Design principles for essentially digital governance

Conference paper

Paper to the 111th Annual Meeting of the American Political Science Association,
San Francisco,
September 3-6 2015.

Design Principles for Essentially Digital Governance

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Governments and citizens operate in a digital environment, leaving digital trails whatever they do and wherever they go. These trails generate huge quantities of information about themselves, each other and any interactions they have. In this context, the most important elements of an organization that deals with people are the information it can access and the intelligence provided by analysis of that information. Information and intelligence generate capacity for innovation, efficiency and the agility to adapt to a rapidly changing environment. These statements are as true for public as for private organizations; most governments in the 21st century industrialised world and beyond are reliant on a large digital presence and complex network of large-scale information systems for administrative operations and policy-making. These systems go beyond being critical for policy implementation to shaping the whole context within which policy and service delivery choices are made, either facilitating innovation or constraining policy options. Simply put, many or even most government departments and agencies 'are' their information systems and digital presence – the only part of them with which many citizens will interact (Margetts, 1999; Dunleavy, Margetts et al, 2008, Steinberg, 2012).

Yet those that direct, manage and study government can find it bewildering to negotiate this rapidly changing information environment or to prioritise the interactions and feedback loops that would capitalise on the potential of the internet and digital technologies for public policy solutions and service delivery, particularly in the prolonged period of austerity following the financial crash of 2008. Consequently, the online worlds of governments and citizens remain strangely separate and distinct. The state can lag behind technological trends endangering its operation. As driverless cars become a reality, for example, the technology available to service them far outstrips the development of the legal framework to govern their use or allocate responsibility, for example when two driverless cars crash.

This paper puts forward an 'Essentially Digital' model of Governanc*e* (EDGE) to navigate this changed world, a model of bureaucracy where finally digital technologies take centre stage in government organization. It draws on the authors' earlier exploration of *Digital Era Governance* (Dunleavy, Margetts et al, 2006, 2008, 2010, 2013) and over 25 years of research into digital government and policy-making to investigate the relationship between the internet, politics and public policy. The Essentially Digital Governanc*e* (EDGE) model places digital technologies at the centre of government, from which they have so long been marginalised (Margetts, 1999; Dunleavy and Margetts, 2006; Pollitt, 2011), starting from the digital baseline that ten years of DEG has provided and putting forward principles for the design of the state in the era of social media, cloud computing, robotization and big data. It identifies the organizational cultures that can foster EDGE practices, most originating outside of government, in visions and practices that derive from the normative views and theoretical models that have grown up around the internet and information technology, from open source to digital rights and even the anarchism and cyber-utopianism that characterised the early days of the internet. It provides practical principles for the design of governmental organization and service delivery, and for the normative choices that confront policy-makers in the digital era.

The paper is structured as follows. First, we look at the relationship between technology and bureaucracy in public management reformr and, second, how digital cultures have grown up in the information state. Third we make the case for nine 'Do' principles and 'Choice' principles to guide the design of 'Essentially Digital Governance'. First, five 'Do' principles provide the framework for administrative and service design:

D1. Deliver public services for free

D2. Use already existing digital information

D3. Do it once

D4. Grow scalable services in competition

D5. Isocratic (DIY) administration

Second, four 'Choice' principles lay out a normative framework for policy-making and service delivery in the age of social media and big data:

C1. Value equality of outcome over process

C2. Provide formal rights and real redress

C3. 'Keep the state nodal' obligation

C4. Experiential learning

For each of these principles, we identify their cultural origins from the world of information theory and science that has grown up around computers, information systems and the internet, highlighting exemplars where these principles have been pursued in government. The analysis will provide a framework for their synthesis in a 'whole of government' approach.

Models of bureaucracy and technology

Over the last 100 years, governments have been designed along the lines of three basic models of bureaucracy. First came the Weberian model, characterised by paper-based systems; formal written files; and command and control in large hierarchical structures. This model was at the heart of what Hood (1995: 167) termed 'Progressive-era Public Administration' (PPA) to characterise the 'progressive era' of the late nineteenth and early twentieth century, based on three key principles: the idealization of career public service professionals insulated from the general labour market; a battery of generalized rules that limit the discretionary power of public servants in their conduct of government operations; and the equal treatment of citizens in a rule of law way. In this model the role of digital technologies was marginal, although the initial automation of administrative operations reinforced machine bureaucracies and increased standardization through co-ordination in databases.

From the 1980s to the early 2000s, the New Public Management (NPM) model dominated the toolkit of public management reform. To varying extents in different countries, NPM variants of managerialist modernization emphasized disaggregation of large-scale departments, increased competition within the public sector, and the incentivization of public officials along business lines. In this model, digital technologies were also marginalized, after an initial tokenistic information technology adoption aimed at better service delivery. In fact, radical NPM models worked against the successful incorporation of digital technology into government, as the IT operations of government were agencified and outsourced to global computer services providers along NPM lines, stripping digital expertise out of government (Margetts, 1999). Indeed, Fishenden and Thompson (2013) have argued that attempts so far to build digital government 'have been constrained by their foundation on an "NPM chassis": an NPM-era commercial model involving unchecked development of monolithic, outsourcing-style private sector involvement in IT-service delivery'.

From the 2000s, models of bureaucracy with digital technologies at the centre became viable. Digital Era Governance (Dunleavy, Margetts et al, 2006, 2008) is based on the complete digitalization of paper and phone-based systems; a citizen-based holism where services are reorganized around digitally enabled citizens; and a reintegration of governmental organizations fragmented after years of NPM change. A second wave of DEG (Dunleavy and Margetts, 2010, 2013) brought a strengthening of reintegration through the demands of austerity, with shared services and 'digital by default' channels as a way of doing more for less and for drawing on citizens' willingness to manage their own affairs and co-produce, and even co-create, public services and policy. Although DEG remains an ideal type pursued to varying degrees by different governments and different agencies and departments within governments, it challenged strongly and arguably defeated the NPM model (Dunleavy et al, 2005), which by 2014 had no remaining claim to be a coherent model for reform. At a seminar to 40 civil servants (grade 7 and above) given by one of the authors in June 2014, only two of those present had ever heard of the phrase 'New Public Management'.

