

# A Perspective on the Government Digital Strategy (GDS): Balancing agility and efficiency in UK Government IT delivery

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## Executive Summary

The recent publication of the Government Digital Strategy (GDS) addresses “how the government will become digital by default” and heralds the redesign all UK Government “transactional services handling over 100,000 transactions per year”. The GDS is intended to play a fundamental role in defining how UK citizens will access the most critical government services.

Although somewhat broad in scope, the principles and actions defined in the GDS appear to be underpinned by three key assumptions that form the heart of the way the GDS believes it can realize digitized services in practice. These are:

1. Use open source tools to reduce cost and break dependency on proprietary solutions;
2. Adopt agile methods to speed up delivery via an incremental stream of capabilities;
3. Encourage more SME participation to enhance innovation and flexibility.

In this report we examine these principles with respect to delivery of the UK Government IT solutions, and provide an extensive commentary on how these principles should be interpreted to improve their impact and success. Based on the that commentary, we recommend enhancing the GDS as it stands with additional detail, an extended focus on clearer interpretation of those principles to help understand how to enact the principles, and deeper elaboration to emphasize several under-developed themes. We focus on four major recommendations:

- For greater innovation, focus on open data access;
- Understand the complex socio-technical issues;
- Focus on the agile organization, not agile development;
- Revise IT systems only in support of broader cultural change activities.

There is no doubt that the GDS is an important example of how digitization of IT systems is revolutionizing online service delivery. It will radically alter UK Government interactions with citizens, and has the potential to significantly change citizen-to-citizen interactions through government. This report offers a commentary to help focus and accelerate the success of this activity.

## Introduction

Today's service-based economy is fundamentally dependent on IT systems. Through these computer-based systems, the critical interactions at the heart of those services are defined, managed, recorded, and governed. Furthermore, in recent years, these IT systems have moved from being hidden back office solutions used to process the mountains of human-maintained paperwork, to being directly exposed to users of these services through front office applications accessed through kiosks, Internet browsers, and the growing plethora of mobile devices. This digitization of service delivery has been one of the most rapid and compelling trends of the past two decades, and has spurred a revolution in how to most effectively bring transactional solutions to end users.

The UK Government is clearly one organization experiencing this pressure to accelerate the delivery of new services to its citizens, and to open up government activities to more direct scrutiny, access, and use. The current economic, technical, and social context is driving UK Government to review its service delivery strategy, and specifically the way in which its software-intensive IT systems support those services. A major part of this review is the recent publication of the Government Digital Strategy (GDS) with its goal to address "how the government will become digital by default" and with its focus on the planned redesign of all UK Government "transactional services handling over 100,000 transactions per year" [1]. Essentially, the GDS is intended to play a fundamental role in defining how UK citizens will access the most critical government services: Activities such as claiming government benefits, applying for a driving license, and submitting tax forms. The GDS is a baseline on which future core IT practices, systems, and services will be delivered.

Over the past few years we have been deeply engaged in the study and analysis of a number of large-scale software development and delivery projects in a range of commercial and government contexts. Common across many of these projects has been the use of multiple suppliers in a global software supply chain, the need to accelerate time-to-value from those efforts to meet highly demanding user needs, and the focus to optimize efficient delivery of all tasks across the lifecycle. We have referred to this as the balance between agility and efficiency, and using detailed case studies we drew a series of conclusions and recommendations for how to approach the challenge of addressing this balance [2]. These observations have been reinforced as particularly relevant to the challenges in delivering large-scale government, most notably by Steve Denning in his discussion of the recent failure of a large US Air Force project where the balance of agility with control was seen as a critical reason for the abandonment of the project after spending over \$1.3B [3].

Here we review the GDS in light of these experiences. The goal is to offer a broad context within which the GDS can be understood, analysed, enhanced and guided to increase the likelihood of success. In particular, the focus of the review is to understand how the GDS views the essential dilemma that we believe is at the core of large-scale system delivery for UK Government: Balancing the pressure to accelerate delivery of improved, more flexible, online capabilities while maintaining and enhancing governance and control to monitor a project's progress and ensure public money is spent effectively.

