

# Digital Government, Open Architecture, and Innovation: Why Public Sector IT Will Never Be the Same Again

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## ABSTRACT

This article argues that the future of public services will be shaped increasingly by the evolution of global, Internet-enabled, digital platforms, with two distinctive technical and commercial features. First, use of open standards and architectures that separate standard business logic from supporting applications will allow government to become technology- and vendor-agnostic, freeing it from its overdependence on proprietary systems and suppliers. Second, over time, open standards and increased market choice will drive both innovation and progressive convergence on cheaper, standard “utility” public services. These two features will combine to create a powerful dynamic situation, driving disintegration of traditional “black boxed” technologies and services, traditionally organized around “systems integrators” and departmental structures, and their reaggregation around the citizen in the form of services. Such reaggregation is allowing progressively sharp distinctions between niche/innovative and commodity/standard offerings, supplied by a plural, innovative, and more cost-effective marketplace, with unprecedented implications for the way in which the state buys and deploys technology. We draw on a range of data from across public and private sectors to illustrate our argument and identify some key policy and implementation recommendations.

## INTRODUCTION

The approach to modernization of the public sector since the 1980s has been characterized as the era of new public management, or NPM (Cochrane 2000; Ferlie et al. 1996; James and Manning 1996; McNulty and Ferlie 2004). The underlying hypothesis of NPM was that private sector style, market-oriented approaches to public services would provide improved cost-efficiency and quality. NPM has often involved government disaggregating many of its functions and devolving them to smaller agencies as well as encouraging competition (a) between different parts of the public sector and (b) between the public and private sectors, underpinned by an assumption that

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the economics of the marketplace are applicable to the provision of public services (Dunleavy et al. 2005).

Dunleavy et al. (2005) highlight a move away from NPM policies after 2000 within the United Kingdom and other advanced countries, consequential upon an increasing realization that many of the promised benefits of disaggregation, such as increased competition and incentivization, had failed to materialize. Instead, they point to examples of increased administrative complexity resulting from the vertical siloing of agencies, difficulties in coordinating joined-up service delivery across independent organizations operating within different incentivization structures, instances of service provider fraud, and the ineffectiveness of many large private finance initiatives and outsourcing contracts for a range of reasons that include poor service quality, spiraling costs, and cost-cutting by contractors (Dunleavy et al. 2006).

In partial response to the perceived failings of NPM as well as the emergence of new technologies, Dunleavy et al. (2006) have also argued that we have entered a new era of Digital Era Governance (DEG). DEG is characterized by a reaggregation of public services under direct government control around the citizen, and other “digital-era changes inside government, responding to the advent of the social web, cloud computing, apps development and many other recent phenomena moving advanced industrial societies further toward an online civilization” (Dunleavy et al. 2010, 1). DEG rightfully highlights the confluence between emerging Internet technology and emerging technology-driven behaviors and resulting citizen expectations around DEG as a channel for citizen–government interaction.

The behaviors and expectations around more effective and agile approaches to technology inherent in DEG in the delivery and consumption of public services appear set only to increase (Franda 2002), with key features reflected in policy rhetoric and aspirations within the UK public sector, including the Prime Minister’s commitment to restore a more effective marketplace, including that of information technology (IT) services, by “open[ing] the bidding process to every single business in our country—a massive boost for our small businesses, because we want them to win at least a quarter of those deals” (The Times 2011); the Cabinet Office Minister’s corresponding commitment to ensure that central government becomes a better buyer of goods and services from small- and medium-sized companies (Business Matters, undated); and the Chancellor of the Exchequer’s long-standing commitment to open source as part of a move to use “agile, modern technology [that] can transform public services and relieve taxpayers of bloated budgets” (The Times 2009). Government’s ability to achieve DEG rests in no small part on its ability to understand and support this change. Our article focuses on an emerging, hybrid architecture based on the use of open standards that we argue will be required to deliver and support DEG. Such architecture embodies a particular, technology-enabled relationship between government and the range of public, private, and third-sector organizations that increasingly provide services on its behalf.

The defining characteristics of this relationship are part technical and part commercial. An “open” architecture provides a new modularized approach to the fulfillment of public sector needs. Unlike current outsourcing and procurement models, which conflate both niche and commodity requirements, an open architecture

approach distinguishes between innovation around bespoke needs on the one hand, and the use of utility, commercial specifications for centrally standardized, yet plurally delivered, public services on the other. Such sharp distinctions are made possible for the first time by successful developments within the IT domain involving open standards and improved connectivity. Such *open technologies constitute both a technical platform and an economic model* underlying delivery of many of the digital-era public services identified by Dunleavy et al. (2010) in DEG. Where implemented effectively, an open architecture allows disaggregation of the “black box” of previously vertically integrated silos, proprietary systems, and opaque-cost structures, enabling easier cost comparison between commoditized components in a manner that resembles, for example, the domestic electricity market. Our aim here is to explain how, in the sense used in this article, an Open Architecture approach successfully combines a technical as well as a commercial dynamic, to explain why such an approach is required to deliver DEG, and to outline a workable framework for government to exploit this emerging technical/commercial environment.

This article is organized as follows. We start by explaining what we see as a major problem facing current IT-enabled public service delivery, including a discussion of NPM and the more recent IT-enabled developments termed DEG by Dunleavy et al. (2010). We then use examples from the UK public sector IT to highlight the UK government’s continued use of NPM-based service-delivery models; we show that these are inappropriate for delivery of DEG and argue that their continued use constitutes a serious constraint to government’s ongoing ability to deliver IT-enabled public services. In response to this perceived situation, we proceed to explain the Open Architecture approach in terms of the need for government to position itself knowingly within a plural, disaggregated, IT-enabled ecosystem. We focus in particular on what is new about this dynamic and explain why its achievement is necessary to generate the innovation required to deliver DEG. We then offer an initial framework for taking Open Architecture forward and include examples that indicate other organizations are beginning to deploy an understanding of the commercial implications of digitally enabled forms of organization to their advantage, distilling these into a set of further recommendations for the achievement of DEG based on these ideas. Finally, we outline some clear implications of this analysis for IT-enabled service design and delivery at both national and local levels. Although our particular focus is on the UK public sector, we believe that our findings hold resonance for all “advanced” public administrations seeking to make sense of a rapidly evolving digitally enabled service-delivery marketplace.

## **EMERGING TRENDS AND CONSTRAINING DELIVERY MODELS: DEG AND NPM**

### **Reintegration, Holism, and Digitization as Partial Response to Shortcomings of NPM**

NPM can be seen as a response within the public sector to a new organizational paradigm emerging from the private sector (Kernaghan 2000) and fuelled by “management gurus” such as Drucker (1992), Peters (1992), Hammer and Champy (1993), and Handy (1995), in which a hierarchical, bureaucratic, and multidivisional organizational form became progressively unsuited to more volatile market conditions

arising from globalization (Farrell and Morris 2007). Although definitional disputes exist about the exact nature of NPM (Dunleavy et al. 2006; Hood and Peters 2004), Pollitt (2009) offers a useful synthesis, arguing that at a high level, NPM “is a general theory or doctrine that the public sector can be improved by the importation of business concepts, techniques and values” (Pollitt 2009, 201), characterized by (a) greater emphasis on “performance,” goals, and the measurement of outputs; (b) small, disaggregated organizations; (c) substitution of contracts for hierarchical relations; (d) widespread injection of market-type mechanisms; and (e) an emphasis on treating service users as “customers.” It has also been associated with repeated organizational restructurings (Moran 2003), the introduction of quasi-markets within the public sector (Walsh 1995), increased emphasis on “managerialist” concepts and structures (Broadbent and Laughlin 2002; Reed and Anthony, 2003), the appointment of business people to head public agencies, and a shift to short-term employment contracts (Heckscher and Applegate 1994).