The three themes of the DEG model – reintegration, needs-based holism and digitization – remain as valid now as they did when the DEG model was first developed, particularly in the age of social media, big data, cloud computing, utility software and robotization. But the legacies of the Weberian model and NPM have constrained the shift to the digital era. Some sectors, such as the military, have deep technological pockets, with smart robots – such as drones - replacing complex chains of command and people, resulting in centralized authority and expenditure patterns which are vulnerable to bureau-shaping pressures and ever more opaque to public scrutiny. In other more citizen-facing sectors, governments can struggle to keep up with an increasingly technologically savvy citizenry, accustomed to interact via social networks and online forums which have rapidly accumulated more trust online than the more formal offers of government bureaucracies. Expensive security laden digital channels can be plagued by low usage levels, while lack of understanding of non-use and proxy-use mean that even more expensive non-digital channels have to be maintained, even for experienced internet users. When it comes to disseminating information, lack of social media expertise and access (and indeed many civil servants in the UK lack internet access of any kind) and an overly formal approach means that government can face declining nodality and visibility (Hood and Margetts, 2007; Escher et al, 2006). Governments find

it hard to follow the principles that some commentators argue are necessary for 'staying power' in the digital era, such as the 'productization of services' (Cusumano, 2010).

In summary, the online worlds of governments and citizens are surprisingly separate, even after over a decade of widespread internet use, with governments failing to capitalise on the affordances of big data and citizens unable to interact with government digitally to anything like the extent they do with firms or social enterprises. In some ways, government has changed little since the early 19th century, when in Germany the word 'bureaucracy' was in common usage and 'rule by offices' was characterised by a passion for writing things down and filing it. Governments are still, 200 years later, awash with text, paperwork and signatures, the traditional accoutrements of bureaucracy.

So governments need a reform agenda that directly confronts the continuing predominance of the Weberian model, discards the tattered remains of NPM and provides a route map for the digital future.

Information cultures

Aspects of the Weberian model have survived the onslaught of decades of New Public Management reforms and an overlay of DEG reforms, so that the three models co-exist uneasily. The introduction and partial realization of the authors' own model Digital Era Governance worked against the NPM legacy, which inhibited digitization, reintegration and holism in terms of reaggregation around the citizen, particularly in those countries (such as the UK) where it was pursued most enthusiastically (Fishenden and Thompson, 2013). 'Digital by Default' agendas (as in the UK) have engendered a far more general interest in the possibilities afforded by digital governance across public sectors more widely, outside units with specifically digital responsibilities, but cultural barriers remain to using social media and embracing the digital timestream, and developing the data science skills necessary to extract public value from big data. Contemporary public service systems are now typically 'eclectic mixes of historic "legacy" cultures, pluralistic PPA ideas, NPM implementations, and DEG trends' (Dunleavy, 2014). Although widespread use of social media, cloud computing, big data and the internet of things have opened up a route for a 'second wave' of Digital Era Governance from 2005 (Margetts and Dunleavy, 2013), in many countries the progress has been disappointing, with the digital elements of government still an add on or peripheral to government operations.

Meanwhile, 50 years of computers in government, 20 years of the internet and world wide web and ten years of social media have imported a range of organizational cultures to government that ultimately can underpin a new model. Computers have acted as a conduit for new types of professional influences and economic imperatives on the business of government. The internet is the first technology ever to become integrated into daily life by citizens at a faster rate, and in more innovative ways, than governments, so also acts as a channel for the earliest visions of 'cyberculture' to enter government (such as the anarchic and libertarian visions of cyberspace, Barlow 1996) as well as newer cultural movements that have grown up around particular technological trends, such as the open source movement. In contrast, the Weberian model is resistant to external cultural influences, with rigid emphasis on hierarchy and bureaucratic culture. Likewise, PPA with the focus on a public sector ethos and professions distinct to the public sector repelled external influences. NPM with narrow lines of accountability through the contract was also resistant to cultural influences outside of what was perceived to be business culture and did little to foster technological trends within government – these were viewed as being imported automatically as neutral tools along with managerialism. For the first time, therefore, influences on EDGE as a paradigm for public sector reform are likely to come from outside government, rather than from inside, or from outside analysis of what is perceived to be happening inside government (take the budget maximisation model beloved of NPM enthusiasts).

Meanwhile, the lack of attention paid to digital technologies in mainstream public administration, even 20 years after the authors pointed this out, continues to ignore or at the least underplay the importance of these cultures. Even the authors who have started to observe the lack of attention paid to digital technologies (see for example Pollitt, 2010, 2011) do not address the issues of clashing cultures in their own books on public management reform (Pollitt and Boukaert, 2011). Key works in the field focus on specific areas of digital government such as information technology and project management (Garson, 2006; Reddick, 2010; Gil-Garcia, 2013; and Scholl, 2010), and pay little attention to either social media or big data, while Mergel (2012) focuses principally on the use of social media by (the US) government to disseminate information. There are a number of new and important works in management and organizational studies (see Cusumano's *Staying Power* in 2010, for example) which

develop models and principles for the design of corporations, but these rarely turn attention to government.

We argue that the 'culture of the internet' and the belief systems and 'technomanifestos' of its early architects and information revolutionaries (see Brate, 2002) are important influences on digital developments inside government today. These include an anarchic strand of IT utopianism opposing authoritarianism and the State and stressing the counter-culture of the internet, following the US poet and lyricist John Perry Barlow: 'Governments of the Industrial World, you weary giants of flesh and steel. I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather..' (Barlow, 1996: 1). Other cultural influences come from developments in the history of computers (Ensmenger, 2012) and information technology (Haigh, 2013) and the economic imperatives of the firms and entrepreneurs who develop them, even if few who work in or research public administration would acknowledge it.

Cultural threats to EDGE are more likely to originate from inside government. A new class of expert systems and information personnel (Dunleavy, 2013) have combined with the Weberian emphasis on hierarchy to continue to justify huge, bespoke, proprietary gold-plated information systems best suited to another era, increasingly produced by immensely powerful corporations with the extensive and continuing outsourcing of critical information state functions to powerful systems integrator corporations. On the (even) darker side, technocrats and knowledge professionals from the security agencies have allowed their desire to 'master the internet' to lead to near—universal electronic surveillance with no regard for any kind of right to privacy. The cultures of huge global corporations, bureaucracy and the intelligence services' approach to technology have combined to cause huge reputational damage to some elements of EDGE, for example by giving a bad name to the very idea of government using big data. These competing and clashing cultures need to be used in a creative way to build a system of EDGE, for example by drawing in the great expertise of the security and intelligence agencies in gathering and analyzing large-scale data on the one had, and the technologically innovative hacktivist culture of the start-up world. At the same time, their destructive forces must be controlled: 'The key challenge for the information state is to control technocracies and knowledge professionals (partly located in the giant corporations) whose raison d'être lies elsewhere, whose value systems often resonate to

different rhythms and dynamics. There are constant battles between governments and big corporations on the one hand, and armies of hackers, open government leakers, open data exponents, cyber criminals and external cyberforces on the other.' (Dunleavy, 2013: 24).

