort of their own homes, society itself evolved into something of a "cyberocracy," relying on data analytics to provide important insight into evolving problems and helping to inform better decision making.[8]

'Public services will be developed around the needs of people, not prescribed by administrative structures of government.'

That was then; this is now

Science fiction? Perhaps not. All of the innovation described above has its basis in existing technology. The only thing missing is diffusion – and vision. Will we use existing technology to develop and deepen democracy and the provisioning of better, more advanced public services?

4 Learn more about e-Residency in Estonia at https://e-estonia.com/e-residents/about/

5 Ibid., "Digital Disruption on the Farm," *The Economist*, 24 May 2014. http://www.economist.com/news/business/21602757-managers-most-traditional-industries-distrust-promising-new-technology-digital

6 A study of census results in England and Wales since 1871 finds that technology has been a job creator rather than making working humans obsolete. Ian Stewart, Debapratim De and Alex Cole, *Technology and People: The Great Job-Creating Machine* (London: Deloitte, 2015). For an overview of how technology impacts employment, see The Economist, *"The Onrushing Wave," The Economist*, 18 January 2014. http://www.economist.com/news/briefing/21594264-previous-technological-innovation-has-always-delivered-more-long-run-employment-not-less

7 The idea of competing for talent was first voiced in 2005 by Richard Florida in his well-know bestsellers. See Richard Florida, *The Flight for the Creative Class. The New Global Competition for Talent and Cities and the Creative Class* (New York: HarperCollins, 2005); Ibid., *Cities and the Creative Class* (New York: Routledge, 2004).

8 The term "cyberocracy" was pioneered by David Ronfeldt, a researcher at RAND Corporation, in the early 1990s. See David Ronfeld, *Cyberocracy Is Coming* (Santa Monica: RAND, 1992). http://www.rand.org/pubs/reprints/RP222.html

Analogue to digital

	Analogue	Digital
Democracy	• Political life is structured around and driven by political parties • Political communication travels one way, from parties to voters • Voters cast their ballots at polling stations • General elections are held at regular intervals of time	• Political parties, communities, ad-hoc social groups and individuals interact and collaborate • Political communication is two way, with voters and parties speaking to one another dynamically in real time • Voting takes place online, often from the home or office • Citizens participatie in the political process in between elections
Legislation	• Governing parties produce legislation • Elected members of parliament are in charge of the legislative process	• Political parties facilitate the legislative process • Citizens co-legislate, author new proposals, propose amendments and eventually vote
Public services	• Government is the principal provider of public services • Public administrations are organised hierarchically • Uniform public services are provisioned by "siloed" departments	• Government facilitates and commissions public services • Public-sector organisations are flexible, networked, purpose-driven entities • Integrated e-gov platforms offer tailor-made public services and enable citizens to commission, co-design and co-produce public services

Or will we allow such developments – already on-going today – to exist only in small pockets where local communities had the foresight and wherewithal to move forward more quickly than the rest of us?

> 'Digital technology offers an unparalleled tool to re-design public service, engage the public and reconfigure the relationship between citizens and their government.'

This Digital Insight Special Edition is divided into three parts. In part one, we look at the way public service delivery – a central function of any government – is evolving and will evolve over the next 15 years on the back of the radical changes – and new possibilities – inherent in digital technology. In part two, we look at the role of the citizen and the state, arguing that citizens are ready for this kind of transition – indeed, they are demanding it. Part three provides a set of detailed strategic, regulatory and technical actions that need to be implemented within the coming months and years to move more confidently and strategically towards this vision. These arguments and evidence are intended to inspire and inform a broader public debate, and contribute concretely to the European Commission's emerging Digital Single Market strategy and e-Government Action Plan.[9]

In fact, many governments and public administrations in the world's most advanced economies have already embarked on extensive digital transformation.[10] And enough evidence has accumulated to draw some early conclusions. Most notably, while technology occupies a central role as a facilitator in this process, it is not an end in itself. Rather, technology is a smart tool that can help achieve a better functioning public administration, and ultimately, increase prosperity and bring dramatic enhancement in quality of life. Sceptics have questioned digital government, arguing *inter alia* that "digital" is just a fancy word for information technologies, that digitalisation can work successfully for the private sector but government is inherently different, or that digital entails no human interaction. We believe these views are fundamentally false. We will show how smart governments can seize the initiative and embrace the opportunity inherent in digital government to deliver a better democracy, a stronger social system, a more sustainable society and a happier population.

9 The strategy, unveiled in May 2015, offers a roadmap and a list of 16 impactful actions to be implemented in 2015 and 2016. One of them is a new e-Government Action Plan 2016-2020, with several initiatives to be launched as early as in 2016. See European Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Digital Single Market Strategy for Europe*, Brussels, 06 May 2015, COM(2015) 192 Final. http://ec.europa.eu/priorities/digital-single-market/docs/dsm-communication_en.pdf

10 See Rolf Alter, Christian Bason, Olivier Costa, Arnis Daugulis, Brian Hayes, Michael Kaeding, Robert Madelin, Bernard Le Masson, Francis Maude, Kyriakos Mitsotakis, Arnaud Mourot, Robert-Jan Smits and Brigitte Zypries, *Delivering Pubic Service for the Future: How Europe Can Lead Public-Sector Transformation* (Brussels: The Lisbon Council, the College of Europe and Accenture, 2014). http://www.lisboncouncil.net/publication/publication/117-delivering-public-service-for-the-future.html

Key principles of digital government

- **Digital by default.** In any interaction between the government and the users of a given service, the user is obliged to use the digital channel unless there are good countervailing reasons.

- **User friendliness and inclusiveness.** The principle of digital by default implies that digital public services should be available for everyone, not only for a few techies or digitally-savvy people. Digital public services should use an easy-to-navigate and intuitive user interface. Importantly, while public services are digital, there is always on-going human support in one way or another (face-to-face or via digital channels).

- **Once-only.** This means eliminating the unnecessary administrative burden that occurs when users are required to supply the same information more than once to public administrations. Under this scenario, the databases of all public authorities are interconnected, and information stored by one entity is available to the other. While this is designed for citizens' convenience, it should be done in full accordance with the rules of data privacy and ultimately the citizens should be in control of their personal data.

- **No legacy.** This principle requires public administrations to renew all state information technology systems after a certain amount of time to keep in line with the ever-changing environment and development of technology. Although it may look like a costly solution, ultimately it pays off through enhanced operational efficiency.

- **24/7.** Technology allows the delivery of public services in real time. Digital public services do not stop working after 6pm and do not shut down on weekends. It means that a digital interface (a "digital front office") alone is not sufficient. Where possible, all internal processes need to be digitalised so that they can operate around the clock without human intervention.

- **Single point of entry.** For user convenience, public services should be accessible from one portal through single identification. Users don't need to find their way through a maze of government websites.

- **Omni-channel services.** The user should be provided with a seamless digital public-services experience no matter what device – a desktop or a mobile device – is being used to access the portal.

- **Open standards.** Service-oriented architecture of living public services is underpinned by open standards and open-source technologies, enabling digital collaboration. Particularly, common standards and interfaces should enable smooth data exchange. This principle of open standards and interoperability that would enable cross-border functioning of public services is critical in Europe, and represents an important building block in the Digital Single Market strategy.

Public services in the digital age

Today, many public-sector organisations already blend cyber and physical systems; carefully balancing the old and the new, they are busy optimising supply chains, establishing new business models and creating new value products and service offerings, customised to individual users. Intelligent public services – or "living public services," as we believe the next round of public services will come to be known – will add a new element. They will leverage the power of data analytics, learn and adapt around the user, and be available on mobile devices.[11]

'Smart governments can seize the initiative and embrace the opportunity inherent in digital government to deliver a better democracy.'