Although within the United Kingdom, a challenge to the traditional Whitehall bureaucracy (Hennessy 1989) was perhaps long overdue, the proliferation of agencies and other new organizational forms that resulted from adoption of NPM doctrines (Efficiency Unit 1991; Ibbs 1988) by both Conservative and Labour administrations during the 1980s and 90s created a complexity that appeared to receive some recognition in the Blair-era doctrine of *Transformational Government* (Cabinet Office 2005b; available at [http://www.paisdigital.org/documentos/docsinnovacion/2005/Transformational\\_government.pdf](http://www.paisdigital.org/documentos/docsinnovacion/2005/Transformational_government.pdf)). Accordingly, although Transformational Government sought to streamline and reorganize service providers around the citizen, it saw centrally imposed IT as the principal means of achieving this aim, by enabling “joined-up” government whereby government aimed to acquire insight into detailed aspects of the lives of every citizen. In this sense, it remained a state-side, centralist view of citizens’ needs and hence missed the essential dynamic of the Internet with its edge- and user-driven characteristics.

Many of the strategic aims contained within Transformational Government are discussed by Dunleavy et al. (2005; 2010) who bring together a number of distinctive IT-enabled developments in the conception and provision of public services under the term DEG. Dunleavy et al. (2005) explain DEG in terms of three identifiable strategic themes promoted by the Labour administration during the 2000s: reintegration, holism, and digitization. Dunleavy et al. (2010) later argue that there has been a “second wave” of developments in DEG against these themes, but for space reasons, a synthesis of both “waves” is offered here. The first theme, reintegration, encapsulates the notion of joined-up governance, involving a rollback of agencification, concentration of procurement activity, reintegrative outsourcing, shared services, and simplified service-delivery chains. The second theme, holism, is about reorganizing services around the citizen and includes “one-stop” service provision supported by data warehousing, simplified and integrated social insurance processes, and citizen audits and evaluation of services, based on notions of the “social web.” The third theme, digitization, includes “100% online” channel strategies in which services are assumed to be digitally delivered by default automated processes, open information and data, government “cloud”- and “web”-based utility computing, isocratic (“do-it-yourself”) administration, and “social web” behaviors (open book government, mash-ups, coproduction of services).

A particular characteristic of DEG is that its features are profoundly *innovative*, in the sense that they rely on the emergence not only of new technologies but also of new business models and supporting commercial incentives. To illustrate this point, we include below a synthesis of some of the more notably innovative features of DEG, taken from Dunleavy and Margetts's (2010) more detailed treatment (Table 1). It is notable that very few of the above features of DEG can be delivered via a traditional "command economy" approach to governance. This is because the great majority of DEG features, even those involving reintegration, involve new technologies, incentivization mechanisms, and resulting behaviors that do not currently exist—either within the existing public domain or within existing outsourcing arrangements, which, as we explain later, are oriented largely toward the creation and maintenance of bespoke, complex, and largely noninteroperable silos.

Dunleavy et al. (2010) conclude their astute summary of the emerging features of DEG with a question about how DEG will continue to fare in the present age of budget constraint. The authors ponder three scenarios: first, the (unlikely) revival of NPM; second, a lengthy "investment pause" in public sector transformation

**Table 1**  
Innovative Features of DEG

DEG Theme	Innovative Feature
Reintegration	Network simplification
	Single tax and benefit systems using real-time data
	Decentralized delivery
	Radical disintermediation in public service-delivery chains
	Delivery-level joined-up governance
Holism	Interactive and "ask once" information-seeking and provision
	Agile processes (e.g., exceptions handling, real-time forecasting and preparedness)
	Joined-up delivery of local public services
	Coproduction of services
	Online reputational evaluations in public services, including citizens' testimonials and open book government
	Development of "social web" processes and field services
	Single benefits integration in welfare states
	Single citizen account
	Integrated service shops at central/federal level
	New service-delivery models linked to austerity and central disengagement
Digitization	Active channel streaming, customer segmentation
	"100% online" channel strategies and mandated channel reductions (potential removal in part or whole of Government agencies and departments)"Government Cloud" and Government apps
	Free storage and data retention
	Web-based utility computing
	New forms of automated processes (e.g., zero touch)
	Isocratic administration (e.g., coproduction of services)
	"Rich" technology driven by "social web"
Freeing public information for reuse, mash-ups, etc.	

Source: Summarized and adapted from Dunleavy et al. (2010, 16–17).

involving a mothballing of capital–expenditure-intensive initiatives; and third, a continuing expansion of DEG as a response to “*the unrelenting waves of technological and social changes that show no signs of easing off*” (2010, 29). We believe Dunleavy et al. (2010) debate about government’s achievement of DEG is important and seek to move this forward by showing that the intrinsically innovative nature of DEG holds a specific set of implications for the role government needs to play in its delivery. We argue that the answer to Dunleavy et al. (2010) question lies in government’s ability to understand this role—and hence, to locate itself correctly within a distinctive emerging digital economy that will successfully allow it to deliver DEG-style services.

### Attempts to Implement DEG Using Outdated NPM Instruments

Although it appears that NPM is unlikely to be revived in the face of continued growth in public expectations for DEG-style digital service delivery arranged around the citizen, it is far from clear, either, that government currently has the widespread understanding or specific capability to build and deliver the necessary innovation required for DEG. Recent demand for joined-up and “social web” forms of governance has emerged against a background of intrinsic problems in government’s procurement of IT and a string of high-profile project failures. The significant investment in the centralized transformational government agenda and both earlier and subsequent digitization initiatives have produced a profoundly counterinnovative public sector IT marketplace in the United Kingdom. Attempts thus far to build DEG 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.

Although large government outsourcing has been based on the principle of aggregating *demand*, procurement practice in the United Kingdom has led to an aggregation of *supply*, with a restricted number of “super suppliers” in the marketplace. In 2004, 11 IT companies handled 80% of the United Kingdom’s annual IT public sector expenditure (House of Commons Public Accounts Committee 2005). By 2011, this was slightly improved, but only 18 IT companies handled 80% of the estimated £17 billion annual IT public sector business in the United Kingdom (National Audit Office 2011). This reliance on a handful of suppliers is peculiar to the United Kingdom, and these broad statistics also mask a more significant underlying market distortion: namely, that a small number of suppliers actually dominate the supply chain—something the UK Government (Cabinet Office 2011b) and House of Commons Public Administration Select Committee (PASC 2011a) have both referred to as an “oligopoly,” with the Committee going further to refer to the domination and behavior of the large suppliers as “cartel like.”

One study found that in the Netherlands, the top five IT suppliers have 20% of the government market; in the United States, this figure is 48% (Dunleavy et al. 2004). By way of illustration of the marked lack of competition within the United Kingdom, in 2008, the estimated revenues from the public sector among the top five suppliers alone totaled £7.09 million out of a total IT expenditure of £13.65 million (Transformational Government Annual Report 2008), representing 52% market share.

**Table 2**  
Estimated Revenues of UK Public Sector ICT Suppliers in 2008

Supplier	Estimated Public Sector Revenues (£million), 2008
HP/EDS	2,235
BT	2,100
Fujitsu Services	1,200
Capgemini	900
IBM	650

*Source:* Adapted from Maxwell et al. (2010).

