

ICT-enabled public sector innovation: trends and prospects

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ABSTRACT

This experience paper is a personal thinkpiece which outlines many of the main issues and discussions taking place in Europe and elsewhere about the future of the public sector and how it can respond positively to some of the acute challenges it faces in light of the financial crisis and other global challenges. The paper examines how ICT-enabled public sector innovation highlights concepts like open governance, public value, government as a platform, open assets, open services and open engagement. It develops a vision of an ‘open governance framework’, moving beyond ‘new public management’, based on ICT-enabled societal-wide collaboration. It recognises that although the public sector can in principle create public value on its own, its potential to do so is greatly enhanced and extended by direct cooperation with other actors, or by facilitating public value creation by other actors on their own. It also examines the role of bottom-up innovation and public policy experimentation, as well as the need to focus on empowering civil servants and changing public sector working practices and mindsets.

Categories and Subject Descriptors

K.4.1 [Public Policy Issues]

General Terms

Management, Measurement, Performance, Design, Economics, Reliability, Experimentation, Security, Human Factors.

Keywords

open governance, public value, government as a platform, open assets, open services, open engagement

1. INTRODUCTION

This experience paper is a personal thinkpiece which attempts to summarise many of the main issues and discussions taking place in Europe and elsewhere about the future of the public sector and how it can use Information and Communication Technology (ICT) to respond positively and innovatively to some of the acute societal challenges arising from the financial and other global crises. As such, this paper inevitably throws up more questions than answers. Although the main issues outlined are based on the

author’s own thinking, much of this has also been validated through an extensive consultation process amongst many interested actors in the context of designing inputs to the European Commission’s research and innovation work programmes for 2014 and 2015.¹

The challenges in Europe are clear, and the following is just one example. Five years ago, the subject of widespread poverty in Europe would not have had much traction. However, the economic and financial crisis has re-opened a serious north-south split between European countries with levels of relative poverty soaring in countries like Greece, Portugal and Spain. In addition, the number of poverty-stricken people within many northern and eastern European countries has also risen dramatically in the last few years, for example in the UK and even in countries like Denmark. A striking example is provided in Manuel Castell’s 2012 book in which he documents action research showing that 97% of families surveyed in Barcelona have engaged in non-capitalist economic practices since 2008 simply to survive. This is a massive rise compared to the period before the crisis. Such practices include growing food, consumer cooperatives, exchange and social currency networks, cooperative child and elder minding, free universities, hacklabs, etc. [1]. The interesting aspect here is that the solutions being found are coming from ordinary people in their own localities responding creatively and innovatively to the pressing challenges they and their families and communities are experiencing every day.

Poverty is just one of the ‘wicked’ problems Europe is now facing, but there are many others most of which are also global challenges. These includes increasing inequalities both within and between countries, climate change, an energy crunch, jobs and income under pressure, rapidly changing demographics (ageing, migration, urbanisation), governance deficits at all levels (such as loss of trust in governments’ ability to collect taxes and provide good regulation, public services under strain, etc.). In response to these developments in its own backyard, the European Commission published in 2010, Europe 2020², a strategy for smart, sustainable and inclusive growth for the next decade. For the first time ever, reducing poverty has been made a target in the EU. It is calculated that more than 80 million people in the EU are at risk of poverty – including 20 million children and 8% of the working population – so the European Platform against poverty

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¹ Background work for this paper, including an online public consultation and an expert workshop, was undertaken for DG Connect (European Commission) as part of its preparation for the Horizon 2020 Research and Innovation Programme commencing in 2014:

http://ec.europa.eu/research/horizon2020/index_en.cfm

² http://ec.europa.eu/europe2020/index_en.htm

and social exclusion³ has been set up with actions to reach the EU target of reducing poverty and social exclusion by at least 20 million by 2020.

Some clear conclusions emerge from this. Public policy and services need to become more open and innovative as well as being efficient and effective, and indeed it is argued that these attributes are complementary, but also that the public sector cannot successfully tackle these challenges entirely on its own. It needs to collaborate, and a powerful tool in this context is ICT. This is the basic message of this paper which examines a new approach to public sector innovation based around notions of a proposed ‘open governance framework’, and which attempts to unpick its main components as we can presently see them.⁴

This paper also builds on previous research and attempts to draw some of the existing strands together in a new synthesis focused around openness and innovation, on top of traditional concerns for efficiency and effectiveness. In terms of academic paradigms which have had real impact on public sector transformation over the last twenty years in Europe, this would involve moving beyond the useful but limited agenda of 1990s New Public Management⁵. The paper also attempts to take a step further than the 2000s Public Value Management narrative [3] which linked the changes seen or needed in the public sector to networked government and the need for open systems.

Much literature has grown up around and beyond these traditions, notably work on the embeddedness of public sector innovation in the politico-administrative system [4], and from a public value perspective the role of strategic management in government [5]. Public value is also examined in the context of ICT enabled public sector reforms [6], and is seen as contributing to making government processes more transparent and accountable through transformational (t)-government [7]. Most recently issues of ‘lean government’, doing more for less and platform-based governance, especially in comparison with e- and t-government, are seen as a new wave which focuses on the orchestration role of government where innovation, experimentation and user requirements are key factors [8]. The current paper also draws on traditions outside the public sphere, for example the huge theoretical and practice-led advances made in business innovation and new business models, including ‘open innovation’ [9].

2. OPEN GOVERNMENT REQUIRES OPEN GOVERNANCE

Open government is one of the main pillars of ICT-enabled public sector innovation⁶, based on open data and other assets, open

services and open engagement. However, for this to be realised, a broader open governance framework is also necessary, which both reaches across many parts and levels of the public sector as well to other appropriate actors outside government. In many contexts, open governance is about linking and integrating the worlds inside government, as well as linking and integrating these with the worlds outside government for the specific purpose of creating public value⁷. ICT is a key enabler in making this possible. See Figure 1 and further discussion below.