## Main Themes of the GDS

Simply stated, the GDS is based around three key themes:

1. **Improved online access to digital services.** The focus is how the large number of paper-based forms and documents can be digitized and made more widely accessible online. Included here is the need to enhance online systems to improve the user experience when interacting with UK Government services.
2. **Redesigned transactional services and their access online.** Bringing key transactional services online often requires that those services are reviewed and updated to address concerns such as security, privacy, auditability, and so on.
3. **A common platform and toolset for building, digitizing, and exposing new services.** UK Government services are developed by a broad community of organizations, teams and individuals. Common approaches and technologies can greatly improve the efficiency and effectiveness of new service delivery.

Each theme comes with its own particular set of activities, plans, and measures of success. In terms of the digitization efforts, there is a great deal of focus on digitization technologies and standards, and the push to bring a common access approach to documents and forms on the new cross-departmental website at GOV.UK. This central portal to UK Government will bring clarity to citizens wanting access to online UK Government services, and provides an immediate focal point for coordinating delivered services. Success is defined as bringing more people to use online services rather than other channels, with the goal of bringing online access to UK Government services in line with online access to commercial services for banking, shopping, and utilities [4]. It should be noted, however, that many government services are more complex, and may require different forms of user authentication, so it is not clear how realistic this ideal is.

With respect to redesign of transactional services, an analysis of transactional services across UK Government is used to identify those high volume services where a shift from offline to online access could bring most benefit [5]. Cost saving is the key driver, with estimates being made for how much could be saved through moving expensive manual processing activities to be automated online. These savings are primarily as a result of reducing staffing costs for handling phone call enquires, obtaining paper documents and information on procedures, and basic data processing.

In addressing the common platform and tools for delivering new services, an interesting blend of activities is pursued. On the one hand standardization of digital formats and common exchange protocols is sought [6], with a goal of driving conformance to these standards. On the other hand an open dialog and diversification of tooling solutions is encouraged in how such standards-based artefacts are produced and managed [7]. Specific toolsets are illustrated, and it is commented that standard bundles of tools will defined and made available [8].

## Core Principles of the GDS

The GDS provides a broad perspective on the digitization of key services, with a strong emphasis on the need to move more of those services online and to improve the user experience in gaining access to those services. The survey-based research on which the GDS is grounded [4] shows that online access to UK Government services is substantially below typical online access to commercial services such as

online shopping or online banking. It is acknowledged here, however, that there are some exemplary services, e.g. for renewing car tax, but that does not mean the problems are solved.

While no detailed analysis of the limitations of UK Government online services is provided, there are several comments made that offer insight into the likely causes. First, the online transactional services are sometimes found to be less convenient, timely, or reliable than manual alternatives. This is diagnosed as a failure to adapt those transactional services to the online experience. It is not necessarily appropriate to simply expose a paper-based transactional service to users online. The interaction style and user experience of online self-service interaction may demand that the service is simplified, componentized, or redesigned. Second, online access often requires interaction and alignment of transactional services created independently by different groups in the same government department, or across departments (or more widely, as is the case with car tax). As a result of organizational or contractual boundaries, little attention has usually been paid to the commonality of service access, and the user experience when performing a related set of tasks is confused by different terminology, interactions styles, and uncoordinated actions. Third, few government departments have invested in providing access to services via mobile devices. With the rapid adoption of new mobile devices as the preferred way to access online services, this gap in supporting new devices is limiting access to UK Government services for mobile users, and may be a general disincentive. Fourth, the Civil Service has a notable capability and skills gap to address that prevents it moving more quickly to digitize its services. Not only does the GDS recognize that they often do not have the right technical skills and knowledge of the new “digital consumer”, they also suggest that they lack insight into the details of their own transactional services, and have weak management practices for measuring performance and managing costs in new service delivery.