Table 2 paints an ironic picture of the result of the supposedly free-market doctrine of NPM within the UK public sector IT domain: a closed market comprising a small number of large suppliers. In comparison with the figures for the Netherlands and the United States, the top five suppliers hold undue influence within the market. Several authors (Maxwell et al. 2010; Thompson 2008) have argued that this situation of aggregated service needs, let through monolithic, long-term, high-value, and high-risk contracts, severely restricts competition and has resulted in a disincentive to adopt disruptive technology that may reduce the complexity, and thus the cost, of government. For suppliers, this disincentive toward innovation is commercial; for senior civil servants, it lies arguably in a tendency toward risk aversion (Andreeva, Ansell, and Harrison 2009). The result is often outsourcing of existing poor systems and processes, with no clear model for their ongoing modernization and improvement, vendor lock-in, and related IT-path dependency.

The result of this absence of real competition has been well documented: A study for the Parliamentary Office of Science and Technology found that only 13% of all IT projects, and less than one percent of IT-development projects, were successful (Parliamentary Office of Science and Technology 2003), with particularly high-profile failures at the Home Office, Department for Work and Pensions (DWP), Child Support Agency, and National Health Service (Thompson 2008). Although the 2006 National Audit Office Report (NAO 2006) highlighted some IT projects that had proved “successful” (defined as on time, to specification, and cost), these were largely systems that automated existing processes, including their inefficiencies, rather than using IT to help redesign and improve them (PASC 2011a). The Driver and Vehicle Licensing Agency (DVLA) Vehicle Tax service, often cited as an example of good practice with some 24 million annual online transactions, has largely automated an existing manual process, including the retention of article documentation. Arguably, the resulting 24 million annual transactions produce an additional and unnecessary bureaucratic burden on citizens: For example, the collection of vehicle taxes, as with other UK taxes such as Pay as You Earn (PAYE) and Value-Added Tax (VAT), could be outsourced, with insurance companies collecting the tax as a by-product of the annual vehicle insurance–renewal cycle. This widespread use of IT to automate existing public administration processes and systems in the United Kingdom rather than to innovate with new delivery models is a symptomatic characteristic of the current NPM-era model, with one senior Dell executive observing that “Government expects its outsourcing service provider to maintain the complexity rather than to simplify and standardize the work processes” (Szelenyi 2010).

A recent investigation by the *Independent* found that the total cost of ten recent government IT failures exceeded £26 billion, equivalent to more than half of the budget for Britain's schools in 2009 (Savage 2010)—or a figure that would account for around 19% of the 2011 public sector net-borrowing requirements of the United Kingdom.<sup>1</sup> The public sector is uncertain what it currently spends on IT, quoting widely varying figures between £13 and £21 billion, and is historically unable to account for much of where the money is spent (Read 2009). It is arguable that such failure can be viewed at least partially as resulting from the creation of a culture of IT-enabled service delivery with little incentive to innovate and introduce newer, standardized technologies that would generate a platform for greater competition and greater value for money. Instead, NPM-style outsourcing rewarded complexity, where outsourcing service providers built and supported bespoke, complicated, and siloed processes and technologies that only they understood and could maintain and upon which government grew increasingly dependent.

### **The Need for a New Understanding of IT within Government**

The UK coalition government's information and communications technology (ICT) strategy, published in March 2011, appears to accept the unsustainability of the present situation as well as the link between common platforms and a competitive incentive, stating that "the Government will (also) put an end to the oligopoly of large suppliers that monopolise its ICT provision" by "creating a platform based on common standards" (Cabinet Office 2011b). This appears to be a recognition that the innovation and cost reduction required for DEG can be delivered only via a wholesale shift away from large, top-down, and proprietary systems and services built and maintained on a bespoke basis within large outsourcing contracts, toward an "ecosystem" model where many suppliers are incentivized to innovate using standard, commodity platforms (Evans et al. 2006).

The best of the private sector provides examples of technology being used to innovate and transform the way in which services are designed and delivered. Commonly cited examples include Amazon, eBay, and Facebook, who have used technology to disrupt previous market models and enable end-users to manage the way in which they transact with and receive services. More widely, organizations such as the Telegraph group (Oliver 2008; Veitch 2009a), Jaguar Land Rover (Veitch 2009b) and some universities (Google 2011; Microsoft 2011) have also understood and adopted the reality of IT as a utility (Fishenden 2010), adopting various aspects of cloud and utility models; and elsewhere in the public sector, the Westminster City Council has recognized the value of shared commodity services across traditional stovepipe boundaries (Veitch 2010).

Some of these examples, such as Facebook, are sometimes perceived as having less immediate applicability to the mainstream public sector, because such innovative approaches do not carry with them either the legacy and encumbrance of old ways

<sup>1</sup> Public sector net borrowing (excluding financial interventions) was £139.4 billion for 2010/11 (Source: ONS. Retrieved from <http://www.statistics.gov.uk/cci/nugget.asp?id=206> on 06.06.2011)



of doing things, or the public sector's necessity to ensure that existing vital services can continue without the risk of failure. New enterprises are able to create new markets and business processes, operating within a greenfield context at variance with the inherited constraints of the public sector. We recognize the need for government to balance the issue of how it both maintains current critical systems, such as the collection of taxes and disbursement of welfare payments, while transitioning to an Open Architecture model. Relevant comparisons for the public sector do exist, however, within other older, private sector organizations, such as those mentioned earlier, who have managed to innovate from within while also maintaining existing services during the transitional period (Oliver 2008; Veitch 2009a, 2009b).

For the public sector to learn from such best practices and transition to a more effective organizational model for the delivery of services centered on citizens' needs, rather than the needs of departments, will require a significant change to the existing, and unsuccessful, model of reform. A topical example is provided by the "reintegration" element of DEG in [table 1](#), which identifies a "single tax and benefit system using real-time data" as a key innovative feature, something recognized by the coalition government's Universal Credits (DWP 2010) and Real Time Information taxation (HMRC 2010) programs. However, the existing model will make such citizen-focused public services difficult to achieve, because they are generally developed around existing organizational structures focused on producer (departmental and agency) hierarchies and needs, each continuing to operate within their own distinct political jurisdiction. The complex and frequently criticized government IT systems that result from this siloed approach to services reflect the problems caused at the point-of-service delivery by the fractured nature of competing jurisdictions. The track record of existing approaches to public service reform has proved poor, witnessing a notable decline in public sector productivity (ONS 2009).

Egg Banking plc, the online bank whose origins lie within Prudential, a much older institution, is an illustrative case study of successful service innovation. Such innovation incubation within a well-established brownfield organization has analogous relevance to the public sector as it seeks to identify more successful methods for exploiting IT to reengineer and improve public services than has proved possible over the last 15 or more years. A former senior Egg executive involved with its start-up and successful launch identified several key characteristics of innovating new organizational processes and service delivery models from within an older institution.<sup>2</sup> These included the development of Egg as a separate entity with its own team outside of the normal Prudential structures and processes, while still permitting it to make use of Prudential facilities (office space, procurement contracts etc.), or the freedom to move outside of them if it wished. It also focused on attracting the people who shared the mindset and culture of Egg (people with experience who wanted to make things better, to do them in new ways). The funding operated like a venture capitalist (VC) model, with the Egg management team returning to Prudential from time to time to demonstrate progress and secure next-stage funding. On the issue of risk (a particular problem in the public sector whenever fundamental public service reform is raised),

2 Private discussions with one of the authors.

the risk was contained at all times—financially, through the VC-like control mechanism; and overall, because the Prudential carried on operating as usual at all times, so an Egg failure at the early stages would have had a relatively marginal impact on the Prudential. This was consolidated through the segmentation and phased release of services to select audiences. Strong governance was another key factor, with committed leadership both at the Prudential (which gave Egg autonomy) and within Egg, which had a dedicated focus and sought alignment (rather than agreement), removing personnel who did not feel able to align behind the team and its mission.

