The Future of Government

Lessons Learned from around the World

Global Agenda Council on
the Future of Government

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*The views expressed herein represent a collation of viewpoints emerging from a series of discussions among the **Members of the Global Agenda Council on the Future of Government**. Although the observations and proposals in this document enjoy support, they do not necessarily reflect the individual institutional viewpoints of any of the companies or institutions that took part, or of the World Economic Forum.*

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Executive Summary

Governments around the world are faced with new demands, new expectations and a fast-growing array of new technologies and tools. A current example is the Middle East, where a youth revolution built on the global technology revolution is demanding immediate reform. The challenges faced by governments increasingly span national borders and require resources and expertise to be mobilized on a scale that far exceeds those of governments.

To be efficient and effective in today's complex, interlinked and fast-changing environment, governments need to redesign their structures and processes to capitalize on a new set of actors and tools.

In this context, the Forum is pleased to present *The Future of Government: Lessons Learned from around the World,* a report elaborated by the World Economic Forum's Global Agenda Council on the Future of Government. The Council consists of 15 of the most innovative experts and leading practitioners from some of the most advanced governments and international organizations.

The report provides a summary of the discussions that have taken place within the framework of Forum activities on how the strategies, structures and practices of governments must change in the coming years, and how new networks and technologies can be leveraged to transform government capacity. It includes a series of policy briefs, which distils some of the most current and vital information for government modernization available, and concludes with case studies from around the world.

Governments of the future will need to adapt and continuously evolve to create value. They need to stay relevant by being responsive to rapidly changing conditions and citizens' expectations, and build capacity to operate effectively in complex, interdependent networks of organizations and systems across the public, private and non-profit sectors to co-produce public value. As recommended in this report, what is needed today is flatter, agile, streamlined and tech-enabled (FAST) government.

In most countries, the civil service systems of today's governments require considerable modernization. The report suggests a number of measures to align civil service systems to the requirements of FAST governments. Furthermore, governments in the 21st century will be marked in many countries by reductions in the size of the civil service.

The report emphasizes the importance of carefully planned workforce reductions coupled with the significant organizational, technological and workforce advances inherent in FAST governments to build slim and streamlined organizations that can thrive in the new world order. Adaptive governments that share labour, services and resources through networked approaches and Gov 2.0 strategies can remain slim while delivering on their mission in effective and innovative ways.

The report also explores the powerful but, in some cases, controversial concepts of open government and open data, giving examples of how governments are using the power of the Internet and the Web, including social media, to transform governance, empower citizens and rebuild the social contract between political leaders and citizens.

The report shares experience on citizen engagement tools designed to incorporate the perspectives and ideas of citizens in decision-making and reflects on how networked relationships can be built between the public and private sectors to solve challenging problems that cannot be addressed by either sector working alone.

Open government represents an emergent movement worldwide, although national governments will continue to differ with respect to the definition and implementation of these ideas. Clearly, sharing best practices and lessons that work as experience accumulates will be crucial.

One of the key questions facing public officials is the proper balance between open government and risk management. There is a natural tension between the hallmarks of open government – open data, open access, transparency and accountability – and the sensitivities of security. The report describes the key cybersecurity risks related to open government of which officials need to be keenly aware.

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Furthermore, to accelerate the required transformation of government, the report suggests that the international community needs a new kind of metrics that go beyond measuring progress in e-government and ICT-related performance across society. The authors challenge governments to design and implement two new complementary ways of assessing governments' performance.

The first set of measures consists of a holistic approach to government performance along the four axes defined earlier as FAST (flatter, agile, streamlined and tech-enabled). The second set of measures focuses on measuring the value of such transformation to citizens. The first set of indicators (FAST Metrics or MGT) will allow the monitoring of the "transformation readiness" of governments, while the second one will allow governments to measure and benchmark improvements in "public value" from the point of view of citizens.

Regardless of reform, revitalization and a technological revolution, the reality is that in many developing countries, at least in the foreseeable future, government alone will be unable to develop sufficient capacity to offer basic services to citizens. Yet the experience of the past decades vividly demonstrates that market forces alone will not produce public value either.

A range of public-private partnerships and other multisectoral arrangements have opened possibilities for value creation and greater efficiency. In this context, the report highlights the potential of social enterprise, an important way to leverage the innovative potential of entrepreneurship for social and economic development – particularly in settings where neither the government nor the market is likely to produce value using traditional means.

The report elaborates on future government architecture (how internal effectiveness and efficiency can be achieved in government operations) and concludes with a number of case studies capturing some of the most important developments in government reform and modernization today, in a range of countries and regions including the OECD, Singapore, the United Arab Emirates, the United States, the Asia Pacific Economic Cooperation Forum, and the United Kingdom.

Although great variations will remain among governments, there are certain globally valid recommendations, best practices and lessons learned as a variety of countries progress towards more networked governance. The Council seeks to identify cross-cutting areas that are globally relevant and test them for regional variations to get to robust conclusions with global force.

This report is a revised and more fully developed discussion paper written by the Members of the Council in January 2011 that served as a springboard for discussions at the World Economic Forum Annual Meeting 2011. The report will serve as a focal point for discussions at the Forum's regional meetings and elsewhere during 2011.

The effective sharing of best (and worst) practices can speed innovation globally. Currently, best practices are gathered, but efforts are fragmented across different regions and managed by different organizations. Bringing these efforts together would speed up the transmission of knowledge and capacity for innovation.

The Forum trusts that this process will stimulate creative thinking and a more informed debate among policy-makers and others on the future of government and contribute to sharing best practice and lessons learned within this field.

The Forum wishes to acknowledge the Council Members for having taken this very important initiative and especially the Council Chair, Jane Fountain, for her intellectual guidance and strong commitment to this initiative. I would also like to thank the Forum Team for their highly capable management and contributions and the editing team.

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Introduction and Recommendations

Many questions have arisen over the past years regarding the central role of government, particularly in the wake of the economic crises and amid large-scale global challenges including rising unemployment, population shifts and climate change. However, the events of the past year – notably the recent events in the Middle East and North Africa (MENA), dubbed by some the "Youthquake" – underline the critical role of government.

The protests and subsequent revolutions in MENA prove that Arabs' political and economic grievances are two sides of the same coin, and that democratization in the Arab world must be coupled with economic reform for either to succeed. To achieve these goals, a new form and style of government is needed that is effective, transparent and harnesses the power of modern tools to enhance the role of government so it may serve as a driver of opportunity and growth.

In a matter of months, government in MENA has gone from being the authoritarian regime that should "go away" to the future saviour of the hopes and aspirations of millions of Arab youth. The future of the Middle East region will hinge on the future of its governments: what it looks like, how it creates public value, how it re-invents itself to be more agile, streamlined and tech-savvy, and how it engages with its citizens.

Over the past two decades, a demographic change has swept across the Arab world. Roughly one-third of the population in the region is under 30. Frustrated by a lack of political freedom and economic opportunity, the young are demanding change. Today, as the whole region lives historic moments – from the youth revolutions in Egypt and Tunisia to the events in Libya, Syria, Bahrain, Iraq and Yemen – governments in the region need to think fast about building a brighter future where they avoid past mistakes, and face new global economic and technological realities.

If there ever was a case for "re-inventing government" in the Middle East, then the "Youthquake" made it. Politics has always been a topic of discussion in the Middle East but, for the first time in 50 years, politics now means addressing the interests of the people. Moreover, this regional revolution is built on one of the global revolutions: the technology revolution. In Egypt, most of the youth organized on Facebook and Twitter – tools that are foreign to the old bureaucratic governments – hence the phrase "Keystroke Revolution". Those megatrends will reshape government forever.

Regardless of the extent of eventual political reform, transparency and economic reform aimed at more fairly distributing wealth, most of these societies will not become markedly wealthier in a national sense as a result of the current wave of change. Even if a few of them achieve notably greater economic success, they have huge populations living at or well below the poverty line and vast youth unemployment.

While decision-makers in the Middle East and North Africa are seeing an unprecedented wave of new ideas and possibilities regarding what their governments can do, and how they should be doing it, the immediate priority is to get economies working again while preventing the flight of national wealth.

The long-term goal must be to dismantle the rentier state where possible and loosen the grip on the rest of the economy in the resource-rich lands. However, while welfare policies such as food subsidies and public job schemes are inefficient, they must be kept in place until they can be replaced by direct support of purchasing power for the poor.

Despite extraordinarily high popular expectations, no successor governments (no matter how well-intentioned and incorruptible) are likely to make serious dents in the backlog of societal economic problems anytime soon. Indeed, there is every reason to believe that successor governments could encounter rather serious problems related to retaining credibility and public confidence.

Extrapolating from the dramatic examples of the Middle East to the rest of the world: If one thinks that governments are in danger of becoming irrelevant, there are "inconvenient truths" that have to be faced. At their most basic, "public functions" have been redefined as various combinations of public and private entities that have been tested around the world in policy domains from education to health and even in the military and tax matters.

More importantly, and thanks to the Internet and social networking revolution, the future of government is less and less in the hands of governments alone. Technology has empowered ordinary citizens by offering them a way to make their voices heard and challenge government leaders about their ability and willingness to address public concerns and requests.

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Governments of the future will need to adapt and continuously evolve to create value. They need to stay relevant by being responsive to rapidly changing conditions and citizens' expectations. Citizens are demanding more visibility on the allocation of public resources and challenging governments to be more efficient and equitable through accountability and transparency. Throughout this process, governments must stay coherent, which may prove to be the biggest challenge of all. What is needed today is flatter, agile, streamlined and tech-enabled (FAST) government.

Last year, the Members of the World Economic Forum's Global Agenda Council on the Future of Government devoted particular attention to the impact of new networks on democratic processes, focusing on citizen engagement. While this issue remains centrally important, the focus has broadened to encompass how the strategies, structures and practices of governments must change in the coming years, and how new information and communication technologies and networks can be leveraged to transform government capacity.

This paper includes the recommendations of the Global Agenda Council on the Future of Government, a set of selected policy briefs that elaborate key topics, and case studies of best practice. The policy briefs distil some of the most current and vital information for government modernization available.

The policy briefs focus on key attributes of government (FAST); powerful but, in some cases, controversial concepts of open government and open data; modernization needs of the civil service – that core of experts whose capacity is critical to well-functioning government institutions; metrics for evaluation of transformation readiness and measuring perceptions of citizens towards innovations in public services and operations; the potential power of social enterprise as a tool for development in low-income countries; the need for cybersecurity in increasingly open government environments; and on future government architectures.

The case studies capture some of the most important developments in government reform and modernization, with an emphasis on tech-enabled innovation in a range of countries and regions, including the OECD, Singapore, the United Arab Emirates, the United States, the Asia Pacific Economic Cooperation Forum and the United Kingdom.

Recommendations

1. The future of government lies across networks that include government, business, NGOs and civil society at multiple scales and levels, from global institutions to neighbourhood and tribal councils. Locating the most effective nexus for particular activities and understanding how governance works in this new complex ecosystem are at the core of the future of government. Powerful ideas such as government as a platform and open government emphasizing transparency, collaboration and participation rely on a strong orientation towards networks, thus the Council gives primary attention to this core concept.

    The Council recommends that governments focus strongly on building capacity to operate effectively in complex, interdependent networks of organizations and systems across the public, private and non-profit sectors to co-produce public value.

Sovereignty and territoriality remain core principles of national governments, but governance is increasingly transboundary. The recommendations that follow are meant to strengthen support for the advancement of networked governance.

1. The effective sharing of best practices can speed innovation globally. Currently, best practices are gathered, but efforts are fragmented across regions and managed by different organizations. Bringing these efforts together would speed up the transmission of knowledge and capacity for innovation. The Council has focused on knowledge sharing: what concrete, practical experiences exist in the implementation of networked governance, citizen engagement, public-private partnerships to promote innovation and the co-production of public value? How can best practices in networked governance be identified, shared and adapted worldwide? Several regional and global benchmarking efforts exist, but attention to best practice for networked governance still lags.

    The Council recommends that the best and worst practices in the emerging areas of networked governance, transparency, collaboration, participation and efficient public service production and delivery be gathered and shared globally to promote innovation.

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Although great variations will remain among governments, there are certain globally valid recommendations, best practices and lessons learned from more advanced countries' progress towards more networked government from which less advanced countries could benefit.

3. Government institutions are staffed by civil servants who are often the key implementers and policy experts for emerging networked governance. Yet civil servants may be intractable points of resistance. Public-private partnership and citizen engagement supplement but do not replace civil servants. Attracting and developing civil servants for 21st century networked governance will require cultural change, incentives, new professional education and training. Increasingly, mid- and upper-level civil servants are networked with their counterparts in the private sector, civil society and other governments globally. Governments are among the largest, most important organizations in the world and require decision-makers and administrators of the highest calibre, equipped with the mindset and skills for innovation and adaptation.

The Council recommends that governments modernize their civil service to accelerate innovation in government. In addition, professional schools and public management and administration programmes should be updated to educate and train civil servants for 21st century government by emphasizing the skills and knowledge required for public management in an interdependent, technologically sophisticated world.