As a result of this review, the GDS defines a set of 11 principles and an associated set of 14 actions to enact those principles. These address a broad set of basic needs for improved understanding and leadership in digital technologies, redesign of transactional services, and changes in government policy to remove legal barriers to enhanced online access. Although perhaps of interest, we do not intend in this document to engage in a discussion on each of the principles and actions defined. Instead we will look at the GDS holistically and make some broader comments on how it could be strengthened, the chance of success increased and its impact improved.

## Commentary

Our main criticisms of the current GDS fall into 5 areas:

1. Brevity of key statements and lack of depth in analysing core concerns.
2. No clear interpretation for commercial suppliers or government consumers.
3. Lack of demonstration of complex systems thinking.
4. Narrow view of open systems and standards.
5. Over-simplification of the cultural change required for success.

The GDS document itself is rather brief, and it would appear that it is intended to be revised and extended over time. Brevity in itself is not an issue (and much welcomed for those used to overly-long government documents), and a brief document could be adequate if supported by appropriate references. However, brevity cannot be an excuse for lack of detail, explanation, and precision. It is

particularly important when one of the key criticisms raised in the GDS is that there is too much confusion around the provision of digital services. For example, the glossary in Annex 1 contains only 8 entries and even these, such as the definition of “Digital” as “internet-enabled” and “Agile” as incremental delivery where the “product works from a very early stage”, are very simplistic in nature (arguably incorrect or misleading as it may not be appropriate or possible to deliver some services incrementally) thus not particularly helpful in practice.

In fact, where this lack of depth is most damaging is with regard to a central element of the GDS: “Transactional services are the primary focus of this strategy”. Here, we see that in Annex 2 there are 2 pages to cover the entire approach to service transformation. It is impossible with the detail provided to form any reasonable view of how this key activity will be performed. Similarly in Annex 3 the proposed transactional service standard is outlined. Again, in the few pages provided there is far too little to make any assessment. For example, the critical “design” section consists of 4 bullets along the lines of “transactional services will be simple and intuitive enough for users to succeed first time, unaided”. The general sentiment is clear, but it is impossible to give any viable interpretation in a transactional process as complex as applying for a new driving license, or enquiring about expected child benefits. In such circumstances, what is deemed to be “simple” and “intuitive”? What does it mean for the transaction service to “succeed”? Defining these terms is essential.

The challenge around brevity is unfortunately not simply a matter of the GDS document itself requiring further explanation. The issue is further exacerbated if you look at the standards hub [6]. This is described as “the ‘front door’ through which you can contribute to the process for prioritising and adopting open standards in Government”. Yet entering through this front door you find no standards are approved, none are listed in the pipeline for approval, and the “progress report” shows no activity for over a year. These failings are deeply disheartening to both solution architects and potential contributors alike. If openness and longevity is an aim, then there is an urgent need for standards to be developed and agreed.

It would be easy to put this lack of depth down as simply one of timing: Perhaps more detail will soon be added and the gaps filled. However, the impact of these criticisms as they relate directly to the strategy’s interpretation is not entirely academic. We were recently in discussion with the head of IT services for a large UK county council and we asked him about his reading of the GDS. His comments were clear: as it stands he had no practical understanding of how to use this strategy to have positive impact on his team’s work; We suspect he is not alone in this view.

The target for the GDS and the redesign of transactional services is the identified 152 transactional services that execute over 100,000 times per year across 7 key UK Government departments. Although not highlighted in the GDS itself, the characteristics of these kinds of transactional services are well known to anyone with a history of working with these systems. Essentially, they are extremely complex, have been implemented in a variety of technologies over many years, are defined, updated, and managed by external companies, and are managed and administered by a network of bureaucratic governance procedures, policies, and rules. As written, the GDS makes very little reference to these characteristics and their implications. Many previous reviews of government systems in the UK and the USA draw particular attention to the impact of complex system characteristics and the importance that plays in their redesign, delivery online, and transparency to third parties. For example, there are many discussions on the need for better architectural insight to resolve challenges in understanding core

service properties [9], there are frameworks for investigating the unpredictability of ultra-large-scale systems behaviour [10], and there are studies highlighting the challenges that arise at the socio-technical boundary of where systems thinking meets system usability [11]. The GDS shows no evidence that it is aware or has taken account of the impact of such thinking in the very general notion of “transactional service redesign”. A feasibility analysis based around a subset of services is essential to understand the issues involved.