We propose the EDGE model as a way to go with the grain of these developments, rather than pulling against them. The model is based on nine principles. The first five are principles for action and design, with the aim that government emerges as a tight central core of intelligent bureaucracy, setting strategy, architecture, procurement and governance on a pluralistic open innovation platform (Kernaghan, 2000; Fishenden and Thompson, 2013). The next four put forward 'choice' principles. Policy-makers trying to implement EDGE do not do so in a value free world, but must face normative choices, in terms of equality of outcomes; responsiveness to citizens; the maintenance of rights (such as the right to control over their personal information); the capacity to analyse information and maintain a place in society's information networks; and the choice of policy tools that minimise 'vexation, trouble and oppression' on citizens (as Adam Smith put it). The counter-cultural influences outlined above make this kind of normative navigation even more important, informing and fuelling some principles and threatening and endangering others. Ultimately, the development of EDGE will depend on the capacity of policy-makers to import and emphasize the cultural influences that go with the grain of technological trends, rather than against it.

'Do' Principles

D1. Deliver Public Services for Free in the Digital World

On 18 January 2012, Wikipedia blacked itself out for the first time in its history, featuring instead of the online encyclopaedia a black banner with the words 'Imagine a World Without Free Knowledge', part of a huge and successful campaign of a cultural mix of internet activists, internet corporations and venture capitalists against two proposed laws against web and online piracy in the US (SOPA and PIPA) which were aimed at increasing the criminalization and punishment of copyright infringement. The idea of information being freely exchanged is inherent in the earliest visions for the internet and social media platforms (Facebook proclaims proudly on its site 'It's free and always will be'). Widespread use of the internet has brought a fundamental shift in what people

expect to pay for, a direct clash with both Weberian and NPM views. In many countries, citizens pay for some or all of passports, identity cards, licences, medicines, museum visits, recycling containers; public transport and the use of toll roads and cities, park facilities, public records, deeds, and to submit patents. In the UK, citizens must pay for public information requested under the data protection act, even where this is information relating to themselves (education and health records can cost up to £50). The marketization of public services under New Public Management brought a system of user fees and charges which extended the scope and scale of charging for services which did not abate with the death of NPM.

In *Free: the Future of a Radical Price*, Chris Anderson argues that in the online, electronic world, services can be genuinely free at scale, but not in the physical provision of goods and services. He makes the case that in many instances businesses can succeed best by giving away more than they charge for, giving away one thing to create demand for another. In contrast, government has found the 'free' social ethos of most internet-based environments extremely challenging. So for example, as Anderson points out, at Google (which he describes as the 'flagbearer of the free') new services start with 'geek fantasy questions 'like " Would it be cool?", "Do people want it?", "Does it use our technology well?" rather than "Will it make money". There is a clear read across here for government, in terms of offering digital services that displace usage of expensive offline channels, such as online tax filing and benefits claim processes – and incentivizing citizens to use these channels (for example by making them cheaper in terms of time and effort in contrast to other channels) has had clear benefits. Such displacement can require 'Free' thinking: in 2011, the Swedish Tax Agency launched an app to access prefilled tax returns on a smartphone or tablet, even though it could already be done by phone, text message or website and a cost-benefit analysis showed no advantage of investing in the app. The app brought more than 120,000 users in the first year and drove up broader adoption of e-filing (WEF, 2014).

D2. Use Already Existing Digital Information – non-obtrusively

The 're-use' of public sector information derives from an historic under-use of information by government, with a Weberian reluctance to use information collected for one purpose for another – the process of collecting official statistics, for example, has been kept separate from information collected for public service delivery or health, even

though the two categories of data may be very similar. Once the internet made it so easy to share and disseminate data across organizational boundaries, and the 'information is free' culture discussed above, there grew up open source, open access and open standards movements culminating with open data programmes which epitomise the idea of making government information freely available and releasing its 'power' for public value (Mayo and Steinberg, 2007). Government open data initiatives, with the aim of releasing public sector datasets for public use began in the late 2000s, starting with the US and UK governments but becoming popular across the world from 2011. Such programmes generally have three aims, with different emphases in different countries: increased transparency of government, improved public services and better governance; and the stimulation of innovation and enterprise. In some countries, the emphasis has been on the last of these three, meaning that although open data has generalised (and unmeasured) economic benefits, it does not actually create public value in terms of sourcing improved or new public services. Some open data programmes have been criticised for the lack of feedback loops between the data and the originating department or agency (Margetts, 2013). So although open data is produced by government, it may not actually be used by government.

This principle means that if business and civil society organizations already produce information in digital form, government should tap into and use that – including video, images and audio, not just text. In the digital era, special purpose government 'detectors' and 'effectors' to generate information or accomplish actions should be minimized. At the individual level, this will inevitably mean sharing data across agencies and sectors. The Swedish Tax Agency for example provides a prefilled tax return that is based on income statements from sources from across government but also employers and banks. That can mean one department or agency using data collected for one purpose for another, something that banks and corporations regularly do for their customers, but bureaucratic cultures and departmentalism in government have always resisted. Another example of efficiency in using individual level information comes from X-Road, the framework of data exchange between the state's information systems in Estonia. X-Road creates a multilateral connection among multiple services, in which no server holds all of the data. This approach avoids the high costs associated with a system of bilateral connections, but reduces the risk of concentrating data in a single hub. By 2013, there were 287 million information requests from X-Road. Finland and the UK

have now expressed interest in X-Road, and the recently introduced X-Road Europe is planned to improve interconnectivity among public sector information systems of EU countries. But X-Road is a fairly isolated example and Estonia has only1.5 million inhabitants, so the question of whether it could be scaled up to a medium or large liberal democracy is clearly open to question. This chapter investigates the characteristics of the project that made it successful, and investigates scalability for larger governments.