4. Measures and indicators developed in the 1990s for e-government readiness and e-government do not sufficiently reflect the new realities of networked governance, citizen engagement efforts or the explosion of new media in governance. The Council recommends an effort to examine the currency and utility of the most frequently used measures with a view to bringing them into alignment with current needs.

Several regional and global benchmarking efforts exist, but attention to best practice for networked governance still lags. Without proper metrics, progress will not be measurable and resources will not be allocated optimally. Governments increasingly rely on measures and indicators, often collected by international organizations, to identify key dimensions for strategic attention and to benchmark progress relative to their counterparts.

The new dynamics of global competition, environmental challenges, financial reform and emerging global norms regarding privacy, surveillance, cybersecurity and more require the development of measures and indicators that reflect the realities of networked governance.

The Council recommends that measures be developed to reflect and support networked governance, citizen engagement, innovation, agility and other dimensions of the future of government.

Deliverables – How Do We Want to Achieve Them?

The Council will not try to define a precise path for the future of government. Recent world events demonstrate the futility of such an endeavour. Governments will continue to reflect deep variations in politics, economics, and social and cultural history. The Council instead seeks to identify cross-cutting areas of importance that are globally relevant and "test" them for regional variations to reach robust conclusions with global force. Key questions include:

- How can governments do more with less through networked government, multistakeholder partnerships that change "partners" from shareholder to stakeholder, new divisions of labour, citizen engagement and the co-creation of public value, allowed by new information and communication technologies? What works and what does not work?

- How can governments develop the capabilities of civil servants, and what capabilities are key for future governments? Given the substantial financial pressures on the public sector workforce around the world, how can new technologies promote efficiencies without the loss of expertise and capacity?

- Social media and new technologies hold great promise to improve societies and economies, but how do governments deal with risks related to transparency and open data, cybersecurity, minority capture in public participation and deliberation, the high failure rate of ICT projects in governments, and the risk of being locked into expensive low-performing systems?

- How can governments develop robust indicators to measure innovation, networked governance, readiness for change and other key dimensions? The Council recognizes the importance of indicators and benchmarking, concluding that what is measured happens. It recognizes the strong impact of benchmarking on national reform initiatives and seeks to remedy the inadequacy of indicators that capture key dimensions of networked governance, including collaboration and participation.

- What are the drivers of change for governments beyond those identified, including more informed citizens, media attention, competition linked to indicators and benchmarking, incentives and compensation, the exchange of experience on a regional and global level, and financial pressures? How can an appetite for change be created?

A subset of these questions and an earlier, much briefer version of this report were discussed in a closed-door session for senior leaders convened at the World Economic Forum Annual Meeting 2011. The Council continues to probe the issues raised herein at the Forum's regional meetings and in other forums around the world.

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FAST Government (Flatter, Agile, Streamlined, Tech-enabled)

Leading governments are transforming themselves into flatter, agile, streamlined and tech-enabled (FAST) organizations. FAST governments develop innovative public services, effectively meet citizens' needs, care for scarce natural resources and create new public value. FAST does not necessarily mean speedy, although the time frame for many decisions may be shortened with the help of collaboration platforms, tools and analytics; nor does FAST mean ignoring the core government values of merit, equity, checks and balances, accountability and jurisdiction. The following provides an outline of FAST government for leaders everywhere.

Government Must Be Flatter

Governments become "flatter" in four ways:

Citizen engagement. Flattening here means decreasing the distance between government and the people through the use of social media, mobile devices and mapping tools; increasing participation through online deliberation, consultations, surveys and other communication modes; and committing to open data that provide citizens and businesses with access to much more public information in easy to use, searchable electronic formats.

Administrative efficiency. Flattening here means decreasing layers in hierarchies between top management and line personnel and removing red tape, aided by collaborative work environments, business process redesign and business analytics to foster evidence-based decision-making.

Decision-making processes. Flattening of the decision-making process can be accomplished vertically as new data and analytical processes put information where it is needed by policy-makers and others, and horizontally by building collaboration within and across government departments, agencies and ministries.

Intergovernmental and cross-sectoral collaboration. Networks that lie across public, private and non-profit sector organizations and various government entities will be critical in the 21st century to solve complex problems, gain economies of scale and scope, and leverage innovative ideas and best practice.

Government Must Be Agile

Agility and adaptability are critical to effective and innovative governments. Successful governments are able to organize themselves to marshal public and private resources quickly to address challenges. As important, governments must be able to "de-"organize themselves when specific structures and processes are no longer needed. This requires an agile workforce made up primarily of highly skilled knowledge workers with broad problem-solving capabilities and armed with real time data and business intelligence – working in teams and networks, often with private sector partners.

Agility and adaptability include organizational structures and processes, service delivery models, civil servants and others employed in government work, and flexibility in regulatory and legal structures.

Government Must Be Streamlined

Government in the 21st century will be marked in many countries by reductions in the size of the civil service. Just like diets, in many cases these "crash" workforce reductions only prove successful in the short run, if at all. Virtually all governments are reducing staffing levels, most often without any real reduction in service levels.

Carefully planned workforce reductions coupled with the significant organizational, technological and workforce advances inherent in FAST governments result in slim and streamlined organizations that can thrive in the new world order. Adaptive governments that share services, labour and resources through networked approaches and Gov 2.0 strategies can remain slim while delivering on their mission in effective and innovative ways.

Government Must Be Tech-enabled and Tech-savvy

Governments of the future must be fully tech-enabled with a tech-savvy workforce. Policy, legal and regulatory frameworks and processes must be redesigned to align with the dynamics of the networked world. Information infrastructures must support new modes of collaboration, information and intensive governance. Even in the poorest regions, brilliant examples of service innovation have been driven through the use of cheap mobile and wireless technologies. FASTer governments are more likely to attract and retain a new breed of civil servant who thrives on problem-solving, results and innovation.

As governments become FASTer, the next decades of the 21st century will witness a renaissance of government and public service, when the "best and the brightest" seek out public service – whether through government agencies, civil society organizations or businesses working in the civic sector.

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Open Government and Open Data

Governments globally are using the power of the Internet and Web, including social media, to transform governance, empower citizens and rebuild the social contract between political leaders and citizens. Although the emphasis and details differ from country to country, many central governments are making more information public and easily available on the Web in formats that citizens can access, reuse, mash up, remix, visualize, map and share.

Tracking and mapping tools and systems allow citizens to examine government activities and expenditures. Citizen engagement platforms and tools allow governments to reach out and incorporate the perspectives and ideas of citizens in decision-making and policy-making. Still others are building networked relationships between the public and private sectors to solve challenging problems that cannot be addressed by either sector working alone.

An increasing number of countries are building transparency and accountability and driving public and private innovation through the use of information and communication technologies, including social media.

Right to Information. Several countries – including Indonesia, Mexico, Turkey and India – have recently passed legislation guaranteeing the right of citizens to public information and requiring ministries to make information accessible to the public. The Obama Administration has inked an open government partnership with India to exchange best practices and share data.

Transparency and Accountability. Tracking systems used in countries such as India, Kenya and Brazil allow and engage citizens in the monitoring and exposure of inefficiencies and corruption.

Open Data. Today, 10 countries or more have open data portals. Significant Data.gov initiatives are now established in Australia, Canada, Estonia, Norway, the United Kingdom, the United States and New Zealand. These efforts are designed to make government data accessible in a form that may be used by citizens.

These innovations tap not only emerging information and communication technologies but also the expertise and creativity of individuals, the private sector and the power of collaboration and participation using data and evidence for decision-making.

It should be obvious that only those citizens with broadband access and the digital literacy to engage in these types of activities can benefit directly. Thus, countries increasingly must focus on education, broadband access and digital literacy for citizens to gain the benefits of open government and social media use for citizen engagement.

Moreover, even in wealthy countries like the United States, as downloading of large datasets increases, older servers are unable to manage such highly intensive activities, causing computers to crash. Most governments will need to make careful choices about how much data, what types need to be available immediately and in what form. Low- and middle-income countries represent the "next frontier" for open government and open data reforms.

To this end, the World Wide Web Foundation launched an Open Government Data Feasibility Study of the Governments of Chile, Ghana and Turkey to determine in what ways middle- to low-income countries have the capacity to develop and maintain open government data projects.[1]

A number of international organizations and foundations have formed a donor collaborative called the Transparency and Accountability Initiative to foster the powerful concepts of transparency and accountability through greater use of networking and information technologies coupled with social media.[2]

Open government and open data represent an emergent "movement" worldwide although national governments will continue to differ with respect to their definition and implementation of these ideas. Clearly, sharing best practices and lessons that work as experience accumulates will be key.

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[1] See http://www.webfoundation.org/projects/ogd/. The Omidyar Network and the Open Society Institute support the Open Government Data Feasibility Study.
[2] The Transparency and Accountability Initiative, a donor collaborative, includes the Ford Foundation, Hivos, the International Budget Partnership, the Omidyar Network, the Open Society Institute, the Revenue Watch Institute and the William and Flora Hewlett Foundation.

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The Civil Service in the 21st Century

In most countries, the civil service systems of today's governments require considerable modernization. Current civil service systems are traditionally structured, rigid, inward-looking and based on outdated competencies. Governments need to network and collaborate increasingly, and be more transparent, more flexible and participatory.

Measures to align civil service systems to these new characteristics are required. Pressure to decrease the size of some countries' civil service should not be confused with the need for modernization, as these issues are separate.

Updating the legislative framework*.* In most countries, legislation governing the civil service dates back several decades. Such legislation in most cases does not provide the civil service with the authority or flexibility to share information or engage with business and the non-profit sector for the co-production of public goods.

Reforming organizational structures and processes*.* Civil servants operate in very pyramidal public organizations and their work is organized in compartmentalized silos. Procedures and practices are cumbersome and inefficient and do not provide scope for initiative and innovation. Structures and procedures need to be simplified and streamlined to provide civil servants with the ability to network among themselves and with others and to innovate. The main challenge in this respect is striking a balance between offering flexibility and guaranteeing accountability and integrity, particularly in the areas of financial management and procurement.

Changing organizational culture and civil servants' mindset*.* Civil servants learn quite early to work in organizational compartments. Information and knowledge are jealously kept within individual organizational units. Rivalries exist between different agencies vying for recognition and/or funds. In many organizations, initiative and efficiency are frowned upon, particularly among frustrated and disillusioned tenure staff. Management styles are often traditional and either paternalistic or authoritarian. Modernization, therefore, requires special programmes that teach public management and staff to work proactively and collaboratively.

Promoting the sharing of information*.* "Open government" initiatives should be introduced to promote the sharing of information and increase transparency. The sharing of information and knowledge facilitates the involvement of other actors in the delivery of services and also enables civil servants to take advantage of information resources through cloud computing. The creation of common data platforms to be shared among various agencies would facilitate information exchange and sharing among civil servants.

Overhauling recruitment, advancement and remuneration systems*.* Recruitment systems, including examinations and interviews, should be modernized to facilitate the recruitment of staff with new competencies and skills. Selection methods should assess not only knowledge but also attitudes and behaviours. Job descriptions for posts should not be a rigid framework within which management and staff cannot operate with flexibility and initiative. As advancement in the public sector is very often linked to seniority, criteria that reward efficiency, effectiveness and initiative should be given more importance in the promotion of staff. Also, remuneration systems should be able to reward those civil servants who are particularly effective, innovative and engaged.

Most civil service systems are fairly rigid when it comes to the ability to exchange staff between the public sector and the business and non-governmental sectors. Governments of the future should draw from all sectors of society, particularly at the managerial level, and facilitate the movement of human resources from and to the civil service and other sectors.

Modernizing public administration education and training. Public administration schools and institutes offer a strong curriculum in traditional disciplines, such as political science, economics and social sciences, but are extremely behind in developing newly required competencies and behaviours. Their curricula should also focus on building competencies in collaboration, networking, public-private partnerships and citizen engagement. Competencies in using social networks and current information infrastructure should be embedded in core curricula. The same can be said for pre-service or in-service training programmes offered by civil service schools or training departments.

Major challenges. At a time when civil service systems require a major overhaul, many governments are facing a serious financial crisis and are reducing the costs of the public sector by eliminating programmes and/or freezing recruitment and salaries. Under these circumstances, great creativity and innovation are required to carry out the necessary reforms. Greater efforts must be placed on retraining existing staff, introducing non-monetary incentives and promoting partnerships between the public and other sectors for the delivery of services.

Given the complexity of the issues to be addressed, the governments of the future require staff that are highly specialized in various disciplines. At the same time, they require staff with flexible skills, able to perform various functions and move from one position to another during their career. These apparently contradictory requirements need to be reconciled through well-designed and implemented recruitment, rotation and training systems.

New Government Requires New Measures: Metrics of Government Transformation (MGT)

A wide range of performance measures are now used to evaluate government performance. Yet governments are challenged to design and implement new metrics, which we call the Metrics of Government Transformation (MGT). In this report, two complementary ways of assessing governments' performance are proposed that need to be combined to ensure that citizen engagement in the transformation of government can be monitored, benchmarked and improved.

