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Designing Digital Public Services

Paul Rainford and Jane Tinkler

When looking at the interplay of digital public services and design in UK government, it is possible to see this from a long perspective: starting from the governance structures that determine how the public sector buys and applies IT to policy problems right through to the look and feel of online offerings that the end user sees when interacting with government online. This piece will focus mainly on the beginning of this range: the governance structures around IT in the UK public sector.

Government in the UK has a long history of failing to deliver efficient or effective IT-enabled change to public services. This is the result of a number of issues:

- *The UK government is fragmented and heavily siloed.* Each government body has handled its own IT needs with little central supervision or guidance. This has meant that resources have been spent on ‘bespoke’ or heavily customised systems rather than building onto off-the-shelf or already-owned technology. A recent landscape review by the National Audit Office found that the Cabinet Office, despite having primary ownership of IT policy and strategy, has difficulty in persuading departments to implement cross-government initiatives (NAO, 2011).
- *There has been an over-reliance on large contractors and long-run contracts.* In the mid-2000s, of the top 10 UK government contracts (by value) half were with one main contractor, EDS, at a total cost of nearly £5.5 billion. Currently, 80 per cent of central government ICT work is handled by just 18 contractors (NAO, 2011). Contracts of 10 and 15 years are still the norm. As technology changes, so contracts have to be altered and extended with scope creep entailing spiralling costs over the life of the contract. Now legacy systems spread across major departments are eating up resources and halting initiatives to join-up or share services.
- *The government is an unintelligent customer of IT.* The growth in outsourcing through the 1980s and 1990s meant that much of the civil service’s IT expertise moved into the private sector. So government lost sight of the fact that the standard of their technology solutions was well below that of the private sector and the relative cost they were paying was much higher.

- *It has been difficult to adequately share the risk of system failure with private sector contractors. As with other modes of innovation, rather than use incremental and regular refreshes of technology, government departments use 'big bang' approaches to new systems. Often these are out of date by the time they arrive as development time and approval processes by the government body have been long in order to ensure risk to services was as low as possible.*

How governance models have affected digital public services

These issues make it clear that the problem is not one of technology but rather one of governance. To understand this better, we examine two governance models that have been used within the UK over the last three decades and their implications for the design of digital services. There has been a move away from the paradigm of New Public Management (NPM) that was dominant for around two decades between the early 1980s and early 2000s. It has been replaced by a new set of themes that we call Digital Era Governance (DEG).

New Public Management (1981-2002)

The many aspects of NPM have been examined and collated in a number of ways but almost all can be categorised around three key themes (Dunleavy et al., 2006: 4). These are:

- **Disaggregation:** breaking up large government departments into more specialised and focused bodies including executive agencies, non-departmental public bodies and 'quangos'. This in turn led to a greater number of regulation, oversight and audit bodies to ensure value for money was being maintained and benchmarking between organisations was possible. There was a consequent break up of centralised control over key administrative functions such as IT, contracting and procurement; giving lower tier organisations authority over budgets with only limited central guidance. Both central and local government bodies purchased and customised IT systems needed to provide public services.
- **Competition:** market functions were introduced to government services separating purchasers from providers. This was intended to drive the development of different forms of delivery and increase competition among providers. Internal markets for decentralised services were introduced most extensively in the NHS. Contracting processes were formalised to ensure external providers of front line services achieved value for money. Areas where government was thought not to have 'core competency' were outsourced or contracted out. IT was extensively contracted out during this period.