This capacity to manage the development of innovative new business models within the brownfield reality of existing organizational structures has clear potential within the public sector, with its need to minimize risk and disruption to existing essential services during any reorganization. It contrasts with the prevailing approach to major organizational change within government, which has historically propagated existing hierarchies, processes, and bureaucracy, bringing together different existing operations under new brands rather than seeking outcome- and service-based models of organizational change. Illustrative cases are those of the merger of the former Inland Revenue and Her Majesty's Customs and Excise (HMT 2004); and the reorganization of the Securities and Investments Board and the junior financial regulators into the Financial Services Authority (FSA; HMT 1997). These organization-centered approaches to reform have resulted in poor service outcomes, with both the resulting bodies, HMRC and FSA, respectively, performing poorly (APPG 2011; HMT 2010b; PAC 2011). HMRC continues to face numerous operational difficulties, and financial services regulation is now in the process of another significant reorganization.

The Egg-style approach to incubating new models of service delivery is potentially well suited to the government's policy-reform initiatives, such as those of welfare and taxation, currently being undertaken by the United Kingdom's coalition government. It would support the government in delivery of its underlying policy objectives, intended to reorientate public services around citizens' needs rather than on those of the incumbent service providers. It would enable proposed improvements and simplified approaches to taxation and welfare to be developed and brought online in a low-cost, low-risk, and successful fashion alongside the existing, costly, and inefficient systems inherited from the NPM-era model (which could in turn later be decommissioned as the new systems and services prove successful). It would, hence, provide a proven and risk-managed basis on which Open Architecture could be introduced to new programs.

On a limited scale, a similar approach to the Egg model has been tried in central government before, between 2000 and 2007, when the Cabinet Office established what later became the e-Delivery Team (EDT) responsible for building shared digital services for use across the government (Cabinet Office 2007). EDT proved a successful model to the extent that it delivered the only significant shared services still in widespread use today, the Government Gateway and DirectGov. This approach to cross-governmental solutions was not without its problems, with many parts of the government developing alternative solutions rather than making use of these shared services, a recognition of the issues facing any new public services provisioning that cuts across existing political and legal jurisdictions, and service delivery responsibilities, within Whitehall. Such jurisdictional problems will potentially undermine future

attempts to reform service delivery around the citizen rather than organizational needs unless the government is successful in adopting the type of approach used in the private sector to develop new unified service businesses from within existing organizational entities.

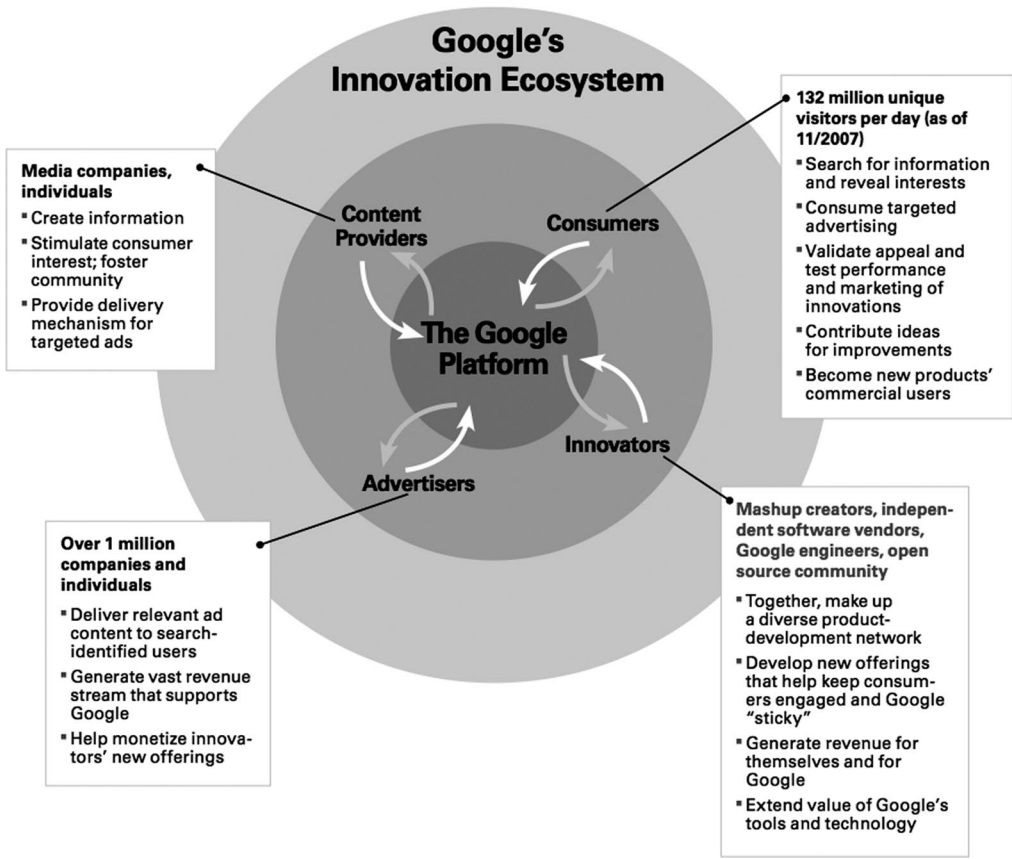
At present, however, the government's flagship policies of welfare and taxation reform appear to be constrained to operate within the old, centralized, NPM-era model, planned at the IT level largely along existing lines using incumbent suppliers working within existing silos and building around existing systems and processes (PASC 2011f). This reflects the strong residual hold of NPM-era approaches despite their long track record of poor delivery, high risk, high costs, and overruns. Government will need to develop improved in-house expertise and implementation skills capable of delivering policy in more appropriate, timely, and effective ways if it is to successfully transition to an Open Architecture approach and not continue to experience the problems of the past. Practical and successful implementation of Open Architecture depends not only upon adoption of the policy rhetoric of an improved approach to public service reform, but also an in-house competence in cultivating and operating the necessary ecosystem. This is unlikely to come from within its existing skillset, either in-house or among its existing large supplier base, given their long-standing habituation and experience of working solely within NPM-era models and their consequential inexperience in the more recent and agile approaches that have developed over the last ten or so years.

Part of this transition will require government to adopt a more effective and agile approach to innovation and technological and service reform. Google's innovation ecosystem offers a good example of the crucial link between platform and innovation, which illustrates the difference between traditional outsourcing mechanisms and utility, platform-based ecosystems. By providing a cheap, commodity platform, Google has encouraged a broad range of content providers, consumers, innovators, and advertisers to build applications, share data, and purchase services in a way that allows it to crowdsource ideas and then "cherry pick" and invest in the best of these. The resulting continually emergent, innovative dynamic is clearly very different from a fixed supply contract owned by one, or a small handful, of suppliers. The economic power of Google's strong open platform is clearly shown in [figure 1](#), taken from Iyer and Davenport (2008).

Such open models are well proven within the commercial sphere, with numerous companies providing an open platform around which third-party developers can innovate. O'Reilly has observed that "the secret to the success of bellwethers like Google, Amazon, eBay, Craigslist, Wikipedia, Facebook and Twitter is that each of these sites, in its own way, has learned to harness the power of its users to add value to . . . [and] to cocreate its offerings" (O'Reilly 2010). Open Architecture will help the government to establish a sustainable platform for innovation, an open platform model that enables Government services to be available to citizens when and where they need them: "In this model, Government [becomes] a convener and an enabler rather than the first mover of civic action" (*ibid.*, 13).

It is important to understand that *the ecosystem model achieves its dynamic of continual innovation because it comprises both technical and commercial dimensions*. In explaining why this is the case, it may be helpful to consider the video home system

**Figure 1**  
Google's Innovation Ecosystem



Source: Taken from Iyer and Davenport (2008, 4). Reprinted with permission courtesy of Harvard Business Publishing.