The first set of measures, described in this section, consists of a holistic approach to government performance along the four axes defined earlier as FAST. The second set of measures, addressed in the next section, focuses on measuring the value of such transformation to citizens.

To a large extent, one may consider that the first set of indicators (FAST Metrics or MGT) will allow the monitoring of the "transformation readiness" of governments, while the second will allow governments to measure and benchmark improvements in "public value" from the point of view of citizens.

How Ready Are Governments to Transform?

Over the last decade, significant efforts have been deployed to better measure the work of government, with a view to improving performance. Such efforts include the *Global Information Technology Report*, a long-standing collaboration between the Forum's Global Competitiveness Network and INSEAD. The report examines the degree to which 138 economies employ advances in information and communication technologies to increase growth and development through the methodology of the Networked Readiness Index (NRI).[3]

The United Nations E-Government Survey makes available a biannual evaluation of national online services, telecommunication infrastructure and human capital in the 192 Member States.

These two global surveys have focused largely on assessing how better and wider use of ICT in the public sector could improve the ability of governments to develop and deliver services to businesses and citizens. Resulting rankings have attracted the attention of decision-makers (public and private) and contributed to improving the visibility and efficiency of efforts to modernize governments.[4]

Yet to accelerate the transformation of government, the international community needs new metrics that go beyond measuring progress in e-government or even in ICT-related performance across society. Addressing the challenges and seizing the opportunities described in this report require that the four qualities identified earlier as key characteristics of FAST Government should be subject to constant real-time measurement and benchmarking. This is a necessary condition to allow them to remain "dashboard items" for decision-makers (public and private), analysts and ordinary citizens.

The measurement tools associated with those four qualities should constitute the backbone of a simple, robust and globally meaningful policy toolkit that we propose to call the Metrics of Government Transformation (MGT). This backbone should be complemented by an equally simple set of measurement tools, allowing decision-makers, analysts and citizens to assess the impact of the efforts made to improve the four components of the FAST model.

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[3] This year marks the 10th Anniversary of the GITR. For additional details and context, as well as indications of future avenues for improvements in benchmarking and applications of NRI (Networked Readiness Index), see www.weforum.org/gitr.
[4] Additional indices and rankings have also been regularly published about e-government. Some of them are described in the next section.

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The Backbone of MGT

The following table summarizes some of the indicators to be used in assessing progress along the four dimensions of FAST Government.

Dimension to be addressed and measured	What should be measured/assessed and improved?	Possible hard data/ indicators (areas)	Possible proxies and/ or qualitative indicators (areas)
Flatter	• Layers of government to be faced by users/ citizens in typical interactions • Balance between central and local government responsibilities • Evidence of citizen engagement in decision-making	• Creating a new business • Public tenders • Life events certificates • Cities' responsibilities • Online feedback mechanisms • Use of social media across government units and by the public sector	• Perception of how "flat" government is among citizens and businesses • Perception of "proximity" between government and users of public services
Agile	• Ability of existing public structures to adapt and transform themselves in face of new demands and opportunities • Evidence of innovative behaviours across government units • Responsiveness to requests/expectations from citizens and businesses	• Record of new services offered over a certain period of time (e.g. past year) • Record of time-saving and cost-saving (to users) for a set of typical services to citizens and/or businesses (e.g. improvements over a one-year period) • Extent of opengov/ opendata initiatives	• Perception of how "agile" government is among citizens and businesses • Perception of how innovative government is
Streamlined	• Staffing levels relative to output of government services • Existence of shared processes and networks across public departments and services • Administrative efficiency	• Staff/output (measured in volume or value of services provided) • Extent of e-procurement, HR management tools, shared databases and knowledge across ministries	• Perception of how "streamlined" government is among citizens and businesses • Image of civil servants' efficiency across national population
Tech-enabled	• Availability of ICT in government • Extent of government services available online • Pervasiveness of new media/social networks in public sector • Civil servants tech-savviness	• ICT equipment, bandwidth and services (including social networks) available in government • Percentage of government services online • Extent of social networks in G2B and G2C interaction	• Perception of how "tech-enabled" government is among citizens and businesses • Image of civil servants' tech-savviness and innovativeness across national population

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The Impact Component of MGT

To be a true tool for action and an efficient instrument of government transformation, the set of indicators outlined above must be linked to (and aligned with) the overall objectives of governments. Such objectives will naturally cover a wide range of areas and fields, including economic, social, political and cultural. It is to be expected that some degree of divergence will exist between those objectives and that the emphasis on one or the other will vary across time, especially in democratic environments.

Yet an agenda of government transformation, if based on a set of clear and action-oriented indicators and measures, can transcend such changes and offer a stable reference framework to achieve longer-term objectives in areas such as accountability, transparency, efficiency, competitiveness and innovation.

To achieve this, the impact of government transformation will need to be assessed, monitored and benchmarked against key dimensions as diverse as citizens' participation and engagement, social inclusion, employment, income inequality, quality of life, openness and political stability. This is why this backbone component must be combined with the impact indicators described in the next section.

Contrary to the backbone component of MGT (which has to be a common base for a global assessment and benchmarking of government transformation worldwide), this impact component of MGT will require a high degree of customization and localization to ensure its relevance and applicability in specific geographies. Such customization should involve as much as possible the active participation of all parts of society, including governments, businesses and, as indicated in the previous section, individual citizens.

Finalizing the structure and components of MGT should include provisions to make it immune to likely shifts of responsibilities among levels of governments (e.g. from central national governments to local governments, especially those of cities). Giving priority to indicators that can be valid both for nations and cities will hence be one of the main challenges that MGT will need to address. It will also be one of the most exciting.

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Benchmarking E-government Public Value from the Perspective of Citizens

Governments around the world are forging ahead with the introduction and continuing development of e-government Web-based information, tools and services for citizens. Are all of these efforts producing public value? Are they designed keeping in mind the perspective of the citizens who will use the services or is design and delivery optimized in terms of the government (e.g. to reduce costs)? Do decision-makers have the appropriate metrics available to determine which is the case?
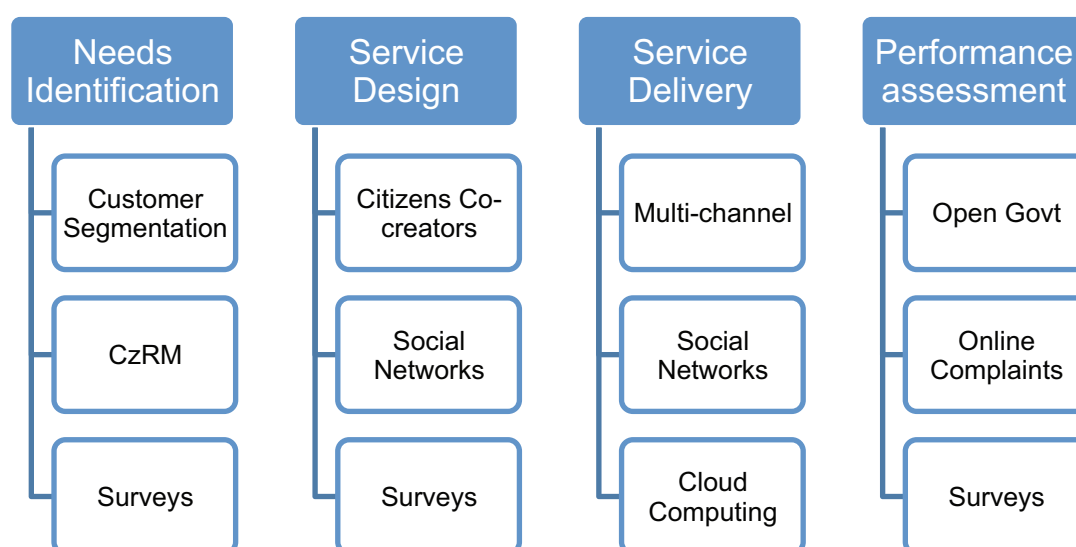
An initial issue that needs to be clarified is how public value is generated through the introduction of e-government. Taking inspiration from various definitions of public value, particularly those from Kearns and Kelly, one could state that public value is created when:

• Quality public services are delivered
• Socially desirable outcomes are achieved
• Citizens are satisfied with the services and outcomes
• Trust in government is created and/or increased

To deliver public value, governments must involve citizens in the stages of the delivery path, namely, in the identification of citizens' needs, design of services, service delivery, and performance assessment and evaluation. This type of citizen involvement is critical as countries adapt lessons and innovations from other country settings.

In this view, governments bear responsibility for producing public value, but citizens become co-producers of public value as they engage with and provide feedback to government. Citizen engagement in co-creation of public value can take different forms (see Table 1). Therefore, surveying and assessing citizens' needs, preferences and satisfaction is key to delivering public value.

Table 1: Modalities for Citizens' Participation in Delivering Public Value

Needs Identification	Service Design	Service Delivery	Performance assessment
Customer Segmentation	Citizens Co-creators	Multi-channel	Open Govt
CzRM	Social Networks	Social Networks	Online Complaints
Surveys	Surveys	Cloud Computing	Surveys

A number of international surveys are benchmarking e-government. While each is sophisticated, there is tendency to neglect the perspective of the users. In reviewing these criteria (see Table 2), one will conclude that these surveys rely primarily on supply-side indicators and not demand-side indicators.

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These supply-side indicators can be summarized as follows:
- Criteria indicating how ready governments are to implement e-government
- Criteria relating to the enabling political, economic and social environment for the introduction of e-government
- Availability of services online
- Sophistication of services provided
- Quality and ease of navigation of government websites
- Promotion of e-participation
- Usage

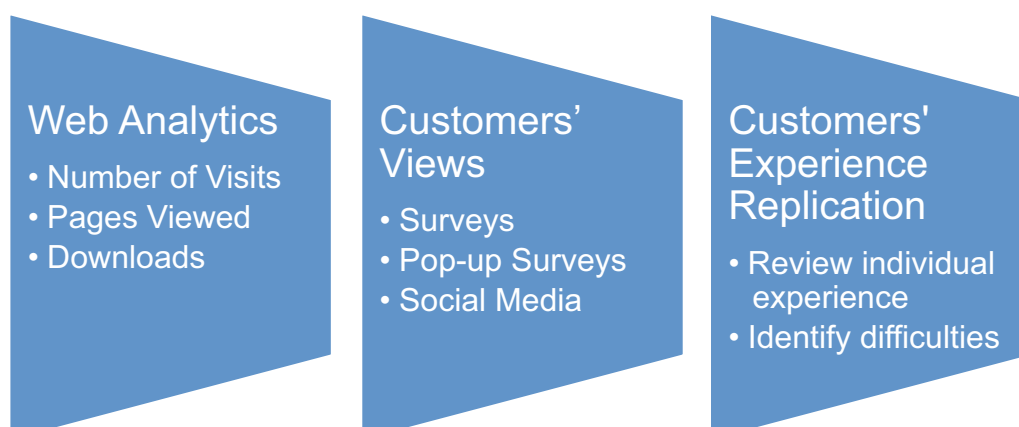But none of the criteria measure citizens' satisfaction.

Table 2: Criteria Used by e-Government Surveys

Waseda University	Brown University	UN Survey	Economist-IBM	Capgemini–EU Survey
Network Preparedness	Electronic Services	Telecommunication Index	Connectivity Infrastructure	Services Availability
Functioning Applications	Privacy and Security	Human Capital Index	Business Environment	e-Procurement Availability
Management Optimization	Disability Access	Online Services	Social Environment	Services Sophistication
National Portal	Foreign Language	e-Participation Index	Legal Environment	User Experience
CIO in Government	Ads, User Fees		Government Policy/ Vision	
e-Government Promotion	Public Outreach		Consumer Adoption	

From the citizens' perspective, the achievement of outcomes is of primary importance. But several "process" criteria influence whether and how services will actually be used. These criteria include but are not limited to user perceptions of fairness, wealth of information/content, timeliness, delivery, accessibility and visual appeal. Currently, some of the main metrics available to measure citizens' satisfaction with e-government include Web analytics, customers' views and customers' experience replication (see Table 3).

Table 3. Measuring Citizens' Satisfaction
These tools are already widely used by businesses that are serious about customer relationship management but less

Web Analytics
- Number of Visits
- Pages Viewed
- Downloads

Customers' Views
- Surveys
- Pop-up Surveys
- Social Media

Customers' Experience Replication
- Review individual experience
- Identify difficulties

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frequently used by governments. Yet, several countries have developed surveys that measure citizen satisfaction with Web-based government information and services, mainly at the national or sub-national level, including:

- The Canadian Common Measurement Tool
- The Malta E-Government Services Demand Survey
- E-GOVMON Project – Norway
- The American Customer Satisfaction Index

The American Customer Satisfaction Index (ACSI) is an economic index that measures customer satisfaction across a range of industries, companies and government organizations in the US economy. Developed by a private firm, the ACSI surveys about 80,000 Americans each year. Based on a range of research on customer service, the firm has developed a methodology that compares citizens' service expectations with their perceptions of the quality of Web-based government services in areas such as ease and timeliness of the process; clarity and accessibility of information; courtesy and professionalism of the service agent; and ease and usefulness of the website in terms of navigability and clarity.

