How Government CIOs can Respond to the Economic Crisis

Viewpoint paper

ADAPTING

to the fiscal climate change in government

Government Chief Information Officers (CIOs) face the challenge of a significant fiscal crisis that will have long-term effects in many countries across the world. Three key strategies can be implemented to handle the fiscal crisis successfully: minimize IT operating spending, maximize government return on investment and explore disruptive solutions, whether in technology, procurement and commissioning or service delivery models.

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However the immediate global financial crisis unfolds, governments in developed countries are facing a long-term deterioration in public finances.

HP believes that in this context government CIOs should act quickly and make substantial change, otherwise they will lose scope to maneuver as budget reductions progressively squeeze out investment. Action is required on three fronts. CIOs will have to reduce IT operating costs both to contribute their "fair share" towards efficiency targets and to free up investment in IT to reduce business costs. In addition, they should aim to maximize return on IT investments because funds will be scarce and IT expenditure subject to close examination. But, this will not be sufficient. Government CIOs will also have to innovate out of the crisis by adopting "disruptive" solutions in service delivery, commissioning and procurement, and technology. In each of these three areas for action HP has identified strategies that government CIOs can adopt today.

Introduction

A "climate change" in government finance, not just a few "bad winters"

The world is still navigating the aftermath of the global financial crisis that began in 2008. Whilst the short-term prospects for the global economy are uncertain, it is apparent that what lies ahead is not still water; rather, a more profound and longer-lasting crisis in public finances.

For more than 40 years, government expenditure as a proportion of GDP has steadily increased in Organization of Economic Co-operation and Development countries from an average of 25 percent to 35 percent. It's not that governments have become less efficient. Governments have taken on additional responsibilities and citizen's service expectations have risen. In response, taxation has increased.

The challenge ahead is that strong demand pressures on spending will continue but governments will find it hard to raise taxation in line. Expenditure will be driven by the ageing of the population, scarcity of carbon-based fuels and a continued increase in the quality of services that citizens expect. Unfortunately, on the supply side of the public finance equation, the tax base faces erosion. Ageing of the population reduces the number of people in employment and paying taxes. Globalization is putting downward pressure on corporate tax rates (average rates have fallen from 40 percent to 30 percent over the last 30 years). Multi-nationals and high net-worth individuals are increasingly able to structure their affairs to minimize tax obligations.

Today's fiscal crisis, therefore, represents a series of "bad winters" that prelude a long-term "climate change" in public finance. Some countries will extricate themselves from today's crisis before entering this climate change; while others will enter this second crisis burdened by high levels of debt.

The role of IT in navigating the fiscal crisis

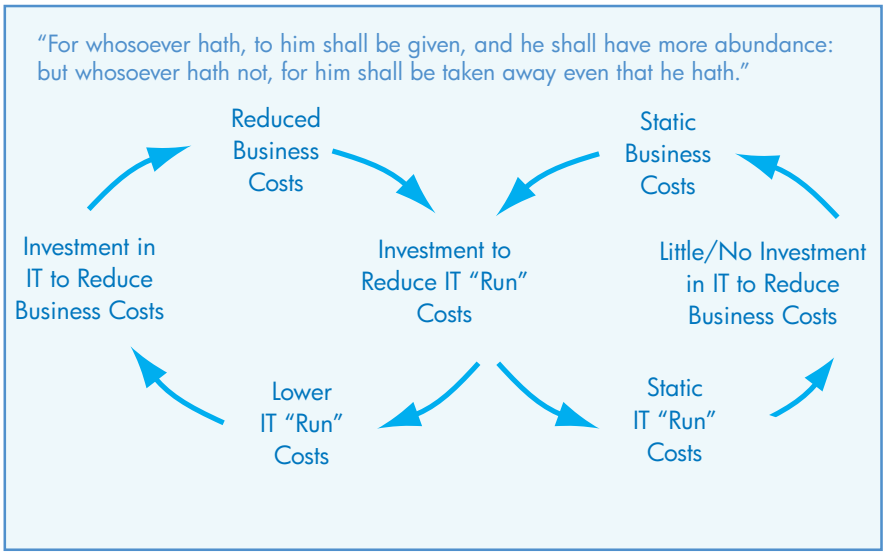
According to Gartner, IT on average makes up 8.5 percent of operating expenditure in national and international governments, with 72 percent of spending devoted to operate or run systems. In state and local governments, the figures are 3.2 percent and 73 percent, respectively.[1] It is evident, therefore, that reducing the cost of IT will only go so far in helping an organization reduce its overall expenditure. The real role of IT must lie in supporting business initiatives that reduce the 91.5 percent to 96.8 percent of costs that are not IT. But, since capital is in short supply, the only source of funding for IT to improve business performance will be reductions in IT operating costs. Consequently, government CIOs will have to make a two-fold reduction in IT operating costs: the first to contribute their "fair share" towards efficiency targets; and the second to fund investment in IT for business change. As a result, governments will have to shift the balance between spending to operate IT systems towards spending to improve the business. In fact, Australia has set targets for departments to shift this balance from 77 percent to 70 percent,[2] which would be in line with the average for the private sector.