"Public services" is a broad term covering a wide range of services provided by public authorities to their citizens – ranging from justice and law enforcement, healthcare, education to payment of welfare benefits. Depending on the nature of each specific public service, the case for digitisation is different. In some areas, internal and procedural processes can be reengineered in such a way that they can run automatically, as a "background task," or "zero touch" technology, without any day-to-day human involvement. Already today, social security and pension benefits, for example, are automatically calculated, processed and paid. If the system is efficient – as future systems will be – it should anticipate users' demands and act on its own to deliver the necessary services, without the citizen's request.

When such interaction takes place, it should run smoothly. Take the case of an individual requesting a licence or permit. In the future, digital public services will automatically check all the eligibility criteria using an integrated database. If all these criteria are satisfied, an authorisation will be granted, and an electronic document issued and "streamed" to the individual's smartphone. Importantly, digital technology will need to impact and influence the design and operation of these public services as they are being developed and evolving, rather than being applied merely as a means of automating an existing process.

Public services in other areas, such as law enforcement and the maintenance of public order, will remain managed and delivered by humans. This, however, does not preclude digital technology playing a supportive role. Policemen will maintain public order and use technology to do their work, e.g. prevent crime and solve crimes more effectively and efficiently.[12] Likewise, people will still carry out emergency services, but technology has the tremendous potential to support this work, e.g. by notifying residents in a particular district about (impending) emergency situations. Even such critical function of any state as the administration of justice – that relies heavily on human judgements – has potential for digitisation. Citizens can be involved in legal processes digitally. Digital databases and data analytics can help judges and lawyers make the right decisions ensuring respect for the law and taking human values and specifics of each legal case into consideration.

11 Fjord and Accenture Digital, *The Era of Living Services* (Dublin: Accenture, 2015). http://www.fjordnet.com/media-files/2015/05/Living-Services.pdf

12 Learn more about the digital transformation of police in the Netherlands in Tjeerd Brenninkmeijer, "Introducing a Single Digital Police Office for the Netherlands with the Open Source Hippo CMS," *European Commission Joinup Blog*, 28 February 2013. http://joinup.ec.europa.eu/elibrary/case/introducing-single-digital-police-office-netherlands-open-source-hippo-cms

Public services digital typology

	Digitally-supported public services	Digitally-enabled public services	Digitally-driven public services	Artificial-intelligence-led services
Description	Humans provide public services, but support processes are digitalised. Typically, such public services rely heavily on physical work or involve tangible assets	The potential for digitalisation for these services is huge, but digital technologies can play only an enabling role. Humans are solely responsible for all value- and judgement-based decisions	These public services are completely digitalised and often run as a "background task." They are fully electronic and normally do not produce any physical deliverables	Artificial intelligence (AI) will analyse lots of available data to deliver insights and intervene to get the most productive outcome
Humans	Provide the service	Make value- and judgement-based decisions	Intervene only if necessary	Design the framework conditions for the AI-led services
Technology	Supports the service	Enables the service	Generates and provides the service	Makes decisions and acts upon them
Examples of public services	Law enforcement and public security, justice, defence, emergency services, social housing and waste collection	Healthcare and medicine, education and town planning electronic property and information mapping services	Payment of social security and pension benefits, taxation administrative services, e.g. obtaining a licence or a permit	Early warning systems, identification of known and unknown threats, swift diagnosis and so forth

NB: Boundaries between the four categories are imprecise. Moreover, within each broad category of public services, there are sub-sets of public services that can belong to a category other than that to which the broad category belongs.

Digital technologies could also help rebuild the trust between citizens and elected officials, which is so low in many countries today. Already, we see a tectonic shift in democracies as a result of growing use of digital technologies throughout society. Thanks to social media and other online tools, the "analogue" gap between voters and their politicians is narrowing, or even disappearing. Some citizens can even vote online on specific legislative proposals in real time or form one-issue ad-hoc groups, similar to those formed on Facebook and other social media channels.

Somewhere in between are public services where technology can play a substantial role, but will need to be "supervised" by people, i.e. technology will provide input, but the ultimate decisions and actions will need to be taken by humans. Healthcare and education are good examples in this category. While digital technologies – such as data analytics – can bring a significant positive impact to many processes, humans will need to stay on top of these processes, and make the ultimate value- and judgement-based decisions. In addition, the fourth type of public services

X-Road Estonia

X-Road is the backbone of e-Estonia, a movement by the government of Estonia to facilitate citizen interactions with the state through the use of electronic solutions. X-Road is the invisible yet crucial platform that allows the nation's various e-services databases, both in the public and private sector, to link up and operate in harmony.

One of the key elements of e-Estonia is that its databases are decentralised, meaning that: **1)** there's no single owner or controller, **2)** every government agency or business can choose the product that's right for them, and **3)** services can be added one at a time, as they're ready. Data-exchange layer X-Road is the all-important connection between these databases, the tool that allows them to work together for maximum impact. All of the Estonian e-solutions that use multiple databases use X-Road. Originally X-Road was a system used for making queries to different databases, launched in 2001. Now it has developed into a tool that can also write to multiple databases, transmit large data sets and perform searches across several databases. X-Road was designed with growth in mind, so it can be scaled up as new e-services, with their various platforms, come online.

Over 900 organisations use X-Road offering more than 2,000 services, using over 170 databases. Queries done over X-Road totalled 287 million in 2013 in a country whose population is barely one million. The services offered include presenting a registration of residence electronically, inspecting one's personal data (address registration, exam results, health insurance, etc.) on the national databases, declaring taxes, checking the validity of one's driving licence and registering vehicles. Learn more about X-Road at https://www.ria.ee/x-road/

Source: e-Estonia, X-Road https://e-estonia.com/component/x-road/

is breakthrough artificial-intelligence-led services. In contrast to digitally-driven public services designed for the execution of routine background tasks, the public services led by artificial intelligence would be designed for emergency, extreme situations, such as early detection of disturbances at atomic power stations, or potential problems with electricity grids and water supply.

> 'If the system is efficient – as future systems will be – it should anticipate users' demands.'

The "living public services" we describe in this paper are insight-driven and predictive, offered on mobile devices as apps, powered by data analytics for decision-making in real time, and often use open data and rely on cloud infrastructure. But making the most of these advanced, user-friendly services will require something more – a cross-agency platform capable of uniting users and service providers in a safe, secure and easy-to-access place.[13] Under this vision, people would be able to plug-and-play apps into a platform with government being the custodian and facilitator of data that can be used by citizens, businesses, tech entrepreneurs and other agencies. This platform would be based on an Application Provider Interface (API) – a set of routines, protocols and tools for building software applications – created specifically to be used or developed by third parties. Data would be offered in machine-readable format. Citizens would be not just passive consumers of public services; they would also act as co-creators and shapers of living public services.

Predictive data analytics would be the core of the new system. Today, it is already used in the United Kingdom to analyse the impact of legislation. Barclays, the multinational banking and financial services company, runs a programme called "Barclays Local Insights."[14] It uses anonymised financial data to provide UK members of parliament with economic facts and figures about people and small businesses in their constituencies in England and Wales. These free-of-charge reports offer valuable up-to-date insights in spending habits, mortgages and business activities that lead to evidence-informed policymaking, and ultimately contribute to society's wellbeing. As more data from various sources becomes available, data analytics will proliferate and more importantly, will become increasingly predictive – being able to produce *ex-ante*, and not just *ex-post* insight.

In the government of the future, data analytics will be leveraged by administrative artificial intelligence that will identify the requests of citizens and deliver living public services. The system will replicate a human-to-human conversational experience. This is somewhat similar to the (still developing) technology of speech recognition and voice-controlled software, such as Siri, an intelligent personal assistant and knowledge navigator integrated in Apple's iOS, or the "OK Google" voice search. People will only need to say, "I need a new parking permit." The system will analyse the necessary parameters, and if the approval is granted, the permit will be streamed to the user's smartphone as a new app, or add-on to an already installed app. At the end of the day, public services will be developed around the needs of people, not prescribed by administrative structures of government.