This methodology is used by the private firm, Foresee Results, to publish quarterly the E-Government Satisfaction Index for all agencies of the US federal government. (The firm also publishes reports on customer satisfaction in retail, financial and other industries internationally.) Use of standard customer satisfaction metrics allows US federal agencies to benchmark their performance against that of business, a practice that was mandated by executive order during the Clinton Administration.

The ACSI evaluation is used by public managers to predict users' future intentions and thus to adjust the delivery of services accordingly and make them more attuned to citizens' needs and preferences. Table 4 provides a schematic of the relationships proposed between key dimensions of service (process, information, customer service, and website characteristics), perceptions of quality based on customer expectations, and measures of customer satisfaction and generation on the negative side of customer complaints, and on the positive side of greater citizen trust in government.

Table 4. The ACSI Customer Satisfaction Index (Source: ACSI)
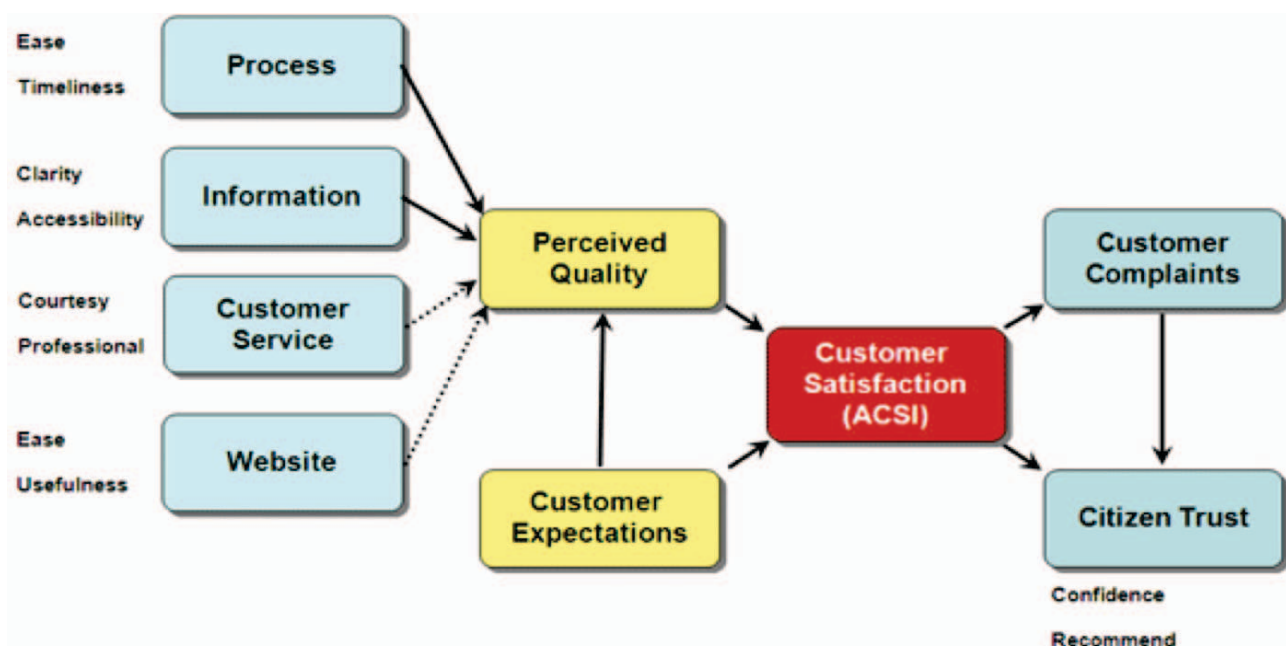
Based upon the analysis above, one could conclude that citizen satisfaction indexes in use should be further refined and, for those dimensions that are not now measured, new metrics should be developed. If the perceptions of citizens are deemed to be important for the future of government and if citizen perceptions of Web-based information, tools and services have an impact on citizen use and, more importantly, trust in government and perceptions of government credibility and legitimacy, then citizen-based assessment and evaluation tools should be built into government Web-based applications.

The Power of Innovation through Social Enterprise for Development

While the focus of this report is the future of government, throughout the report the terms "networked government" and "networked governance" are meant to include multi-sectoral arrangements to develop public value that include government, business and civil society institutions. In this section, the report highlights the potential of **social enterprise**, an approach to investing that trades off some financial return in exchange for generating "social returns." Social enterprise is way to leverage the innovative potential of entrepreneurship for social and economic development – particularly in settings where neither the government nor the market is likely to produce value using traditional means.

Regardless of reform, revitalization and a technological revolution, the reality is that in many developing countries, at least in the foreseeable future, government alone will be unable to develop sufficient capacity to offer basic services to citizens. Yet the experience of the past few decades vividly demonstrates that market forces alone will not produce public value either. A range of public-private partnerships, privatization efforts and other multi-sectoral arrangements have opened possibilities for value creation and greater efficiency and productivity. In this section we turn to an emerging, vital tool that accompanies the future of government, particularly in poor countries.

The power of innovation and the power of entrepreneurship are beginning to converge in the delivery of services to the poor. While traditional development institutions, non-governmental organizations and governments have been working a long time to meet the challenge of serving the poor, a new opportunity exists to engage with for-profit and not-for-profit private institutions to scale up the delivery of public goods to marginal groups. With the convergence of technology, scale and entrepreneurship, there is an opportunity to make substantial progress in the fight against poverty.

Social enterprises are responding to the need to improve the production and delivery of basic services to the poor and the delivery of public goods in the developing world. The potential of social enterprise is yet to be unleashed. The notion that "small is good" took root several years ago, and examples of small, successful private enterprises abound in developing countries. But the problems in the poorer developing countries are huge and time is in short supply. We must accelerate the rate at which proposed solutions serve the poor and help small-scale enterprises achieve scale much more quickly. To this end, the opportunity exists to engage social entrepreneurs for systemic change.

The future of government in many poor, developing countries depends critically on aid, expertise and support from international organizations such as the World Bank. Herein lies the opportunity for the World Bank's *Development Marketplace* to contribute to economic and social development in countries lacking government capacity and resources.

Traditionally, the World Bank has focused on support for small-scale, early-stage enterprises. A subset of these enterprises has produced proven results but excellence begs scale. So how can the world of social investing be connected to more than a decade of social enterprise pipeline in a way that matches growth-ready inclusive business models with next stage investors? This is where an opportunity exists.

Social or impact investors collectively represent over US$ 50 billion of capital waiting to be invested. But they are constrained by efficient deal flow and pipeline. These investors are not only optimizing for a financial return but are trying to find optimization between a social return and a financial return. Businesses can be powerful vehicles to provide public goods and services to the poor and, if they are not solely concerned with the financial return, they can be powerful levers to deliver effective goods and services to the poor.

The power of innovation can make an enormous difference in large organizations, be they governments or multilaterals such as the World Bank. Innovation can be seen in two ways. Innovation includes doing things differently – this is primarily about *process* innovation and relates to organizational change, systems change and the work of institutional reform.

But innovation is also about doing different things. This definition includes *product* innovation as well as lateral, non-linear approaches to development. In short, innovation in development includes thinking about completely different ways to solve old problems, often with new partners.

Cybersecurity for Open Government

One of the key business and policy questions facing public officials considering how best to implement open government, open data and social media in government (collectively "Gov 2.0") is the proper balance between risk management and open government.[5] There is a natural tension between the hallmarks of open government – open data, open access, transparency and accountability – and the sensitivities of security.

Cybersecurity can be defined broadly as the vulnerability of computer systems, including Internet websites and mobile networks, against unauthorized access or attack, or the policy measures taken to protect them. The cybersecurity risks related to Gov 2.0 also cannot be focalized into one type of concern or category. Gov 2.0 is inclusive of a number of factors including human actions, concerns related to infrastructure and social expectation, and even crosses over to multiple platforms and interfaces.

The following is a summary of some of the key cybersecurity risks related to open government of which officials need to be aware.

Human Error and Carelessness. The most real security threat may be the inadvertent disclosure of potentially compromising information or data by careless government employees. Much of the allure of social media, for example, is its ability to "connect" large numbers of individuals in real time.

Real time presents great opportunities for Gov 2.0, including the ability to inform constituents of details as events are occurring and to have open channels that can immediately connect government to what constituents are experiencing. However, providing data, information and responses in real time can also result in less time and focus spent on ensuring that responses, data and information are accurate and do not provide any opportunities for security breaches.

Physical Network Access. The incredible growth of social networking and social media sites, mobile services and applications – thousands and growing exponentially each day – provides numerous new potential entry points to computer networks. This is one of the most basic and obvious cybersecurity threats, and should not be overlooked.

Malicious Data/Information Mining. Virtually all mobile phones now include GPS (Global Positioning System) technology. Most leading smartphones have the ability to procure geotags that provide latitude and longitude coordinates of the phone and, subsequently, where the phone user is located.

One of the major combined benefits of mobile technologies and social media is the sharing of geo-location information. This is often included as an online privacy issue, but in the context of government agencies it can present a very real cybersecurity issue – location of key public assets such as power plants and other important infrastructure, public transit and transportation data, the comings and goings of key public officials, access patterns around key public facilities, etc.

This can become a potential problem in the public context – for example public agency communications personnel providing photos of events, groundbreakings, etc. It can also pose a problem as social media is used more and more for enterprise collaboration or distributed communications and field work. Some new public e-government services are actually built around this and encourage "active citizenship" by offering a variety of platforms for citizens to report their uses/concerns, including mobile device options and photo uploads.

Social Engineering. A large area of cybersecurity vulnerability revolves around what is known as "social engineering". At its most basic level, social engineering as a cybersecurity concept involves exploiting the human element of trust, which is at the very core of social networking. This is especially troublesome for public agencies as ever-higher profile government actors – elected officials, city managers, board and commission members, general managers, communications and public information officers, etc. – use social media to communicate and share information directly with the public, often in real time.

Trend Analysis of Social Media "Conversations". A booming industry has arisen around social media "listening". For private sector marketing, branding and public relations, the goal is to collectively assess what consumers are saying or sharing about a product, an event, a company, etc.

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[5] Adapted from: Gregory G. Curtin and Charity C. Tran, "Securing Government Transparency: Cybersecurity Policy Issues in a Gov 2.0 Environment and Beyond," in Cybersecurity: Public Sector Threats and Responses (Kim Andreasson, Editor) Taylor and Francis, New York, New York (2011 forthcoming).

By staying abreast of these "trending" conversations, companies can attempt to actively guide and shape them – by fuelling positive trends and attempting to dampen negative trends. While this is still much more art than science, the rise of data mining and business intelligence tools that enable users to relate discrete pieces of data and information to each other for predictive analysis has created powerful opportunities for malicious users. These tools can be used, for example, for "spear phishing" attacks or to piece together broad knowledge bases about public facilities and infrastructure, internal operations, plans and strategies, etc.

Phishing and Spear Phishing. Phishing scams have become a growing scourge across the Internet: who has not seen that now-ubiquitous e-mail inquiry or solicitation attempting to get the reader to click on an apparently legitimate site link to check an account (often bank or other financial accounts), a special offer or some similar scheme in order to steal usable information such as credit card numbers.

While many of these phishing scams border on the ridiculous and are readily recognizable by even most digital neophytes, many of them have become increasing sophisticated and look remarkably similar to the actual accounts and sites that they are masking. With the rise of social media, an even more nefarious scam dubbed "spear phishing" has emerged and escalated rapidly. Spear phishing is an attack targeting a specific user or group of users, and attempts to deceive the user into performing an action, such as opening a document or clicking a link, that launches an attack.

Spear phishers rely on knowing some very specific pieces of information about their target, such as an event, interest, travel plans, address or current issue, and have found social media sites and conversations a treasure trove for finding these critical pieces of information. The popular use of URL shorteners in the social media world has added to the effectiveness of spear phishing as users cannot easily recognize a modified URL of a branded website.

Application Security/Attacks. Web applications have posed serious security vulnerabilities for public agencies for some time, especially with the rise of e-government services over the past five to 10 years. In the Gov 2.0 context, two new trends have added to these security concerns: mobile applications and the rise of open application development contests or challenges by government agencies providing open data.

While there are current and emerging security standards in place for application development such as the Open Web Applications Security Project (OWASP) guidelines, tracking and enforcing these in the dynamic Gov 2.0 world is becoming increasingly difficult.

Mobile Government Applications. Predictions by virtually every reasonable technology source note that mobile connections to the Internet – smartphones, pads/tablets – will outstrip computer-based connections by around 2013. Symantec, a security company, and others in the industry report that as mobile phones become "smarter" and add new features, applications, data access and connectivity, they open up entirely new avenues for cyber criminals.