1 IT Key Metrics Data 2011: Key Industry Measures: Government National and International Analysis: Current Year; and, IT Key Metrics Data 2011: Key Industry Measures: Government: State and Local Analysis: Current Year, Gartner, December 2010.

2 Review of the Australian Government's Use of Information and Communication Technology, Sir Peter Gershon, August 2008.

Figure 1

The Parable of the Two CIOs



The role of the CIO and the parable of the two CIOs

In a situation where budgets are continuously declining, two patterns emerge with two different paradigms of CIO. The first CIO resolves to make substantial reductions in the cost of running IT, quickly freeing up funds for investment in business improvement projects that make capital available for further reductions in IT operating costs. In this instance, a self-reinforcing, or "virtuous circle," can be set in motion. The second CIO does not quickly get on top of operating costs. A "vicious circle" sets in where declining budgets and the cost of running IT operations combine to squeeze out investment in improving the business or in reducing IT operating costs, making change progressively harder.

Under these two scenarios, IT and the CIO are viewed quite differently. In the first instance, IT is seen as a value center and the CIO's primary focus is to enable business change. In the second case, IT is regarded as a cost center and the CIO's principal role is reducing IT costs.

Strategies to handle the fiscal crisis

HP believes that to navigate the fiscal crisis CIOs should employ a combination of three strategies:

- Minimize IT operating costs — reduction of spending to operate IT systems is "table stakes" without which a CIO has no room for maneuver.
- Maximize Government Return on IT — however successful a CIO is in reducing IT operating costs, investment in new solutions will always be scarce, so it is critical to maximize return on investment.
- Explore disruptive solutions — the forthcoming climate change in public finances is of such scale that just managing today's business a little "better and cheaper" will not be sufficient. In places, governments will have to innovate out of the crisis by resorting to disruptive technology, procurement and service delivery solutions.

Minimize IT operating costs

Gartner conducts annual surveys of government IT spending across different technology domains.[3] HP has drawn on experience of IT transformations to assess typical levels of savings in each of these domains. Over-laying these analyses demonstrates that savings in operating costs of some 25 percent to 30 percent are achievable — though not without taking action across a broad front. Furthermore, the areas with the greatest gross savings potential are:

- Data center
- Client and peripherals
- Applications development
- Applications support

Data Center

The predominant strategy to reduce data center costs is to access economies of scale by sharing IT resources. Within the bounds of a single organization this can be achieved through a converged infrastructure that integrates servers, storage, networking, security, power, cooling and facilities into shared pools of interoperable resources — all managed through a common management platform.

Cloud computing takes convergence further by enabling on-demand access to shared computing resources and by introducing pay-per-use business models. As a result, cloud computing can not only deliver efficiencies but also free up capital for investment, rapidly adjust capacity to meet peaks and troughs and allow a more agile response to policy change. IT resources can be shared at three levels: infrastructure, including processing power, storage and other basic computing resources (Infrastructure as a Service); the platform on which applications run (Platform as a Service); and, applications (Software as a Service). As you move higher "up the stack," potential savings increase because a higher proportion of IT spend comes into play, yet the probability of finding organizations that share identical business requirements decreases in equal measure.

Public cloud solutions, shared by multiple clients -– both government and commercial - offer global economies of scale. There are practical limitations, however, to adoption of public cloud computing in governments, for instance:

- Regulation – The European Union and many national governments have regulations that restrict the ability to move data offshore. In addition, government procurement rules were not designed to

[3] Ibid, 1

allow the switching between suppliers or accessing additional capacity on-demand from different suppliers, which is one of the benefits of cloud.

- Security and data privacy – Citizen's trust in governments to do their utmost to protect personal data may be undermined by moving to the cloud. In addition, many governments have system audit and penetration-testing requirements that are at odds with the standard terms and conditions of public cloud providers.
- Mission-criticality – Potentially catastrophic implications of outages for national security or for society at large raise the bar for mission-critical availability.
- Technical considerations – Many legacy systems cannot feasibly be transformed to operate in the cloud, especially those that have been engineered for series processing as opposed to parallel processing.
- Business case – The cost of converting governments' many aged proprietary legacy systems to run in the cloud may outweigh savings in operating costs. Furthermore, the significant investment that governments have made in their legacy environments profoundly shapes the make/buy decision of moving to cloud solutions.
- Market maturity – Currently, there simply is no market for many of the applications required by government, or there are so few suppliers that vendor lock-in is a risk.