13 We will call this system "GovOS" for the purposes of this Digital Insight Special Edition.

14 Visit https://www.insights.barclays.co.uk for more.

Smart Nation Singapore: A blueprint for Europe?

Smart Nation is Singapore's vision of using technology to improve the quality of life and enhance the business climate. The Asian city-state is the world's first "smart nation" exemplifying a vision of "E3A": everyone, everything, everywhere, all the time. Complete connectivity is seen as the basis for revolutionising the way every aspect of society operates – from healthcare to the environment – in order to improve the overall quality of life for Singapore's citizens. For this reason, the state-run Infocomm Development Authority is designing the Smart Nation Platform, which will involve infrastructure and technology to enable a whole host of new capabilities to citizens, businesses and government.

The platform will roll out in two phases. The first phase – scheduled to be completed by the end of 2015 – will involve localised trials for wired and wireless connectivity sensors and networks. The second phase is expected to be a large-scale deployment of technologies in collaboration with industry partners. To enable the growth of innovation-driven tech startups, tech entrepreneurs can tap existing partners and available resources. Singapore's government works with corporations, universities and professional accelerators to bring promising tech startups to accelerator programmes that are tailored to suit startups at different stages of maturity. Learn more at http://www.pmo.gov.sg/smartnation

Michael Tegos, "IDA Wants to Make Singapore a Smart Nation. Here's What You Need to Know," *TechInAsia*, 22 April 2015. http://www.techinasia.com/singapore-smart-nation-2015/

Cloud computing offers attractive advantages to the public sector. It has the potential to reduce costs by virtualising capital assets like disk storage and processing cycles. One of the most significant cloud computing opportunities for the public sector is the ability to share digital resources among multiple agencies in a so-called "cloud federation" to use the phrase coined by Accenture, a leading professional services company.[15] Any qualified provider could supply services to the federation, including government agencies and third-party providers. Governments would monitor and approve every service. And they would let cloud providers compete, so market forces drove down costs.

> 'Technology can help achieve a better functioning public administration and increase prosperity.'

More innovation could also come from widescale deployment of the relatively new blockchain technology, which today powers virtual currencies like bitcoin. This revolutionary protocol facilitates peer-to-peer transactions without intermediaries. It enables smart contracts, decentralised autonomous organisations, decentralised government services and transactions among things. Keeping the user's information anonymous, the blockchain validates and keeps a permanent public record of all transactions. This means

15 Matthew Coates, James Harris, Nicolas Monsarrat, John Sepple and Sean Shine, *A New Era for European Public Services. Cloud Computing Changes the Game* (Dublin: Accenture, 2013). https://www.accenture.com/t20150527T211057__w__/fr-fr/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Local/fr-fr/PDF_4/Accenture-New-Era-European-Public-Services-Cloud-Computing-Changes-Game.pdf

that personal information is private and secure, while all activity is transparent and incorruptible – reconciled by mass collaboration and stored in code on a digital ledger. The blockchain can hold any legal document, from deeds and marriage licences to educational degrees and birth certificates.[16]

In this paradigm, government becomes an interconnection of stakeholders, consumers and producers from the public and private sectors. It is a system in which the outcomes aren't specified beforehand, but instead evolve through interactions between government and citizens in a collaborative ecosystem. Government is a partner, enabler and facilitator rather than purely a public-service provider. It moves well beyond the concept of "government as a platform," the vision first proposed by author Tim O'Reilly.[17] Put simply, government becomes an open platform allowing people inside and outside government to collaborate and innovate. It improves the quality of the public service that forms the heart of our democracy and empowers the democracy that creates the public service.

'Digital technology will need to impact and influence the design and operation of these public services as they are being developed.'

Collaborative ecosystems for public services: From demand to delivery

Obviously, any "government of the future" will begin and end with the demand for change – and the capacity for acceptance. Four recent surveys – one from the European Commission and three from Accenture – show that many citizens embrace a digital future – including for their government.

The European Union eGovernment Report 2015 found that online public services in Europe were "smart but could be smarter."[18] This recent study showed that cross-border connectivity in Europe is still a challenge: only 57% of public services are available to cross-border businesses and only 41% to EU citizens in other member states. The "once only" principle – now officially endorsed by the European Commission – is getting very little pick up. Users are still asked to fill forms with information already available to the administration in more than half of the cases. Lastly, an astonishing 73% of public service websites do not have a mobile-friendly version.

In the Public Services Pulse Survey on Digital Government, which polled more than 6,600 respondents in Australia, France, Germany, Singapore, United Arab Emirates, United Kingdom and United States, Accenture found that a clear majority of citizens already prefer to interact with

16 Don Tapscott and Alex Tapscott, *Blockchain Revolution: The Brilliant Technology Changing Money, Business and the World* (New York: Penguin, forthcoming).

17 Tim O'Reilly, "Government as a Platform" in Daniel Lathrop and Laurel Ruma, *Open Government* (2010). http://chimera.labs.oreilly.com/books/1234000000774/ch02.html

18 European Commission, "EU eGovernment Report 2015 Shows that Online Public Services in Europe are Smart but Could be Smarter," 23 June 2015. http://ec.europa.eu/digital-agenda/en/news/eu-egovernment-report-2015-shows-online-public-services-europe-are-smart-could-be-smarter

Social media to involve citizens in public decisions

Similar to digital democracy, innovative public-sector organisations are embracing social media to establish new communication channels with citizens and to involve them more in public decisions.

Six hundred of the 3,500 residents of Jun, Spain, have Twitter accounts registered at the town hall. They are using it to book rooms at the town hall, make doctor's appointments, report crimes or street lamps that need fixing and tweet about school lunches. One of the success factors behind the project is a very committed and technologically confident mayor who has pursued this project for 16 years, and has ensured that Twitter has replaced paperwork but not human interaction. The town hall is still very visible in the town, with constant dialogue and public engagement. Deb Roy, Twitter's chief data scientist and associate professor at Massachusetts Institute of Technology, has been exploring how the Jun project could be scaled up, looking at Boston, Chicago, New York and San Francisco.

Source: Jemima Kiss, "Welcome to Jun, the Town That Ditched Bureaucracy to Run on Twitter," *The Guardian*, 02 July 2015. http://www.theguardian.com/technology/2015/jul/02/twitter-jun-spain-bureaucracy-local-government

government digitally.[19] Many liked to inquire about and request services and apply for licences and permits digitally; and a significant portion of citizens wanted to access digital government services across devices. Results of another Accenture survey showed that more than 81% of citizens believed it was important for governments to provide more services through digital channels in the future.[20]

Another Accenture report – prepared by Fjord, the company's in-house digital think tank – argued that consumers' commercial expectations have become "liquid" across different product and service categories. For instance, consumers no longer compare their brand experiences of two different banks; rather they make comparisons between their bank and a best-in-class airline or a design-driven startup. Importantly, as their experience of connected digital services grows, consumers can imagine how services could evolve to make their lives easier and better.[21] People surrounded by digital technology in virtually every aspect of their lives expect the same level of convenience from their government.

'Digital technologies could also help rebuild the trust between citizens and elected officials.'

19 Accenture, *Accenture Public Services Pulse Survey, Data Nuggets for Q1 – Global Report. Topic: Digital Government* (Dublin: Accenture, 2015).

20 Accenture, *Digital Government: Pathways to Delivering Public Services for the Future* (Dublin: Accenture, 2014). https://www.accenture.com/us-en/insight-digital-government-pathways-delivering-public-services-future.aspx

21 Fjord and Accenture Digital, op. cit. Baiju Shah and John Greene, "Liquid Expectations. Consumers are Setting a Different Bar for Experiences," *The Economist*, 19 May 2015. http://www.economistgroup.com/leanback/consumers/accenture-liquid-expectations/

The Work Profiler

UWV, *Uitvoeringsorgaan Werknemers Verzekeringen* (Employee Insurance Implementing Body), is an autonomous administrative authority set up by the Netherlands Ministry of Social Affairs and Employment to support employment, social medical affairs, benefits and data management. The UWV operates The Work Profiler – a digital diagnostic tool that evaluates a job seeker's probability of returning to work within a year as well as potential obstacles. The evaluation tool includes 55 predictive items that are offered in a digital questionnaire online to all clients of unemployment offices scattered throughout the country.