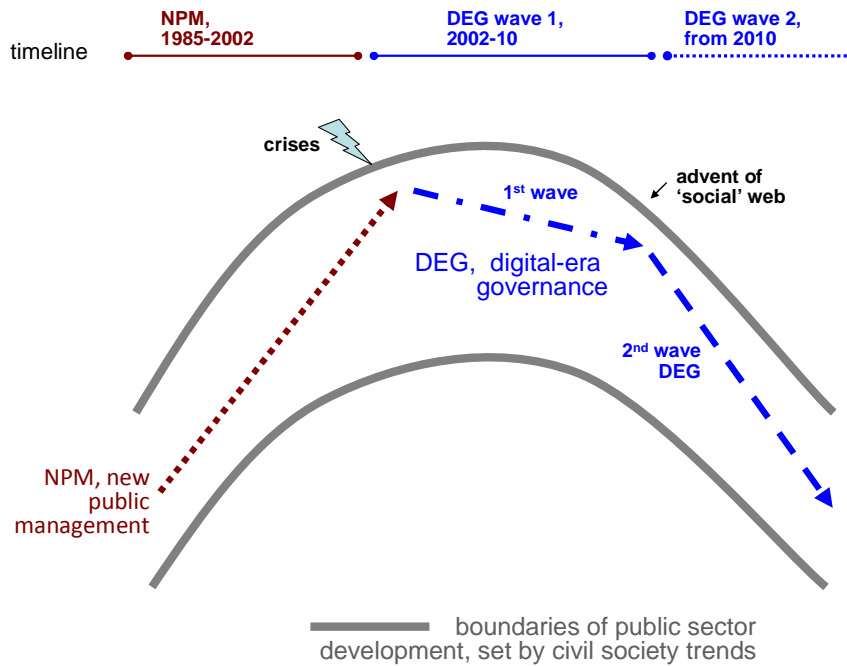
- **Incentivization:** previous thinking on the value of the public service ethos was downplayed and incentivised payment by results was introduced, with performance related pay for civil servants and payment by results for organisations. This impacted most strongly on professional groups within government (Kirkpatrick, Ackroyd and Walker, 2004) who became more powerful.

NPM changes were aggressively pursued by the UK governments of this period, along with other Westminster systems such as Australia, Canada and New Zealand, but by the 1990s this approach was providing diminishing returns and would later lead to acute crises and reversals of policy in those countries that had fully implemented the NPM agenda. Additionally 'at a fundamental level NPM solutions ceased to fit well with the macro-trends in business and the wider society towards digital era processes' (Margetts and Dunleavy, 2010: 3).

Digital Era Governance (2002-2020)

From the early 2000s, a new paradigm of governance emerged that focuses on three very different themes. This was not a reversal of NPM ideas but instead a radical change of direction that took into account the major changes taking place in wider society around the development of the internet and online social processes.

Figure 1: The shaping of first and second wave digital-era governance



DEG's three themes are:

- **Reintegration:** a recognition that the fragmentation of the public sector has led to multiple overlapping processes whereby central administrative functions are carried out by many bodies. This entails a reversal of the disaggregation process bringing bodies and functions back into larger-scale means of organisation. However rather than just reversing the trend, new technologies mean that opportunities exist for new organisations and processes to be created that are both more flexible and responsive to user needs and cheaper for the government.
- **Needs-based Holism:** this theme moves beyond joining-up governance and looks instead at how embracing technologies can encourage new ways of interaction between government and citizens. It considers how services can be re-designed to look across the full range of interactions with groups of citizens, and also how individual customer journeys can be looked at in an 'end to end' way rather than through the siloed view of how government provision operates.
- **Digitalization:** to fully maximise the opportunities provided by these changes, government offerings need to transition to a fully digital mode of operation. Electronic information

provision and transactional services become 'genuinely transformative' rather than being seen as add-ons to more traditional forms of delivery. The savings gained from moving the bulk of services online for those that are keen and able to use them, mean that resources can be targeted towards those who remain unable to access e-government.

When looking at how DEG changes have been implemented in UK government it is important to recognise the difficulties in understanding how IT changes have affected wider society and the private sector, let alone their implications for government. It is possible to see that IT changes have had complex and dialectic (that is partially contradictory) implications for organisations (Bloom et al., 2009).

Firstly, *network effects* are centralising. It is now possible to collect more information, analyse it in real-time in ever more sophisticated ways. This means that small central teams within large organisations are able to get a better overall picture from very local levels and make decisions accordingly. Senior managers are able to be consulted in real-time and intervene more quickly when performance indicators dip. This has led to the thinning out of mid-level managers resulting in flatter, wider hierarchies.

However, a second result of *modern databases* has been strongly decentralising. Front line staff are able to immediately access more information about cases, citizens or departmental precedents than in the past. So staff are able to make decisions themselves without appealing to their supervisors. Therefore the same staff can handle a wider range of tasks as long as the IT facilities are sufficient to support them. Therefore decision making can be moved down organisational hierarchy.