Moving beyond the individual level, using existing information means making use of so-called 'big data', real-time transactional data generated by the digital imprints that citizens leave as they go about their daily lives, on the internet, social media and government's own internal information systems. In the first instance, 'big data' harvested from government's own systems and the social web should be gathered non-obtrusively and used where possible to understand citizens' behaviour. For example every government agency that has a digital presence receives analytics data, incredibly fine-grained anonymised 'big data' that provides a complete picture of people's behaviour when interacting with government, and the effect of any site changes. Analytics data is, however, often marginalised or ignored as a source of administrative data and some structures for delivering digital government actually work against its use – in the UK for example, where all government services and content have been concentrated in the Government Digital Service, and staff in departments and agencies do not always have access to it, or even know that they can. A key case example here is provided by the US Digital Analytics Program, which opens up Google analytics data for all federal departments and agencies to any federal official participating in the program. This allows new possibilities for observing flows and trends across the federal government as a whole, seeing the effect of platform change in one agency on traffic in other agency and understanding government-citizen interactions in a sophisticated way.

It should be noted that in spite of growing interest and tentative enthusiasm for the use of big data data in government, there are some inbuilt cultural barriers. In the UK army, for example, incoming soldiers are trained using the 'TAPS' principle for the use of information – that it must be 'timely, accurate, precise and secure', meaning they develop their careers with an ingrained resistance to the whole concept of big data (as a lieutenant in logistics pointed out to one of the authors at a Command and Control symposium in 2015). More generally, across government (particularly in the UK) officials are reluctant to estimate or produce anything other than 'official' statistics, which also works against

data science methodologies, based on exploratory data analysis and the identification of broadbrush trends and patterns. If these forms of resistance could be overcome, then extending such techniques beyond administrative data to the social web as a whole, might ultimately lead to develop predictive capacity for government, in the same way that Google search data has been used to predict mass health crises, such as a flu pandemic. So for example, take the UK passport crisis in the summer of 2014, where long delays in the issuing of passports were caused, according to the passport office, by 'unprecedented demand'. It seems possible that a combination of Google search data, social media data and previous years' administrative and analytics data could predict peaks in demand like this, and lead to greater governmental capacity to deal with them.

D3. Do it Once

The pressure for this principle comes from the corporate management literature of the 1990s, which pointed towards new forms of organization where information technology allowed for the first time a single central core of servicing units handling large numbers of subordinate units in an 'infinitely flat hierarchy' (Quinn, 1992; Dunleavy, 1994), establishing a standardized presence (such as the same chips in Mcdonald's restaurants) in diverse countries and regions. This model of organization never really made it into government, owing to the hierarchical rigidity and strong departmentalism of most medium to large governments, with even large administrative processing departments (such as tax and benefits delivery) tending to be divided into processing units dealing with specific services or types of tax or benefit. If really implemented, this principle would mean that government should plan, procure, and provide services once – not many times, not even twice. That can imply services that are planned, procured or provided at the maximum scale, for example at the national level, or even the European level. Local planning, procurement, provision is needed only for physical service non-online, non-bits elements. In this way, governments can follow large corporations into 'intelligent centre/devolved delivery' organization architectures.

More recent calls for this model originate from the idea of government as a platform (Gaap) (O'Reilly, 2011; Cusamano, 2010; Nooteboom, 2011) where platforms are 'partly finished products', where users can inscribe their own purposes as opposed to older-style fully finished, single purpose products. The originator of the 'government as platform' model, Tim O'Reilly (2011) cites Apps.DC.gov, the "App Store" for the city of

Washington, D.C., as a good example for every government to follow; a real app store, with applications written by the city of Washington D.C.'s own technology team (or funded by them) demonstrating how to use key features. D.C. then took the further step of highlighting, at a top level, third-party apps created by independent developers. The organizational culture most enthusiastically promoting this model for a national digital government is probably the UK Government Digital Service (GDS), until 2015 a burgeoning organization within the Cabinet Office charged with delivering 'digital by default in the UK'. GDS promoted the idea of software as a public service, either working with departments to commission and deliver digital public services across the UK government, or at times stepping in to actually build them. GDS use the analogy of a Lego brick, which provides the basis for constructing many different products from the same components, where the core platform provider enforces the technical standards to be used to ensure consistency and that all applications based on the platform work well together. Likewise the Government Digital Service are working on a 'software stack', whereby modules are written with multiple applications across government, such as a Universal Resource Identifier (URI) of information for every property in the country, drawn from land registry and other databases – which could then equally well apply to every car in the country, drawn from DVLA data, insurance companies and garages. Such a shift involves a cultural change away from the traditional UK departmental silo culture of building everything 24 times, once for every department. GDS claim that this sea change has already taken place in the UK, whereby the Treasury now do not want 24 departments buying digital technology, whereas traditionally it was the only way that it could be contemplated within their organizational culture, and there have been some successes, notably Verify, a federated identity verification system which does not rely on an identity card, 'quietly disrupting' the issue of online verification (*Guardian*, 6th November 2014). Rather, it uses a range of sources such as credit reference agencies, utility bills and mobile companies to services, to authorise citizens to use a range of public services. But 'no government in the world has ever implemented GaaP' in its entirety (Glick, 2015) and changes afoot after the UK 2015 election mean that GDS may not get the chance to do so.

D4. Grow Scalable Services in Competition

Essentially digital services displace essentially physical provision services in transitions via (partly controlled) competition. Competition was a key pillar of NPM trend, but operating through initiatives like the Private Finance Initiative (UK), strategic review and market testing as it did in several countries meant that competition took place over large units – an agency, a hospital, and huge-scale IT outsourcing contracts with global systems integrators over periods of up to ten years (particularly in the UK, see Dunleavy et al, 2006, 2008). Such arrangements led to a spiralling effect, as the only companies that could bid for them were huge, meaning that ever-larger contracts became the norm (Margetts, 1999). In contrast, the internet, cloud computing and mobile-based application platforms have introduced a whole new dynamic to competition in a range of services, whereby innovations can be introduced on a small, modular scale and scaled up across millions of users. In all private sector industries, across almost all periods, half of all productivity growth occurs as a result of production transferring from unproductive to more productive and efficient producers (Dunleavy and Carrera 2013). The same kind of processes can be institutionalized in the government sector, as has happened in London where cash has almost disappeared from bus travel, with no distinct payment products (which are costly to administer).