The development of mobile applications – stand-alone applications generally available for download from online application "stores" and mobile Web applications generally available to any/all mobile users – is one of the richest areas of application development. The opportunities for mobile e-government services and mobile Web applications are virtually endless. So too, is the variability in the quality of mobile application development.

In the commercial space, leading app stores – such as iTunes for iPhone-specific applications and the App Market for android-based applications – screen applications for functionality. But, according to *Wired*, an industry magazine, they do not generally assess security vulnerabilities or malware.

More flexible mobile Web applications – which do not have to be distributed through app stores and are potentially more widely accessible – are prone to the same vulnerabilities as Web-based e-government applications and services, but include a layer of complexity because of the multitude of mobile handsets and operating systems in the market. Monitoring and management of this development is often beyond the expertise or capacity of local government IT personnel.

Open Applications Development Contests/Challenges. Vivek Kundra, the current Federal Chief Information Officer of the United States, launched in 2008 an "Apps for Democracy" contest while he was still the Chief Technology Officer for the District of Columbia. The simple idea was to open up key government datasets and tools to the public, and allow companies and individuals to develop their own e-government applications for use by the government.

Cybersecurity for Open Government

New York City followed suit with its "NYC BigApps" contest, which is now in its own 2.0 version, and numerous other public sector agencies in the United States and elsewhere have followed suit. While some of these contests indicate in their rules and guidelines that apps must be free of malware, this request is generally buried – reducing the potential prominence of this concern – and does not provide any detail on how apps can or will be screened for malware.

Admittedly, the more that rules and structure infiltrate these Gov 2.0 crowdsourcing initiatives, the more likely they will be perceived to be not really open. Some very basic cybersecurity frameworks could go far in avoiding potentially major problems down the line. The potential for malware to be built or introduced into such "open" applications is a distinct vulnerability, especially if the contests and resultant applications see greater usage by the members of the public and the agencies themselves.

Access to Basic Social Media Tools. Symantec, a global leader in security, makes the case in its annual security threat report that the increasing adoption of social media by government agencies increases the risk of cyberattack. They point out the use of shortened URLs – an efficiency measure whereby lengthy URLs are shortened, especially for microblogs such as Twitter – as being dangerous because they mask the true links behind them.

The firm is sounding the alarm, particularly for national-level governments and global corporations and terms the rise of these highly targeted and sophisticated attacks *cyber warfare*: "Stuxnet and Hydraq, two of the most visible cyber-events of 2010, represented true incidents of *cyber warfare* and have fundamentally changed the threat landscape," said Stephen Trilling, Senior Vice-President of Symantec Security Technology and Response (Stuxnet was a notable attack on nuclear facilities' programs; Hydraq was used in an attack on Google).

In a recent study conducted over four months by the Georgia Tech Information Security Center, an average of 130 instances of malware were found every day simply by searching for content on popular, "trending" topics via Twitter, Google, Yahoo! and Bing.

Ultimately, a number of issues can be avoided or reduced if public sector employees are adequately trained and educated in how they should be engaging with constituents through these channels and providing "open" data and information. Users of technology are often the weakest link in the chain, as individual actions may be managed but never fully controlled.

Human error and carelessness must be anticipated when considering implementation of any technology. By training and educating employees, some potential dangers can be mitigated. Additionally, by developing policies that include making training materials available and mandatory for staff engaging with social media, government agencies and their staff will also increase awareness and understanding of their goals with social media and pros and cons with integrating the experience into their organization.

Creation of key information, communication and cybersecurity positions within government is one measure that governments can take to build trust with their constituents. Formally adopted and published policies and guidelines are also key signals to citizens, evoking the foundational nature of Gov 2.0 as a movement to an open, transparent and "secure" arena.

Citizens in a Web 2.0 world expect the integration of such technologies into their interactions with government entities, but there are still underlying concerns of privacy, security and public information sharing. Providing guidelines and policies can mitigate such concerns and open up for discussion additional needs and expectations of the citizens as development progresses in this area.

Governments are poised to accelerate their implementation of new technologies and strategies and, in fact, shape them into an emerging platform – Gov 2.0 – developed specifically around the needs of the public sector. In so doing, governments become more open, transparent and accountable. Cybersecurity threats new and old will always face the users and advancers of new technologies. Fear of these threats should not stifle innovation; rather, it should stimulate sound preparations, responses and new technologies to protect the public good.

Future Government Architecture

The emerging Information Age, which is notable for widespread use of ICT in all spheres of human activity, brought two new trends into the development and functioning of government. One trend is related to improving efficiency and reducing costs in implementing the functions delegated to the government in order to serve the public interest.

Another trend is associated with the transition to citizen- and business-oriented state governance when government is primarily regarded as a services supplier to the public, enterprises and civil servants themselves. In this case, the use of ICT not only improves the traditional processes of public administration, but also opens up new opportunities.

However, recent decades have also demonstrated the inefficiency of a large number of e-government projects in several countries. The traditional approach to building e-government based on the use of ICT to support activities of separate government agencies with further integration and interagency interaction has not led to significant changes. The reason is that the traditional functioning of public administration does not put at the centre the government's interaction with citizens and citizens' involvement in decision-making processes.

The key to an effective state governance system takes its point of departure from citizens' needs and takes into account their interests at every stage. The metrics of citizen perceptions of services is a powerful toolset for this purpose. Only such strategy for the public administration system, synchronized with the massive use of ICT, can lead to quality improvements that will be used by citizens to produce public value.

An Enterprise Architectural Approach. e-Government may be thought of as a complex socio-economic and human-machine system, which has begun to be explored and developed in recent years with the use of the Enterprise Architecture (EA) methodology. This approach encompasses a generalized representation of the subject domain structure and the subsequent formation and use of the principles and guidelines that define the system architecture development management over time.

One of the important advantages of this architectural method is the availability of tools that allow a government (or any organization) to synchronize a complex system development strategy with opportunities carried by ICT.

The use of EA methodology allows government decision-makers to overcome the drawbacks associated with traditional approaches to using ICT to improve separate agencies' activities aimed at performing their functions or providing certain services. An enterprise architecture approach to government development allows public managers to represent the structure of today's and future e-government as an integral system, with its components and their interconnections, and their relationship to business processes.

Based on EA methodology, one can present the fundamental components of e-government, sufficiently detailed so that one can manage their generation and development processes as well as create a set of reference models and tools, which determine a coherent and interrelated development.

The main purpose of constructing e-government architecture (e-GA) is to provide opportunities for more effective enforcement of public authorities' powers; execution of functions and provision of public services for citizens and businesses through the use of common approaches to the creation of government information systems; and identification of opportunities for shared use of information systems, ICT infrastructure and best practices.

Formulating some basic principles, developing guidelines and setting priorities in building e-GA is largely dependent on the set of social and economic specifics and needs because the architectural approach involves the simultaneous development and linking of several levels: *business architecture* (public administration functions and services), *system architecture* and *technology architecture*.

No less important is the consideration of particular aspects of e-GA that pierce the architectural levels, including:
- *Information and data* architecture, which determines the composition of data necessary to support administrative processes
- *Performance* architecture, which characterizes a set of key effectiveness and efficiency indicators of public services execution and provision of services to citizens, businesses and other public authorities, based on ICT)
- *Information security and confidence* architecture, which takes into account the need for adequate protection of information and ensures users' trust to ICT)
- *Integration and interoperability* architecture, providing electronic interaction between different information systems and taking into account the legal, organizational, semantic and technological compatibility

ICT Infrastructure. A necessary (but not sufficient) condition for the development of e-government is the availability of accessible ICT infrastructure to overcome the distances and remove restrictions on time for the public services to citizens. Ubiquitous access to ICT infrastructure in today's information society is becoming one of the elements of social justice and social welfare.

The digital divide between regions, countries, communities, genders, age groups, etc., starting with the Okinawa Charter on Global Information Society and the World Summit on the Information Society in Geneva and Tunis, has been one of the most pressing problems of the new century. Measures taken by many states and international organizations in recent years have been aimed at building a global ICT infrastructure that is needed, i.e. for full-fledged use and development of e-government technologies.

There are different ways to develop ICT infrastructure, based on modernization and new ways of using existing telephone and cable television networks. However, the future development is unequivocally associated with the use of fibre-optic networks that allow for more broadband access than traditional cable infrastructures. Rapid development and reduction in cost of mobile new-generation networks have become a trend of recent years and allow their use for broadband data transmission without fixed infrastructure.

Mobility has given rise to a qualitative change in the development and use of ICTs; one can observe massive utilization of users' mobile terminal devices with reliable broadband access to providers' services and data, including those provided by the government. This trend will be dominant in the coming years and will become a real embodiment of the principle "ICT as commodity", which cannot fail to influence the current technology of electronic government.

Open Government Data. In the course of its operation, the government collects huge amounts of data necessary both for the functioning of government itself and for the provision of public services. Government data are usually located in isolated information systems of departments and are difficult to access, and often they are simply inaccessible for other agencies. And even more so – for citizens and businesses that have the right to know what their government is doing.

It is not only the requirement of "transparency" and "accountability" of the government, but also the possibility to reuse the data, including analysis and presentation in visual form. Data are an important resource for socio-economic development in the information society; so, while opening the public data, the government promotes the development of innovations in business and the development of social entrepreneurship.

Finally, the disclosure of government data not only promotes awareness of what the government is occupied with, but also provides opportunities for broad citizens' participation in decision-making affecting the interests of the society.

The projects initiated by the US government and implemented recently to disclose collections of public data in machine-readable format received broad support in other countries. They are aimed at improving government accountability and at providing data that enable the government, country and world to operate more efficiently.

Non-governmental initiatives and projects to develop new services based on available public data have become even more important. In fact, real public-private partnerships have emerged where governments provide access to datasets, and representatives from business, civil society and/or academia develop socially significant services on this basis.

It is extremely important to use modern ways of presenting data in machine-readable form, primarily based on the Semantic Web principles developed by the W3C, when disclosing government data. This opens up the possibility of repeated use of data for resolving various tasks of public administration in an automated mode to link different datasets with each other, which is especially important in the provision of integrated public services.

Disclosure of datasets in machine-readable form occurs in several phases that characterize a level of maturity. At the initial stage, it is simply about the availability of data on the Web, but with an open license for use. The next level encompasses the availability of machine-readable structured data (in an ideal case published in a non-proprietary format). If, in addition to the above, open standards (e.g. from W3C) of data description are used to identify entities, it is believed that this is a higher level of maturity.

The highest degree of maturity in data disclosure consists in such (linked to each other) data, which allow description of the context of the subject area. Open government data are also often accompanied by metadata describing the datasets, and catalogued to provide easy search and navigation.

Country and Regional Case Studies: Best Practice and Lessons Learned

Citizen Engagement in the OECD

Social media has opened powerful new possibilities to public administration for dialogue and cooperation with citizens. The use of social media is exploding globally, but clearly public administrations have advanced in its use more slowly than the rest of society.

Citizen engagement has instrumental value, including better outcomes at lower cost, more innovative solutions, responding to greater diversity, better use of resources and knowledge and higher compliance to decisions. But it also has intrinsic value, including building greater trust and strengthening democracy. Through public discourse and participation comes collective commitment to the impacts of joint decisions on future generations.

Public dialogue and citizen engagement support multistakeholder evaluation of policy-making and increase the quality of preparatory work. At its best, the interactive dialogue can increase efficiency, innovation and genuine accountability, when the work of administrations becomes more transparent.
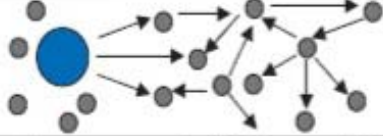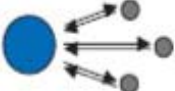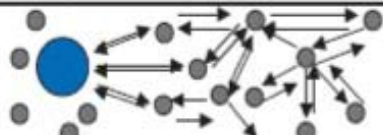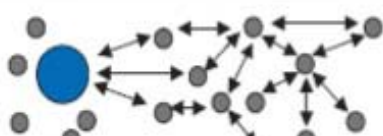
What Is Different Now? Participation 2.0

Previously, governments have thought about the linkages and dialogue between the administration and citizens and civil society organizations from a bilateral perspective and at best as a two-way interaction. In their efforts to inform and engage citizens, OECD countries have used e-tools accordingly.

Examples include information to citizens through websites and e-mails, consultation through online forms or online dialogue and participation with discussion forums. However, this has not been through widespread policies; rather, through individual projects or organizations. There are exceptions among countries and recent good news. By 2007, New Zealand had put much effort into participation 2.0, and developed a large project involving experts from other countries. The result was a comprehensive guide to online participation developed through an online wiki.

Most countries have not taken into account that they are not just in dialogue with isolated individuals. Citizens themselves are interconnected. The following picture, originally from the New Zealand work, describes how e-participation has evolved and should be taken into account by governments.