Figure 2 looks at how these dialectic effects have impacted on both the DEG first wave (2002-2008) and the DEG second wave (2008-2020).

Figure 2: Developments in DEG themes since 2005

DEG themes:	Centralizing, networks-based, communications gain developments	Decentralizing, database-lead, information-processing gain developments
Reintegration	<ul style="list-style-type: none"> - Rollback of agencification/ fragmentation 📈 [A+] - Joined-up governance 📈 (JUG) - Re-governmentalization, boosted by temporary regovernmentalizations during credit crunch 📉 [A-] - Reinstating/re-strengthening central processes 📈 [A+] - Procurement concentration and specialization 📈 [A+] 	<ul style="list-style-type: none"> - Network simplification and ‘small worlds’ 📈 [A+] - Re-engineering back-office functions and service delivery chains – de-duplication 📈 [A+] - Shared services (mixed economy) ~ [A+]
Second wave Reintegration	<ul style="list-style-type: none"> - Intelligent centre (IC) + DD design [A+] - Integration of governmental and national infrastructures - Single tax and benefit systems (using real time data) [A+] - Reintegrative outsourcing [A] 	<ul style="list-style-type: none"> - IC+ decentralized delivery (DD) design [A+] - Austerity-driven central government disengagement and load-shedding [A+] <i>linked to</i> - Radical disintermediation (do it once) in public service delivery chains [A+] - Delivery-level joined-up governance [A+]
Holism	<ul style="list-style-type: none"> - Interactive and ‘ask once’ information-seeking ~ - Data warehousing, pre-emptive needs analysis ~ - Agile government processes (<i>e.g. exceptions-handling, real-time forecasting and preparedness, responses to the unexpected</i>) 📈 [A-] 	<ul style="list-style-type: none"> - Client-based or needs-based reorganization 📈 [A-] - One-stop provisions, ask-once processes 📈 - End-to-end service re-engineering ~ - Sustainability ~ [A-]
Second wave Holism	<ul style="list-style-type: none"> - New wave holistic social insurance developments - Social security systems moving online [A+] - Single benefits integration in welfare states [A+] - Linked-benefits approvals and payment integration [A-] - Single citizen account [A+] - Integrated-service shops at central/federal level [A+] 	<ul style="list-style-type: none"> - Joined-up local delivery of local public services [A+] - Co-production of services, especially in behavioural public policy (‘nudge’) fields [A+] - Client-managed social/health care budgets - Comprehensive online reputational evaluations in public services and government - Citizens testimonials as substitutes for central regulation [A+]

		<ul style="list-style-type: none"> -Open book government and citizen surveillance as substitutes for central audit [A+] - Development of ‘social web’ processes within online government, and field services [A-] - ‘Big society’ changes linked to austerity and central disengagement [A+] - Reappraisal of ‘mission commitment’ drivers, e.g. staff-sorting, client-sorting and contractor/NGOs-sorting [A+] - The end of the simple ‘digital divide’, and the advent of new (differentiated) forms of residualization
Digitization	<ul style="list-style-type: none"> - Radical disintermediation (cut out the middle-man) 🕒 [A+] - Active channel streaming, customer segmentation ~ [A+] - Mandated channel reductions 🕒 [A+] 	<ul style="list-style-type: none"> - Electronic service delivery and e-government 🕒 [A+] - Web-based utility computing 🕒 [A+] - New forms of automated processes e.g. <i>using zero touch technologies or RFID</i> ~ [A+] - Facilitating isocratic administration, e.g. <i>co-production of services, quasi-voluntary compliance, do-it-yourself forms and tax-paying</i> 🕒 [A+] - Moving towards open-book government (now also full OPG policies) 🕒 [A+]
Second wave digitalization	<ul style="list-style-type: none"> - Government super-sites (and pruning web-estate) [A+] - ‘100% online’ channel strategies (covering all contacts and transactions) and related modernizations [+A] - ‘Government cloud’ [A+] - Free storage, comprehensive data retention [A-] 	<ul style="list-style-type: none"> - ‘Social web’ shifts to rich technology within online estate [A-] - Freeing public information for re-use, mash-ups etc. - Pervasive computing, fuelling transition to ZTTs and capital substitution for labour [A+]

Notes:

Status: 🕒 process is continuing to spread and increase in use.
~ process is accepted part of public management but is not spreading or developing further.
(All second-wave processes are growing.)