Nevertheless, these constraining factors do not mean that public cloud computing is not for government. They mean that governments will adopt a hybrid of delivery models: some public cloud, some private cloud and some more traditional IT delivery models. In order to decide which option is most appropriate, the key task will be to segment the applications portfolio and to assess each application according to the criteria above. In our experience, when governments go through this exercise they find that for the bulk of their IT the sweet-spot will be a private cloud solution.

There are several ways that governments can structure private government cloud services:

- Single department – If a department is of sufficient size, it may be able to generate its own economies of scale.
- Lead department – Smaller agencies may piggy-back on a larger department's economies of scale.
- Community or cluster – Community or cluster models may be built around government entities that share a common mission, data or customers. Community clouds are of most significance in the longer term because they offer business innovation, not just cost reduction. A practical advantage is that communities will tend to have comparable security, performance and mission-criticality requirements, thus diminishing an obstacle to sharing environments.
- Whole-of-government – There are some common systems that are used by multiple government departments, for example, aspects of infrastructure, testing platforms, and commodity applications, such as e-mail. These are natural candidates for whole-of-government solutions; but their take-up will be hindered in national governments by the devolution of funding and procurement authority and by the difficulty of agreeing shared security, IT and business requirements. On the other hand, state and local governments that are smaller and often have more concentrated decision-making will find lower barriers to whole-of-government solutions.

Figure 2

Potential savings in each IT domain

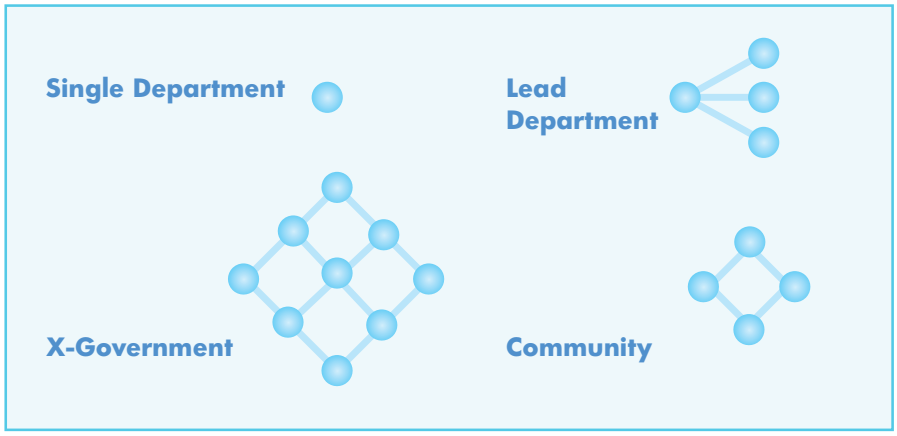
	Gartner National/ International	Gartner State/Local	HP Experience of Typical Savings	HP Calculation of Typical Impact on Total IT Budget*
Finance/ Administration	4%	5%	20% – 40%	1.4%
IT Management	8%	7%	15% – 30%	1.7%
Applications Development	19%	13%	35% – 50%	6.8%
Applications Support	15%	15%	15% – 40%	4.1%
Help Desk	8%	8%	10% – 30%	1.6%
Voice Network	6%	7%	20% – 30%	1.6%
Data Network	10%	12%	5% – 30%	1.9%
Client and Peripherals	11%	14%	20% – 35%	3.4%
Data Center	19%	19%	15% – 40%	5.2%

Source: Gartner Key Metrics Data 2011: Key Industry Measures: Government National and International Analysis: Current Year; December, 2010; IT Key Metrics Data 2011: Key Industry Measures: Government: State Local Analysis: Current Year, December 2010

Source: HP experience and HP calculations
*Average of National / International and State/Local expenditure multiplied by HP experience of typical savings

Figure 3

Hybrid delivery (procurement models)



Since different commissioning models may be right for different IT services, government IT will often be a hybrid not just of IT delivery models, but also of procurement models.

HP is able to assist you in navigating the complex question of how to identify the right strategy for your data centers and for cloud computing. After you have mapped out your strategy, HP can support you in execution whether you are looking for a partner to design, build, deliver, or manage your converged environment.