All four studies find that, perhaps not surprisingly, few people are happy with the way things stand today; many of the surveyed citizens see room for their government to improve satisfaction with digital services. The public in general is poorly informed about the services already on offer – indeed, this is the greatest factor that prevents citizens from increasing their use of digital services from government. Many people cite poor organisation and poor search functionality as key obstacles they encounter when using government digital services. Clearly, there is enormous potential for improvement.

People also expect ease of interaction with their government for business and commercial purposes too. They believe there should be a hassle-free interaction with government throughout a business's lifecycle – from start up, through continuous reporting to expanding across borders, changing legal form, even shutting down (in the unfortunate event that a bankruptcy has to be filed). They feel the process of starting up a new business should be easy and seamless. Already today, it is possible to set up a company online in many countries, but cross-border registration is still a challenge.[22]

'Thanks to social media and other online tools, the "analogue" gap between voters and their politicians is narrowing, or even disappearing.'

With these goals in mind, the European Commission recently proposed a directive on single-member private limited liability companies (*Societas Unius Personae* – SUP), aiming to make it easier and less costly to set up companies across the EU and facilitate cross-border trade. One of the proposal's key provisions states explicitly that "member states shall ensure that the registration procedure for newly incorporated SUPs may be completed electronically in its entirety without it being necessary for the founding member to appear before any authority in the member state of registration (on-line registration)."[23] Once established, businesses should be able to communicate with government without wasting time and resources. In Europe, they should be able to do it not only within their home country but also across borders.

22 In the United Kingdom, it is possible to register a private limited company online within 24 hours. Visit https://www.gov.uk/register-a-company-online. Similarly, people in Estonia register new businesses at the Company Registration Portal: https://ettevotjaportaal.rik.ee. The European Commission encourages all EU member states to make starting a business an easy procedure, including the completion of all formalities online and making it possible to register a company in another EU member state online (through the national contact points). Visit http://europa.eu/youreurope/business/start-grow/start-ups/index_en.htm.

23 European Commission, *Proposal for a Directive of the European Parliament and of the Council on Single-Member Private Limited Liability Companies* /*COM/2014/0212 final – 2014/0120 (COD)*/ http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2014:212:FIN

Any transition towards a "government of the future" providing living public services will require collaborative efforts from a range of stakeholders – from government itself to businesses, non-governmental organisations and civil society. In fact, it is essential to look beyond the traditional lines of the social, private and public sectors in order to construct and deliver living public services. The new public administration is synonymous with collaboration and co-production across various sectors.

'Cloud computing offers attractive advantages to the public sector.'

Digital technology underpins many emerging business models. The idea of "a sharing economy" – with such iconic pioneering startups as Uber Technologies Inc., Airbnb, Inc., BlaBlaCar, Car2Go and Fon Wireless Ltd. – has proven very popular with consumers. There are few reasons why such new models of service delivery and sharing could not be explored in the context of the public sector too. The highly-regarded study "Unlocking the Sharing Economy," prepared for then UK Minister of State for Business, Enterprise and Energy Matthew Hancock, highlighted the promises of this new economic reality and introduced an idea of "a sharing city."[24] Elements of such an initiative include sharing municipal buildings with community groups, a better integration of car-sharing platforms with local public transport and creating local online hubs where residents and businesses can share their skills and possessions with each other. On the basis of this vision, the report recommended a pilot project of a sharing city, where transport, shared office space, accommodation and skills networks are joined together and residents are encouraged to share as part of their daily lives.

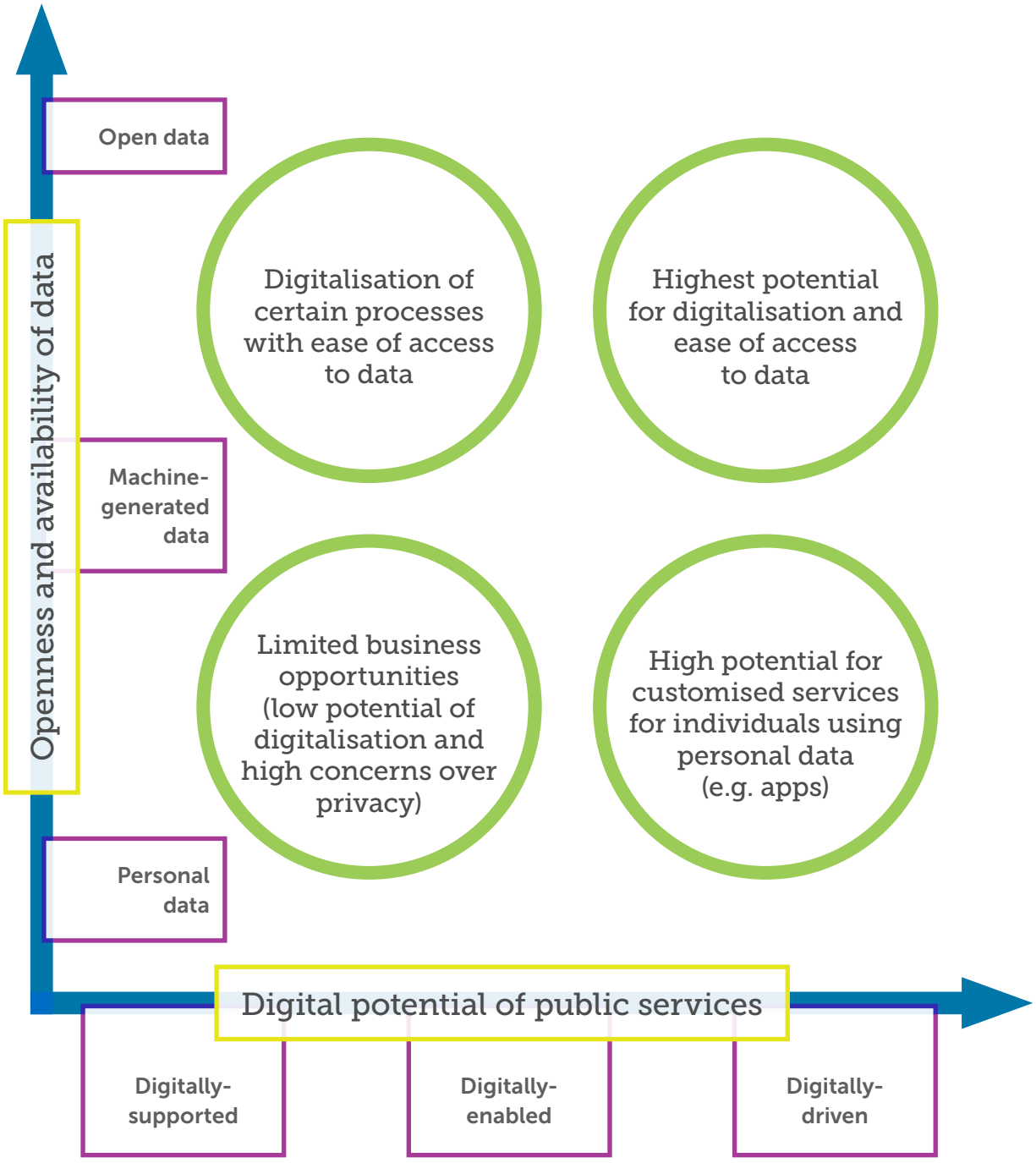
Digitalisation of government could also provide ample business opportunities for digital startups and tech entrepreneurs who could work together with public authorities to shape digital government. Tech entrepreneurs could design and develop digital solutions that public authorities could employ for the provision of public services. Alternatively, startups could use open data released by public authorities to develop and commercialise innovative data-driven products and services.[25]

Naturally, the stronger the role of digital technologies in the provision of public services, the higher the potential for collaboration with digital startups and web entrepreneurs. The chart on the next page presents a combination of the digital potential of public services and types of data. On one side of the spectrum are digitally-*supported* public services, which are provided almost entirely by humans. Technology plays only a supportive role. Citizens can engage as volunteers and digital businesses can provides solutions to some (outsourced) parts of these public services. On the other side of the spectrum are digitally-*driven* public services. These are populated with living public services, united by a GovOS platform that provides the functionality of plug-and-play and promotes the development of new apps. The latter scenario also offers great opportunity for digital entrepreneurs.