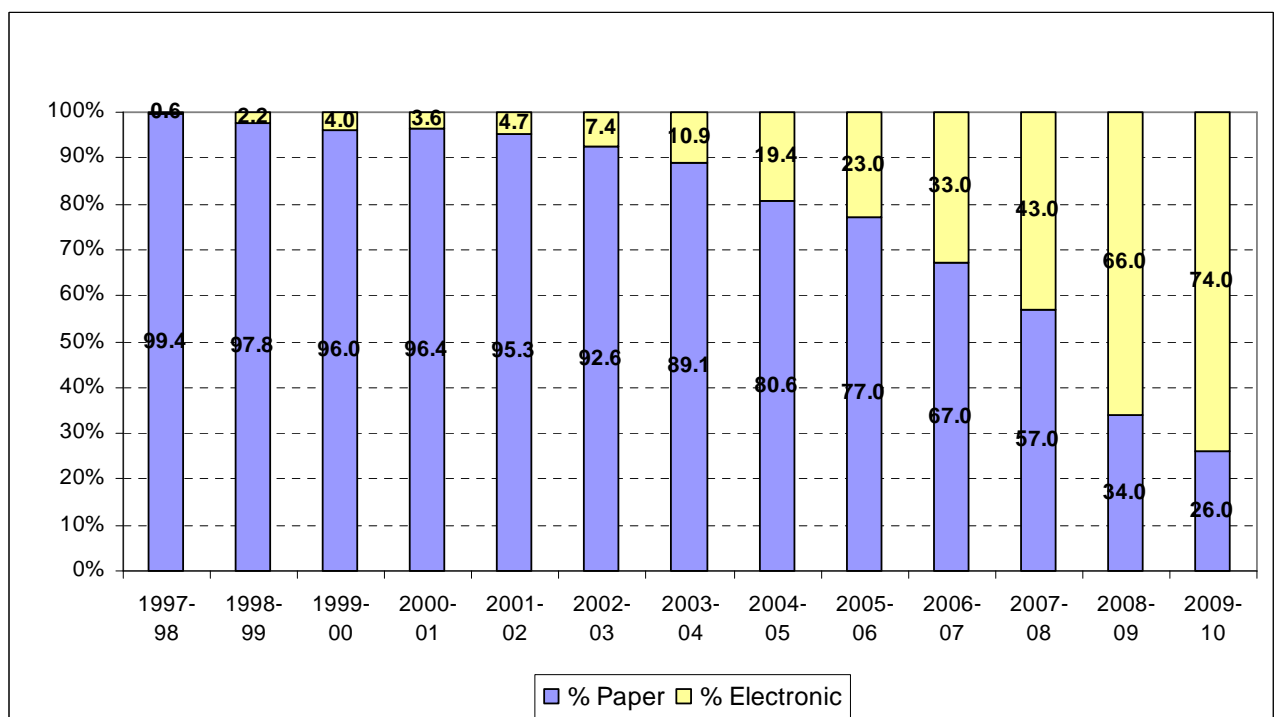
Austerity effect: [A+] process is clearly boosted or accentuated by austerity imperatives.
[A-] process is clearly constrained by austerity imperatives.

How digital services have developed in the UK

HM Revenue and Customs

Digital services in the UK have also developed in a piecemeal and fragmented manner. Some departments, such as HM Revenue and Customs, are well in advance of other large public facing departments in terms of their online offerings. Looking at one major interaction that HMRC runs, self assessment tax filing, we can see that there has been extensive growth in online use over the last ten or so years.

Figure 3: Percentage of HMRC self-assessment applications via paper and online, 1997 to 2010



Source: HMRC data.

This Figure shows steady growth of electronic filing over this period with the 2011 data showing another rise to 78 per cent of users submitting online. The Department has used both soft incentives by giving online users an extra three months to submit, and mandate for companies such as accountants filing for clients to push take-up.