One element of this lack of complex systems thinking is with regard to the role of large System Integrators (SIs) in the delivery of UK Government transactional services. An undercurrent in the GDS and associated blog commentaries [12] is that the large SIs are at the root of many of the current problems being faced, particularly with respect to the nature of the proprietary solutions frequently delivered (and by implication closed and inflexible). Certainly the SIs must share responsibility for the current state of delivered UK Government services. Lack of success in solution delivery can too often be traced to inflexibility of SIs in operating procedures based on their negotiated contracts. However, the role of the SIs must be clearly identified as critical to any viable future solution. As the GDS points out, knowledge of the UK Government’s key transactional services primarily resides with these SIs. They have the deepest knowledge of the processes being carried out, the IT systems essential to carrying them out, and the technologies in which they are now embedded. Furthermore, although their record is far from perfect, the SIs have demonstrated their ability to deliver massively scalable solutions in the kinds of complex environments typical of the UK Government.

Two potentially viable alternatives to an SI-based solution have emerged in recent years. One is an open community model as delivered successfully in Linux, Eclipse, and Apache. The other is a web-based platform model as delivered successfully with Amazon, eBay, and Facebook. In both of these cases there is much that can be learned and applied to the UK Government’s solutions. They are clearly scalable and illustrate that it is possible to create very powerful technology frameworks that support rapid, incremental development. However, we would strongly argue that neither case offers a direct, clear model that applies to this UK Government context: A technologically-diverse, long-lived set of transactional services to be executed in a complex cultural, political, and regulatory environment. How the lessons of these alternative models can be brought to bear on the current UK Government’s IT systems is a core question that the GDS must address, but right now it has little meaningful to say. The GDS must avoid falling into the trap of an overly-simplistic response that one approach is poor and the other is better.

The approach to delivering digitized services is similarly influenced by the thinking that traditional development methods and tools will not be able to meet the needs of the UK Government in this area. Although somewhat broad in scope, the principles and actions defined in the GDS appear to be underpinned by three key assumptions that form the heart of the way the GDS believes it can realize digitized services in practice. These are:

1. Use open source tools to reduce cost and break dependency on proprietary solutions;
2. Adopt agile methods to speed up delivery via an incremental stream of capabilities;
3. Encourage more SME participation to enhance innovation and flexibility.

Each of these assumptions is based on valid needs and identifies approaches embraced in many other software-intensive systems development projects. And while there is clearly appeal in their focus on

cost reduction and speed of delivery, it is well worth commenting directly on each of them as they relate to this specific context.

First, with respect to using open source tools, there is currently a quickly growing portfolio of potentially useful tools emerging in the market. These are a mixture of open source (i.e., developed under a license that grants open, free use of the technology), packaged open source (i.e., customizations of open source technology that are packaged with paid-for services), and commercial open source (i.e., commercially-supported variants of open source technologies, or commercially licensed extensions to open source technologies). Many of these tools offer excellent capabilities for creating, managing, and delivering digital services, and they should be considered an important part of any tooling strategy in today's software teams. Furthermore, some open source choices reduce the barriers for SMEs to contribute to a burgeoning ecosystem around the open source solution.

However, as many commentators have noted [13, 14], there is also a need for caution. The main concerns centre on how use of these open source tools can be managed and coordinated when used in diverse, highly-regulated environments with extensive demands on long term support for all fielded solutions. Previous government approaches have been an overly-cautious disregard for open source solutions on the grounds that they cannot be effectively managed. However inadequate that answer, the solution cannot be the equally sweeping statement that "open source is free" and therefore proprietary solutions are an unnecessary expense to be avoided. Open source solutions are neither free to administer and support, nor are they the most cost-effective answer in all situations. What most organizations require is access to good information on what is available to them, a decision framework for assessing risks in selecting proprietary or open source solutions, and responsible guidance on how the choice of open source solutions fits into their management of a broader tooling portfolio. These will help with the challenge of establishing which projects are best suited to an agile approach and, indeed, which elements of agile methods should be required. In some cases, for example, it may be appropriate to develop a fairly detailed specification but to develop this in short sprints with continual client feedback; in others, short delivery cycles based on an evolving set of prioritized user stories may be used, and so on.