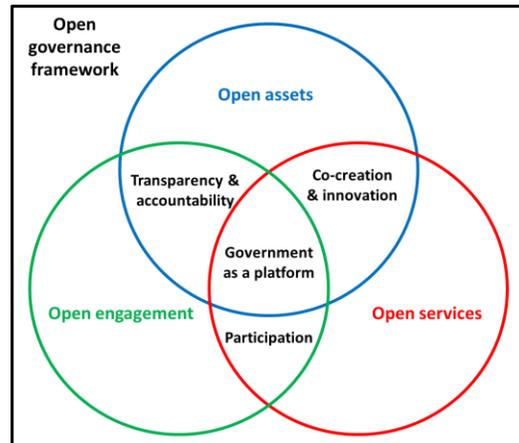


Figure 1: The open governance framework⁸

Open governance also encompasses open structures, open organisations and open processes. It involves breaking down, or at least cooperation between, silos across different administrations, levels and locations, through sharing infrastructures, processes, data, assets, resources, content and tools. It implies forms of federation and coordination which balance centralisation and decentralisation as well as top-down and bottom-up approaches. This involves huge challenges technically, politically, legally, organisationally and in terms of working cultures. The vision is a ‘whole-of-government’ approach embedded in and interacting with the reality of society as a whole. What is proposed is a broad ‘open governance framework’ strategy going forward to 2020 (see section 3). Such a strategy would attempt to develop the policies and tools to put into practice an open governance vision, underpinned by appropriate research.

The public sector can become much more efficient and effective if all parts of it share and pool the assets, resources, data, etc., which each needs. For example, public administrations could share data and employ data analytics to compare and identify similar locations, user groups and/or services through analysing socio-demographics and service use and impact. Government clouds, whether public, private or hybrid, could facilitate this. This will enable each public administration, or groups of them, to take an evolutionary approach to learning and building good practices, what works and what doesn’t through shared policy modeling. They will be able to compare, rank and simulate between similar contexts and/or through similar strategies. This might also cover

³ <http://ec.europa.eu/social/main.jsp?catId=961&langId=en>

⁴ Please note, the terms ‘public sector’ and ‘government’ are in practice used interchangeably in this paper. The term ‘governance’ refers to public governance as “the role of governments, working alongside other actors, in building, facilitating and overseeing political, social and economic development. Irrespective of any intrinsic value it might have, public governance is therefore a crucial means to desired development outcomes.” [2]

⁵ New Public Management is an approach to the public sector adopted in the 1990s by many governments worldwide, in which *inter alia* a strong emphasis was placed on the large scale adoption of private sector management disciplines related to measurement, target setting and the often wholesale outsourcing of government functions to the private sector which was deemed to be more efficient in fulfilling them.

⁶ See for example the European eGovernment 2015 Action Plan: <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0743:FIN:EN:pdf>

⁷ There are many established definitions of ‘public value’, for example “public value refers to the value created by government through services, laws, regulation and other actions” [10]. For the present purpose it can be also thought of as similar to the older notions of ‘public goods’ and ‘good governance’.

⁸ Partially based on David Tallan’s blog: <http://www.govloop.com/profiles/blogs/three-dimensions-of-open-government>.

common service lists, common processes and interactions, shared metadata standards, shared business models, etc. (This is already starting to happen in Europe, see section 8)⁸ Different parts of the public sector will also be able to collaborate in presenting a common and joined-up face to users and other external actors. Some countries are beginning to do this and are reaping the benefits of massive cost savings and efficiencies, as well as of greatly improved user services⁹.

However, there are two main types of barrier to developing an open governance framework and the sharing and openness this implies. First, lack of technical, semantic and organisational interoperability between government organisations, so that it is not possible operationally to share or exchange data. Second, management tends to be reluctant to share data and other resources as this may be considered as risky and giving up control, and where the necessary individual as well as organisational skills, awareness and attitudes are not in place. There are also real concerns that sharing assets can result in loss of knowledge and thereby loss of value, such as when investments made in one part of the public sector result in benefits appearing mainly elsewhere, which can only be mitigated by establishing a transparent, federated and coordinated governance framework.

3. GOVERNMENT AS A BROAD PLATFORM FOR PUBLIC VALUE CREATION

Although the public sector can in principle create public value on its own, its potential to do so is greatly enhanced and extended by direct cooperation with other actors, or by facilitating public value creation by other actors on their own. In other words, the public sector does not have a monopoly on public value creation, but it does have in most situations the prime role in ensuring that public value is created. Existing and new ICT is transforming the ability of government to act in these ways.

An important new role and business model for government in some (though probably not all) of its functions is to act as a broad open collaboration platform supported by ICT. In this context a 'platform' means an open environment and ecosystem with clear frameworks, guidelines, resources and supports which invites all actors to collaborate in producing public value as well as value which directly benefits the actors themselves.¹⁰ These actors include companies, SMEs, civil society organisations, communities, groups and individuals, as well as hackers, designers and artists. Resources government should provide itself, as well as elicit from other actors, include data, applications, knowledge, content, capacity and service building blocks. To enable this collaboration to happen, the government should develop shared infrastructures and processes. It should encourage collaborative use through hackathons, discussion fora, blogs, consultation, support and advice, brokerage, good practices, arbitration, workshops, events, etc. It should provide standardised modules for basic functionalities which are cross institutional so that external actors do not have to contend with unnecessary differences, but which can easily be used, re-used and combined in new ways to address specific needs.

⁹ For example Denmark, UK, Australia and Singapore, and at the smaller scale local and city level where the barriers are often easier to overcome.