Client and Peripherals

Commentators often talk of desktop or end-user computing as a commoditized space which might suggest that there is limited savings potential, when in fact innovation exists at every level of the workplace:

- Mobile devices – The variety of end-user devices continues to grow. Smartphones now outsell laptops and adoption of tablets is growing at an even faster rate.
- "Bring your own device" – Government departments are beginning to consider whether they should allow employees to bring their own devices.
- Thin client vs. thick client – Traditional desktop solutions are considered "thick clients," meaning they have a hard drive, are fully functional when not connected to a network and physically hold many applications and data. Thin client solutions, on the other hand, do not have a hard drive and access data, applications and processing power over the network. Thin client solutions have a lower operating cost by some 10 percent to 30 percent, as well as offering benefits such as instant access to applications and the enhanced security that comes from holding data in a highly secure data center. Thin-client and thick-client solutions are commonly blended together to deliver role-based computing, where, for instance, process workers might have a thin-client solution, while managers and knowledge workers might have a thick-client solution. In a number of government agencies, HP is implementing "next generation desktop" solutions that combine thick and thin clients.
- User-based charging models – In addition to various types of technical innovation, workplace costs can be reduced and more tightly managed through new commercial models. For example, HP's Workplace 360 allows governments to pay for a full "next generation desktop" service simply according to the number of users. Similarly, HP's Managed Print Services (MPS) allow an organization to pay for printing per page by outsourcing end-to-end responsibility for print management. The savings can be substantial because on average, an enterprise spends 5.9 percent of its total budget on document processing,[4] with about half of that related to printing costs. HP has found that an organization can reduce these costs by up to 30 percent through MPS.
- Remote working – Where and when people access devices is changing too. Increasingly, government employees are working from home to support more flexible work patterns and to reduce costs. HP has implemented secure remote-working solutions even for government employees handling data with high levels of security classification. Mobile printing, such as HP's ePrint, is now possible, enabling government workers to print to any printing device that is connected to the Internet.

Applications Development and Support

Spending on applications development and maintenance represents the single area with greatest potential for cost reduction. HP believes that the most significant opportunities for government CIOs to reduce applications spending are re-use, applications rationalization and outsourcing.

Re-use

Academic literature has found statistical evidence of a link between re-use and significant performance.[5] Moreover, the same research shows that the benefits of re-use increase as re-use moves "up the stack" from technology to process and from re-use at business-unit level to re-use at enterprise level. The same research, however, has found that re-use is that much harder than people thought.

Attempts at re-using IT capabilities across jurisdictions have traditionally foundered on two rocks: the view that, "We're different," and the way that systems have been engineered. Increasingly, efficiency pressures are leading organizations to reconsider whether the price for being different is worth paying. In parallel, the way that software can now be engineered has evolved to allow many differences in requirements needs to be addressed. For example, in a welfare entitlement system, separate layers can be built for policy rules and business process rules. This allows

4 ALL Associates Group, "Enterprise Document Assessment Methodology (EDAM)," white paper, 2010.
5 "Re-use is More Important and Harder than we Thought," Center for Information Systems Research Sloan School of Management Massachusetts Institute of Technology, Volume X, Number 5, May 2010

organizations to adopt best practice processes, yet at the same time maintain their distinct legislative rules. Repeatable industry solutions, with growing levels of maturity, are becoming available for a wider range of government services. HP, for instance, has our own industry solutions for many aspects of government, such as command and control, identity management and welfare eligibility, but we also integrate partner solutions.

Re-use is possible within an organization by employing standard components and patterns, but only if an application has been designed and built for re-use. Application design is a strong cost lever because approximately 70 percent of the whole-of-life costs of an application occur after it has been developed. HP's Designed for Run™ is an approach to designing an application with built-in maintainability, supportability and re-usability.

Applications Rationalization

The cheapest application to maintain is the application that has been switched off. In a survey of 114 public sector IT managers in Europe,[6] it was found that 16 percent of applications are under-utilized and not providing real business benefit. An applications portfolio assessment analyzes each application to determine the optimum strategy — switching off an application is only the most extreme intervention. Other strategies that stem from applications rationalization include re-factoring code to facilitate maintenance, re-engineering to allow re-use, virtualization to enable automated remote management and re-hosting to reduce operating costs.

Outsourcing

Even if supported by the right tools, applications work is inherently labor intensive. As a result, some government CIOs have historically questioned the benefits of outsourcing applications work – "Surely our people are cheaper than your people?" But increasingly, there are factors, not the least the fiscal crisis, that are leading governments to reconsider:

- governments seek a more variable cost base, with resources paid for as required, potentially on a service basis, such as testing-as-a-service;
- proliferation of technologies makes it harder for an IT department to keep all the right skills on hand;
- controls on the (expensive) use of solo contractors and desire for greater accountability strengthen the case for buying outputs, in the form of fully functioning applications instead of inputs;
- some governments are revising off-shoring regulations to allow access to lower labor rates; and,
- many government agencies can no longer afford the capital investment to keep up with the state of the art in tools for development, testing and maintenance.