Such a development could go hand-in-hand with the 'government as a platform' concept, indeed for some this is precisely how it would work:

> 'An alternative vision of GaaP, such as that proposed by Mark Thompson, who has long been close to GDS and co-authored the Tory IT manifesto, *Better for Less*, before the 2010 election, sees GaaP as a set of enabling standards and principles, with the market providing solutions using data and APIs - minimising in-house software development. Think of it as an Amazon or Uber for government - enabling an ecosystem not building in-house software.' (Glick, 2015).

An example here is that of public libraries in the UK and many other countries. England has 110 library authorities, procuring as 75 'coalitions', presiding over a dated service where book borrowing has plunged 38 per cent in six years, book stocks are very old and odd, new acquisitions are funded mainly by fines and charges, 80 per cent of book stocks are identical, and 450 libraries are threatened with closure already. A digital public library could be nationally run, exploit economies of scale, procure ebooks from suppliers at a small fraction of current cost, let citizens choose library 'stocks', automate borrowing, remove any need for fines, and 'dis-intermediate' the procurement-choice role

of librarians. Local libraries perform multiple functions, accreted over the years, many valuable – but such services should be organized directly in optimal ways, not linked to a physical books model of dwindling relevance.

D5. Isocratic (DIY) Government

As Ivan Illich put it 'most of the time, most citizens solve their own problems with their own resources' (Illich, 1973). Yet traditional models of government bureaucracy leave no role for active citizens. The idea of isocratic government in digital governance, where citizens can manage their own affairs independently of government using internet-based platforms derives in part from the libertarian anti-statism of the earliest settlers in cyberspace – John Perry Barlow's idea of fragmenting state bureaucracies and a libertarian concept of decentralized power (Barlow, 1996). More recent enunciations – such as David Cameron's vision of the Big Society rest also on the idea of citizens taking on some of the roles of the state, as citizen auditors for example. But the type of social media platforms that citizens are now regularly using makes it possible to take this principle further, through crowdsourcing platforms that make use of new capacity for citizens to undertake 'micro-acts' of participation, which has transformed collective action in the age of social media (Margetts et al, 2015). Weberian bureaucratic culture is very resistant to the idea of citizens playing a role or contributing in any way to public service delivery, and this characteristic has lingered long in the majority of governments outside Scandinavia. Likewise in those countries where it was enthusiastically pursued, NPM brought a vision of accountability that went narrowly through contract mechanisms, allowing no place for citizen involvement other than as a voter, or as a consumer of public services (where choice mechanisms were expected to play a role). In contrast, the idea of co-production was central to the DEG paradigm, drawing on ideas of crowdsourcing and user generated content that was encapsulated in the concept of 'Web 2.0', which became popular with the rise of social media and internet-based platforms that allowed user generated content from the mid-2000s. Some of the potential to use citizen participation for policy problem-solving was later illustrated by Noveck's 2009 book *Wiki Government*, which showed how public institutions could harness networks of self-selecting citizen experts, using the case of the US Peer-to-Patent initiative, where patent examiners used the web to connect to volunteer scientists and technologists.

Co-production has been a theme in public administration literature since the 1970s (Parks et al, 1981) largely as a post-Weberian method of involving the voluntary sector in public services delivery (Brandsen and Pestoff, 2006). Although some visions of co-production have involved organized initiatives in which citizens play a direct role (rather than mediated by an organization), such ideas have received far less attention – even recently, which is ironic as internet-based technologies and social media make them more possible than ever before. A special issue of Public Management Review in 2006, for example makes no mention of the digital possibilities for co-production and examples of digital co-production are few and far between, patchy and fragmented (in the same way as telehealth has been over the last decade), although Osborne (2013) calls for an exploration of the possibilities.

In fact, internet and mobile-based digital technologies allow for co-production and co-creation of a scale and scope undreamt of by the architects of the idea. This principle would involve a much more systematic approach to using the willingness of citizens to both engage with government policy and services and to manage their own affairs, at two levels. At the individual level, this would mean a form of isocratic administration, where citizens manage their own affairs with government in the same way as most do with their bank. The burgeoning field of mobile health and the internet of things is important here, as devices which can monitor behaviour in domestic settings, with measurements relayed to health professionals via the internet or mobile is an example of this kind of co-production. At the collective level, co-production would involve some kind of crowdsourcing, for example in the introduction of SeeClickFix in the US) and Fixmystreet.com in the UK, where citizens notify governments of non emergency problems in neighbourhoods, for example by uploading photographs of problems. SeeClickFix is now used in 25,000 towns in the US and other countries including India, Sweden, Malaysia, Bulgaria and Italy. The firm claims that after 6,000 reports of problems, the programme will have paid for itself. Another form of this kind of co-production is provided by participatory monitoring tools like Checkmyschool.org in the Philippines created by the Department of Education, which uses parents and a network of information intermediary volunteers who monitor the performance and resource management of schools. Similarly, the incoming UK coalition of 2010 promised an 'army of citizen auditors' with the release of expenditure data by local government, although this has not really materialised. At the policy level, co-production moves

towards co-creation, where citizens use the government as platform idea to co-create both policy and services.

Actually, in terms of some types of co-creation, governments have little choice. Take the UK case of privatization of forests, where the coalition government first announced its plans in October 2010. The campaigning group 38 Degrees commissioned an opinion poll and ran advertisements (both paid for through crowdfunding of online micro-donations) in the major newspapers and logged over 100,000 phone calls and emails to MPs expressing opposition – a huge concerted action by organizations, individuals and groups – which meant that a rushed policy was abandoned. There were official consultations on the forest sell off, but in the age of social media these are increasingly anachronistic. This example is used by the World Economic Forum (2014) as illustrating the 'smart toolbox' of government, but a more cynical view would suggest that government did not embrace co-production here, but were rather forced into it by far smarter citizens and NGOs. Governments need to find ways of tapping into the swelling ranks of people who are willing to contribute to policy-making, rather than unleashing it only through the introduction of unpopular policies.