(VHS)/Betamax standards war of the 1980s (see Grant 2009). Because VHS successfully became a common standard for video products, it was able to create a commoditized platform that drove down costs and allowed businesses to innovate around this: It created a vibrant market comprising commercial viability, low cost, and choice. In contrast to VHS, Betamax rapidly became seen as a proprietary standard relevant to only a limited, and dwindling, number of niche products and services, with the result that the market dried up; it had become an evolutionary dead end. By analogy, government attempts to create the innovative features of DEG using NPM-style outsourcing creates its own evolutionary dead end: Markets will only support outdated systems if they are paid an increasing premium, and because these systems are not a mainstream platform, the market will innovate elsewhere. Like Betamax suppliers, government will be forced to turn back to the direction of mainstream platform evolution in the end (Maxwell et al. 2010).

The above example illustrates how both the evolution of open standards and cheap connectivity have allowed technical platforms and commercial markets to

become inextricably linked. Modern IT thus needs to be light touch, open, agile, and locally responsive not as a matter of ideology—but because these are the characteristics of the successful technical platform/commercial models that have evolved. In this way, it is arguable that the transition required to create agile, “bottom-up,” citizen-responsive public services within DEG rests to a great extent on government’s ability successfully to execute the move from closed to open standards, in turn encouraging a shift from closed to open markets, with their improved innovation and reduced costs. Given government’s stated desire to remodel itself around the needs of citizens, it can arguably no longer afford to ignore the powerful technical/commercial dynamic of the platform/innovation model. Cloud computing, in particular, is an expression of the utility economics of open standards and cheap connectivity, while at the same time illustrating the problem government currently faces in implementing DEG:

A current barrier to Cloud is that procurement is not geared up, at this moment in time, to even define how those organisations move from classic outsourcing – build a data centre, build a unique application, manage it 24/7 – to building something and saying ‘it has got to conform to this standard; it has got to be able to work within this security framework and it has got to enable small businesses, from a software provision point of view, to be able to interface with local community groups’, or whatever the case may be. The lack of framework is the biggest disabler today.

(Burton 2011)

The above comment from the Chair of the UK Cloud Industry Forum underlines the need for government to manage the market effectively by driving open standards and platforms and encouraging competition, instead of concentrating it in the hands of a limited number of suppliers:

We can only achieve this post-bureaucratic ideal . . . if we don’t view IT as an outsourcing solution. The fundamental thing that I keep hearing again and again is that we are looking at IT as something that is designed and built deliberately for a government department and managed by a third party. . . . Therefore the procurement process of making the IT uphold the bureaucracy is the wrong way around. There is not enough new thinking.

(Burton 2011)

Here, we have a new example of the long-standing claim (e.g., Drucker 1988; Hinds and Kiesler 1995) that new developments in technology are driving organizational redesign. This is not a determinist position (Grint and Woolgar 1997) because organizations, in this case government, remain free to ignore mainstream technological developments. Indeed, overcoming deeply entrenched cultural barriers within the UK civil service remains a significant issue if the government is to embrace the emerging model (Thompson 2008), illustrated by the examples herein mentioned of the backward-looking NPM-era approach to Universal Credit and Real Time Information. Rather, this is a claim that the growing commercial benefits, flexibility, and increased simplicity of the platform/innovation model are likely to create an increasingly powerful incentive for government to alter its traditional understanding of the role of technology in public service delivery—and of its own position and that

of its suppliers—within this marketplace. This “ecosystem” understanding is fundamental to the Open Architecture approach to delivering DEG. Just as electricity is consumed as a utility platform *in the same way* across public and private sectors to run untold appliances, both sectors will consume standardized IT components as a platform for untold services, progressively challenging many traditionally held differences (e.g., Su and Bozeman 2009) between the two.

## **THE OPEN ARCHITECTURE APPROACH**

### **A Unique Technical/Commercial Hybrid**

The Open Architecture approach is founded on recognition of the way in which the utility economics of open standards and cheap connectivity will increasingly determine how government delivers DEG. Not only is DEG dependent on continuing innovation by an open marketplace delivered by the platform/innovation model (as opposed to large outsourcing contracts), it must also ensure that it is in a position to take advantage of “utility” commercial models, such as the desktop (Sowler and Thompson 2010), as these emerge. In turn, building platforms and leveraging utility services require standardization around core protocols and open access to data. Reflecting the Google example mentioned earlier, Open Architecture is therefore characterized by a centralization/decentralization dialectic, involving, on the one hand, a tight central mandation of standards and interfaces, by a core function that is thus positioned to leverage the innovation and cost advantages of a plural, disaggregated delivery marketplace, on the other. The principles of such a dual approach have been acknowledged in the rhetoric of the current coalition government of the United Kingdom, with the Cabinet Office Minister’s commitment to a strategy described as “tight-loose.” This means taking hawkish central control over strategic items—communications, headcount, property, infrastructure, and commodity procurement. Everything beyond this orbit is pushed out “as close to the frontline as possible.” (Werran, undated). Although others (e.g., Bloom et al. 2009) have also drawn attention to an emerging centralization/decentralization dialectic, this is often attributed to functional differences, such as (in the case of Bloom et al. 2009) differences between the characteristics of databases and networks; in contrast, we argue that the dialectic is most clearly explained by the operation of the unique technical/commercial dynamic described here.

It is in this sense of a tight central core and a disaggregated, plural delivery marketplace that the platform/innovation model required by DEG is truly “open.” Reflecting Burton’s comments above, the role of government within this model is one of a small, intelligent bureaucracy, whose role is to set strategy, architecture, procurement, and especially governance in ensuring a continuance of public service values (Kernaghan 2000). In this view, the question as to whether services themselves are best delivered by public sector, private sector, third sector, hybrids of these, or by citizens themselves will increasingly be determined by the environment of commercial incentives established by government at the center, set against the evolving ability—and willingness—of these actors to engage with these incentives. Achieving this model can be seen, in simple terms, as the *disintegration* of tightly integrated, proprietary systems traditionally organized around the supplier and service provider—and their

*reaggregation*, in the form of services, around the citizen in such a way as to take advantage of the utility economics of a rapidly evolving services marketplace.

The availability and mandated use of a common infrastructure is critical to this approach. This applies to the business as well as to the technology: In addition to open *technical* standards governing data and interoperability and clear *governance* standards enshrining public service values, it is essential that government converges progressively on *standard business logic*—because standard processes themselves can become a commodity platform around which technology suppliers will invest, increasing innovation and driving down cost. An example of such standard business logic would be a set of core, simple back office processes across government around which the market will supply a range of increasingly cheap enterprise-resource planning, modules that could eventually be “rented” by the hour from the cloud with little to no vendor lock-in—and potentially switched at will. An aspiration at policy level to such simplification and standardization is in part already reflected in current attempts by the United Kingdom coalition government to standardize on simplified processes, such as those of welfare reform (Universal Credit) and the Office of Tax Simplification (HMT 2010a), set up by the Chancellor of the Exchequer of the United Kingdom with a request to identify ways of simplifying the UK tax system, with specific emphasis on tax reliefs and a review of small business taxation. Some reports, however, suggest that such attempts to simplify and reduce bureaucracy are already encountering difficulties (Kaffash 2011).