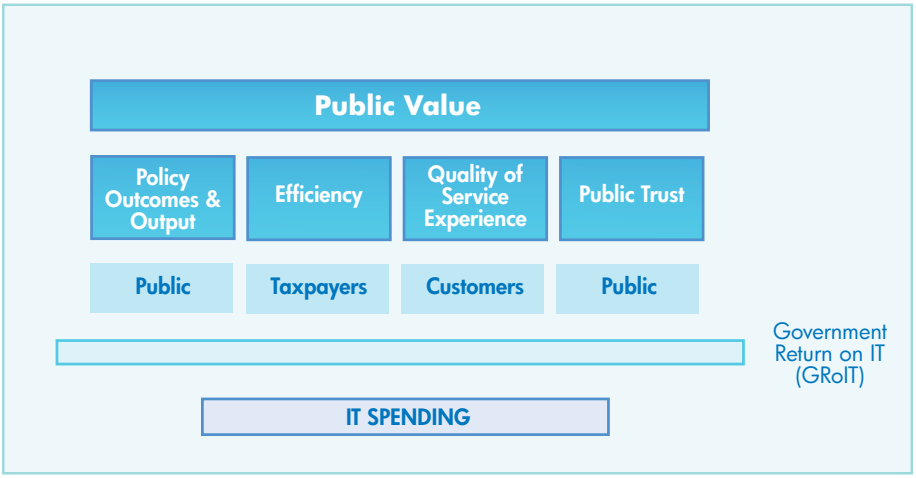
Maximize government return on IT

Since less money is available to fund new capabilities, it is all the more important to maximize return on whatever investments are made. In the private sector, Return on IT (ROIT) investment is usually calculated in financial terms. Many have recognized that even in the commercial world this can be simplistic. "The greatest danger is the 'concrete' and 'measurable' driving the significant out of the analysis."[7] In the public sector the issue of how to measure ROIT is more complex since the desired outcomes are rarely purely financial and there is often a longer distance between IT investment and outcomes – the so-called "outcome gap." So how can you measure ROIT in the public sector to prioritize IT investment and demonstrate returns?

HP has developed a Public Value Framework drawing on the school of public value thinking that stemmed from Mark Moore's seminal work, Creating Public Value.[8] In contrast to market contexts, where value is linked to the return to shareholders, public value in societies is ultimately defined by the public themselves. As a general rule, what the public values falls into four distinct categories: policy outcomes and outputs, such as reduced crime and arrests; efficient use of public funds; a high-quality service experience where citizens and the businesses are a direct "customer," such as a patient in a hospital; and, acting in a manner that maintains public trust, such as keeping citizen data confidential, adhering to procurement rules, delivering services in a sustainable manner, and so on. The impact of IT investment in government, or Government Return on IT (GRoIT), can be assessed according to the public value created. See Figure 4.

Figure 4

Maximizing Government Return on IT



6 HP 2010 Applications Management Survey, An Exploration of Applications Management and IT Issues in European Private and Public Sector Organizations.

7 "Measuring Return on IT Investment: Some Tools and Techniques," knowledge@Wharton, 18 July 2001, available from http://knowledge.wharton.upenn.edu/article.cfm?articleid=398; Internet.

8 Mark H. Moore, Creating Public Value: Strategic Management in Government, Cambridge, Massachusetts: Harvard University Press, 1997.

The financial crisis has greatly increased the importance of assessing and measuring GRoIT. At a basic level, departments compete amongst each other for scarce funds, so ability to create a strong business case based on a clear link between IT investment and return is essential. In addition, the fiscal crisis has altered the atmosphere surrounding government expenditure. Audits and audit committees have become more intrusive and censorious. Much greater transparency is demanded, making it important not just to make the right investment decisions, but to have a clear audit trail based on the delivery of public value to demonstrate that the right decisions were made.

Portfolio Management

An all-but essential mechanism for delivering and demonstrating public value is portfolio management. HP's Portfolio Management tool provides visibility into IT supply and demand. This allows CIOs to prioritize IT projects and then to have complete visibility into projects throughout the life-cycle portfolio, knowing where they are in the process, what money is being spent, and what benefits have been delivered. With this discipline comes reduced costs, more predictable costs and lower risks – backed of course by an audit trail linking projects to the public value delivered.