Second, agile methods are receiving wide publicity as the antidote to long-lived "deathmarch" projects characterized by endless reviews, slow progress, and inflexible solutions [15]. Indeed, it is becoming clear that agile software development practices are extensively being adopted in most software projects in both industry and government environments [16]. Again, while adopting these practices can be very helpful to many projects, the challenge for most software teams, project managers, and project administrators is in understanding how such practices impact the overall delivery approach (of which writing software is inevitably only one component). The fact that software developers quickly create new capabilities is only helpful if there are ways to organize, manage, deliver, and support such an approach. Unfortunately, this is frequently not the case. Hence, adopting agile development methods must also be accompanied by changes in the broader delivery practices. For most projects this is a much more complex area to address. Further, there are risks that rapidly changing services will deter the take-up of digital services, not encourage it, so the impact on the (perhaps non-expert) user of incremental upgrade to services needs to be considered.

Third, use of SMEs is seen as one way to increase diversity of thinking and increase flexibility in delivering new services. It is typically found that smaller organizations can operate with greater speed,

and without the constraints of an excessive internal bureaucratic overhead and delay that too often is experienced in larger organizations. Such dynamism is critical to support the need to accelerate delivery times and increase the UK Government's ability to deliver services in line with the expectations of its citizens. However, it is clear that a large project delivered by a network of SMEs will still require significant effort to coordinate and manage tasks and deliverables. The move to self-organizing teams may provide some help. But cross SME concerns still need to be addressed. Certainly many of the inefficiencies in larger organizations cannot be justified nor condoned. However, some of that effort is required to organize and manage the team or teams so that the UK Government team does not need to perform that function; without this the UK Government will end up with a set of disconnected elements which are difficult to use to provide transactional services. The move to networked SME approach may have a profound impact on project delivery and management, to say nothing of measurement and governance procedures. The GDS is remarkably (perhaps alarmingly) silent on the issue of how to coordinate SMEs in project delivery, where their context means that through necessity they are often narrowly product or consulting-focused and may inevitably lead to a lack of experience or the capability for substantial cooperative working.

The deeper significance of many of these comments comes to the fore when we think about the cultural impact that many of these changes imply. In fact, in a recent article in The Guardian newspaper, Rachel Neaman discussed the implications of GDS on the Department of Health by describing it as a major shift in mindset within the civil service. She quite clearly defined GDS to be "as much about creating cultural change across government as it is about technology or systems" [17]. This comment is not difficult to justify. A move toward "digital by default" is nothing short of a radical change by UK Government that must influence every aspect of IT system delivery approach including contracting, project management, governance, and auditing. Although the GDS identifies a focus on digital leadership and skills enhancement being key elements of its principles, in general the GDS does not provide you with the reassurance that it is prepared to invest in the massive cultural change this strategy will require. If we look at the guidance of change management experts [18], there are clear steps, practices, and milestones that need to be established before any cultural change can be attempted. We see little discussion of a concrete and practical change management process to support the "digital by default" strategy in the current GDS. We view this as a potentially fatal omission. Put another way, trying to drive cultural change via technology (IT) is highly risky and almost never succeeds.

This change dimension becomes yet more complex when issues of governance and funding across all forms of UK government are considered. The split in funding for some services means that local authorities, other local bodies, and national bodies all have a stake in the system of governance and these groups will not necessarily all take a consistent view nor have the same drivers and priorities. Therefore, inevitably, change will tend to be very patchy across the country. This variation in deployment must explicitly be recognized, managed, and supported.