'Choice' Principles

C1. Value Equality of Outcomes over Process

Early views of the impact of information technology on government put forward the view that information systems would solidify processes, rules and hierarchy within bureaucracy – or 'out-Weber Weber' as Hood (1994) put it. Such a view is popularized in a vision of officialdom where 'the computer won't let me do that' replaces 'that would be against the rules' or 'it's more than my job's worth' (Margetts, 1999). But the internet imported an organizational culture into government that works against the stability of procedures and disrupts the idea that processes might become digitally embedded. The original idea of the internet was messy, a flat network instead of an organized hierarchy, a disorganized and heterogeneous world view that contradicts the idea of process equality. The personalization of public services through technology, for example in medicine where treatments may be geared at a particular individual set of circumstances, or where education may be tailor-made for an individual based on the data generated through their previous learning experiences by using big data, take the impossibility of

process equality to a new level. The origin of this kind of approach comes in part from the radical and anarchistic nature of the early internet, where the 'hacktivist' movement grew up around the idea of the 'hack', the act of penetrating and altering the computer-based applications of other organizations. While the term hack came to be linked to illicit computer-based activity (such as denial of service attacks, bombarding target machines with huge number of requests, overloading its capacity to the extent that it cannot operate), as it originated in hacking circles, a hack is more widely defined as the use of technology in 'an original, unorthodox and inventive way' (Jordan and Taylor, 2004: 6). From the late 2000s there has been a revival of the term as a way of generating innovation in organizations, including government 'hackathons' where people from inside and outside government organizations develop innovative technological solutions to tackle some shared challenge (for example in NASA, see Llewellyn, 2012) and even 'hack the state' weekends convened by the Rewirethestate NGO.

In this informal, messy world, where process is positively rejected by the hacktivist culture of internet entrepeneurs, equality of outcomes may still be a guiding principle. This choice principle represents a direct confrontation of Weberian design, where process is valued as the route to a perfectly functioning bureaucracy. In contrast, an equality of outcome approach means that what matters is getting things done, not getting things implemented in a certain mode. It means being flexible and using multiple approaches, each of which is probabilistic not deterministic – because for complex tasks, there are no deterministic tools. It means valuing equality – but not legal or process equality, but rather equality in end results, such as equality of welfare. So, people who can do things digitally should do so, and can even be compelled to do so in an era of resource scarcity. That means an abandoning of 'Choose your own channel' for 'Use the socially optimal channels' – and embracing the idea of 'government as a platform' (Reilly, 2010), as have Google, Amazon, Twitter and Facebook. It also means government addressing issues of exclusion or marginalization for particular segments of the population at the point of delivery. For example in some pathfinder job centres in the UK, benefits claimants for the new benefit Universal Credit are provided with internet access to look for work, using computers within the job centre, ensuring that those benefit claimants without access to the internet at home are able to compete for jobs on an equal footing with those that do. Likewise in a number of countries, internet tax cafes are

combined with compulsory taxation in order to ensure that everyone can use this channel.

C2. Provide Formal Rights and Real Redress (not just administrative protections)

This principle means recognising that administrative or technical protections will not be enough. Government 'customers' and citizens need explicitly digital rights to privacy, data protection, freedom of information, access to digital channels and minimum information collection. The idea of digital rights probably derives from the 'cyberlibertarianism' promoted by John Perry Barlow's 'Declaration of Independence' (Barlow, 1996): 'imagine a continent so vast that it may have no end to its dimensions, imagine a new world with more resources than all our future greed might exhaust, more opportunities than there will ever be entrepreneurs enough to exploit, and a peculiar kind of real estate that expands with development'. This view has propagated a stream of activism which has bubbled away around issues relating to the utopian future offered by the internet, as long as various rights were protected including freedom of expression, net neutrality, freedom from copyright restrictions and resistance to internet censorship (Margetts et al, 2015). Indeed right back in the 1980s, the collective known as the 'Cult of the Dead Cow' campaigned for access to information as a basic human right.

Rights breed confidence and willingness to change, while non-rights breed counter-productive digital resistances. In relation to institutions, offices, agencies or bodies of the European Union, Article 41 of the European Union's Charter of Fundamental Rights guarantees a right to good administration, hailed by Wakefield (2007) as 'the first enunciation of a right to good administration in the western legal tradition……novel, perhaps even revolutionary', but what such a right might mean is extremely unclear. Particularly in a digital context where administrative procedures are governed by complex algorithms and huge data sources, administrative protections tend to be opaque and difficult to understand. Examples of digital rights in operation in government are fragmented and patchy and some of them must be read across from non-governmental contexts. But as internet-based platforms and social media become embedded into daily life, we have seen more examples of a rights based approach, with various human rights being identified as digital rights – freedom of expression, data protection, privacy and freedom of association and the growth of a number of pressure groups to further their protection. Access to the internet itself is now recognised as a right

by the laws of several countries. In Estonia for example, in 2000 the parliament launched a programme to expand internet access to rural areas, with the government arguing that 'the internet is essential for life in the 21st century' and in Finland, the government pledged to give every person access to a 1 MB broadband connection by 2010 and a 100 MB connection by 2015. The European Union has moved progressively to implement a 'right to be forgotten' from 2012 onwards, when the European Commission's draft European Data Protection Regulation included specific protection in the right to be forgotten. In May 2014, the European Court of Justice ruled against Google on the 'right to be forgotten' online in the case of Costeja, a Spanish citizen who had asked for the removal from Google search results of a 1998 article detailing an auction from his foreclosed home for a debt that he had subsequently paid. This particular case had little to do with what data governments hold on citizens – but it is an important precedent for the idea of citizens having rights of this kind.

However, rights are fine to talk about and difficult to implement. The UK Information Commissioner's Office was self-proclaimedly 'set up to uphold information rights in the public interest', yet their website only obliquely mentions what rights people actually have; it describes the (complex and paper-based) ways that people may access personal information that is held about them, rather than guiding them digitally through the process http://ico.org.uk/for_the_public/personal_information . So it is difficult to find examples of where citizens' digital rights are assured. The WePromise.eu campaign sought to bring digital rights to the agenda of the European elections in 2014 with a Charter of 10 digital rights (https://www.wepromise.eu/), involving 36 European civil rights organizations, but it as yet unclear the extent to which their principles will reach widespread appeal or penetrate European institutions. The best example so far may be Denmark, where even from the mid-2000s digital citizens' rights issues have been explicitly addressed in the design of digital government, including "eDays" in 2003 and 2005 based on citizens' right to electronic transmission of information, culminating in legislative changes, and the acknowledgement of rights associated with data sharing as a necessary consideration in how to structure new eGovernment programmes.