24 Debbie Wosskow, *Unlocking the Sharing Economy: An Independent Review* (London: HM Government, 2014). https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/378291/bis-14-1227-unlocking-the-sharing-economy-an-independent-review.pdf Mr. Hancock was appointed and Minister for the Cabinet Office and Paymaster General in May 2015.

25 Sergey Filippov, *Data-Driven Business Models: Powering Startups in the Digital Age* (Brussels and London: The Lisbon Council and Nesta, 2014). http://www.lisboncouncil.net/publication/publication/119-data-driven-business-models-powering-startups-in-the-digital-age.html

Types of data and types of public services



Already, data is at the core of all public services. Even "non-digital" services like defence or police are increasingly powered by data. We identify three broad categories of data in relation to public services:

- **Open public data.** This is information about public transport, traffic in real time, weather forecast, economic indicators and the like. Anonymised and highly-aggregated data on individuals also belong to this category. Generally, privacy issues play a very marginal role in this category.

- **Machine-generated data.** This category relates to information which was automatically created from a computer process, application or other machine without any human intervention. Machine-generated data is set to grow exponentially with the explosion of the so-called Internet of Things – the network of physical objects embedded with electronics, software, sensors and connectivity to enable objects to exchange data with each other. Although this data generated by machines should be "privacy-neutral," it could allow some to identify the device's owner and his or her habits and preferences – thus potentially becoming personal at one moment.

- **Personal data.** This is the most sensitive type of data as it involves everything that identifies an individual, such as a person's name, date of birth, marital status, photos and medical records. Most individuals prefer to keep such data confidential, or at least to have control over who accesses such data and for what purpose. In most cases, individuals need to grant their unambiguous, free and informed consent to collect, store, handle and process their data. It is possible, however, to anonymise personal data. In a highly anonymised, aggregated form, it can become open data.

'Consumers no longer compare their brand experience of two different banks; they make comparisons between their bank and a best-in-class airline or a design-driven startup.'

A combination of these typologies – public services and data – yields broad categories with ill-defined borders that provide an analytical map for citizens, public servants, businesses and non-governmental organisations operating on "government as a platform." See the chart on page 15 for more.

A whole range of opportunities for digital businesses could be created in the intersection of public services with high digital potential and data with high openness and availability – the category at the top-right corner of the chart. Companies could develop public-services apps both for business efficiency and individuals that are seamlessly integrated in GovOS and access data without privacy concerns. Public agencies need to boost business opportunities in this sector – by seizing the full potential of digital technology in public services and by releasing as much open data into the public domain as possible. Public administrations can also enlarge the sector itself by "creating" more open data from personal (and machine-generated) data through anonymisation and aggregation.

E-petitions and crowdlegislation

Some governments' e-petitions systems enable the public to engage with parliamentarians and the democratic process. Perhaps the most renowned is *We the People* (petitions.whitehouse.gov) helping U.S. citizens to exercise their constitutional rights. They can browse open petitions to find an appeal related to their issue and add their signature. If the issue is not currently represented by an active petition, they can start a new one. If a petition meets the signature threshold (100,000 signatures within 30 days), it will be reviewed by the administration and a response will be provided.

In the UK, citizens can create a new petition to support a cause or ask for a change in policy or the law using the Number 10 Downing Street e-petitions site (http://epetitions.direct.gov.uk/).

A similar system has been launched in Finland. On 01 March 2012, the country adopted the Citizens Initiative Act, a national version of the European Citizens' Initiative enshrined in the Treaty of Lisbon. According to the provisions of the Act, an initiative may be organised by one or more eligible Finnish voters. If they manage to collect 50,000 signatures supporting the initiative within six months, the Finnish parliament is obliged to consider it. To support this project, the Open Ministry, a Helsinki-based non-profit, non-aligned organisation, was established. It created The Open Ministry platform: http://www.openministry.info in English, and http://www.avoinministerio.fi in Finnish – to support proposals getting through to the parliament. Everyone can share their ideas and initiatives and collaborate. The project got off to a very successful start. In April 2013, Finnish lawmakers debated the country's first ever draft crowdsourced legislation - to ban fur farming. Over time, the Open Ministry platform evolved into an information centre on crowdsourcing legislation. Another initiative is a pilot project run by the Finnish ministry of environment and the committee for the future of the Finnish parliament. Crowdsourcing is applied to the lawmaking process to map possible regulatory and legislative problems and then find solutions to these problems.

Projects like this are supported by initiatives like Decentralised Citizens ENgagement Technologies, or D-CENT, a European Union-funded consortium led by Nesta, the UK innovation foundation. There, programmers are developing the next generation of open source software to allow citizens to crowdsource legislation, to share information about pending government initiatives and to vote online. The project ran large-scale pilots in Finland (7,000 users), Iceland (10,000 users) and Spain (50,000 users). Future developers will be able to write API-based apps on top of the codebase, and new modules can easily be added. Thus, the platform can evolve as the needs and demands of citizens' groups change. Find out more at http://dcentproject.eu.

On the other extreme are all types of data with restricted openness and public services with low digital potential. The digital potential of such services remains limited, and privacy concerns serve as a barrier. Nevertheless, "niche" opportunities still exist. For instance, businesses could develop customised solutions for individuals using their personal data stored on GovOS, but it would need to be done in strict compliance with data protection rules. On top of that, businesses could develop digital solutions for the public authorities' use while not treating personal data themselves (or treating only limited parts and pieces of such data). For instance, businesses can develop integrated systems of automated border clearance or secure identity verification.

'Digitalisation of government could also provide ample business opportunities for digital startups and tech entrepreneurs.'

Opportunities in the middle of this spectrum – where public services are delivered by humans but actively aided by technology – are profound, even when dealing with personal data. Think about personal health in the digital age: e-health, or "m-health."[26] Through wearables and nearables, people are already generating a lot of personal data about their lifestyle, health conditions and ailments. With prior consent and clear agreements, these volumes of data could flow to respective general practitioners or hospitals, who would then be able to deliver timely medical advice.

Yet, the biggest value could be captured by businesses that offer digital products and services drawing on the whole spectrum of real-time data from different sources – from personal to open data, as well as on the whole spectrum of digital public services. To make it possible and viable, the public sector needs to stop developing and delivering everything internally and focus more on the commissioning and consumption of service outcomes. Public-sector leaders need to think in terms of end services, not inputs. In this regard, procurement and specification rules need to be rethought as traditional procurement mechanisms cannot always be counted on for innovative products and services.

Time for action: from European to local level

This Digital Insight Special Edition describes a vision of future-oriented government and public services based on realities that exist today. But there is no space for delays or complacency. Impactful policy actions need to be launched right now if these advantages are to be gained and this brave new world brought into being.

On 06 May 2015, the European Commission unveiled its Digital Single Market strategy, a plan to create a single European market for digitally delivered goods and services. One section of the strategy focuses on digitisation of government. It states that the European Commission intends to present a new e-Government Action Plan 2016-2020 which will include:

- making the interconnection of business registers a reality by 2017;

26 m-Health is an increasingly used word for "mobile-health."