¹⁰ San Francisco City government, as one of the leading proponents of government as a platform, talks about "government as a launch pad" in "a start-up called government: our first year in retrospect", the San Francisco Mayor's Office Of Civic Innovation, April 2013: <http://innovatesf.com/2012Retrospective.pdf>

By providing this enabling platform, government can support a range of actors to collaborate with each other, as well as with government itself, to generate public value. It is clear that today and in the foreseeable future, complex societal problems can no longer be solved by the state alone (the visible hand), or by the market alone (the invisible hand); now also all and any partnerships and groups (many hands) are needed. Using ICT, groups can easily and freely form, cooperate, act and dissolve: the platforms are free and the costs are essentially zero. Citizens, communities, civil groups, as well as businesses, are themselves changing from passive consumers of data, content and knowledge to active producers. For example, citizens share more and more with each other on social media platforms and tend to consult other citizens, rather than the government for advice – they increasingly use the 'social signal' and 'social search' to organise and improve their lives. Government thus needs to recognise the value of collaboration and crowdsourcing. Although government should better mobilise its own resources and talent, there is always more relevant talent outside any organisation (including government) than inside. Just as a new vision in business sees everyone as (in part) an enterprise, part of the new vision in government sees everyone potentially as a resource with assets to contribute in creating public value.

Government as a platform facilitating public value creation in the most efficient and effective way possible will support an ecosystem of actors with changing roles and relationships. This would switch the erstwhile challenge of government having to do 'more for less' to being able to orchestrate doing 'more with more' as it pools the assets of others with its own to solve problems. This already happens in a few countries, and indeed has been presaged by numerous examples where other actors have usurped government's role using ICT¹¹. On the other hand, more formal collaboration between government and other actors has greater potential as well as being more challenging because of similar barriers to those mentioned above.¹² In Europe there are bottom-up examples where local governments collaborate with other actors as well as each other to develop local services in a pan-European context by developing templates and standards that promote applications and services that can be easily adapted to local conditions rather than a 'one-size fits all' approach¹³.

It is difficult to predict which type of public sector activities and services are most suitable for these different approaches as this depends on specific circumstances, the openness of a given government and the ability and willingness of other actors to collaborate, which may also depend on the incentives they are offered. However, some possibilities are sketched in section 6.

¹¹ For example 'Fix-My-Street' in the UK developed by civil society, noise measurement around Amsterdam Airport in the Netherlands undertaken by residents in the flight path, Microsoft's 'health vault' storing citizens' health records in the cloud, and the website 'Patients know best' which is a privately provided service enabling patients to control their own medical data when negotiating with public health authorities about their treatment. These are examples where other actors have seen gaps in what government is doing and stepped in without invitation.

¹² Examples do exist, however, notably in the UK with the new e-government portal recently launched after going through both alpha and beta versions in cooperation with former hackers. The best examples are at local and especially city level, for example in San Francisco with its open data and outreach initiatives involving all relevant actors.

¹³ See footnote 9.

For many years, there has been a trend towards outsourcing and privatisation of e-government activities, including services, as part of the New Public Management vision of government. This has led to many challenges arising from new types of dis-integration and 'siloesation' between the many actors which mitigate the benefits of sharing and joining-up systems. The new open governance framework vision sketched here instead emphasises collaboration, sharing and transparency between actors with complementary role specialisation moving towards a value network and ecosystem approach to government. Here, the role of government is more likely to be concerned with coordination, integration and the orchestration of public value adding activities on the platform.

4. THE CHANGING ROLE OF THE PUBLIC SECTOR

It is clear that the above trends and visions concerning an open governance framework and government collaborating with other actors in fulfilling functions it previously fulfilled on its own, imply that governments in many (though not all) areas are starting to re-think their role. By establishing collaboration platforms at many levels, government's role changes to one of enabler and facilitator, as well as arbiter, coordinator, and regulator for the activities of others in delivering public value. In this context, there are perhaps three main types of changing role: first, providing tools such as guidance and incentives for collaboration and co-creation; second, managing assets; and third, good governance by ensuring sustainable and balanced public value.

First, by providing tools, guidance and incentives for collaboration, it is clear that although the participatory, bottom-up co-creation of services can create more effective, personalised experiences, the process can increase the burden on citizens to participate. Making more efficient, cost-effective public services must mean more than assuming citizens will contribute time and other resources to create their own services. Instead, government should provide structured guidance within which service co-creation can happen. 'Guided' service co-creation will reduce the burden on citizens of participating in this way whilst maximising the return for public administrations and citizens alike. Government should also provide incentives by highlighting the benefits citizens will derive from the co-creation process, giving them more power to make decisions about these services in adapting them to their needs, and supporting them with relevant data and other resources. Given that the most successful innovations like this happen at the local level, but that here there is huge diversity in local authority resources and competences with 'smart cities' often in the vanguard, the latter should assist the smaller (often more rural) communities to help drive public sector innovation across countries as a whole, rather than just in the metropolitan hubs.

Second, government has an increasing role in managing societal assets. Especially in the context of Europe's pressing societal challenges, there is a need to identify and deploy all the assets and resources available in society but which are often not used or are under-used. Such existing assets, including government's own, include finance, people's time and expertise, organisational structures and competences, networks, data, things, places, buildings, spaces, vehicles, etc. The role of government in using the power of ICT, perhaps in collaboration with other actors, is to identify, broker, match, orchestrate and coordinate assets which can be shared and which would otherwise go to waste, converting them into public value impacts. There are already many non-

government actors launching mainly bottom-up and small scale examples of ICT-based platforms which undertake such a role¹⁴, but government has greater power and scope to do this linking across other actors as well as sharing its own assets internally¹⁵. In order to ensure that no actors are disadvantaged or excluded from such benefits, governments should adopt this role. This would involve widening the scope of ICT-based content management systems to become asset management systems.