C3. Obligation to 'Keep the State Nodal'

The idea of nodality – being embedded in social and information networks – is bestowed on any user of the internet as a 'peer-to-peer' network, providing ordinary citizens with

unprecedented capacity to receive, share and disseminate information. This universalization of nodality is one of the most exciting characteristics of the domestication of the internet into everyday life, providing everyone with a great chance of attaining their '15 minutes of fame', but poses a particular challenge to government. Nodality is one of the four tools of government policy (Hood, 1983; Hood and Margetts, 2007) – the ability to collect and disseminate information through position in society's social and informational networks. Nodality used to be something that government possessed by virtue of being government – the watchtower or watermill in the flow of information across society, so that people tell government things for free, and take special notice of what it says (Hood, 1983). Yet in an era of social media and big data, government can no longer take nodality for granted and indeed can experience a net loss of nodality (Escher et al, 2007). The other tools of government are Authority, Treasure and Organization (including organized expertise). Nodality is in general less expensive, faster to administer (with real-time effects), persuasive, acting directly on behaviour (such as the use of 'nudge' techniques rather than command and control) and overall, causes less 'trouble, vexation and oppression' for citizens. For these reasons, it is the first choice of policy tool in many contexts, such that the other four are selected only when nodality has failed.

To retain nodality in a digital world, government has to embrace the 'digital timestream' or 'lifestream' (boyd, 2009; Gelertner, 2013) where citizens exist in a 'heterogeneous, content-searchable, real-time messaging stream' of social media, blogs and RSS feeds, living inside the stream, adding to it, consuming it, redirecting it, sharing it – 'peripherally aware and in-tune, adding content to the stream and grabbing it where appropriate' (boyd, 2009). Such a metaphor changes the whole nature of search and replacing the 'space-based web' (Gelertner, 2013). Static, cross-sectional websites (with complex and costly customer management systems or outsourced provision) reflect past bureaucratic processes. Government needs to be continuously and extensively present in the 'timestream', rather than expect to retain nodality through people searching for and coming to websites. In this way, if citizens interact with government through social media platforms, then there is more chance that they may co-produce, co-create or otherwise be engaged with government, for example through feedback loops and 'micro-donations' of engagement so that government's nodality is enhanced rather than threatened. But governments have been reluctant to dip even a toe in the timestream – in

the UK for example, very few civil servants outside Communications departments have access to social media while at work.

To lose nodality, however, is for government to cede power and even the very idea of what it means to be a state. Such a point is illustrated by the events on the ill-fated United Airlines flight 93 during the events of the 9/11 al-Quaeda attacks, where citizens used a range of mobile communications to acquire nodality far more rapidly and efficiently than any state organizations, although their attempt to save the lives of travellers on UA93 from New Jersey to San Francisco was ultimately unsuccessful. The plane was hijacked by four al-Qaeda terrorists who killed the pilot and co-pilot, seized the cockpit and redirected the plane to Washington DC. Using mobile phones and back-of-seat credit card phones to call relatives, who were aware of the concurrent events (the crashing of planes into the World Trade Centre and the Pentagon) in New York and Washington DC via CNN and other news networks, the passengers became aware that the hijackers had no intention of landing the plane or negotiating their release (as the hijackers had assured them), organised a resistance against the hijackers and, it seems, nearly overcoming them before the remaining hijacker at the controls crashed the plane into the ground. At every point, the organized passengers were far more nodal than state entities, receiving far better information from other citizens (relatives and friends) than they from US federal authorities, who were always several steps behind in understanding what was going on, had no ability to track planes by main radar systems above 10,000 feet when transponders were switched off, exhibited massive gaps in their information and decision capabilities and had no means of communicating with anyone outside of the cockpit in the hijacked aircraft – for example, tragically, no staff or passenger or the relatives of passengers had any emergency number that could put them in direct touch with the FAA, national security or law and order personnel.

Nodality is vital in a crisis, but there is a long held view behind the design of administrative procedures for crises that information technology will be the first thing to go – that organizational capacity is the only tool of government that will work (Hood and Margetts, 2007). This Weberian view of people and chains of command being central to dealing with an emergency is epitomised by this view of a Governor of New Orleans when acting as a Witness to the Commission investigating the government's response to the floods that devastated the City after Hurricane Katrina: 'I was trying to get more people in……I needed more people. I needed more people. I needed a lot of people'

(Senate Homeland Security and Governmental Affairs Committee, 2006). But in a contemporary crisis, smartphones may in contrast be the only connection that many people have with the non-crisis-struck world. While mobile phone networks may be unable to cope with massive peaks in demand (as indeed happened in some areas on 9/11 and the London terrorist attacks of 7th July 2005) smartphones can provide access to web-based platforms which can deal with such peaks.

C4. Experiential Learning

NPM models created a state that was fragile not agile – a 'push it and it breaks' model, where lack of organizational stability worked against organizational learning and institutional memory. PPA prioritised robustness and stability, resulting in inertia and resistance to change and lack of responsiveness to societal trends. In contrast to both of these models, an 'essentially digital' governmental organization can 'bend with the wind', with learning from society operating in the same way that learning from experience operates at the individual level.

The key to experiential government comes from two main sources. One is education, where experiential learning derives from the idea of learning from experience and the four step 'experiential learning model' (Kolb, 1984) illustrated by the process of learning how to ride a bike: in the "concrete experience" stage, the learner physically experiences the bike in the "here-and-now". This experience forms "the basis for observation and reflection" and he or she has the opportunity to consider what is working or failing (reflective observation), and think about ways to improve on the next attempt made at riding it (abstract conceptualization). Every new attempt to ride is informed by a cyclical pattern of previous experience, thought and reflection (active experimentation). The other source is the experiential approach to measuring democracy, developed by Dunleavy (1996) and Dunleavy and Margetts (1994). This experiential approach involves assessing democratic systems along the lines that people experience them, rather than an institutional approach, which involves studying democratic institutions such as general elections. The read across for government here is to consistently assess people's experience of government from social media, where they have proved themselves willing to provide feedback, complain, comment, discuss and share experiences of government in a public setting, which can be mined to provide valuable information for policy-makers (Bright et al, 2014).