Department of Work and Pensions

Other departments such as the Department for Work and Pensions have been much slower to embrace online services. This was in part due to the complicated IT systems lying underneath benefit provision in DWP – over 150 systems are used to calculate and pay benefits with another 3,000 or so ‘workarounds’ to help the systems talk to each other – and partly because the Department felt that

online services would not be applicable for their particular client group. This was despite the Department's own research showing in 2008 that over 50 per cent of benefit recipients either had a computer or had easy access to one (NAO, 2009).

Previous research has found that with public sector innovation, it often takes a crisis to push organisations towards change. From 2008 onwards, the Department faced a sharply increasing number of people applying for Jobseekers Allowance. In January 2008, 830,500 applications for JSA were made across the UK, which had risen to 1.3 million in January 2009 and 1.7 million in January 2009. The Department's plans for moving JSA online were brought forward and a timetable set to provide this service from August 2009. Figure 4 shows the results for the eighteen months since this took place.

Figure 4: Online applications for Jobseekers Allowance (August 2009 to December 2010)

Month/Year	Total JSA new claimants	Completed claims for JSA online	% JSA claims online	Visits to JSA online first page	% visits that result in completed claim
August 2009	400,712	19,789	5	64,769	31
September	322,459	20,706	6	129,935	16
October	325,597	14,723	5	62,619	24
November	377,291	10,954	3	56,793	19
December	281,891	13,898	5	45,931	30
January 2010	351,583	14,456	4	76,167	19
February	319,928	11,480	4	62,222	18
March	283,952	10,934	4	70,279	16
April	261,694	15,052	6	59,157	25
May	314,454	10,561	3	55,188	19
June	251,520	11,548	5	69,568	17

July	302,551	17,125	6	84,883	20
August	379,538	25,495	7	92,624	28
September	303,068	65,389	22	181,257	36
October	383,125	46,390	12	160,838	29
November	299,468	42,784	14	152,593	28
December	282,543	51,066	18	126,017	41
Total	5,441,374	402,350	7	1,550,840	26

Source: First column data taken from Nomis. Second column data from FOI request available on www.whatdotheyknow.com

For the first year of the new system, well under 10 per cent of applications came through the online channel. However since September 2010, the percentages are steadily increasing. There has been extensive discussion of how well the 'look and feel' of online services has been designed and the final two columns in Figure 4 show the large drop-off from those looking at the initial pages of JSA online application and those completing the process. In total 26 per cent of people on average who start out looking at JSA online complete the application process. Although there may be many reasons why this is so, one reason must be that the online form itself seems difficult to follow.

Department of Health

During the swine flu panic, online provision of health information was a key feature of helping GPs surgeries manage the influx of people seeking advice. Therefore the National Pandemic Flu Service (NPFS) was launched in England on 23 July 2009. Its job was to provide an initial assessment on the risk of swine flu for users and the provision of antiviral medicine where necessary. By the time the Service closed in February 2010, it had allowed 2.7 million assessments to be completed online and 1.1 million courses of tamiflu had been distributed through over 2,000 collection points that had been established.

The NPFS used an 'at risk' algorithm to determine whether antivirals should be prescribed. There was also a telephone self-assessment service running alongside the online provision. Where they had been prescribed, the 'overwhelming majority of drugs were collected within 48 hours, meaning

that the service ensured that those requiring medicine were able to access it rapidly' (Hine, 2010: 101). Around one in four people were still advised to go to their GP but the NPFS aided the reduction in numbers of people that primary care services had to see. Figure 5 shows the costs of the flu pandemic preparation and response. It shows that the cost of developing and running the NPFS during this seven month period was a very small percentage of the overall cost of handling the preparations for a pandemic. Taking the infrastructure costs for preparedness and response together shows that each online assessment cost £35 to administer. However, previous research has found that the cost of a visit to a GP is around £25. So although the NPFS was seen as being an innovative and useful response to a crisis, it does not seem to have been financially efficient.

Figure 5: Costs of preparedness and the response

Description	Preparedness (£m)	Response (£m)
Pharmaceuticals (including antivirals, vaccine and antibiotics)	506.32	505.42
Consumables (including face masks, respirators and other consumables)	113.13	2.34
Infrastructure (National Pandemic Flu Service development and maintenance costs, stock management, etc)	27.73	65.75*
Communications	06	15.72
Total	654.75	587.38

Source: Hind, 2010: 155. Note: * the NPFS was only available in England so some response costs were additional resources for the Health Protection Agency.