Measuring the effective use of IT within the design, operation, and delivery of public services is likely to mature into a comparative measure of how successfully advanced governments have moved toward an Open Architecture model. However, public sector organizations have often used existing published metrics as a deterrent to the necessary change, rather than providing a stimulus. For example, Gartner (2012) provides a range of industry global averages for IT spending as a percentage of total operating expense. Examples include “3.2% across state and local government in 2010” (PASC 2011b) and ranging from “7.9% of IT spend as a percentage of total operational expenses where total Operating Budget is above \$10 Billion” (Gartner 2012). The value of such abstract averages can be limited when used in an attempt to demonstrate that IT delivers best value for money or that it is deployed effectively with a good return on investment. Visa Europe, a technology-dependent and technology-centric organization, for example, spends around 35% of its turnover on IT (Goldsmith 2011), a figure that may be a better indicator of whether an organization is in a pre- or post-digital services phase. Comparing one government organization with another utilizing generic averages takes no account of whether an organization is attempting to deliver DEG using an architecture comprising integrated systems or aggregated services. Moreover, attempting to adhere to such benchmarks may drive perverse behavior, mistaking IT solely as a cost center rather than as a means of transforming the way an organization designs and operates its overall processes and services. A more focused approach to benchmarking would choose an appropriate peer group and conduct comparisons at the level of public services, rather than solely considering total IT spend.

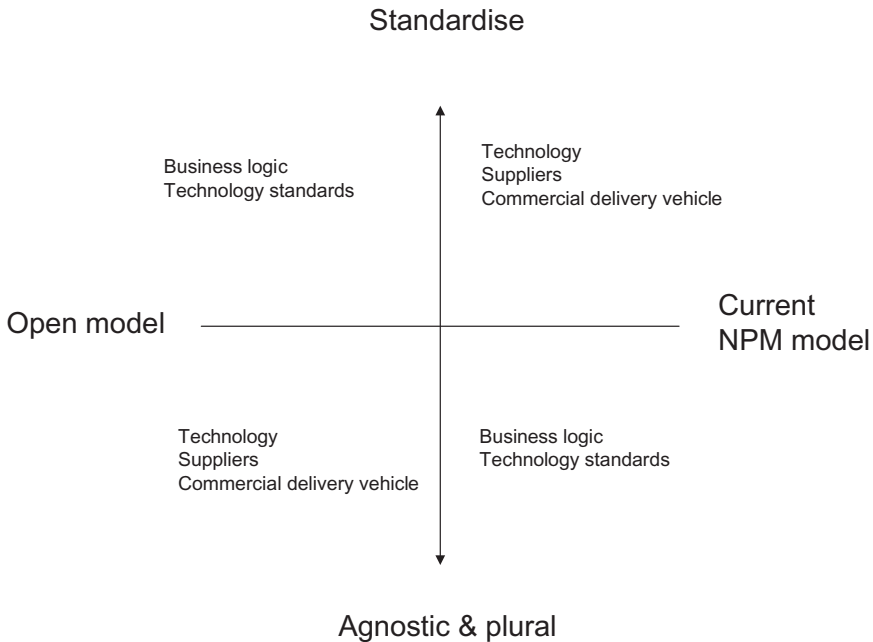
Public sector organizations can learn from organizations elsewhere about how IT enables processes and services to be fundamentally redesigned. Starting with an

arbitrary percentage to be spent on IT is to start in the wrong place: The real issue is how to design and deliver optimal public services, based around citizen need, and the role of technology in that process. This might mean far more use of IT in the design and operation of public services, but an overall lower budget required as a consequence of the savings to be made elsewhere from improvements to public sector processes and systems. Indeed, [figure 2](#) demonstrates that achievement of the Open Architecture vision will require an almost complete reversal of the enduring NPM model of IT-driven public services.

[Figure 2](#) shows that achievement of an Open platform/innovation dynamics with a tight central core and a vibrant, open ecosystem of suppliers requires a significant—and probably painful—policy shift from the present “NPM chassis” situation. The left side of the quadrant (“Open model”) shows that by standardizing, or mandating, business logic and enabling technical standards, government can create a platform that enables it to be agnostic and plural in its approach to technology, suppliers, and commercial arrangements: “We want a service that achieves certain outputs, that complies with certain standards (so we can switch easily). Providing you achieve these, we don’t care how you do it, or what sort of supplier you are.” Such an approach places government in a position of commercial strength, exercising choice regarding technology, suppliers, and the most appropriate (preferably utility) commercial vehicle for services.

Compare this Open Architecture scenario with the right side of the quadrant (“Current NPM model”), which shows instead that government historically maintains exactly the opposite arrangement: It continues to standardize on technology, suppliers,

**Figure 2**  
How the Current NPM and Open Architecture Delivery Models Are Inversely Related





and commercial vehicles (e.g., restrictive frameworks, constrained outsourcing contracts): “We have standardised on Company X’s Products; we therefore purchase from Company X; and we have a long term licensing agreement with Company X – and will adapt our own business logic and standards to fit their application.” Within such arrangements, government is purchasing (technology) inputs rather than (service) outputs, and it becomes locked in with proprietary standards and processes controlled by the supplier, with whom it occupies a correspondingly weak commercial position.

A recent illustration of the pervasiveness of this thinking is the attempt by the Efficiency and Reform Group of the UK government to coerce small- and medium-sized enterprises or SMEs to cease being direct suppliers to government departments and instead to become subcontractors under existing large suppliers (PASC 2011c). Such behavior suggests that, despite rhetoric and aspirations at policy level that appear supportive of DEG and Open Architecture, at an operational level, NPM-era approaches continue to predominate, undermining the government’s policy intent. Further challenges remain: organizing itself to identify and mandate appropriate technical standards, converge on standard business logic, deal with a plural marketplace, and persuade people to accept utility services is not likely to be easy for government. Earlier policy initiatives in the United Kingdom, such as the e-Government Interoperability Framework or eGIF, which sought to mandate the use of open standards in procurements from around 2003 onward, fell largely into disuse with no updates after 2005 (Cabinet Office 2005a), although some recent activity suggests that the United Kingdom’s coalition government has a renewed interest in this area.<sup>3</sup>

## **ACHIEVING OPEN ARCHITECTURE**

We have proposed above that attempts to deliver DEG currently enjoy limited success because of a continuing adherence to an outdated but enduring NPM-style implementation approach that places it increasingly at odds with an IT mainstream based on open platforms, open competition, and rapid innovation. Current evidence suggests that despite the promising DEG rhetoric of the current UK coalition government, it is struggling to implement and drive the practical transition required, and in particular to implement the deep-seated cultural changes and practical steps required to ensure that DEG becomes the default *modus operandi*. In response to Burton’s call for a guiding framework to enable government to improve its chances of delivering DEG, we outline such an approach for achieving an Open Architecture. We hope this may help not only to build understanding across government about the important task of turning government IT away from its evolutionary cul-de-sac and reconnecting it to the mainstream IT market but also to identify the practical implementation steps required to ensure a successful transition.

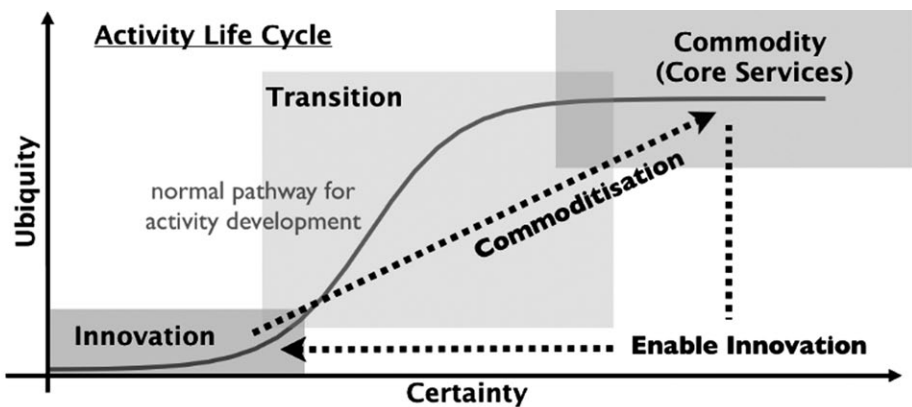
The aims of our framework are, first, to explain, at a conceptual level, the critical relationship between innovation and commodity; second, to show how this relationship means that technical platforms and commercial models are one and the same and

3 The Cabinet Office has recently conducted a consultation on open standards: <http://www.cabinetoffice.gov.uk/content/cabinet-office-consultations>.

must be understood and used as such by government to gain commercial advantage; and third, to offer a simple, robust methodology for applying this framework consistently across all architectural and commercial decisions within government IT. Most importantly, our framework demonstrates that *Open Architecture is a dynamic activity*, rather than a static structure.