Third, because government collaborates increasingly with other actors in producing public value, this does not necessarily imply that government becomes just one actor amongst many as it still needs to fulfil roles which other actors normally cannot. These include taking responsibility for overall quality standards and mechanisms for resource sharing and legal frameworks, even when these are statutorily delegated to other actors. Accountability for services and performance, and responsibility especially if things go wrong, is a critical issue. Others are likely to include data protection and security. In this context, it should also be remembered that innovation and change in the public sector is not the same as in the private sector, as government cannot pick and choose its customers and government services cannot afford to 'fail' in the same way as in the private sector. Given that government is the only institution democratically accountable to the whole of society, it alone can ensure sustainable and balanced public value where all segments of society benefit and where trade-offs are seen as fair and proportionate. This means that the general sustainability of the governance system is important. Government provides longer term stability and continuity which other actors cannot, and this is necessary to enable people and communities to live stable lives, as well as for the market to have confidence that governance changes will not upset their own innovation and investment decisions. A governance system with a short-term horizon encourages short-termism in business and an unstable society.

It is not only the role of government and other actors which is changing but also of individuals in these organisations. For example, the distinctions between professional, politician, practitioner, civil servant, expert, consumer and citizen, are blurring dramatically. These roles are still important but the (power) relationships between them are changing and any given individual is increasingly taking two or more of them. In relation to government, this means that many actors can and are becoming involved in areas of competence previously the preserve of the public sector or specific agencies alone. The public sector is becoming, instead of always the sole actor, just one player albeit with unique responsibilities in new forms of open and collaborative governance.

5. OPEN DATA AND BIG DATA

A transformatory new resource is open public data, suitably aggregated so individual persons or organisations cannot normally be identified, and making this available in machine readable linked datasets which can also be searched and manipulated. To date there is still only a limited number of governments which have substantially embarked down this path, and even fewer local and regional governments where the benefits are likely to be greater. Standards for data, quality, licensing, structuring, linking,

¹⁴ For example, Shareable based in the USA: www.shareable.net.

¹⁵ For example the estimated worth of the UK's so-called sharing economy was €25 billion in 2012, illustrating the economic as well as societal value of asset sharing: <http://economia.icaew.com/opinion/november-2012/global-sharing-day>.

searching, etc., need to be developed as well as standard tool modules for compiling, analysis and visualisation, with appropriate cloud and other systems to provide the underlying infrastructure and services both across government and between different actors.

At least five sources of big data (whether real time or archived) can be discerned which can be mixed and mashed by governments and other actors to create public value:

- data routinely collected by the public sector, whether for administrative, service or public policy purposes (i.e. PSI: Public Sector Information)
- physical environmental data, for example from sensors and actuators
- data from social networks, such as Facebook: interactions and the social signals and advice which people pass to each other
- co-production platforms, such as Wikipedia: with the specific purpose of co-producing new knowledge and content
- crowdsourced data: human input data of different types, including facts, evidence, preferences, opinions, sentiment analysis, data scraped from the web, etc., which can be used in multiple ways.

Businesses can also be sources of potentially valuable big data for public value, and there can be benefits in mixing such data together and adding data contributed by communities and individuals (through for example crowdsourcing), as well as data ‘scraped’ from the web (i.e. automatic extraction of data from websites), or even from controversial sources like WikiLeaks.

Citizens generate an enormous amount of economically valuable data through interactions with companies and government. Such personal data is a public sector asset, but the value created does not always go to the benefit of the individual, particularly when third parties (whether governments, businesses or civil organisations) collect it and separate people from their own personal data. Smart disclosure is a new tool that helps provide people with greater access to the information they need to make their own informed choices, for example in health care, education, employment, etc. Traditional open government data focuses on transparency, accountability and decreasing corruption in government. The smart disclosure approach is a step on from this and starts from the premise that people, when given access to data and useful decision tools, built for example by governments, can use both their own personal (disclosed) data together with other appropriate data. This can be used to make decisions about their own lives, as well as to self-regulate and stand on a more level playing field with governments or companies.

Many governments, especially at regional and local level, are still struggling to come to terms with the meaning and value of opening their data, let alone how best to do so. This problem will be dramatically compounded in the years ahead as we move from the Internet of Things (IoT) to the Internet of People (where every individual has an internet address) and perhaps to the Internet of Everything where all these internets merge. Efforts are needed to ensure that public sector innovation does not become overwhelmed (or indeed left behind altogether) by an impending ‘data tsunami’. Issues around big data include:

- Data gathering – How can the public sector effectively tap into the ‘data tsunami’ about to hit due to the explosion of social media and introduction of new low cost data gathering tools that effectively make every citizen with a smart phone a data source? What new data gathering trends are most likely

to impact public services? What types of tools, standards and formats should the public sector use to access this data and, in turn, make it easily available and accessible?

- Data usage -- How can the public sector facilitate the use of this data by citizens in the co-creation of new public services? What new tools, procedures and skills are needed by public administrators and citizens alike? How should the public sector handle data management issues, i.e. government as a trusted data broker?
- Data mash-ups – How can the public sector derive added value from data by linking differing data sets, for example from the different sources above? What types of formats, standards and procedures are needed?
- Data ownership – Who owns the new services that are created from big data? How to manage/govern usage and IPR issues?
- Data registration, certification and licensing – which standards, protocols and templates are needed to ensure data interoperability within the public sector and with other relevant actors?
- Data quality, compliance, predictability, durability, persistence and archiving – Are neutral trusted parties needed and are public administrations able themselves to fulfil this role, or should trusted third parties be set up under statutory license? Should such trusted (third) parties display a quality label? When data is used for public services what are the security and privacy issues, and how will quality of service (QoS) be agreed, guaranteed and reflected in service level agreements (SLAs)?