- launching in 2016 an initiative with EU member states to pilot the "once-only" principle;
- extending and integrating European and national portals to work towards a "single digital gateway" to create a user-friendly information system for citizens and business; and
- accelerating EU member states' transition towards full e-procurement and interoperable e-signatures.

While welcoming the need to design such an action plan at EU level and these four actions *per se*, we believe that the Digital Single Market strategy needs a better-articulated vision on digital government. The four actions are specific building blocks. Important as they are, taken alone, they are also insufficient to drive digital change in government and public-services delivery.

The intended e-Government Action Plan needs to lay out an ambitious vision of an open governance framework, cover a number of additional policy areas and present solutions to several key issues. Action on three levels – strategic, regulatory and technical – need to be considered.

'Traditional procurement mechanisms cannot always be counted on for innovative products and services.'

Strategic action

Strategic actions need to be implemented at various governmental levels – from the EU to individual municipalities – to govern for success.

- **Build public trust and create a system of transparency, public participation and collaboration, showcase best practice and launch impactful exemplary projects.** Public leaders need to initiate a debate, raise awareness, promote a change in mindset and embrace the digital revolution in government and public service provision, with "government-as-a-platform" strategic intent. A general lack of understanding still persists of how digital technology can deliver agile, easy-to-use, living public services at lower cost and in a way that emulates people's daily experiences in the private sector. As this Digital Insight Special Edition has shown, digital technologies represent a powerful tool to bridge the gap between citizens and their government and deliver world-class services to people, improving their lives. Public-sector leaders need to give due attention to the idea of agile commissioning of exemplars, embracing a fail-fast approach and making public services digital by default. The shift to digital government is an imperative, not an option. Citizens and businesses are already benchmarking public services with commercial digitally-powered services, and will continue to do so, thus raising demands and expectations. Digital technology represents the main opportunity to improve the quality of life for citizens and kick-start economic growth, underpinned by more efficient public services and business-friendly environments.

- **Reengineer internal administrative processes and apply capabilities across organisational silos.** This is a wider digital transformation of an entire service area, rather than simply moving an existing service onto the Internet (e.g. booking appointments with civil servants online). Essentially, this is a breakthrough redesign of public services rather than just a digital front-end to existing services. While there is no problem technologically to store all the information of a particular individual in a database, the challenge is current rigid organisational configurations preventing the adoption and spread of institutional digitally-driven innovation. Surprisingly, in contrast to the faulty perception that "digital means no human contact," digital technology provides a unique opportunity to qualitatively transform face-to-face public services. It enables an unparalleled transition from processing-oriented tasks to a more counselling-oriented model. In fact, this model would entail more human touch, and also help citizens make the right decisions along their lives. Essentially, it would not forbid and ban, but empower and "nudge" people.[27]

'The intended eGovernment Action Plan needs to lay out an ambitious vision of an open governance framework.'

- **Prepare the digitally-savvy public service workforce for an empowered and inclusive society.** In addition to digital skills, public servants should become more entrepreneurial, adopting a citizen-centric, rather than government-centric approach. Public services ought to be rethought around the needs of citizens, not according to the logic of bureaucratic hierarchies. An understanding needs to be built among public officials of the radical impact that digital technology has on their operations and organisational models. Digital skills will be a must-have for future civil servants, with proper incentive schemes in place. Already now, public leaders need to develop internally or recruit deep expertise in data science and management, new business-model design, procurement innovations and other novel developments identified. A massive effort and awareness are required for millions of civil servants in Europe who will need to accept the shift to digital government at the magnitude described in this Digital Insight. And public employees whose routine, processing-oriented tasks have been displaced by technology could be further trained and relocated to counselling and case work-related roles, providing guidance and counselling for those in need.

Regulatory action

Legislators need to put in place an enabling regulatory framework that would contribute to massive roll out of digital public services and connect public administrations across Europe. It needs to facilitate seamless cross-border service delivery and reuse of successful technologies. A good basis for regulation is already laid out in the policy guidelines prepared by the Organisation for Economic Co-Operation and Development and other international organisations.[28]

27 Nudge theory (or Nudge) is a concept in behavioural science, political theory and economics which argues that positive reinforcement and indirect suggestions to try to achieve non-forced compliance can influence the motives, incentives and decision making of groups and individuals, at least as effectively – if not more effectively – than direct instruction, legislation or enforcement. Nudge theory rose to global prominence in 2008 with the release of the book *Nudge: Improving Decisions About Health, Wealth, and Happiness*, by Richard Thaler, a prominent professor at the University of Chicago, and legal scholar Cass R. Sunstein. Learn more at https://en.wikipedia.org/wiki/Nudge_theory.

28 Organisation for Economic Co-Operation and Development, *Recommendation of the Council on Digital Government Strategies* (Paris: OECD, 2014). http://www.oecd.org/gov/public-innovation/Recommendation-digital-government-strategies.pdf

Online voting

Technology can help undecided voters cast their ballots, as StemWijzer in the Netherlands demonstrates. The diverse Dutch political landscape – nearly a dozen political groups have seats in the House of Representatives – is a result of the historic social division between Catholics, Protestants, socialists and liberals. Choosing the political party most aligned with a voter's stances can be a hard task. StemWijzer is a widely used online tool offering numerous political statements and agree/disagree answers. At the end of this political questionnaire, the system assesses to what extent the voter's political views are consistent with political party programmes. At the last general election in 2012, some 4.85 million people consulted StemWijzer – more than half of the 9.46 million who cast their votes.

In the digital age, where people are surrounded by technology, voting remains a surprisingly archaic pen-and-paper procedure. Estonia is the frontrunner in digital engagement with its citizens. It is currently the only country in the world where citizens can vote online in legally-binding national elections using their state-issued ID card. The i-voting system was first introduced in 2005 for local elections, and was subsequently used in the 2007, 2011 and 2015 parliamentary elections, with the proportion of voters using this voting method rising from 5.5% to 24.3% to 30.5%, respectively. Importantly, the electoral turnout has risen too.

This practice may be relatively straightforwardly adopted and work well in a small dynamic society. Yet, its implementation may be far more difficult in larger countries. However, the benefits could be disproportionally large too. This is what the most recent initiative of the European Parliament shows.

On 29 September, the European Parliament's constitutional affairs committee has supported an initiative of the European People's Party – the largest pan-European political grouping – to give EU citizens the option of voting electronically in the upcoming European elections in 2019. The committee adopted a report which amends the EU Electoral Act. The report proposes the introduction of the right to vote for EU citizens living outside the EU, the possibility of electronic and Internet voting as well as voting by post. "My overall goal was to make these elections more attractive for EU citizens, especially for youth and those with reduced mobility," said Member of the European Parliament Danuta Hübner, who is chairwoman of the constitutional affairs committee and co-author of the proposal. On 11 November 2015, the European Parliament adopted this proposal in single reading. The intention is to have these new rules adopted and implemented in all EU member states in time for the next European Parliament election in 2019.

Sources: Estonian National Electoral Committee, Statistics about Internet Voting in Estonia
http://www.vvk.ee/voting-methods-in-estonia/engindex/statistics

Stemwijzer. http://www.stemwijzer.nl

It is, however, important to realise that the digital transformation of public administration is underpinned by several horizontal themes that need to be addressed urgently. The European Commission has already put forth several important legislative initiatives at EU level and successfully driven their implementation. More work still needs to be done on several fronts.

- **Implement a reliable electronic identification (eID)**, a critical pre-condition for effective digital government. This would enable safe and secure participation in cyberocracy and help to realise the full potential of living public services. The EU regulation on electronic identification and trust services for electronic transactions in the internal market (eIDAS) adopted on 23 July 2014 is a milestone to provide a predictable regulatory environment to enable secure electronic interactions between citizens, businesses and public authorities.[29] To encourage initiative in this important area, it is essential that the eIDAS secondary legislation be adopted taking into account business needs and technology developments. The European Commission should continue supporting member states to deploy technical solutions for interoperability through the digital service infrastructure of the connected Europe facility. National legislators need to make it mandatory for all public administrations to accept e-signatures.