The “innovation curve” at the top half of the Innovate–Leverage–Commoditize (ILC) framework in figure 3 makes two integrated points about the achievement of Open Architecture. First, it shows that as common standards, business logic, and resulting platforms are developed and shared across government, we can expect to see costs decrease as services become commoditized and procured via “utility” commercial models—moving from bottom left to top right of the innovation curve. A recent survey, for example, indicated an average saving of 24% across both private and public sectors by adopting cloud-based services, with the public sector achieving a higher percentage (27%) of savings (Fujitsu 2010). Second, recalling the earlier discussion of the importance of platform in driving innovation in Google’s ecosystem, figure 1 reminds us that such platforms are not needed merely

**Figure 3**  
 Innovate–Leverage–Commoditize (ILC): A Framework for Achieving Open Architecture



Stage	Innovation	Transition	Commodity
<b>Focus</b>	<b>Innovate</b>	<b>Leverage</b>	<b>Commoditise</b>
<b>Scope</b>	Days / Weeks	Weeks / Months	Years
<b>Development</b>	Agile	Agile	Six Sigma / ITIL
<b>Deployment</b>	Agile	Six Sigma / ITIL	Six Sigma / ITIL
<b>Delivery</b>	Local / in-house	Local / in-house	Central / Outsourced
<b>Commercial Focus</b>	High risk / low cost / locally driven	Success criteria (KPIs) for adoption	Low risk / reduction through volume / marketplace
<b>Technology Strategy</b>	Mashup / use of core services	Standards & interoperability	open standards / open source / second sourcing

Source: Contributed by the authors, with Simon Wardley (2010), to *Better for less: How to make government IT deliver savings*. Network for the Post-Bureaucratic Age.

to reduce cost; they are also required to incentivize and enable the innovation upon which continuing rollout of DEG depends. Taken together, these two points are a reminder that Open Architecture is both a technical platform and a commercial model, promoting continuous, accelerated sharing of new applications and services across government.

Moving to the lower half of [figure 3](#), the framework seeks to derive a number of implications from the Open Architecture dynamics in terms of objectives for the government's implementation of DEG, by differentiating between the skills and methodologies needed to foster innovation (on the left), those needed to identify promising applications and services and standardize, or leverage, these across government (middle), and those required to drive volume purchasing of commodities (right). On the left, and again recalling Google, delivery of DEG requires ongoing, multiple innovations, driven by a "platform" of open-application interfaces, publicly available data, and ring-fenced innovation funding, increasingly taking the form of rapid, iterative mash-ups, where the cost of failure, application backlog, development time, and costs can be reduced dramatically while the rate of innovation can be accelerated from months to days, significantly reducing development costs (IBM 2009).

The middle column of [figure 3](#) recognizes that many of the most successful organizations to develop ecosystems around core platforms and standards monitor new innovations and their reception by users and amalgamate those that appear successful into their core offerings—the form of crowdsourcing practiced by the standardized development platforms of Google discussed earlier, as well as by others who encourage innovation around their platform, such as Facebook, who provide an open platform around which an entire ecosystem of third-party companies develop; and Salesforce.com, who encourage direct customer engagement and innovation through Idea Exchange.<sup>4</sup> Here, new applications (innovation) are developed into the platform and made available to other users (leveraged)—which in turn can often lead to wholesale integration and development of the underlying platform (commoditized). Government needs to build capability in the skills and approaches required to leverage successful innovations and standardize these so that they can be delivered cheaply and efficiently in volume. This will require mature service and business management approaches such as the Information Technology Infrastructure Library (ITIL) and Six Sigma, allowing specification, agreement, and monitoring of service quality between commissioning and supply organizations.

Finally, the right-hand column of [figure 3](#) acknowledges the need to preserve a resolute focus on managing central, core platforms and services as commodities. In turn, this requires a separation of high-risk, bespoke activities from low-risk, commodity activities, ensuring that volume procurements such as outsourcing are used only for known commodities. As a matter of policy, there should be no outsourcing of undifferentiated services that have not had such components separated out beforehand, because innovations involving low certainty and ubiquity (as shown in [figure 3](#)) are likely to be more "bespoke" and therefore expensive. In turn, ensuring that services are standardized and commoditized before being purchased in volume both creates a platform for innovation as well as provides funding for innovation.

4 See <http://success.salesforce.com/ideaHome?c=09a3000000D9xtAAC>.

As observed earlier, such changes constitute a major, and probably painful, shift from the current NPM mode of service delivery. Given the risk-averse culture within government departments, a further, important component is therefore needed within the ILC model in order to drive Open Architecture behaviors: the concept of Total Cost of Ownership (TCO). By establishing routine and frequent open visibility of TCO across government for comparable applications and services, which should include full life-cycle costing (including the cost of exit, to help prevent lock-in), it will become increasingly unsustainable for a department to insist on procuring a high-cost, bespoke service that replicates its legacy bureaucracy rather than adapting its bureaucracy to take advantage of a low-cost, standard service. A few, more-forward-thinking government bodies, for example the United Kingdom's Essex County Council, are already starting to make use of TCO as an explicit tool for driving a wholesale organizational transition to an Open Architecture model. However, poor application of TCO methodologies for calculating the apparent cost of applications and services may perversely discourage the level of innovation and change required, because they are often based on comparisons between self-similar NPM organizations rather than on an analytical comparison between those seeking to achieve DEG via NPM with those pursuing DEG via Open Architecture (as discussed earlier, in the comparison of costs between government organizations and others). If applied well, appropriate, rigorous, independent TCO benchmarking by experienced practitioners should, nonetheless, play a crucial role in driving acceptance of standardized "utility" services by a government that is accustomed to specifying its own, bespoke department-specific requirements.

### Same Aim, Different Models: How NPM and Open Architecture Differ

In many ways, Open Architecture does not differ ideologically too much from NPM, in its eschewing of Taylorian bureaucratic forms in favor of disaggregation, competition, and incentivization. As [table 3](#) demonstrates, however, although Open Architecture and NPM share similar aims, their models for achieving these aims are radically different. In the view presented here, NPM failed (and continues to fail) because it substituted a monolithic, fixed private sector delivery model for a monolithic, fixed public sector delivery model. Crucially, although NPM aimed to disaggregate previously monolithic *organizational structures*, it failed to distinguish between, and thus to disaggregate, bespoke from commodity elements *within services* and was thus unable to generate the platform/innovation dynamic presented here. It also, in practice, continued to operate within vertical silos of public service structures, rather than recognizing the potential of horizontal requirements (such as common, commodity back office systems) where cost and complexity could be reduced. Because government disaggregated at the wrong level, the competition and incentivization promised by NPM failed to follow. The result was a system that engendered a culture of disincentive among a closed cadre of suppliers to simplify, and a proliferation of complexity. In contrast to NPM's focus on disaggregating *structures*, the Open Architecture approach focuses on disaggregating a continuous *process* of innovation, leveraging, and commoditizing services that never ceases

**Table 3**

Same Aim, Different Models: How NPM and Open Architecture Differ in Their Approach to Disaggregation, Competition, and Incentivization

NPM Features	Open Architecture Features
Disaggregation at organizational level	Organizational level disaggregation results from
Static, “top-down” replacement of one	disaggregation at service-delivery level into
bespoke organizational structure for	bespoke and commodity elements
another, rewarding complexity	Replacement of static structure with dynamic,
Standardized technical solutions,	“bottom-up” process, rewarding simplification
suppliers, and commercial arrangements	and platform reuse
Plural business logic and technical	Plural technical solutions, suppliers, and commercial
standards	arrangements
Proprietary standards and technology	Standardized business logic and technical standards
platforms	Open standards and technology platforms

and cannot be locked down within long-term commercial arrangements. Open Architecture may thus be considered a digitally enabled, mature expression of the ideals of NPM with the capability to deliver DEG through a radically different underlying philosophy and approach.