## **Directions and Recommendations**

The GDS is an important step forward for the future of UK Government IT solutions, and contains many useful principles and actions. Based on the above commentary, we recommend enhancing the GDS as it stands with additional detail, an extended focus on clearer interpretation of those principles to help understand how to enact the principles, and deeper elaboration to emphasize several under-developed themes. Rather than attempt an exhaustive list of possible changes to the GDS, here we enumerate



several of the high priority themes for additional work. We make a few short statements to scope the discussions, and provide appropriate illustrative references. In doing so our aim is to promote further discussion and encourage debate; it should not be assumed that we have provided the last word on the issues.

### **For greater innovation, focus on open data access**

A number of commentators have noted that the overriding priority for innovation in large-scale systems is to open up the data that sits behind those enterprise systems to a broader set of partners. Perhaps this is most clearly explained in Tim O'Reilly's paper defining Government 2.0 [19]. He strongly makes the case for taking a platform view of government solutions, and argues that innovation comes from defining an open platform upon which many individuals, teams, and organizations can gain access to the data those systems manage.

### **Understand the complex socio-technical issues**

The scale and complexity of many of the UK Government's IT systems cannot be underplayed. Many of the challenges being faced in a "digital by default" approach will be deciphering those systems to understand not only which elements of those services can realistically be brought online, but also how those services interact with the rest of the capabilities with which they interact. Much has been written about the difficulties involved in doing this, with three ideas particularly relevant. The first is a "system-of-systems" view of services interconnection and the importance of a service-oriented view of solution architecture. The second is a "socio-technical" view of the mix of technical, human, and organizational aspects that must be considered to understand the behaviour of such systems. These concerns are well summarised in work by Ian Sommerville and John McDermid [20, 21]. Third, there are also quite complex privacy issues involved if there is a move to a much more open access model for government data - so far, these have been avoided by not opening (anonymised) personal data. These are complex issues that cross technical, cultural, and social boundaries. They cannot be solved quickly, but clearly must be addressed for any substantial move to digitized government services to be successful.

### **Focus on the agile organization, not agile development**

To achieve the goals of the GDS requires a rethink of many critical practices across UK Government. For the goals of the strategy to be achieved, changes in approach will be needed in areas as diverse as contracting and software acquisition, project and program management, software quality, and security assurance, and system acceptance testing. In fact, the appropriate way to consider this change may be to alter the scope of the GDS to explicitly look at the characteristics of the "agile organization". Such thinking is now taking place in the commercial sector. The work by Stephen Denning on "radical management", for example, places a different perspective on how the IT delivery organization will evolve [22]. Denning highlighted how a recent US government project was abandoned in spite of using agile development. This failure was largely, he believes, because they ignored the need to address broader aspects of the agile organization [3].

We note, of course, that changing culture is very hard and public services are not the same as commercial companies. Within companies, to some extent at least, it is recognised that if change is supported by senior management, then people are likely to accept the need for change and (maybe reluctantly) to go along with it. In public services, there are other factors at work, including unionisation and professionalism. Unions are prevalent in the public sector and sensitive to implications of change with respect to reducing jobs, salaries, etc. The public service sector also relies on a plethora of

autonomous professionals (doctors, teachers, etc.) who may resist top-down change because they perceive that the changes are proposed without their particular input and lacking understanding of their broader impact.

### **Align process changes with appropriate accountability, measurement, and auditing**

A move to agile development approaches will mean a significant change in software delivery style across UK Government. The lessons from other large projects adopting agile practices have shown that this change permeates all levels of the organization, not just the software developers. The cultural impact of changing to more agile practices must be clear to all those involved, and appropriate management controls put in place to ensure that not only can progress be seen, but also that the measurable benefits expected are being realized. Work on governing large-scale agile projects is underway. The National Audit Office (NAO) has already begun to offer useful advice on governing agile projects [23], and the practices necessary for extending agile software development toward a disciplined approach to agile delivery are being defined and used [24]. However, much further work is necessary, especially in the areas of more flexible contracting practices, and in defining appropriate measurement frameworks for agile delivery projects.