Figure: Shifting paradigms: from Participation 1.0 to Participation 2.0

Source: State Services Commission of New Zealand (2007), Glossary entry for "Participation 2.0".
Source OECD: Focus on citizens 2009

How citizens interact with each other is crucial to how public administrations should design processes and tools for participation. Government is just one part of the network. In the participation 2.0 world, the tools that can be used are also different. For information, tools like RSS feeds, tag clouds and webcasts are used. For consultation, blogs, online polls and participation through e-petitions, jams, wikis, crowdsourcing and virtual worlds denote the new social media environment. Although these tools are no longer new, few governments actively use them.

For the most part, governments use ICT to inform rather than engage, which suggests that the ideas of dialogues and networks with citizens and civil society are not yet fully in use. Governments can use the participative Web both for their external relations with stakeholders and to improve internal capacities for knowledge management.

In its external use, the government must remember that it competes for the attention of those online. It needs to go where the action is and not wait passively for citizens to come and call. People can be highly connected online but have no connection to government. It is not just a matter of the tools governments use or the actions they take, but that they be present where their citizens are. More important than governments' own choices are the people's wishes and the choice of technologies they prefer to use to interact with the government.

Citizen engagement will also make a difference to civil servants. Social media tools are easy to use, but civil servants need support and training to develop dialogue and interaction skills. Governments cannot expect civil servants to master the new information management skills needed to foster participation without help.

Tools Do Not Create Networks; They Are the Means

Social media tools by themselves do not create networks; they are the means for doing so. For governments, social media may facilitate building new networks and strengthening existing ones. Governments can now feed information to networks and launch consultations, but that information does not stay between the government and its networks – it lives and sometimes dies, transforms or develops further or is clarified by others in other networks that have come to define the public sphere.

Governments are well aware that citizens can use social media to organize e-petitions or consultations where governments are the receiver, not the initiating actors.

What Has Not Changed?

The OECD has worked on principles of open and inclusive policy-making. Whether governments work online in social media or face-to-face with citizens, the same principles apply. The government needs to be genuinely interested; this is not a public relations trick. If governments try to be "cool" by being active in the social media, the effort backfires. As such, commitment is perhaps the most important of these principles.

Commitment means not making promises to citizens that government cannot keep. If there are issues that already have been decided upon, these decisions need to be transparent to citizens. Citizens should be engaged in issues in which they can genuinely have a say.

Core OECD principles include the rights of citizens related to access to public information, legislation, clarity, time, resources, coordination, accountability, evaluation and active citizenship. The OECD countries have reported that they have been most successful in implementing the principles of rights, active citizenship and commitment. They have met with the most challenges in dealing with resources and time for engagement as well as evaluating quality.

The principles are good guidance in the day-to-day, practical work to plan open and inclusive policy-making and in engaging citizens. However, evaluation is particularly difficult in the OECD countries. Both best practices and lesser practices for citizen engagement are necessary lessons. In particular, best practices in the evaluation of engagement in terms of quantity and quality are needed.

Most governments face the challenge of mainstreaming public engagement. Much has been accomplished but citizen engagement is still mainly a separate project, not a factor embedded in daily work. Governments need to mainstream public engagement, develop effective evaluation tools to measure engagement, leverage social media or the participative Web, and adapt public administration principles to support emerging practice.

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This raises the issue of how to build engagement into the functioning of public administration organizations. To solve this puzzle, Finland is raising the issue of participation to the level of strategic importance for the ministries. As such, Finnish ministries are encouraged to make their own civil society strategies. A guide, "How to Make your Ministry's Civic Society Strategy" has been prepared to assist them.

The Finnish Ministry of Interior's Civil Society Strategy

The Finnish Ministry of Interior renewed its civil society strategy in 2009. In this work, it evaluated how the previous strategy from 2005 had worked for the ministry; and collected feedback for civil society organizations on how they saw the strategy and its actions had been carried through as well as what their views were for further developing consultation and participation in the ministry's work.

The ministry's new strategy includes evaluating both the ministry and its external stakeholders on how the previous strategy succeeded; a vision of the ministry's relationship with the civic society; and the strategic targets to accomplish that vision. Goals have been set especially for how to build participation into law; prepare other development projects; develop the participative skills of the ministry's personnel; accomplish the policy of equality; use social media to develop e-participation; and evaluate and monitor the impact of inclusiveness.

What Has to Change?

The valuable lesson in the Finnish Ministry of Interior's civil society strategy is that it is not a separate paper, but is embedded in the functioning of the ministry and linked to its performance management system.

The changes in dialoguing with citizens cannot be accomplished if there is no parallel change of work culture. An organizational culture 2.0 is needed, which also means that civil servants need skills they might not yet possess. Dialoguing with citizens and stakeholders is not a talent everybody is born with. It has not been a cornerstone of classic administrations, which have relied on experts and an expert culture. A new kind of expert culture is needed, where working together is – internally and externally – the password to progress. Civil servants need training and encouragement to acquire these skills.

This new expert culture implies a change in the leadership culture. The focus in leadership is evolving towards enabling the dialogue and supporting the "doing together". It also signifies that leadership training and assessments have to move in this direction. When aiming to increase the use of knowledge produced outside the organization, new know-how is needed.

For the expert culture, it also translates into letting go of old ways of functioning as the way work is done in the administration changes when new more interactive ways of preparing policies are brought in. When there are changes in the interface between civil servants and citizens/civil society organizations, the internal ways of working are reflected; this suggests more inclusive ways of carrying through internal meetings in public administrations. Most of all, the way targets are set and success is measured needs to change. It is a further step forward from input/output measuring towards measuring societal impact.

Singapore: e-Government Strategy over Three Decades

Today, information and communication technologies (ICT) have very much become a part of Singapore's public sector DNA for public administration and public service delivery. Singapore's e-government strategy over the years has benefited the public sector in the form of greater efficiency gains, while Singapore's citizens and businesses have enjoyed unprecedented levels of convenience and cost savings when using public services.

Three Decades of e-Government Transformation

Prior to 1980, the public sector predominantly operated on paper documents and files. The Civil Service Computerization Programme (CSCP), implemented from 1980 to 1999, drove **public sector efficiency** gains through the automation of public service and the development of key IT infrastructures and data hubs.

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By the late 1990s, Singapore saw the convergence of IT and telecommunications and the increased prevalence of the Internet. The e-Government Action Plans I and II brought about a radical change in the paradigm of public service delivery. During the period of 2000 to 2005, ICT drove **public service excellence** with a focus on online service delivery and integrated services to bring greater convenience to citizens and businesses.

Over 1,600 public services were available online by 2003. A concerted push for a more coordinated service delivery followed; government agencies were encouraged to work together to streamline business requirements and provide seamless one-stop services to the public. One such cross-agency integrated service was the Online Business Licensing Service, which provided a one-stop licensing portal for businesses to apply and pay for more than 80 licenses across multiple agencies using a single form. This allowed more than 80% of all start-ups to apply for licenses with ease.

From 2006 to 2010, integration efforts continued to gain momentum, both in terms of service delivery to the public, as well as in backend systems and processes. The iGov2010 strategy focused on driving **whole-of-government integration**. Singapore became the first country in the world to implement a common identification number format (Unique Entity Number) for all entities registered in the country to facilitate their transactions with any government agency.

Internally, a number of shared services were implemented within the government to generate economies of scale and enhance individual agencies' capability in performing their work. For example, more than 11 agencies consolidated their human resources, finance and procurement administration systems into one shared system, ACE (Alliance for Corporate Excellence). The successful implementation of ACE has led to higher efficiency in agencies' HR and finance operations and has resulted in an overall 30% cost savings.

During the same period, the mobile government (or mGov) programme deployed more than 300 government mobile services to ride on the high market penetration of mobile phones to offer customers an additional channel for accessing public services (see Exhibit 1).

Figure 1: Singapore's e-Government Strategy

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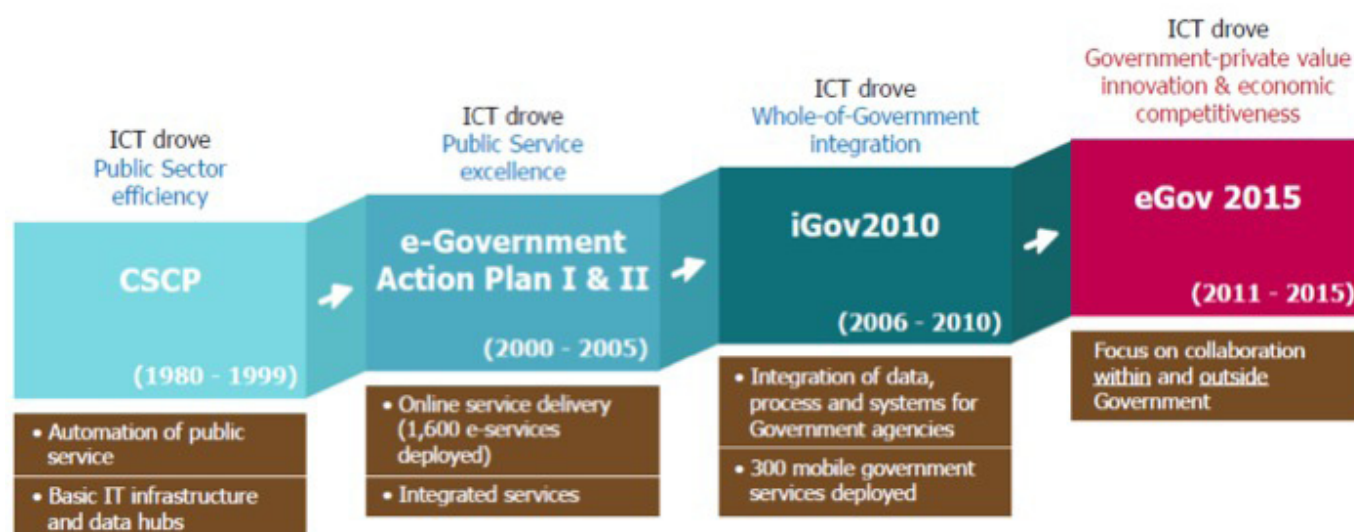
Exhibit 1: Mobile Government (mGov) Programme

Mobile government is one of the strategic initiatives of the iGov2010 master plan launched in 2006, to extend the reach and richness of government e-services to Singapore's customers. Besides the online channel, the government is leveraging Singapore's high mobile penetration rate of more than 140% to deliver more timely and convenient access to government information and services on the go.

One key service implemented under the programme is the OneSMS initiative. A common SMS number 74688 (SGOVT) and a standard short code format for all government SMS-based mobile services (m-services). The One SMS platform has been introduced for many alerts, including notifications for renewal of road tax and outstanding parking fines. Besides receiving SMSs from agencies using the One SMS number, the public can also send an SMS to the same number to access government information and services while on the move, e.g. reporting environmental issues and obtaining contact information of government agencies and officers.

With the trend of increasing smartphone adoption (72% use smartphones as of April 2011), many government agencies have started to deliver feature-rich m-services, including:

- iHealth SG: iHealth SG is a comprehensive guide to all healthcare facilities in Singapore. Produced by Ministry of Health, it contains over 3,000 healthcare facilities like clinics, hospitals, nursing homes and laboratories. It allows the public to use the phone GPS capability to locate a healthcare facility in the vicinity, and even view live webcam images showing the waiting area of various clinics.

- LTA MyTransport.SG: MyTransport.SG allows "live" traffic and public transport information to be accessible via the Internet through popular smartphones such as iPhones, BlackBerrys, Android- and Windows Mobile-based phones. With Location Based Service technology built in, it features a range of services that helps commuters plan a smoother drive or public transport journey.

The Singapore mGov programme has gained international recognition for its innovation in public service delivery. It was presented the Best Wireless Government Award by FutureGov, recognized as one of the world's top 20 innovations by the 2007 IBM Innovations Award in Transforming Government, awarded a finalist for the 2010 Stockholm challenge and received the 2008 Commonwealth Association for Public Administration and Management (CAPAM) International Innovations Award.