The experiences of the current UK government provide an interesting insight into the political challenges likely to be encountered as governments aim to move administrations into the digital services era. IT models operating under NPM have historically proved to be of high risk and high cost to governments; but, these have so far remained deeply embedded and resistant to change within both the senior echelons of the civil service and its existing suppliers. Although continuation of a model that has proved dysfunctional and has rarely delivered the policy outcomes governments have sought may appear counterintuitive, the model has proved low risk for senior civil servants and large suppliers alike. There has been little apparent accountability for such repeated failures, either among officials or among the supplier base. The current NPM-era model, despite its history of failure and cost, thus remains deeply ingrained and embedded.

The United Kingdom is currently witnessing a coalition government exhibiting a rhetoric and aspiration that is clearly strongly rooted in DEG, but the evidence on its ability to drive effective implementation remains deeply mixed. For example, there have been high-level policy commitments to a move away from dependency on large suppliers and the increased encouragement of SMEs in the delivery of government IT. However, the UK government’s Efficiency and Reform Group appears initially to have taken the concept of demand-side aggregation of requirements and substituted supply-side consolidation, undermining the policy intent by driving more work into the hands of select large suppliers and rendering SMEs to second-class status, as we have detailed earlier in this article. The outcome of the recent renegotiations with the small group of large suppliers who currently control more than 80% of the UK supply-side marketplace for IT was expected to result in shortened contracts, the opening up and recompeting of elements, and the open publication of contracts and financial details. Little evidence exists to demonstrate that this has yet taken place. With regard to cloud, the government cloud

(“G-cloud”) program announced under the previous government administration and mentioned favorably by the coalition government also appeared initially confused, with evidence from the recent PASC inquiry suggesting a lack of distinction between commodity-cloud services and data-center consolidation (PASC 2011d). Such confusion was further emphasized by the surprising admission that a program of data-center consolidation was decided upon without any knowledge of how many data centers government in fact owns (PASC 2011c). Although the government has also adopted a strong commitment to the use of open standards (Cabinet Office 2011a), it has also come in for criticism (PASC 2011e). Such challenges in delivering reforms due to the government’s approach to governance and procurement highlight some of the difficulties likely to be encountered in transitioning from an outdated model that has long proved highly valuable to the incumbents and their vested interests.

Based on the challenges already evident in the United Kingdom, transitioning successfully to an Open Architecture model will require both a strong political will and an effective, outcome-driven approach to implementation, supported by complementary skills and experience drawn from outside the NPM-era ecosystem. We believe that the framework to deliver the Open Architecture that we have outlined in this article provides an effective means for government toward transition, at both the policy and operational levels, from the outdated NPM ethos to the benefits of DEG. Open Architecture emphasizes the reuse of existing national ICT infrastructures and services, rather than the historic focus on the acquisition of infrastructure and duplicative government systems. It provides an improved method of governance that can help develop the benefits of DEG and hence allow new public service solutions to grow and succeed through the cultivation of an open market that provides more effective competition. Government’s ability to specify, procure, and regulate public service delivery within this digital era model is increasingly contingent upon its understanding and the management of its underlying dynamics, its expertise in separating niche from commodity requirements, access to Open rather than NPM skills, and its ability to mobilize this understanding in its relations with service providers.

## **SUMMARY**

We have aimed in this article to establish important conceptual differences between NPM and Open Architecture as approaches for achieving DEG, as well as to offer an outline of a governance framework for government’s replication of the platform/innovation dynamics in the public service domain. Open Architecture provides a promising confluence of utility-based IT (both central and decentralized), as well as providing a sociopolitical response to the emerging global utility market. It is thus both a platform and an economic model—but, it also helps to address important political/social challenges. Open Architecture reintegrates IT within the more relevant context of tackling the demands of the public for better services at lower cost and the new working practices required to achieve the necessary change—rather, than as in the past, IT being seen as a means largely of automating existing processes. Open Architecture is about achieving meaningful improvements to the way

government designs, delivers, and operates public services and the integral role of IT in helping with that transition.

At a policy level in the United Kingdom, some of the language of Open Architecture is already commonplace, including the Cabinet Office Minister's use of the phrase "tight-loose" controls. But the reality of its application within Whitehall and across the wider UK public sector currently remains uncertain. New policy initiatives such as Real Time Information (tax reform) and Universal Credit (welfare reform) are natural, beneficial targets for implementing Open approaches, but both appear largely stuck within the old supplier ecosystem and NPM approaches that have historically run late, exceeded budget, and failed to deliver successful and flexible policy outcomes. Although relevant policy commitments and a recognition of the benefits of a successful move to DEG via Open Architecture are evident at a political level in the United Kingdom, their implementation by public servants remains in some areas counterindicative—such as the initial Cabinet Office renegotiations with the top suppliers failing, so far at least, to result in the mix of contractual termination, disaggregation, and modularization expected; the description of a move to cloud services that is frequently muddled with a description of data-center rationalization within the existing supplier ecosystem; and the failure to implement benchmarking, transparency, and the direct contracting of SMEs in an innovation ecosystem. Yet, set against this is more positive evidence, such as the renewed emphasis on open standards, the opening up of public data, and the creation of the skunk works team (PASC 2011c), and early evidence of the current G-Cloud framework procurement. What is less clear is whether these latter initiatives will continue to operate solely on the margins of the public sector, or move to the mainstream as part of a new *modus operandi*.

In particular, we believe that achieving Open Architecture calls for a reappraisal of the relationship between government and innovation. Although the non-linear, interactive nature of innovation has been recognized for some time (Kline and Rosenberg 1986; Rosenberg 1976), together with the need for organizations to see themselves as continual learners within systems of innovation (Lundvall 1992, Nelson 1993), the "proper" role of government has long been considered to minimize risk in public service delivery (Hood 2003). Paradoxically, we believe that this "proper" role remains unchanged within Open Architecture; the role of government is to create platform-based incentives for others to take risks—while accepting, and providing for, the degree of failure that forms an important part of the innovation process. We do not pretend that overcoming the endemic culture of risk aversion within the public sector will be easy; but we believe that building understanding and literacy within government about the links between standard platforms and innovation currently being demonstrated in other commercial environments represents a start in this direction.

These remain early days for the United Kingdom's coalition government. Based on policy aspirations and rhetoric, there appears no shortage of political will to achieve the benefits of DEG offered by an Open Architecture approach. Time remains to address current implementation problems and to move away from the failed NPM-era model toward the more effective and lower-risk approach of Open Architecture. But we believe that doing so will require a more effective, timely, and

practical implementation of the framework we have outlined in this article. We shall continue to track evidence and progress in the United Kingdom to determine the extent to which Open Architecture is delivered, or whether the failed and high-risk NPM approach remains predominant, restricting opportunities for the necessary, systemic improvement at both policy and operational levels.

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