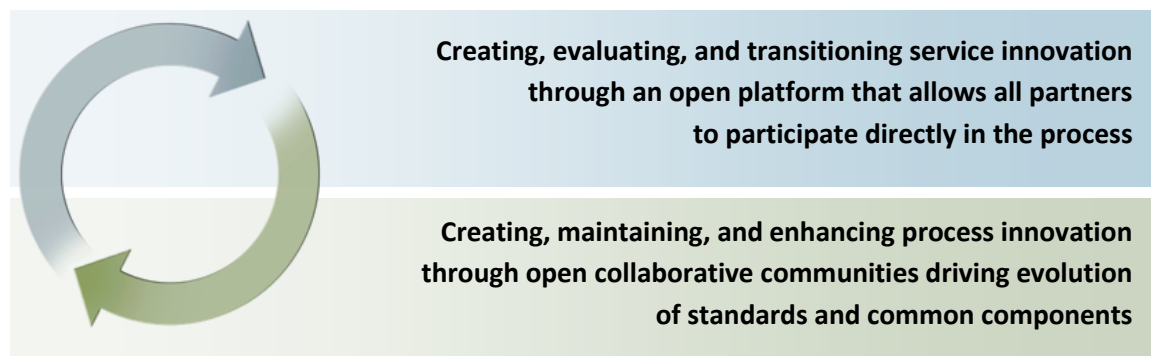
### **Revise IT systems only in support of broader cultural change activities**

It is worth re-emphasizing that the root of the GDS is a major cultural change in the civil service rather than (just) the revision of IT systems and delivery practices. In many regards, the move to new IT practices is a consequence of a change in goals, planning, policy, and skills in order to change the way government operates in the UK. The GDS is expressed a necessary and worthy ambition with respect to technology change. However, the GDS needs to be seen as explicitly part of the culture change in moving to “digital by default” else it will fail. Our experience in government and commercial industry underscores the challenges of making any such change at the scale necessary to have impact across UK Government departments. Nevertheless, clear attention needs to be placed on the scope of impact that this revolution in thinking demands.

## **Final Thoughts**

The GDS is a critical initiative that comes at a time when increased access to digitally-delivered services is essential. The benefits from such a move cannot be overstated. However well-intentioned the current GDS, the comments here make the point that the principles on which the current GDS is based centre on too narrow a view of how to attain those benefits, and lack focus on the major adjustment in culture, processes, and technologies that must underpin such a move.

It is appealing to hope that a radical change in digital service delivery can be accomplished simply through adoption of open source technologies, introduction of agile development practices, and contractual support for encouraging more SMEs with their high-levels of energy and diversity. However, this view is much too simplistic and highly risky. A more detailed analysis is necessary. Our experience points to two significant opportunities to open up UK Government systems to achieve the goals of increased flexibility in bringing digital services online while maintaining control through measured governance. As illustrated in Figure 1, the focus must be on the twin objectives of an open platform and an open community. These can be used to guide the GDS toward increased participation within a framework of common practices, standards, and components.



**Figure 1.** Aligning innovation through an open platform and open communities.

If the history of delivering large-scale complex IT systems in government and industry has taught us anything, it has been that successful technological change always requires equally radical shifts in business mindset, IT practices, and governance approaches [25, 26]. It is accomplished when the correct alignment between these facets is driven with and through all communities responsible for solution delivery. The twin facets of open platform and open communities can enable an integration-first strategy where innovation is encouraged through collaboration within a managed environment.