'Public leaders need to raise awareness, promote a change in mindset and embrace the digital revolution in government and public service provision.'

- **Make use of pan-European cloud computing solutions for digital government**. Cloud computing holds great potential for public authorities. Today, it is fragmented across the continent. Many European governments are moving tentatively to cloud-based solutions, but there are huge differences across nations. Most countries are switching to cloud independently, not focusing on the bigger picture or the chance to share information in the future. In Europe, cloud computing can only be effective at EU-scale or greater, and demand for it will drive further investments in better networks. Guidelines for "g-cloud" – cloud computing for governments – are necessary to avoid fragmentation and conflicting approaches. "Cloud-to-cloud" communication and interoperability of cloud solutions need to be ensured. Given the velocity of technical change, it is counterproductive to regulate detailed technical standards, but the guiding principles should be spelled out. Fragmentation of the cloud space along national borders within the European Union should be avoided. If, for security reasons, governments decide to store their data in a "national cloud," individual citizens should enjoy a civil right to store their own personal data, used by public authorities, in any other cloud in Europe, as well as personal data portability. In other words, freedom of movement guaranteed by the *acquis communautaire* must to apply to the digital space too.

- **Create an enabling regulatory regime for data analytics.** Cloud computing and cloud-based data analytics hinge upon data protection as data is at the heart of any Internet application. A cohesive and enabling data protection regime in Europe is needed for making insight-oriented, customised living public services a reality. For this reason, the European Commission plans to unify data protection with a single law, the general data protection regulation (GDPR), to replace the EU data protection directive adopted in 1995. Its draft was first unveiled in January 2012,

29 *Regulation (EU) No 910/2014 of the European Parliament and of the Council as of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC*. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.257.01.0073.01.ENG

but has been amended substantially by the European Parliament and not yet approved by the Council of the European Union, whose consent will be necessary for the statute to become law.[30] The notion of harmonising data protection laws within the EU deserves support; it would greatly facilitate the development of data-driven businesses to face a single regulatory regime rather than 28 different ones.[31] But the final version should contain sufficient flexibility with regard to the processing of different types of data in order to promote data analytics and enable data-driven public services.[32]

- **Strengthen cybersecurity.** The overall resilience of public-sector networks, platforms and information systems to cyber attacks is essential for the smooth functioning of digital government and the delivery of living public services. The European Commission is working on a number of fronts to ensure cybersecurity. The Cybersecurity Strategy for the European Union and the European Commission's proposal for a directive on network and information security (NIS) put forward legal measures aimed at making the European digital environment the most secure in the world.[33] The directive's objective is to strengthen preparedness, facilitate cross-border cooperation and information exchange. The directive is a first generation of regulation of cybersecurity, and thus, it should be flexible and adaptable enough to be able to accommodate future developments in this critical domain.

Technical action

Open, platform-based thinking about the public sector provides a powerful means underpinning the technological aspects of a modern, digital public service.

- **Develop common standards for a GovOS platform.** Open standards make it possible to break down large programmes into smaller chunks of standardised, interoperable components, or transactions, which can be reused across government. Standard building blocks can be reassembled in locally appropriate ways. Open-source, "living" public services like those described in this Digital Insight can be easily replicated across EU member states, regions and cities. Each and every municipality doesn't need to reinvent the wheel. Basic architecture can be customised for specific needs of public authorities. Apart from being a cost-efficient solution, it also ensures

> 'Given the velocity of technical change, it is counterproductive to regulate detailed technical standards, but the guiding principles should be spelled out.'

30 European Commission. *Proposal for a Regulation of the European Parliament and of the Council on the Protection of Individuals with Regard to the Processing of Personal Data and on the Free Movement of Such Data (General Data Protection Regulation).* COM/2012/011 final - 2012/0011 (COD). http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52012PC0011

31 Paul Hofheinz and Michael Mandel, *Uncovering the Hidden Value of Digital Trade* (Brussels/ Washington, DC: The Lisbon Council / Progressive Policy Institute, 2015). http://www.lisboncouncil.net//index.php?option=com_downloads&id=1184. Paul Hofheinz and Michael Mandel, *Bridging the Data Gap: How Digital Innovation Can Drive Growth and Create Jobs* (Brussels/ Washington, DC: The Lisbon Council/ Progressive Policy Institute, 2014). http://www.lisboncouncil.net//index.php?option=com_downloads&id=1014

32 The final version will also need to take into account the blistering legal criticism contained in the Court of Justice of the European Union's Schrems v Data Protection Commissioner ruling, which struck down the EU-U.S. Safe Harbour agreement. Though aimed at Safe Harbour, the decision also contains major implications for data policy at the EU member state level.

33 European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *Joint Communication on Cybersecurity Strategy of the European Union: An Open, Safe and Secure Cyberspace.* JOIN/2013/01 final; http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52013JC0001. European Commission, *Proposal for a Directive of the European Parliament and of the Council Concerning Measures to Ensure a High Common Level of Network and Information Security Across the Union.* COM/2013/048 final - 2013/0027 (COD). http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52013PC0048

Making government of the future a reality

	Strategic	Regulatory	Technical
European Union	Lead by example and spearhead the transformative change in digital government	Ensure cross-border regulatory consistency and deliver an enabling regulatory framework (data analytics, cloud computing, cybersecurity, etc)	Co-ordinate development and implementation of common (open) standards for digital government to ensure interoperability
EU member states	Drive change on the national level and share best policy practices	Transpose EU law into national legislation. Where needed, adopt complementary national digital-friendly regulation	Develop and implement common (open) standards for digital government Release (more) open data
Regions and municipalities	Overhaul local public services – redesign and offer them digitally Foster citizen engagement	Fully adopt and implement EU and national regulation	Develop and implement common (open) standards for digital government Release (more) open data
Civil society and businesses	Embrace the digital revolution in public services, demand more digital from government	Engage in policymaking and regulatory processes and provide feedback	Engage in grass-root initiatives of open software. Design and develop public services apps

interoperability between digital public services in different cities, regions and countries across Europe. However, despite all the benefits of common standards, the risk is that too much standardisation will stifle innovation and new developments. Here, a delicate balance should be struck between standardisation of components and flexibility of their application.

- **Explore the potential of blockchain and other groundbreaking peer-to-peer technologies.** This standard underpinning cryptocurrencies is a distributed database that doesn't have any trusted central authority and transactions work peer-to-peer without a central repository. We propose an immediate wide-ranging discussion and open reflection on the prospects and promises of blockchain technology and its potential contribution to digital government and the provision of digital public services. The distributed ledger technology has significant future promise as this decentralised solution may ultimately successfully complement mechanisms built on the principle of centralisation.

This roadmap towards living public services will require concerted efforts of various players – public and private – and on different governmental levels – European, national and local. The table on page 24 presents a list of priority actions of different levels of governments and stakeholders on various levels.

Particularly, regions and municipalities should play a pro-active role, as most public services – healthcare, education, law enforcement and day-to-day administration – are local in their nature. And the overwhelming majority – up to 80% – of citizen-government transactions take place at the local level.

Public-sector leaders should also embrace new opportunities for improving the delivery of public services and enhancing the quality of life for citizens. They should explore new ways of operating and adopting innovative solutions. Digital technology offers an unparalleled tool to redesign public service, engage the public and reconfigure the relationship between citizens and their government.

'A cohesive and enabling data protection regime is needed for making insight-oriented, customised living public services a reality.'

Back to the future

So what will they say about us in 2030? Perhaps it will be something like the following...

Back in 2015, the immediacy and accuracy of digital solutions fundamentally changed the expectations of citizens for public services. Most people came to believe that the quality of digital services offered by government should meet or even exceed the quality of commercial digital services.[34] And digital government readily responded to these expectations. A new layer of connected intelligence revolutionised the ability of public administration to offer digital public services. Technology reshaped how government and citizens interacted with each other, delivering better, more tailor-made services – intelligent living public services.