In comparison with the private sector, the public sector may have specific requirements and responsibility in relation to the provenance, integrity, auditability, authenticity and transparency of the data. There are always issues about data quality and representativeness (for example some crowdsourced data may lead to spurious analytics unless it is balanced by accessing inputs on a sufficient scale and representativeness across the target population), and deliberate or accidental data mis-use can occur in the same way as statistics can be mis-used. On the other hand, releasing incomplete and/or inaccurate data is also a way of improving its quality as users can both correct and enhance it. Over ambitious focus on data completeness and quality should not be used as an excuse not to release public data, as long as this is accompanied by full openness about provenance, methods of collection and guidance about use.

As described above, different parts of the public sector possess different resources and competences, for example between ‘smart cities’ and the smaller (often more rural) communities, so support and sharing become important. Similarly, different roles can be played by different levels of government to exploit top-down and bottom-up synergies through federated arrangements for data and knowledge. For example, the top (both at national and European level) should provide federated meta data, registries, standards for sharing and linking, common licensing, shared vocabularies, etc. The bottom (regional and local authorities) should create, maintain and exploit data sets and act as an ‘authentic source’ which is also responsible for the maintenance needed to sustain the data set.

6. OPEN SERVICES AND OPEN SERVICE APPROACHES

Public services delivered or enabled by ICT need to focus increasingly on user empowerment and creating public value for the user as well as the wider society. One of the main drivers is

the notion of 'universal personalisation'¹⁶ which can result in three types of service. [11]

First, ICT can enable government to observe and analyse societal developments right down to individual behaviour using the vast amount of data available to it. In this way, a benign government can provide much higher quality and valuable services for users, especially to those who may be disadvantaged in some way or unable or unwilling themselves to get involved in selecting or creating their own services. Many of these services are 'administrative' services, i.e. necessary for government to function, such as collecting taxes, imposing legal requirements, making decisions, etc., and are the result of statutory requirements. These services are data-driven and can mostly be delivered online. They represent most existing e-government services in Europe and only need to be infrequently used, such as paying taxes once a year or applying for building permission, resulting in relatively low usage of online public services to date. However, other types of these top-down services are related to general statutory service provision in areas like health, social care, education, employment, etc., which are traditionally delivered in 'one-size-fits-all' mode but where data can be used to personalise service offerings. For example, such services can be life-event driven, and services can be orchestrated by government using the 'field of application' approach, i.e. what is the 'perfect' solution for the user. Many of these services can also be described as proactive which makes the government 'invisible'¹⁷. There are obvious threats in such developments. These include reductions in personal privacy as well as the possibility that government may not always be benign, and, even more likely, that government may not always be competent. This, in turn, relates to the extent to which users can trust government, particularly when it comes to using their data responsibly and wisely.

Second, citizens or businesses, either individually or in communities, groups and localities, as well as through intermediaries of various types, can be empowered to select and create their own services. Users are likely to be expert in what their problems are as only they possess the fine grained knowledge about what they really need. The above government- and data-driven approach, however well-meaning and intelligent, is likely to miss this latent, tacit knowledge possessed by users which is largely kept dormant and suppressed by the top-down delivery approach to services in which professionals are largely in control and assumed to have all the knowledge, thereby cajoling users to become largely passive.

This more bottom-up, user-driven and co-creation approach to services can exploit the growth of public services in the cloud, where service components, apps and content/data can be made interoperable and mashable. These components do not need to be provided by governments, but are also likely to be contributed by a large number of different actors. This approach sees users dynamically composing services from existing service components, for example on the basis of the user's own profile or life events. Users can also use automatic web-service discovery of the components they need. An example of a possible future approach in this context is users managing their interaction with the public sector through individual online dashboards. Accessible

through a web-browser or mobile device after secure authentication (which may include biometrics) the user would prepare, present and modify/delete the data that he/she is required (or wishes) to share with the public entity. These would be push-mode (top-down) services but controlled and modified by the user. There is clearly a need for single-sign-on and one-time shared data (such as key fields of identity, address, status, etc.). Multinational aspects for Europe's mobile population can be catered for based on interoperability and mutually recognised authentication schemes (now in pilot testing). This notion builds on existing 'MyPage' approaches already in use in some countries, for example Denmark, the Netherlands and Norway, and illustrates user self-monitoring and control through a single point of contact created by the administration or by the citizen/business, or both in cooperation.

The dangers of this second, bottom-up approach to services are, however, also manifold, including issues of exclusion related to the digital as well as wider societal divides and inequalities. This might mean that more personalised, higher quality and useful services could become the preserve of the better off and more competent segments of society, and not least the already more prosperous localities with more resources to draw on. Also, can governments (and thereby the tax-payer) trust users to behave responsibly when enabled through greater choice and empowerment to directly access public resources, and what should be the extent of restraint or monitoring in order to minimise this danger? This shows that trust goes two ways – it is not only a question of 'can users trust their government', but also 'can government trust users'. Further, there are important issues related to the role of government and the public sector more generally when data, tools and opportunities are given to other actors (not just users but also civil and commercial actors) to create public services. This starts to question what is meant by a 'public service', who owns it, who is responsible for it and who is accountable if something goes wrong.

The third type of service approach enabled by ICT is the emergence of 'everyday' and location-driven services, based largely on mobile smart phones using GPS, although web-based services are also relevant. Such services are offered or created depending on where users are, as well as who they are and what they are doing. These services are also data-driven but largely in a local context where users are given a lot more choice and control. They can include local services related to health, education, care, transport, infrastructures, utilities, parking, accidents, clean and safe environments, congestion and pollution watch, culture, amenities, leisure, sports, security, crime watch, weather, participation, engagement, etc. New types of service, like conflict resolution, can also be envisaged. It is also much easier for users themselves or their intermediaries to participate in constructing and designing their own services at local level where knowledge and resources are often more relevant, closer to hand and more amenable.

An important issue arising from these different types of public sector service possibilities is the differences between statutory and non-statutory services, and, especially in the latter case, whether and how government should regulate, for example in terms of quality and accountability.