In fact, the main comments of this report have been reinforced recently with the publication by each of the 18 UK Government departments of their initial response to the GDS [27]. These are very interesting from many perspectives, and highlight several critical aspects concerning the realization of the GDS in practice :

- Primarily the UK Government department responses make a number of straightforward statements in support of the need for further digitization, particularly about the importance of online access, greater input from citizens, creating a more open process, etc. However, at this stage there is very little detail about how such goals will be achieved, or the broader cultural impact those changes represent.
- There is a wide variety of approaches in response to the GDS. The breadth of both depth and quality of the responses demonstrates the diversity of UK Government department priority, intent, and skills in this area, and illustrate a lack of consistency in interpretation of how to enact the GDS.
- The variety of responses also highlights the challenges that will be experienced in trying to evaluate each department's commitment, approach, resources, timeline, etc. It is not clearly stated in the GDS who is managing the execution process across the 18 UK Government departments to coordinate and assess progress.
- The rapid appearance of 18 UK Government responses to the GDS clearly illustrates the importance that the strategy will play across UK Government, and the potential impact it may have over the coming months and years.

There is no doubt that the GDS is an important example of how digitization of IT systems is revolutionizing online service delivery. It will radically alter UK Government interactions with citizens, and has the potential to significantly change citizen-to-citizen interactions through government. This report offers a commentary to help focus and accelerate the success of this activity.

## Endnotes

1. A.W. Brown, *Enterprise Software Delivery: Balancing agility and efficiency in the global software supply chain*, Addison Wesley, 2012.
2. Government Digital Strategy (GDS), November 2012.  
<http://digital.cabinetoffice.gov.uk/category/gds/>
3. Steve Denning discusses this project's failure in  
<http://www.forbes.com/sites/stevedenning/2012/12/11/reconciling-innovation-with-control-the-air-forces-1-3-billion-lesson-in-agile/> .
4. See <http://publications.cabinetoffice.gov.uk/digital/research/> for the research on current online access to UK Government services and a comparison to online access to equivalent commercial services.
5. <http://publications.cabinetoffice.gov.uk/digital/efficiency/>
6. <http://standards.data.gov.uk>
7. See, for example, the discussion on tooling for GDS at  
<http://digital.cabinetoffice.gov.uk/2012/11/05/tools-over-content/> and the on-going dialogue at <http://teacamp.co.uk/>.
8. For example, the tooling used to create and distribute the GDS itself is described at  
<http://digital.cabinetoffice.gov.uk/2012/11/06/shipping-the-digital-strategy/>.
9. Len Bass, Paul Clements, and Rick Kazman, "Software Architecture in Practice, 3<sup>rd</sup> edition, Addison Wesley, September 2012.
10. See the Ultra Large-Scale Systems (ULSS) initiative at the Software Engineering Institute (<http://www.sei.cmu.edu/uls/>) for an example of how government solutions are impacted by ULSS concerns.
11. Gordon Baxter and Ian Sommerville, "Socio-technical systems: From design methods to systems engineering", *Interacting with Computers*, Elsevier, August 2010.
12. See, for example, the off-hand comment here that "an SME quoted a price of £50k for something an SI quoted £4M", <http://digital.cabinetoffice.gov.uk/2012/12/14/liam-maxwell/> .
13. There are several useful comparisons of the costs of open source vs proprietary software, such as <http://www.idea.org/blog/2011/07/22/open-source-vs-proprietary-software/> .
14. A.W. Brown and G. Booch, "*Reusing Open Source Software and Services*", Proceedings of the 7th International Conference on Software Reuse, Springer Verlag, April 2002.
15. Well documented in Ed Yourden, "Death March", Prentice Hall, 2003.
16. Useful surveys of trends in adoption of agile methods can be found at  
<http://www.drdoobbs.com/>.
17. <http://www.guardian.co.uk/public-leaders-network/2012/dec/06/digital-default-strategy-government-culture-change>
18. For example, see the highly-regarded work of John Kotter with regard to leading change efforts, ("Leading Change", Harvard Business Review Press, 2012) and accelerating change in turbulent times ("Accelerate", <http://hbr.org/2012/11/accelerate/ar/1> ).
19. See the work of Tim O'Reilly on "Government 2.0", and "Government as a platform",  
[http://ofps.oreilly.com/titles/9780596804350/defining\\_government\\_2\\_0\\_lessons\\_learned\\_.html](http://ofps.oreilly.com/titles/9780596804350/defining_government_2_0_lessons_learned_.html)

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