What kind of government would the 'experiential learning' principle lead to? Basically, it would involve a build-and-learn approach, moving away from the idea of government as a finished product, but trialling policies and services on citizens and adjusting in response to the findings. In this way, experiential government would mean learning from society's experience of government, rather than government's own organizational experience. It would mean always seeking an experimental approach, allowing governmental design to reflect the behaviour of citizens. And it would mean building trials into every stage of EDGE design, thereby enabling the development of 'nudge' style interventions, helping people to take effective action to improve their health and cut risk factors. The UK has led the way in the use of Randomized Controlled Trials (RCTs) in government administration, through the work of the Behavioural Insights Team (initially in No 10 Downing Street, later in the Cabinet Office and now spun off as a semi-private entity). For example, in 2014 the team used behavioural theory to understand the impact of variations in wording (such as more personalised language) on letters sent to tax debtors, working out through a trial with hundreds of thousands of subjects which wording was more effective in persuading people to pay their debt; the trial recovered £160 million of debt in its six-week period (OECD, 2014). But most of the interventions have been paper or mobile-based; very few are digital. Ironically, digital provision lends itself perfectly to experimental designs, given that the effect of any platform change can be observed in analytics data (Hale et al, 2014). For digital experimentation, the government leading the way is Singapore, where many departments have a memorandum of understanding with the UK Behavioural Insights Team and RCTs are being used throughout the public administration, particularly in the health system and transport.

Conclusion: Essentially Digital Governance

If we were designing a government from scratch in the modern world, with administration, services and a policy-making apparatus, we would start with the digital. We propose EDGe as a fundamentally new paradigm for governance that would guide the design of this digital operation. For existing liberal democracies, a fundamental state redesign could be possible through implementation of EDGE principles, as in the public libraries example, where the state has a relationship with Google and Google has multiple relationships with citizens who order the books they want, which generates big

data to enable library provision - and the State's role is restricted to some regulatory decisions – such as not buying pornography, again reliant on big data. Another example is provided by public health, where the state takes on insurance, risk pooling, policy setting and funds technology – allowing people to self-monitor and incentivizing people to do so.

Thinking about this hypothetical new state, free from cultural resistance, might give some clues to what is possible for EDGe, while in existing government administrations the kind of barriers identified above (such as the TAPS principle for the use of information in the military) would need to be overcome.

The 'do' and 'choice' principles do not exist in isolation, but rather reinforce each other. Using existing information, for example, fuels the logic of 'doing it once'. Likewise, using existing information enhances the state's capacity to stay nodal, for example through the use of big data. The 'do it once' principle, for example through the GaaP approach, facilitates the growing of scalable services in competition, and indeed for some commentators, that is what the GaaP concept means. Modularization and the development of scalable services (rather than a 'big-bang' approach) facilitates the 'build and learn' approach that characterises experiential learning. Isocratic administration, where citizens can develop their own ways of managing their own affairs in a form of co-production is necessary to free up governments with bureaucratic emphasis on process equality to focus on equality of outcomes.

Likewise, competing cultures – both those that originate from alternative models of bureaucracy, and those that have been imported with digital technologies and social media - affect the extent to which the principles may be realised. For example, some of those in the mega-contract, huge IT system, mainframe tradition have latched onto the idea of big data, as a way to save their old way of working – big budget, secret, non-transparent, cavalier about citizens rights, and antipathetic to social media (except as a data source for counteracting negative publicity and tracking wrongdoers). The dark side of digital governance, where the security and intelligence service operate unrestrained and unchecked, falls into this category but spills over into tax and welfare services too, meaning that big data is not likely be used to improve services, encourage civic engagement or make government or policy more citizen focused. Those who would like to adopt new ways of working may feel overpowered by this cultural dominance, feeling that digital technologies have been so disruptive and hard to predict that government

itself will always lag behind wherever it goes next and be hopelessly locked in by vested interests defending old ways, in the face of developments such as Uber and social mobilization via social media. They can feel a sense of helplessness in the face of IT security and privacy issues, which they feel that government has been unable to resolve, and that cloud computing has only exacerbated. Meanwhile a social media-oriented, open data cultural lobby inside government from the 'hackathon' brigade – the 'hipsters' of government IT - believe that government can innovate, but often find they can do so only in small-scale data transparency ways couched in the language of techno-utopia, but in practice just chipping away at the cultural legacies of previous generations of technology.

By elaborating relationships between the principles, and the cultures that underpin them, the EDGE model could involve a fundamentally different form of decision-making and organizational design - libraries without librarians; self care; the storing of transactional big data – rather than text versions; public services on demand; transformation of the public sector into a set of enablers; and government as a node in online information networks. In this way, the principles link together in a coherent whole and suggest a particular model of state design – with an intelligent centre and a devolved delivery operation, currently the mirror image of most governments outside Scandinavia. Under such a model, the State would emerge as a small intelligent core, informed by big data, its activities restricted mainly to policy design, while citizens using a range of internet-based platforms would play a major role in devolved delivery, leading government (at last) to a truly post-bureaucratic, 'Information State'.

Such a move might attract more popular attention than is normally expected for public management reform. Digital government is far more widely used than it was at the time that *Digital Era Governance* was written (2006), and citizens are starting to see the advantages of interacting with governments digitally, and in many cases to observe the stark differences between how they interact with private and public organizations, which engenders a demand for change. There is also strong evidence and public attention to the policy challenges engendered by digital incompetency. In the US and UK for example, flagship programmes on which leading policy makers have staked their reputations (Obamacare in the US, and Universal Credit in the UK) have floundered on the rocks of troubled technology projects. There has also been far more public attention in recent years to the ethical challenges of digital government and the way that governments

handle citizens' data, with the Snowden revelations of the Prism and Tempora programmes of 2013 which highlighted how much internet-based data the US and UK governments routinely collect, mine and analyse. We see a strong demand for a normative framework for how civilian government deals with issues of big data and privacy and a favourable environment for providing it: see the recent White House Big Data Review (White House, 2014) showing that while citizens' trust in security agencies to handle citizens' data has plummeted, their trust in other government agencies to do so has actually risen, suggesting a more sophisticated assessment by the public than media attention to the issue might suggest. Furthermore, at a time when we have seen (limited) regulatory attention to the data handling strategies of internet corporations (notably the European Court's ruling on the 'right to be forgotten', imposing controls on Google's search facility), there is a generalised sense that it is possible to limit the power of organizations over citizens' data. For all these reasons, the time is right for a normative framework for the development of digital governance.

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