Agility

Value is a function not just of what is delivered but when it is delivered. Time is an aspect of value that is of special importance to elected officials who may serve just 18 to 24 months in a given post. An IT function that cannot scope, fund and deliver projects within this horizon will inevitably be at risk of disappointing its political masters. Re-use, described earlier, is a key strategy in enabling an agile response to policy change. Two other techniques that HP believes government CIOs should consider to increase agility are agile development and risk-based governance.

In contrast to the traditional "waterfall" method of building software that moves stage by stage from requirements, to development, to testing, agile development uses iterative development and small cross-functional teams. Agile development was first picked up by smaller enterprises, predominantly for web-based applications. In the last few years, HP has seen use of agile development moving into core transactional systems and into large commercial enterprises. The potential for agile development is significant because it can reduce time-to-market, lower risk and raise productivity by increasing the proportion of project spend that is devoted actually to cutting code, as opposed to testing, integration and project management. For example, where HP has used agile development techniques with clients, HP has seen instances of a three-fold increase in the proportion of project spend devoted to development and halving of time to market.

Owing to the magnitude of these benefits, HP believes that government CIOs should seriously consider how they can move to more agile development techniques. In saying this, we recognize that such a change creates challenges. Agile development requires extremely high user engagement; it cuts across traditional procurement processes that depend on a tight specification; and, it transforms working practices. These issues amount to a cultural change as much as anything. Given these challenges, small, low-risk projects are good candidates for government CIOs to experiment with agile development.

Another way to increase agility is for governments to adopt risk-based governance. Governments often employ the same governance model with little variation across all but minor projects. Smaller projects can be slowed down by excessive governance and larger or higher risk projects may receive insufficient review. Risk-based governance categorizes projects according to risk (principally, size, complexity and impact of failure), and applies different governance models to low-, medium- and high-risk projects. Organizations that move toward a risk-based governance model can speed up throughput, thus achieving cost savings and delivering value sooner.

Explore disruptive solutions

When considering the scale of the fiscal crisis and the impending long-term climate change in government finances, it is apparent that just doing what you've been doing a little better and a little smarter is not enough. The fiscal crisis is a highly disruptive event that, in HP's view, calls for "disruptive" or innovative solutions that will make a transformation in performance on a scale that meets the problem.

A "disruptive technology" is a technology that progressively disrupts a business area by providing an alternative technological approach. A classic example of a disruptive technology is the digital camera that has all but entirely replaced the analog camera. The concept of disruption can be extended to procurement and commissioning solutions and to service delivery models. Some of these disruptive solutions are not new — it's more that their time has come and a tipping point in their adoption has been reached.

Disruptive Service Delivery Models

HP believes that three particular innovations in service delivery models offer most potential for governments: prevention, participation and collaboration.

Prevention – Most government services operate in a "curing" mode rather than a "prevention" mode. Whether it's crime, healthcare or taxes, shifting attention toward prevention has clear advantages. Even if one ignores the societal benefits that stem from prevention and just takes a financial view, shifting emphasis to prevention makes sense because the cost of prevention is typically much less than that of the cost of putting things right. A tax return that is correct is much cheaper to process than one containing errors and requires intervention. Many government agencies have already taken steps in this direction but, just by looking at allocation of budgets, one can see that the overwhelming focus remains on cure, not prevention.

Participation – A wide range of areas of the public sector are moving toward a more participative model where the citizen, or the customer of the service, has more of a role in the service and how it is delivered. At its most basic form, this entails giving citizens and businesses choice in how and where they access services and enabling them to self-serve. But participation means more than this; it means citizens shaping the nature of the service itself and being a co-deliverer. An example of this is giving parents and children much more control over individual learning plans in schools. In helping people find work, improving healthcare and reducing re-offending, the citizen clearly has a similarly large role to play, with the role of government being to enable citizens through information, tools, training, advice and active support. A strategy of prevention will often depend on achieving this kind of participation. Moreover, many politicians will be keen to promote participation as a means of closing the democratic deficit.

Collaboration – There are countless examples of where government entities already collaborate across jurisdictions, departments and tiers of governments. Strong pressures are driving governments to move further in this direction. For example, globalization often implies a multi-national response, whether in tax, health, defense or counter-terrorism. Likewise, emphasis on prevention and delivery of more citizen-centric typically requires collaboration between government organizations. An example is provided by Westminster Council in London which realized that just 3 percent of families accounted for a disproportionate amount of their budget and social issues. At the same time, these "problem families" suffered from poor outcomes in terms of employment and life opportunities. The Council determined to adopt a strategy of avoidance and prevention focused on these 600 problem families. Collaboration was critical to this strategy since between two and 20 different agencies touched each of these families.[9]

Disruptive Procurement and Commissioning Solutions

The way that governments commission and procure services is a key dimension of innovation. Three disruptive approaches to procurement and commissioning can have significant impact on policy outcomes, efficiency and service effectiveness.