Users are also changing their behaviour when accessing and using e-services. The evolutionary approach to making such services available has been the abandonment of 'many stops' and a move to the 'one stop shop' (typically rather complex) navigation portal, which now dominates. However, studies show that people are

¹⁶ In principle, every service, facility, piece of content, etc., can be personalised to precisely suit all types of recipient, whether individuals, groups, places, etc.

¹⁷ Invisible in the sense that government is not noticed even though it is providing a service or some other function.

increasingly finding and accessing services (whether commercial, personal or public) by sophisticated online search and hardly using expensive government portals.¹⁸ In response, a few governments (most noticeably the UK through first an alpha and later a beta version of their new portal, www.gov.uk) are now moving to the concept of personalised push/pull services in and from the cloud. These are delivered direct to the individual user and/or pulled by him or her, based on a ‘whoever, wherever, whenever you are’ approach, using both mobile and stationary ICT tools.

The UK also provides, along with Denmark and Finland, one of the first examples of the explicit application of ‘design thinking’ to public electronic services¹⁹. Design-led innovation in government is a holistic approach that attempts to understand the “full architecture of a problem”, for example in the Finnish strategic design approach to public services like health, education and social services²⁰. In principle, all relevant aspects of a user’s approach to and use of a service are taken into account, for example by the Danish government’s Innovation Unit, MindLab²¹, where ethnographic-inspired user research, creative ideation processes and other experimental approaches, as well as the visualisation and modelling of service prototypes, are all undertaken.²² The UK’s new eGovernment portal has just won a prestigious design award based on similar principles including the need for government itself to do the “hard work to make it simple for users” by attempting to understand and map user’s circumstances, relationships and full needs.²³ The UK portal is based on an innovative set of service design principles currently being introduced and which will become mandatory by April 2014.²⁴

7. OPEN ENGAGEMENT AND OPEN PARTICIPATION

Open engagement and open participation are important pillars of an open governance framework in which all legitimate actors are invited to engage in the activities of government as long as this engagement is itself open and enhances public value. Most e-participation research and practice over the last ten years has focused on the use of ICT for citizen involvement in political decisions and public policy making at both local and national levels, as well as on the possibilities of e-voting. This is a rather narrow view of e-participation, mainly related to e-democracy, i.e. enhancing the democratic process using ICT. Results have so far been mixed and perhaps disappointing overall given the high expectations of even just five years ago. Ironically, this has perhaps led to reduced enthusiasm for e-participation funding at the very time that technology advances in areas like social media and mobile started to overcome the obstacles. It is also now more apparent that the ICT-enabled public sector allows a much wider

vision of open participation as open engagement, and this is making significant impact through diverse experiences around the world, particularly but not exclusively at local and regional level. Open engagement should no longer be conceived as a silo focused only on politics and policies, although these remain important. Instead open engagement needs to be firmly embedded within, and part of, wider governance changes across all public sector activities, processes and structures. Although ICT is not the cause of these changes, it is certainly a key enabler and driver of them, especially social media and mobile applications. In addition to participation in service design and delivery, for example through co-creation, this means that citizens and other legitimate actors are able to establish a broad engagement and empowering relationship with government in terms of:

- the workings and arrangements of the public sector and public governance more widely (for example through participative budgeting and where scarce resources are allocated)
- community building
- dispute and conflict resolution
- managing societal assets, including land, buildings, etc.
- public policy and decision making as part of the overall democratic process.

An increasing amount of good practice demonstrates that an open engagement relationship between government and citizens is most successful when applied in a joined-up manner across some or all of the above areas and government functions (education, health, transport, law and order, care, environment, etc.), and when intimately integrated with and complementary to non-digital engagement methods. Although most success is still mainly at local and regional level, the evidence shows that open engagement works best when it becomes a seamless part of a government’s broader policy of openness, transparency and collaboration. It should be continuously woven into a citizen’s experience of the public sector, built into the fabric of all aspects of the way in which he or she interacts with the authority. It needs to be a natural and fundamental way in which the government conducts all its business, whether in what is traditionally termed either the back- or front-office so that this distinction becomes misleading – all is now ‘front-office’ in the sense all should now be open, transparent and visible by default, unless there are sound reasons to the contrary. Open engagement thus touches the lives of citizens in a comprehensive way; it builds on traditional open participation but with a new and perhaps transformatory dimension.

Today, with the explosion of new means for citizen engagement the focus is much more around how to tap into existing citizen conversations and make effective use of the wealth of citizen generated feedback. ICT can help reconnect citizens, who are constantly talking online amongst themselves, to political and other public sector issues both formally and informally. It is also helping to connect politicians and civil servants, who often feel overwhelmed by emails and data. For example, ICT can support:

- Federated identity – Using citizens’ existing presence/networks online instead of requiring them to create new identities or go to new platforms. There is a need to ensure that governments go where citizens already are, whether mobile, wireless or multichannel.
- Large scale data analytics – Mining on-going discussions across social media channels about policy and other public sector topics in a manner that provides data that is tailored and relevant for decision makers,

¹⁸ For example, Ben Terrett, Head of Design at the Government Digital Service, in the Cabinet Office for the UK Government, states that only 15% of UK eGovernment users came through the Direct.Gov portal (now replaced) with most of the others using search engines to get direct to the service they need: <http://digital.cabinetoffice.gov.uk/2012/01/19/designing-govuk/>

¹⁹ Singapore’s Design Thinking Unit, in the Prime Minister’s Public Services Division, is another example.

²⁰ Sitra, the Finnish Innovation Fund: <http://www.sitra.fi/en>.

²¹ <http://www.mind-lab.dk/en>

²² http://www.ssireview.org/articles/entry/design_led_innovation_in_government

²³ <http://designmuseum.org/exhibitions/2013/designs-of-the-year-2013>

²⁴ <https://www.gov.uk/service-manual>.

e.g. politicians receiving data about their local constituencies.