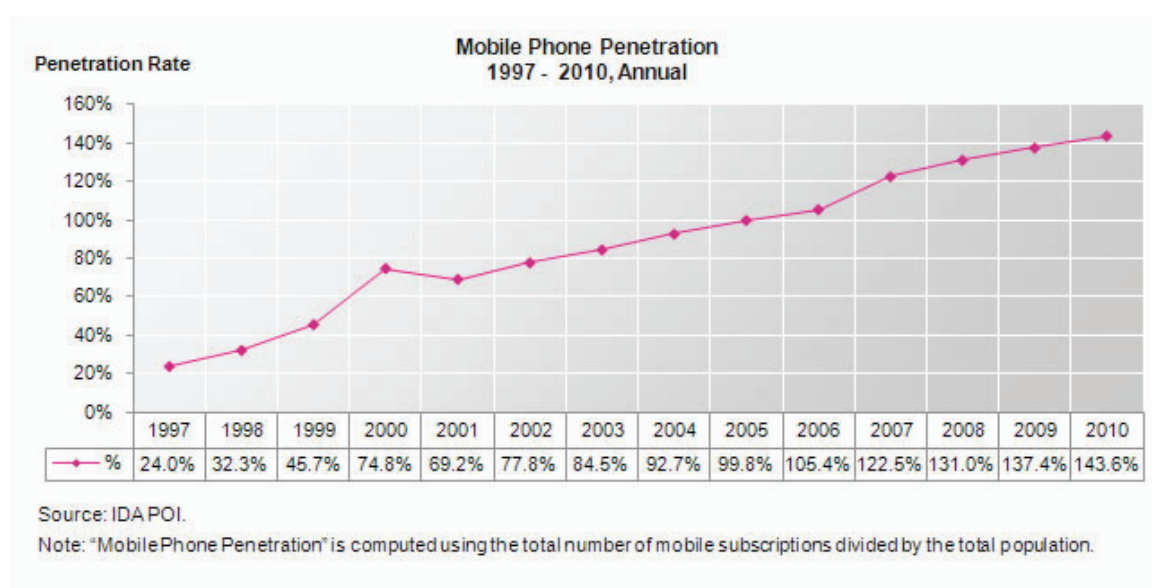***Trends and Challenges Facing Singapore Public Sector Today***

Trend 1: The environment in which the public sector operates is becoming increasingly complex and uncertain. The public sector faces many issues that cannot be compartmentalized and parcelled out to individual agencies. Issues tend to be multi-dimensional and cut across jurisdictions. For example, green issues are prevalent in ICT. The risks of pandemics and environmental catastrophes call for more sophisticated information infrastructures and analytics to be built into policy-making environments and response units. Public officers have to work collaboratively and innovatively across agencies to come up with solutions to such multi-dimensional problems.

Trend 2: Citizens are becoming more sophisticated and better informed. Public officers will have to contend with higher expectations of their customers – both citizens and businesses. Many have become accustomed to the high quality of services offered by the private sector and expect public services to be more integrated and customized to meet their individual needs.

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Trend 3: Technology is becoming easier to use. Over one-half of the Singapore population participates in at least one social media website; the most popular is Facebook, followed by YouTube. Eighty per cent of youths and 50% of professionals use Internet services for communications through instant messaging, social networking and other social media and Web 2.0 communications. This accelerating trend and adoption of ICT have changed the way citizens interact with one another and, more importantly, how they may wish to interact with the government.

The ICT industry in Singapore grew by 11% from 1998 to 2008. From 2006 to 2010, the mobile penetration rate increased from 105.4% to 143.6%; computer access in households increased from 78% to 84%; and the percentage of households with Internet access grew from 71% to 82%.

Figure 2: Mobile Phone Penetration (1997-2010)

Penetration Rate

Mobile Phone Penetration
1997 - 2010, Annual

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
%	24.0%	32.3%	45.7%	74.8%	69.2%	77.8%	84.5%	92.7%	99.8%	105.4%	122.5%	131.0%	137.4%	143.6%

Source: IDA POI.
Note: "Mobile Phone Penetration" is computed using the total number of mobile subscriptions divided by the total population.

Figure 3: Computer Access in Households (2006-2010)

Base: Resident households

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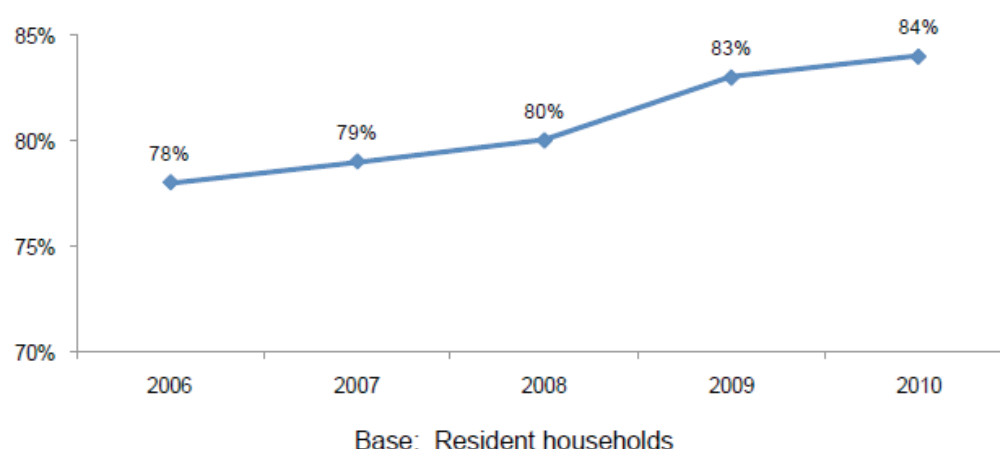
Figure 4: Internet Access in Households (2006-2010)

Base: Resident households
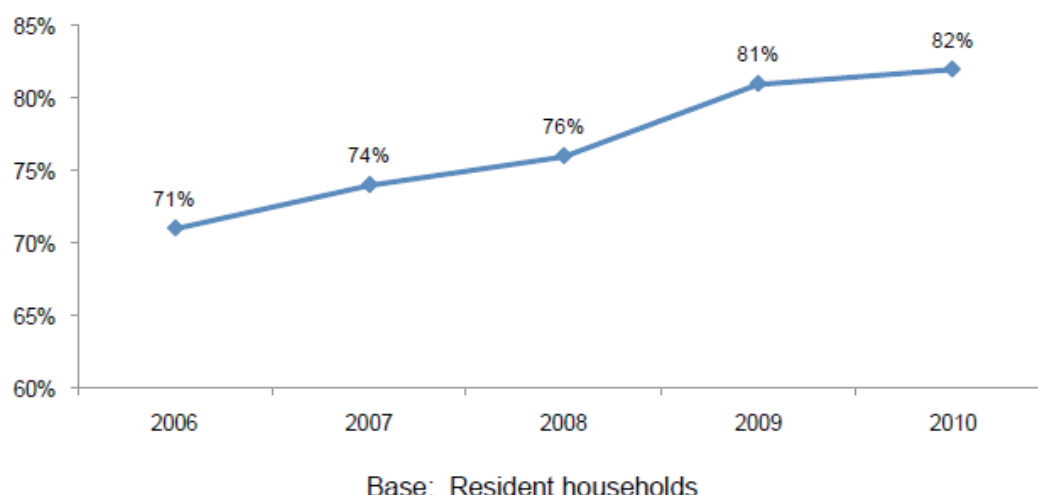
Next Phase of Singapore e-Government (2011 to 2015)

The next phase of e-Government from 2011 to 2015 will focus on collaboration *within* and *outside* government. In this phase, ICT will drive **government-private value innovation and economic competitiveness**. The new eGov strategy will facilitate the major shift from a "Gov-to-You" mindset to a "Gov-With-You" mindset – to **fuel innovation** and **encourage co-creation**. The new eGov strategy will be supported by three strategic thrusts.

Thrust 1: Co-creating for Higher Value
The public sector will work together with the private sector and civil society to co-create for higher value. Today's public services are predominantly delivered in one direction – from government to the customer. Citizens and businesses may no longer be satisfied to passively accept generic products and services. They know better and demand better, and will want to have a say in how things are done.

The public sector should capitalize on this trend to tap into the knowledge and capabilities that reside in the private sector and civil society to co-develop and deliver effective services to meet customers' needs. One of the key e-government strategies embraces the notion of government as a *platform provider*, in addition to its traditional role as a *public service provider*. This strategy aims to encourage participants, whether in the private sector or individuals, to freely innovate and create new value-added services.

One of the ways to encourage development of innovative services is to facilitate access to public sector data. Examples of such services include:
- *Neighbourhood Community Geo-tagging* (by a local Singapore company), which is a location-based community service for its users in which information concerning events in a neighbourhood could be shared with the community. When users indicate their geographical position, they are informed about events, activities and news in their vicinity based on their indicated preferences.
- *Customized Real-time Navigation* provides motorists with routing information as real-time traffic information is processed along with information from users regarding current road conditions.
- *The OneMap Initiative* launched by the Singapore Land Authority in March 2010 serves as an online geo-spatial platform with advanced mapping technologies that allow users to create new applications on a common base map of Singapore. Using the OneMap platform, citizens and businesses contribute information about shops, eateries, recreational activities and landmarks in and around their community. They can also build on this information and create heritage or food trails in their own portal for use by residents or even tourists. One popular service that is already offered under OneMap is SchoolQuery. This service gives anxious parents information on whether their homes are within one or two kilometres of their preferred primary school.

Figure 5: OneMap Initiative (http://www.onemap.sg)
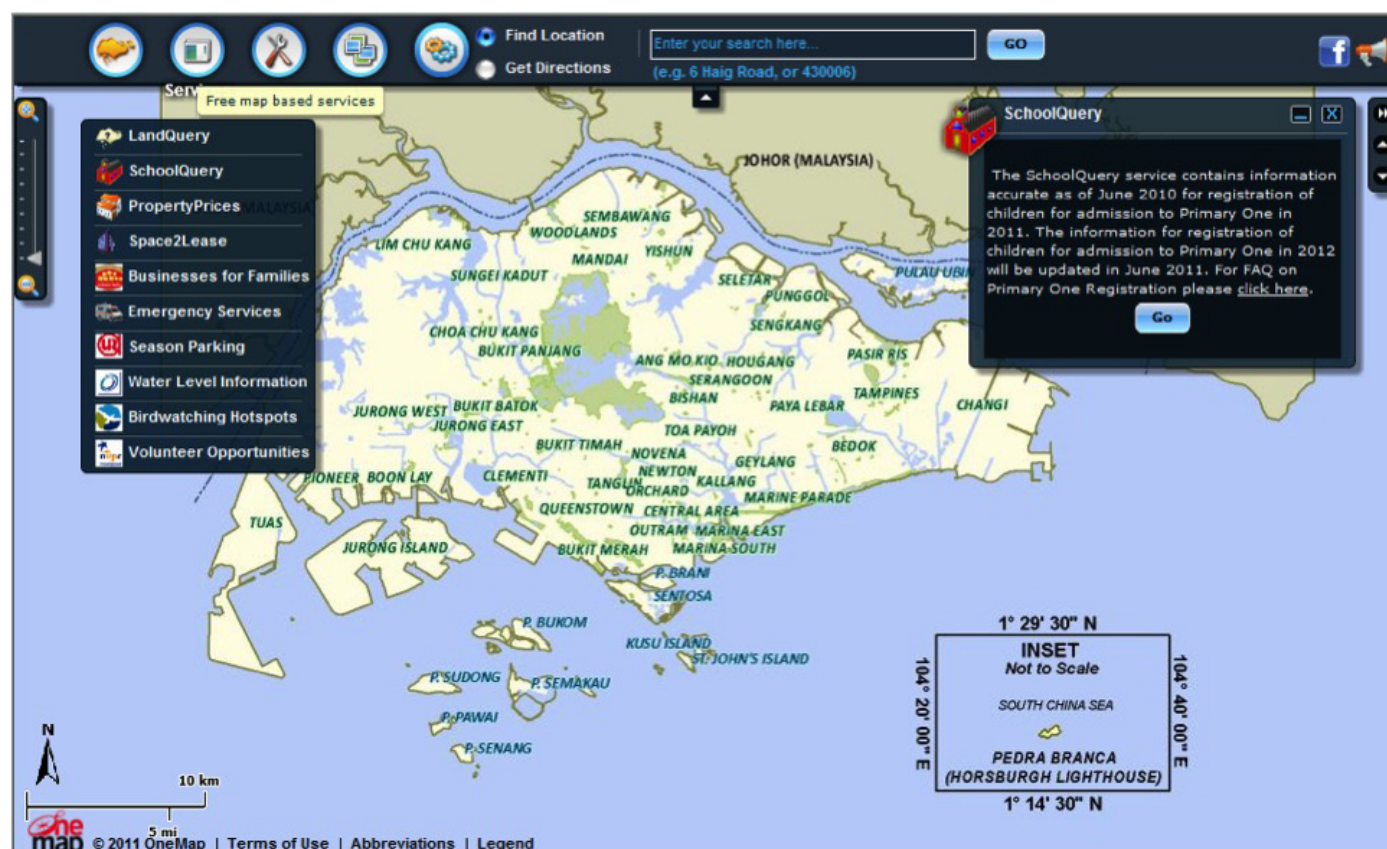
Thrust 2: Connecting for Active Participation
Besides seeking to co-create in service delivery, Singapore will continue to actively connect with its citizens and involve them in shaping public policies. Technology is now providing citizens with new possibilities and platforms for citizen engagement. Social networking tools such as blogs, YouTube, Facebook and Twitter are excellent channels for mass collaboration and reaching out to large segments of population quickly and efficiently.

Singapore government agencies are beginning to use such social networking tools to extend their reach to connect with citizens in spite of the uncertainties, unknowns and even risks involved. In fact, Singapore government's e-engagement platform, REACH (short for Reaching Everyone for Active Citizenry @ Home) has seen an almost threefold increase in suggestions and feedback from the public since it first started (four years ago), largely due to the unit's extensive use of new media platforms such as webchats, discussion forums, blogs, Facebook and Twitter.

Thrust 3: Catalysing Whole-of-Government Transformation
At the heart of the new eGov strategy is a public sector with an effective and innovative workforce operating in an environment that supports inter-agency collaboration empowered by ICT.