Outputs and outcomes – Traditionally, governments would have procured inputs such as hours of time, hardware and software; however, more and more governments have moved or are moving toward purchasing outputs, whether IT outputs such as computing power or business outputs such as the printed page. Drivers behind this change include: allowing service providers greater scope for innovation; clearer accountability for service delivery; a more variable cost base that aligns more closely with business demands; and, leveraging supplier economies of scale in assets and capabilities. And a further logical step in the same direction is to buy business outcomes. For example, an agency may purchase a revenue collection service and pay for it according to the revenue collected. In a similar vein, some governments are procuring employment services according to the length of time that job-seekers subsequently stay in work, and are even, as in the UK, starting to procure rehabilitation services according to re-offending rates.

In the context of the fiscal crisis, buying outputs and outcomes offers the additional advantage of being able to bring a capital injection. Buying a service removes the need for assets so incoming suppliers will frequently purchase existing assets. This is a valuable opportunity to reverse the vicious circle where investment cannot be found to reduce IT operating costs.

Joint-procurement – The concepts of joint procurement and shared services are hardly new but, after many years of hard going, a tipping point seems to have been reached. In the space of just one month Canada announced the establishment of a new agency to provide common IT services and the UK published a strategy for back-office corporate services, such as HR and finance. According to Canada's Minister

[9] Colin Barrow, Stephen Greenhalgh and Edward Lister, "A Magna Carta for Localism: Three Practical Steps to make Localism Real," page 32, available at http://www.cps.org.uk/cps_catalog/a%20magna%20carta%20for%20localism.pdf; Internet.

Ambrose, "The Government has over 100 different e-mail systems, over 300 data centers, and over 3,000 network services. The Government will move to **one** e-mail system, reduce the overall number of data centers from 300 to less than 20, and streamline electronic networks within and between government departments. All resources associated with the delivery of e-mail, data center and network services are being transferred from 44 of the more IT-intensive departments and agencies to a new entity called Shared Services Canada."[10] By the same token, in the UK, Independent Shared Service Centres (ISSC) will operate outside existing departments and provide outcome-based corporate services, regularly publishing performance against benchmarks. Depending on how departments perform against these benchmarks they may be required to become a customer of an ISSC.[11]

Non-governmental organizations – HP believes that governments will increasingly resort to non-governmental organizations to deliver public services. In some instances, this will mean outsourcing to the private sector to access economies of scale, expertise, capital and to transfer risk. In other cases, this will involve calling on voluntary organizations and mixed delivery models such as joint-ventures. These sorts of organizations will often be better suited to preventative and participative services owing to the nature of the relationship with citizens that is needed. In addition, many voluntary organizations have exceptional local expertise that is critical in delivering citizen-centric services tailored to an individual context.

Disruptive Technology Solutions

Three disruptive technologies that offer tremendous potential for governments are mobile, cloud computing and analytics.

Mobile – According to data from the International Telecommunications Union, mobile phone subscription rates have reached at least 75 percent across developed economies, with rates of more than 95 percent commonplace.[12] Even in less developed countries, almost two thirds of people have mobile cellular coverage and mobile cellular penetration has reached 34 percent. Moreover, mobile has potential to bridge the digital divide, with statistics showing that in the UK, 71 percent of households from the lowest income groups have a mobile phone.[13] In addition to the broad access that mobile telephony provides, it has two other important characteristics: firstly, it combines multiple functions (voice, data, text, GPS and photography); and, secondly, it is nearly always — quite literally on hand, enabling instant access to services and information.

Instances where HP is employing mobile telephony to deliver government services include enabling the unemployed to certify that they are still available for work using voice authentication; collecting data about health outbreaks together with a GPS coordinate; detecting counterfeit drugs by allowing buyers to text a bar-code to a system that, within 10 seconds, confirms whether the medication is real or fake; and, running a pilot to monitor clinical data, such as 24-hour blood pressure readings and heartbeat patterns, using a watch-like device that transmits data wirelessly back to the hospital.

Cloud computing – Though cloud computing was discussed previously in the context of cost reduction, in the longer term cloud computing's greatest impact will come from enabling innovation in government services. Operating in a cloud model offers the possibility for countless areas of government to use common systems. For instance, the Integrated Intelligence Pilot, or I2P, is a cross-agency effort in the United States that involves deploying software and servers on the Intelligence Community's classified network so that developers can run database queries across agencies. "Instead of taking data from CIA-specific or NSA-specific repositories, or FBI or DIA, you'll be able to query via the cloud into those organizations and ask, 'Do you have information that meets this question?', and they'll be able to say, 'Yes or No,'" according to National Security Agency CIO Lonny Anderson.[14] Other examples of potential cross-agency collaboration enabled by community clouds include social services agencies that collaborate to assist individual citizens and families using integrated assessment frameworks and case management; and, economic departments that use the same data sets and have a common need for peak-processing and high-performance computing.