34 Accenture, *Accenture Public Services Pulse Survey 2015* (Dublin: Accenture, 2015).

Fifteen years later, highly sophisticated, context-aware digital services routinely reacted in real time to changes in people's environment and patterns of behaviour.[35] People consumed the wearable living services on the go as they were streamed to mobile devices that every citizen possessed. Individuals could choose the type or form of a service delivery model – either by public institutions, by community or by private firms. In this sense, living public services were both vertical (from public administration to citizens and vice-versa) and horizontal (peer-to-peer).

'We propose an immediate wide-ranging discussion and open reflection on the prospects and promise of blockchain technology.'

Meanwhile, technology propelled a more personalised way of doing business. Consumers fully embraced the idea of having more personal and direct connections to the products that inhabited their lives. Producers cut out as many middlemen as possible and came to rely on social technologies to forge lasting relationships with their customers. Combined with advances in technology, such as additive printing, this became known as "artisanal manufacturing."[36] Digital technology empowered individuals, corporations, non-profit organisations and government to distribute, share and reuse excess capacity in goods and services. This trend emerged back in the 2010s and was known as the "sharing economy," with app-led, peer-to-peer services like AirBnB, BlaBlaCar, Car2Go and Uber. The role of consumers and producers blurred and fully merged and virtually everyone became a "prosumer."[37] Car ownership as one of the key national indicators of wealth in the industrial economy lost its relevance. Private vehicle sales fell steadily as "robotaxis" and shared vehicles replaced personal cars.

By 2030, text and data mining and data analytics were omnipresent in all aspects of human life.[38] The sophistication of their predictive capabilities reached such levels that one could even wonder whether electronic devices actually read human minds. The amount of data and information exploded; and instead of teaching people to memorise facts, learning became a creative endeavour. Students engaged in semi-autonomous learning at their own pace and in their own way, from any location they wished. Teachers played a facilitating and guiding role; in this sense, they became "learning advisers."[39]

Technology dramatically transformed medicine and healthcare.[40] Artificial intelligence leveraged huge amounts of data and predictive analytics for medical diagnosis, and hence avoided subjectivism and prevented human errors. Humans still made ultimate medical decisions, though. Regenerative medicine helped people with organ loss to grow new organs. Nanorobots in humans' bloodstream measured health parameters and diagnosed disease at a very early stage.

35 Fjord and Accenture Digital, *The Era of Living Services* (Dublin: Accenture, 2015). http://www.fjordnet.com/media-files/2015/05/Living-Services.pdf

36 Randy Komisar, "What Artisanal Brands Can Teach Us About Using Technology to Humanize Business," *Kleiner, Perkins, Caufield and Byers Blog*, 16 January 2015. http://www.kpcb.com/blog/what-artisanal-brands-can-teach-us-about-using-technology-to-humanize-business

37 A term first coined by futurologist Alvin Toffler. See Alvin Toffler, *Future Shock: The Third Wave* (New York: Bantam, 1981).

38 One of today's examples of these solutions is IBM Watson – a cognitive technology that processes information more like a human than a computer – by understanding natural language, generating hypotheses based on evidence and learning as it goes. Visit http://www.ibm.com/smarterplanet/us/en/ibmwatson/

39 Matt Britland, "What Is the Future of Technology in Education?" *The Guardian*, 19 June 2013. http://www.theguardian.com/teacher-network/teacher-blog/2013/jun/19/technology-future-education-cloud-social-learning

40 Eric Topol, *The Patient Will See You Now: The Future of Medicine is in Your Hands* (New York: Basic Books, 2015); Dr. Bertalan Meskó, a medical futurist, examines the recent digital trends in medicine and future digital prospects in Bertalan Meskó, *The Guide to the Future of Medicine: Technology and the Human Touch* (Budapest: Webicina, 2014).

And DNA drugs made it possible to treat diseases before they even occurred. These developments drastically improved the quality of life; and the digital revolution in healthcare had tangible financial implications, too. Preventive digital medicine, integrated with public health systems and campaigns, reversed the trend of soaring healthcare costs – the challenge that many advanced economies faced in the 2010s.[41]

Paper was still produced, but in much more modest volumes than decades ago. There was no actual need, as information was consumed from the screens of wearables and portables. Iris recognition was used widely as an alternative to passports and ID cards. Paper money largely disappeared from circulation; and plastic cards were largely extinct too, as most people used their gadgets for contactless payment.[42] The financial system increasingly relied on blockchain and other distributed ledger technologies.[43] This was one of the tangible outcomes of the Capital Markets Union strategy launched in the European Union 15 years earlier.[44]

All developments worth pondering on a Tuesday morning just like any other.

41 Jessica Bland, Halima Khan, John Loder, Tom Symons and Stian Westlake, *The National Health Service in 2030: A People-Powered and Knowledge-Powered Health System* (London: Nesta, 2015). http://www.nesta.org.uk/publications/nhs-2030-people-powered-and-knowledge-powered-health-system

42 According to Visa Inc, a financial services corporation and issuer of payment cards, by 2020 all Visa point-of-sale terminals in Europe will accept contactless payments. Currently, 240 banks across the continent already issue contactless Visa cards and the vast majority of Visa account holders will have access to a contactless payment device by 2020. See Visa, "One Billion Visa Contactless Purchases Made in Last Year," *Press Release*, 06 July 2015. http://www.visaeurope.com/newsroom/news/1-billion-visa-contactless-purchases-made-in-last-year

43 Philip Stafford, "Financial Times Explainer: The Blockchain and Financial Markets," *Financial Times*, 14 July 2015. http://www.ft.com/intl/cms/s/0/454be1c8-2577-11e5-9c4e-a775d2b173ca.html

44 Sergey Filippov, *Financial Services in the Digital Age: Leveraging Technology and Regulation to Achieve a Stronger Capital Markets Union* (Brussels and London: The Lisbon Council and Nesta, 2015). http://www.lisboncouncil.net/publication/publication/125-financial-services-in-the-digital-age.html; Don Tapscott and Alex Tapscott, *op. cit.*

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Additional resources

- Government Summit. http://www.thegovernmentsummit.org/
- OECD. Public Sector Innovation and e-Government. http://www.oecd.org/gov/public-innovation/
- Digital Government Institute. http://www.digitalgovernment.com
- Digital Government Society. http://dgsociety.org
- Open Government Data. http://barometer.opendataresearch.org
- United Kingdom. Digital Services for Business. https://www.gov.uk/browse/business
- United States. Digital Government. http://www.digitalgov.gov

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About the European Digital Forum

The **European Digital Forum** is a think tank dedicated to empowering tech entrepreneurs and growing Europe's digital economy. The initiative is led by the Lisbon Council, a European think tank based in Brussels, and Nesta, the United Kingdom's innovation foundation, in collaboration with the European Commission's Startup Europe initiative. The European Digital Forum was launched at the World Economic Forum in January 2014 as a vehicle to intellectually accompany the 22-point action plan put forth in the **Startup Manifesto** (www.startupmanifesto.eu) written by the **Leaders Club**, an independent group of founders of world-leading technology companies based in Europe, including Atomico, HackFwd, Rovio, Seedcamp, Spotify, Tech City Investment Organisation (TCIO), Tuenti and The Next Web. In the manifesto, which was drafted to spur discussion on improving Europe's startup ecosystem and digital-era performance, the European tech leaders proposed establishing a permanent independent think tank to explore and elaborate a more decisive approach to startups, an invitation which was seized and carried forward by the Lisbon Council and Nesta in 2014. Among the founding partners of the initiative are the European Investment Fund (EIF), Banco Bilbao Vizcaya Argentaria (BBVA) and Telefónica. Accenture is a partner. Follow the European Digital Forum on twitter at www.twitter.com/edf_eu.

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