Post-election changes to how government IT is run

Since taking office the Coalition Government has made a number of changes to how IT is managed that may counteract some of the issues outlined above. The Cabinet Office has been strengthening their oversight role by bringing the Chief Information Officer, the Office of Government Commerce (who run the gateway reviews) and Directgov into the Efficiency and Reform Group. The aim of this is to provide consistent guidance from the centre for all government bodies for all aspects of IT:

contracting and procurement, service and technology standards, and the IT profession in government.

The Conservative pre-election Technology manifesto outlined a number of changes that are now being implemented. A moratorium has been declared on IT contracts over £1 million, with the aim of making shorter and smaller contracts the norm. There is also consensus that making it easier for SMEs and other types of providers to sell hardware and services to government will be a valuable addition to the overreliance on large contractors. The Government has also called for more transparency in dealings with contractors. A list of all contractors dealing with each government department has been released along with grouped spreadsheets of contracts. However, this information does not include the governments' legacy systems: 'the large estate of long established systems has become a constraint upon evolving services and it is costly to maintain' (NAO, 2011: 14). Plans are moving forward for the G-Cloud, including allocation of costs of £1.5 billion for its development according to recent Cabinet Office figures. Its aim is to facilitate more shared service provision to reduce the costs and repetition within government service delivery.

The Government has also recognised that moving services online will be a key way of reducing the costs of delivering services without losing quality. The government's online champion Martha Lane Fox has been leading the calls for this. A recent report from her office estimated that moving half of government contacts with the public online would save £2.2 billion (Lane Fox, 2010). One of the aims of a strengthened IT centre will be to encourage or push departments into providing more services online via Directgov. Recent announcements support the idea that services should be online by default with extra resources being put into ensuring equal access to those who are digitally excluded.

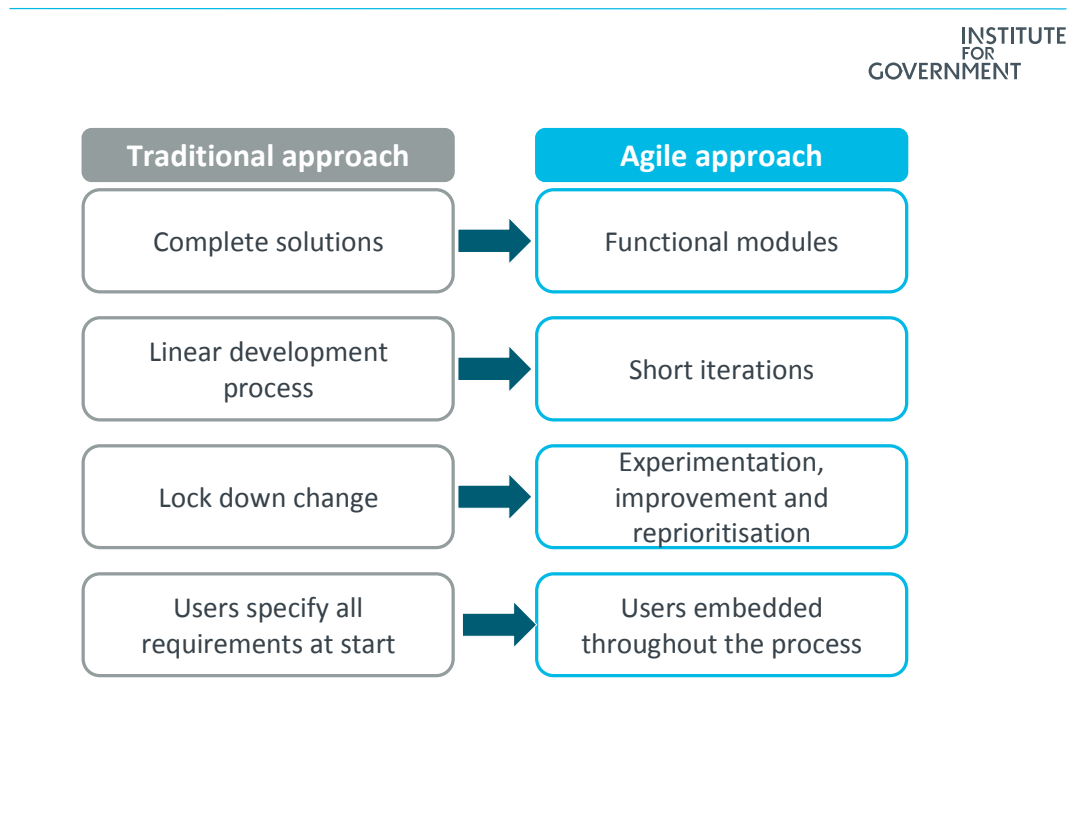
What more could be done?