In the longer term, cloud computing also has potential to enable citizens and governments to collaborate more closely in participative service delivery, since both parties will be able to access common systems and data. These solutions will require robust security, but the potential to change the relationship between citizens and governments is significant.

Analytics – Analytics may not at first glance appear to be a disruptive solution. However, rapid growth in the amount of data, continued increase in computing power, plus constant evolution in analytical tools, are all combining to expand the business potential of analytics across government. In HP's view, many government departments are underinvested in intelligence applications in comparison to the private sector, when one looks at comparable areas such as

10 http://news.gc.ca/web/article-eng.do?nid=614499

11 Government Shared Services: A Strategic Vision, UK Cabinet Office, July 2011

12 The Global, Information Society: a Statistical View International Telecommunications Union, 2010

13 The Consumer Experience 2010, Ofcom

14 Klint Finley, "NSA Reveals Cloud Plans, May Open-Source Some of Its Software," Read Write Enterprise; 22 April 2011; available from http://www.readwriteweb.com/enterprise/2011/04/the-nsa-is-moving-towards-a-cl.php; Internet.

fraud detection, debt collection, contact management, marketing, compliance and security. Moreover, many of the disruptive strategies outlined above, such as prevention, collaboration and commissioning outcomes, will depend on strong analytical capabilities.

Convergence of disruptive solutions

The most powerful change will come where disruptive solutions are combined. For example, social services might reach out directly to citizens in their homes, using **mobile** tools that access data stored in the **cloud** to deliver **preventative** services on behalf of several **collaborating** government departments. The citizen and the range of interventions required would have been identified using **analytics**, with payment determined according to the value of business **outputs** or **outcomes** that may have been **jointly procured** by several agencies (employment, health and education because the costs of failure would be borne by each). The citizen may act as a key **participant** in the process, perhaps obtaining services and information through their **mobile** phone.

Summary

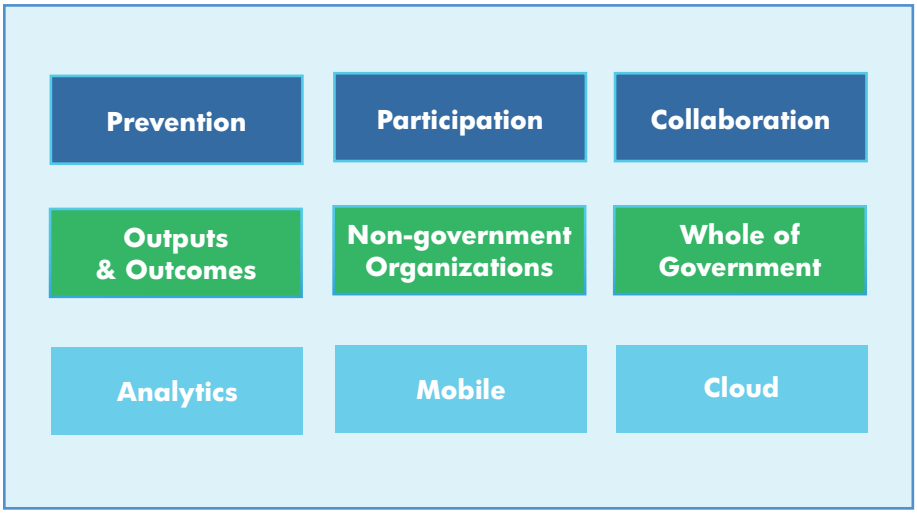
In summary, owing to the fiscal crisis and the long-term climate change in public finances most governments in developed countries must get used to managing in a different world of constantly declining budgets. And in that situation, CIOs must stay ahead of the challenges and invest in reducing IT operating costs, thereby freeing up funds for investment in IT to enable business change. Maximizing government return on IT is also critical, ensuring that money is spent in the right places and that demonstrable value is delivered within the timescales expected by elected officials. However, since the scale of the problem is of such magnitude, governments are going to need to embark on disruptive solutions, many of which are enabled by technology innovation or would not even be possible without technology innovation.

About the author

David Rimmer is the leader of the Global Government Industry for HP Enterprise Services. With a background in strategic consulting, systems implementation, and process improvement, he has extensive experience in helping government organizations meet today's challenges.

Figure 5

Convergence of "disruptive" solutions



4AA3-7136ENW, Created August 2011