- Linked data – Combing and combining across silo and actor data in a manner that helps citizens better understand issues and helps politicians make better decisions.
- Data visualisation – Using new tools to make information more accessible to citizens and politicians – i.e. quick snapshots of public opinion rather than mining through hundreds of emails, identification of variations by regions and constituencies, etc.

Recent examples include crowdsourcing legislation such as the new Icelandic constitution; the city of Hamburg's transparency law created by citizens/civil initiatives using a public wiki and then adopted by government; and the BundesGIT where all federal laws in Germany are being made available on an open source (code) platform in machine readable format so they can be widely developed by experts as well as citizens leading to legal amendments and new versions. The issue here is does such crowdsourced legislation really lead to better law as well as higher acceptance? Does it improve trust and support anti-corruption and better accountability?

Because open engagement is new, especially enabled by ICT, a good approach is to make many small experiments with existing tools. This is much better than a few big initiatives which if they fail waste resources and reduce motivation. It relates to the need for bottom-up, user-driven engagement. For example, what are the drivers and incentives for citizens to engage? Immediate feedback from government might be an incentive but there are likely to be others. Experimentation should be done in a variety of ways; e.g. a recent data collection study in a specific context made by the World Wide Web Foundation²⁵ showed that paying people to respond to surveys made the results slightly better, but that what really improved them was human interaction instead of people filling an online form.

8. LOCATION

The locality is where ICT-enabled public sector innovation can become more meaningful for a much larger number of people and help address societal challenges where they often matter most, in the everyday lives of people. Especially in the larger European countries, open governance is becoming more important at the regional, local and especially city level. Local is where people lead their everyday lives and require public services which are tailored to their location-specific needs. For example, location has an important role in collaborative and open service production based on open data made available by local authorities and other local actors. The creation of these new services could be either driven by citizens but also by public administrations, i.e. services for citizens as well as services for public administrations.

As described above, the traditional, top-down administrative e-services (like tax, benefits, licenses, applications, registrations, etc.) are fully rolled out in most European countries and, although absolutely essential, are by nature infrequently used so the take-up of e-government remains limited. On the other hand, more everyday location-based services, through mobile, PC as well as web 2.0 social media, enable many new types of public service to be offered. This trend, together with dissolving silos, open data, big data analytics and widespread collaboration, are the basis for the important trend to, for example, smart city governance. The

smart use of advanced ICT enables these geographic units to exploit their position at the 'sweet spot' between centralised and de-centralised governance models. Cities are typically large enough to have real power and impact, but also small enough to be close to the lives of real people where governance makes most sense and can have greatest immediate impact.

There are already good examples, like the ESD (Effective Service Delivery) network²⁶ which has a membership of over 23,000 local agencies and authorities in the UK and has developed a range of toolkits and shared services for collaborative working and for evidence-based improvements of locally delivered services. ESD is a hosted, secure, online resource that enables all local authorities to record their public facing services against a comprehensive list of services, processes and interactions, and to compare and monitor them against the characteristics and performance of other participating local authorities based on shared metadata standards. It now has partners across Europe and is fast becoming a new standard for local e-government business models. The ESD network enables local authorities to develop locally relevant services whilst sharing building blocks of functionalities and service types with each other where there are common needs, thereby saving effort and resources.

Further, in October 2010, a bottom-up initiative by a number of European local governments launched a pan-European 'Call to Action' - known as The Citadel Statement, designed to help local government deliver on the key objectives of the Malmö 2009 Declaration. The statement covers²⁷: common architecture, shared services and standards; open data, transparency and personal rights; citizen participation and involvement; privacy and identification of individuals; and rural inclusion.

9. NEW PUBLIC SECTOR 'BUSINESS MODELS' ENABLING BOTTOM-UP INNOVATION

The most widespread current 'business model' in governance is a top-down centralised institutional approach, typically based around administrative silos and with little collaboration with other actors. Current approaches to governance also fail to exploit the benefits of collaboration and engagement, especially at the local level where people experience their daily lives for which new types of governance business model are needed which:

- are often bottom-up ad-hoc processes which exploit existing and often under-used assets
- contextualise the implementation of ICT – starting from the needs of the citizen (perhaps mediated by people or organisations closest to them) rather than government
- enable leadership, ownership and accountability at the grassroots
- usher in new (power) relationships between professionals and citizens
- build widespread skills and competencies amongst the population
- because they start from the bottom, address not just the direct service needs of citizens but also helps give them self-fulfilment and esteem (this is also an aspect of 'design thinking', see section 6 above)
- re-use and mash existing public sector data and other resources

²⁵ www.webfoundation.org

²⁶ www.esd.org.uk

²⁷ www.citadelonthemove.eu

- typically involve much less finance, have much shorter development cycles, and include a whole range of actors compared to traditional top-down initiatives.

Research is needed into new business models for the public sector enabled by ICT in which innovation is more open, bottom-up, evidence and impact led. These forms recognise that everybody and every group are potential innovators but this needs to be better enabled and coordinated in order to have maximum effect. Overall the focus should be on solving complex societal problems through collaboration and open governance. There are close similarities here with ‘social innovation’ where a number of actors, which can include communities, civil society, companies and the public sector, collaborate to tackle unmet social needs whilst also ensuring that the capacity of the different actors to innovate over the longer term is enhanced.²⁸

These bottom-up and social innovation approaches are often compared to biological evolution in which the most successful innovations seem to occur when choices, ideas and innovations occur ‘randomly’ in an enabling environment, and then selected through trial and error. [12] With this analogy, the two rules for successful, especially open and social, innovation underpinned by ICT networks are the need for:

- first, variation: large number of experiments on a scale where failure is small and early, and thus survivable (unlike in the financial sector where failure was huge and late thereby causing massive and damaging disruptions)
- second, selection: citizens, organisations, businesses, governments, will select from this trial and error process what works or is useful for them – for bottom-up innovation this is not a governance role, though government must provide support and ensure the right enabling conditions.