A recent report from the Institute of Government (2011) set out a new approach to government IT that takes into account the need for flexibility to deliver small and innovative responses to delivery problems – which they term 'agile' – while taking full benefit from the scale and collaboration across government – which they term 'platform'. Figure 6 below outlines an agile approach compared with a more traditional view of how IT is handled. In short:

The platform must standardise and simplify core elements of government IT. For any elements of IT outside the platform, new opportunities should be explored using agile principles. These twin approaches should be mutually reinforcing: the platform frees up

resource to focus on new opportunities while successful agile innovations are rapidly scaled up when incorporated into the platform (IFG, 2011: 14).

Figure 6: Comparing an agile approach with traditional IT project management



Source: Institute for Government (2011: 32).

Dunleavy (2011:1) however proposes that more needs to be done to allow more streamlined and simple delivery channels between government and the public. In the short term the driver for this will be the period of austerity. Over the long term:

The key long-run driver of organisational development in the digital age is 'disintermediation' – which means the stripping out or simplification of intermediaries in the process of delivering public services. Disintermediation achieves 'joining-up' by significantly and visibly reducing the complexity of the institutional landscape that citizens confront in trying to access, and improve public services.

He also suggests some possible stages for the development of joined-up services, shown in Figure 7 below. There are some examples of all of these stages across the public sector but it seems likely that the frequency and scale of these projects will increase over the coming years.

Figure 7: Possible stages in the development of joined-up services

Stage 1 – free-standing services			
Stage 2 – agency co-operation			
Stage 3 – active inter-agency collaboration			
Stage 4 – basic cross-agency co-ordination achieved			
Stage 5 – equal co-ordination or partnerships			
Stage 6 – Difficult next-stage, or 'something more', developments	Stage 6a - 'lead-agency' coordination or some re-partition of roles.	Stage 6b – Pooled budget partnerships.	Stage 6c – Joined-up top or intermediate leadership.
Stage 7 – Mergers, take-overs or integration			

Source: This sequence draws on but is different from work by Frost (2005: 13-16).

Conclusions

The work by Dunleavy and colleagues on Digital Era Governance gives rise to three immediate possible scenarios:

- A crisis for digital era governance, with renewed government fragmentation – problems will worsen and a state-shrinking cycle becomes feasible
- An investment pause – government lags further behind the private sector
- Commitment to second wave DEG and to an 'all online' strategy

In the first scenario, there is a real danger that big society initiatives will lead to further fragmentation of IT provision of services. It will be key here for the Government to ensure that common standards are adopted, that custom or bespoke systems are scaled back and cross-government initiatives like the G-Cloud are used where possible. This is both in order to ensure that government offerings are of the same quality across the country but also that economies from spending on the cloud are realised. It will also be key that Government strengthens its grip on information collection across devolved and localised service provision in order to maintain standards and to prevent crises.

The second scenario can already be seen to be taking place. Contracts over £1 million have been halted with discussions ongoing with a range of large suppliers about efficiency savings. A recent speech by Francis Maude claimed that £800 million had already been saved with this measure (Maude, 2011). However when compared to the government's annual spend on IT of £16 billion this does not look like transformative savings of the kind needed. It seems likely therefore that more IT refreshes will be put on hold and larger-scale projects will be downsized.

Lastly, the government has stated its commitment to moving all services online. In a recent response to Martha Lane Fox, Francis Maude agreed with many of her proposals, especially around strengthening the governance structures and authority of Directgov to ensure compliance with moving all transactions services to that platform. Also facilitating the closer working and sharing of resources between Directgov and Businesslink. Key to ensuring this move generates savings though will be closing down other communication channels as more are encouraged to use online. This has not been done in the past due to concerns around the 'digitally excluded'.

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