The public sector cannot be innovative in the same way as highly agile SMEs, corporates or social entrepreneurs. Governments have highly complex and often contradictory evidence to deal with and decisions to make, must attempt to reconcile competing interests, make policy trade-offs, and recognise that both social and business cohesion relies on governments to ensure basic stability and continuity, whilst at the same time being transparent and democratic and serving all parts of society. However, the public sector can still be highly innovative across all its functions, and ICT is a major tool.

Specific methods and tools supported or enabled by ICT, which government can adopt more widely to support experimentation and bottom-up innovation, include living labs and perhaps making these more like open public labs; and hackathons in which a range of actors solve specific local problems using big data as well as local insight from people, designers and artists who own the problem and who can devise elegant solutions. Also relevant is public social policy experimentation²⁹ building on the governance and policy modelling research in the European FP7 research programme, but which also considers using new tools and methods, for example randomised controlled trials³⁰.

²⁸ www.siresearch.eu

²⁹ For example currently being supported by DG Employment, Social Affairs & Inclusion.

³⁰ For example in the UK “Test, learn, adapt: developing public policy with randomised controlled trials”: <http://www.cabinetoffice.gov.uk/resource-library/test-learn-adapt-developing-public-policy-randomised-controlled-trials>

These tools and approaches should directly support collaboration around solving complex societal problems, particularly adopting social innovation goals and techniques. Social innovations are new solutions (products, services, models, markets, processes, etc.) that simultaneously meet a social need (more effectively than existing solutions) and lead to new or improved capabilities and relationships and better use of assets and resources. In other words, social innovations are both good for society and enhance society’s capacity to act. Government is a prime actor in meeting social needs, but needs to be better in doing this and in enhancing society’s overall capacity to act, by close cooperation with the other main actors: the private commercial and profit-seeking sector, the non-profit formal civil organisation sectors, and the informal sector consisting of individuals, households and communities.

10. CIVIL SERVANTS AND WORKING PRACTICES

Equally important to empowering citizens is to empower public sector staff. Applications and processes are needed which enable civil servants, many of whom are frontline professionals and decision-makers, to themselves participate in ensuring government is open and engaging, for example by being equipped with the necessary skills, tools and support. Many civil servants see the real time performance and impact of public services and public policies on citizens, and would be able to generate appropriate data and other inputs which could improve live service experience if they were given the data, tools and incentives to do so, for example by being permitted to participate in a professional capacity in citizens’ social networks to offer advice and knowledge. Moreover, many civil servants also see a blurring of their personal and professional lives in terms of the tools they use, and both can be improved through the exchange of experience and skills. Sensible structures are needed to ensure that civil servants empowered in this way are also able to retain impartiality and a position of trust both from the government itself as well as from citizens.

One of the biggest challenges to ICT-enabled public sector innovation is legacy ways of working and of administrative cultures, and the often embedded resistance to change. The entrenchment of a ‘risk adverse culture’ and ‘business as usual procedures’ remains strong within government at all levels, creating an inherent obstacle to the introduction of new processes, products, services and methods that ICT enables. The importance of empowering civil servants cannot, therefore, be underestimated. Apart from providing appropriate tools and training for civil servants, leadership from both the top and the middle of government organisations is critical to ensure that open governance and services evolve at the right speed. Rather than attempt to keep pace with technological change (which is impossible given the current pace of ICT innovation), government leaders should promote the principles of ‘open innovation’ amongst civil servants, ensuring a cultural mindset that is flexible, adaptable and responsive to user feedback.

Although some ‘bureaucracy’ is necessary, for example to ensure decisions are made according to statutory and other rules, greater discretion is also needed based on big data, user feedback and open engagement, as long as this takes place transparently and openly and subject to reasonable challenge and scrutiny by society at large. This includes new attitudes to, and acceptance of, ‘whistle blowers’ both within and outside the public sector. Much of this needs to be based on ‘freedom of information’ legislation

which also allows questions to be asked and responses provided within a specified time period. Although such freedoms can be mis-used, they contribute directly to trust in government as well as to better governance in the longer term. Thus, there is a need to achieve a balance between transparency and privacy not just for citizens but also for politicians and civil servants who do need private spaces for open thinking and speculation before the full publication of information.

11. CONCLUSION: A VISION FOR ICT-ENABLED PUBLIC SECTOR INNOVATION

A vision of open collaborative governance enabled by ICT encompasses open assets, open services and open engagement. It involves breaking down, or at least cooperation between, silos across different administrations, levels and locations, through sharing infrastructures, processes, data, assets, resources, content and tools. It implies forms of federation and coordination which balance centralisation and decentralisation as well as top-down and bottom-up approaches. This involves huge challenges technically, politically, legally, organisationally and in terms of working cultures. The vision is a 'whole-of-government' approach in which the public sector acts as one entity, especially in its interactions with other actors including citizens and businesses.

In addition, the vision refers to the ability of the public sector, as appropriate to its mandate and resources, to become more innovative and responsive to society's needs in the way it operates. It also sees the public sector supporting innovation in wider society by providing an appropriate collaborative environment and enabling conditions. This vision also implies that government should create a platform for collaboration as an open environment and ecosystem with clear frameworks, guidelines, resources and supports which invite all actors to collaborate in producing public value.

In changing and adapting the roles of government in this way, there are also real concerns that such changes will result in new types of risk, for example:

- loss of control and blurred accountability of services (by whom to whom?)
- quality standards are more difficult to determine and maintain with many designers and suppliers
- privacy and data security
- danger of data and content mis-use
- digital elite formation – new digital divides?

- information and data overload – or is this more a filter failure?

However, government as the only institution backed by democratic accountability, is best placed to address these risks and will need to retain basic roles including setting overall quality standards, providing mechanisms for resource sharing, and determining legal frameworks.

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