The ubiquity of computing demands greater bandwidth. By mid-2012, 95% of Singapore's residential homes and businesses will have access to the new, ultra high-speed all-fibre network capable of up to 1,000 Mbps (1 Gbps) available under Singapore's Next Generation Nationwide Broadband Network (NGNBN). This opens up new next-generation services like telemedicine, immersive learning and interactive video services.

In tandem with the rollout of the NGNBN, Singapore will design and develop the next generation ICT infrastructure for use within the government. The emerging trend of cloud computing enables the provision and consumption of scalable on-demand services such as software-as-a-service and infrastructure-as-a-service.

Cloud computing is a concept that is not new to Singapore. Since late 2005, Singapore has operated a private government cloud – SHINE, providing common ICT infrastructure, applications and services that are used by over 80 agencies. The government will continue to leverage cloud computing and energy efficient technologies in designing next-generation infrastructure to enable increased business agility, higher levels of systems resilience and optimal use of computing resources.

Beyond the underlying ICT infrastructure, Singapore is developing the next-generation workplace environment that is conducive to fostering greater collaboration among public officers. This will build on Singapore's current efforts to deploy a standardized ICT operating environment of the whole public service, which includes a common messaging infrastructure, to desktops and laptops, to common office tools. This standardized environment will open up opportunities and potential for building new capabilities and tools for public officers.

Another focus area Singapore is looking at is the use of business analytics (BA). With the data captured over the years, BA will be strategic in moving government from *collecting data* for service delivery to *drawing new insights* from the collected data for more sophisticated decision-making.

Concluding Remarks

Singapore's new e-government strategy is focused on collaboration within and outside government to spur innovation in the community and in the private and public sectors, to move from "Gov-to-you" to "Gov-with-you" by building platforms and tools and creating a culture for collaboration; stimulating co-creation of public value; and fostering innovation across civil society, the private sector and the public sector.

United Arab Emirates: An Evolving Holistic Approach to Government Modernization

Government modernization and reform programmes have always been at the top of policy-makers' agendas, and the latest economic crisis and regional events (the Arab Spring) have re-emphasized the importance of the role of governments in developing integrated and forward-looking policies, and delivering efficient and effective public services.

Around the world, governments are faced with new demands, new expectations and a fast-growing array of new technologies and tools by which such demands and expectations can be met. In the Middle East region, events in 2011 have demonstrated the increasing expectations of citizens, and the need for tangible and comprehensive reform and results-driven and transparent government.

Depending on the priorities of government, modernization and reform efforts come in multiple forms and go through various cycles – typically swinging between big versus small government (the public sector being called to the rescue when the economy suffers, and urged to "get out of the way" when conditions improve). This reform is often prescribed under large-scale national efforts involving multiple stakeholders and entities.

However, a review of international experience reveals two common factors in government modernization programmes deemed to be successful: a holistic and coherent approach that focuses, drives and synchronizes efforts across the whole of government (and engages the citizens), and the ability of a government to react, adapt and, in many cases, tailor the approach to changing times and different needs. In other words, a joined-up government that is agile and forward-looking.

A number of governments in the Gulf Cooperation Council (GCC)[6] region have already started adopting such a holistic approach in driving their development plans and have achieved some tangible results, with various degrees of success. Over the past decade, the United Arab Emirates (UAE) has pioneered government modernization programmes in the region and shown tangible results as illustrated by the ranking of the country along a number dimensions, together with the economic growth and social developments that the country has witnessed.

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[6] The GCC is comprised of Saudi Arabia, United Arab Emirates, Kuwait, Oman, Qatar and Bahrain.

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As Figure 6 demonstrates, the United Arab Emirates has achieved substantial overall rankings that put it at the higher levels of the regional and global countries along a number of dimensions. Figure 7 demonstrates the Economic Growth that the United Arab Emirates has witnessed over the past decades.

More importantly, the United Arab Emirates Federal Government has been running a balanced budget, and managed to diversify the economy away from the hydrocarbons sector (which amounts to 70% of GDP in some GCC countries). Today, the United Arab Emirates' GDP is made up of 29% hydrocarbons, 16% manufacturing, 9% trade, 6% financial services, 7% transport and communications, 8% government services, 11% construction and 14% other services.[7]

Figure 6: United Arab Emirates Improvement in Global Rankings
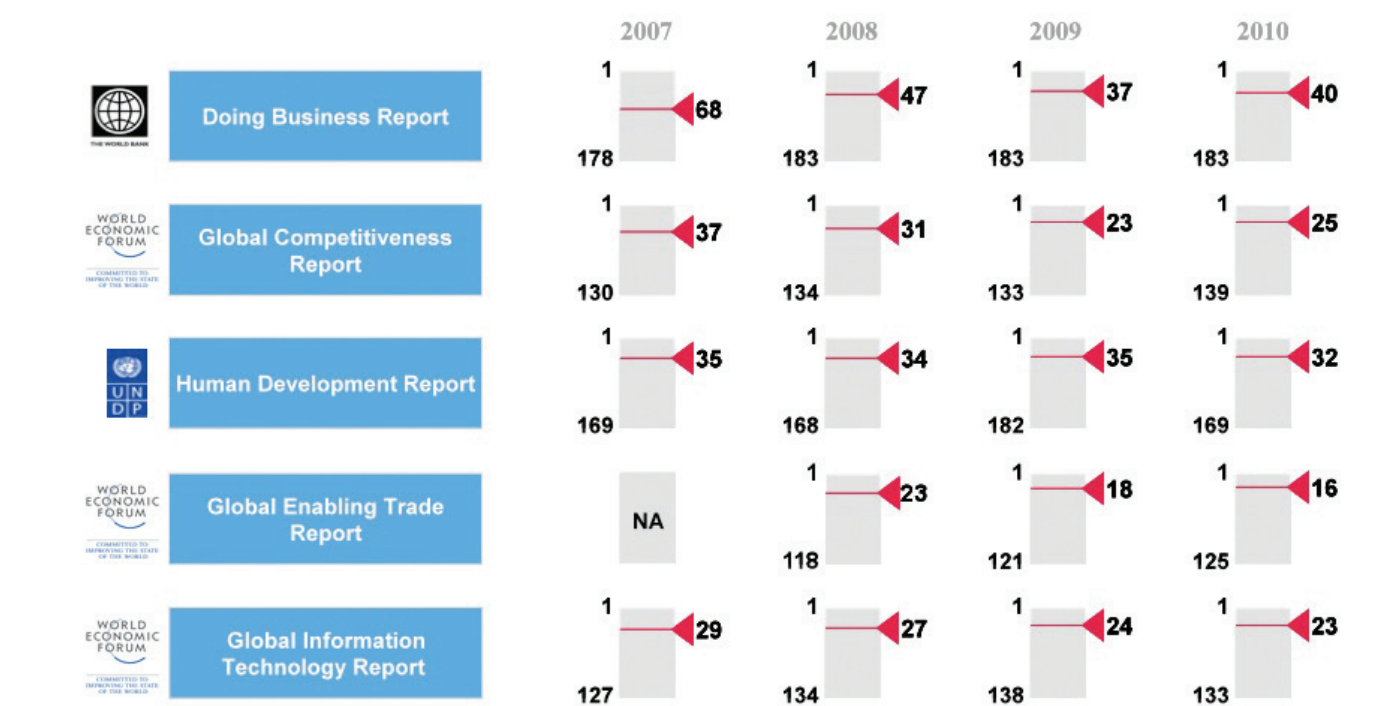
Figure 7: United Arab Emirates GDP
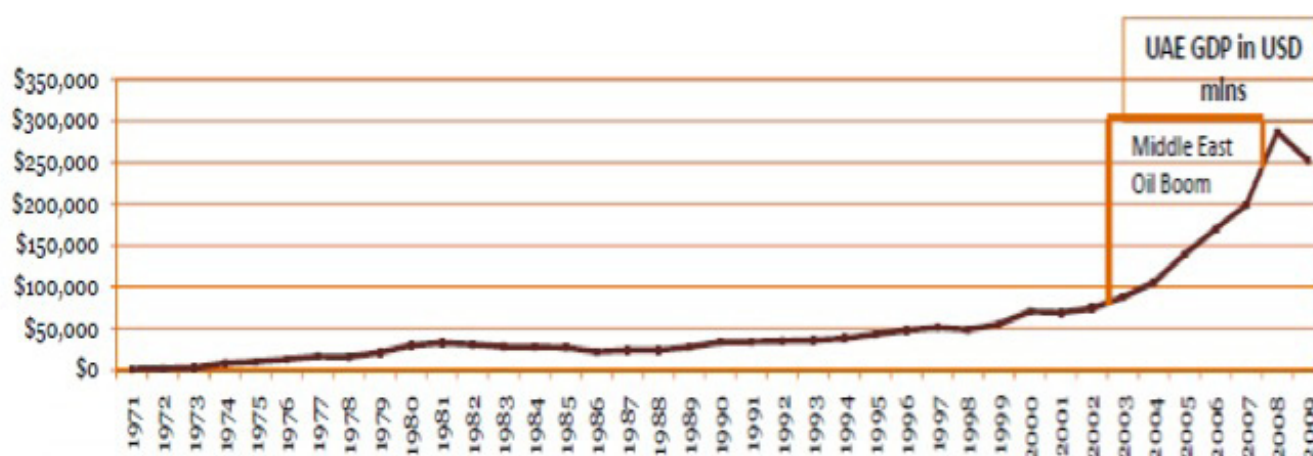
[7] United Arab Emirates Ministry of Economy, 2010

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The growth, improvement in global rankings and diversified economy were a result of a sustained government modernization effort that continues to evolve today. The United Arab Emirates Federal Government has developed its own modernization **"formula"** that fits the current socio-economic status and the wider geopolitical issues affecting the country.

The approach adopted in the United Arab Emirates builds on successful international experiences in Canada, New Zealand and Singapore, and tailors successful policies, tools and methodologies to suit the current developmental stage of the United Arab Emirates and its future ambitions. The following is a brief outline of the two cornerstones of this approach.

A Holistic Approach

Although its importance is universal, the approaches and methods for government modernization and reform are not. A number of governments have undertaken and delivered successful large-scale modernization programmes and managed to drive their countries towards sustainable growth and development.

Central to these success stories is what is commonly known as a "holistic" approach to managing government change that is driven by an agency at the centre of government that champions the overall modernization process, drives its power from the leadership of the country and melds four critical main roles:

1. Championing **overall policy-making** through national strategies
2. Ensuring accountability and proper implementation via proper **performance management** and coordination of cross-cutting programmes
3. Enabling flexibility and continuously **reinventing government** through institutional efficiency and service excellence
4. **Supporting cabinet** decision-making processes and related stakeholder communications

Figure 8 details the four critical roles and outlines the sub-activities in each.

Figure 8: Government Modernization Critical Roles

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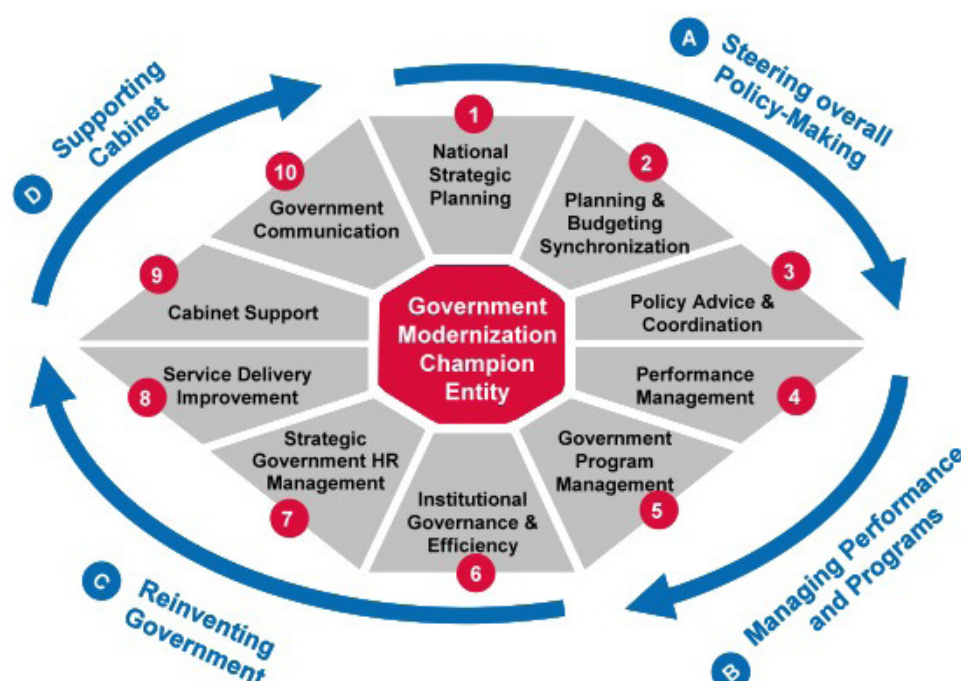
**A Central Policy-making Champion to Support National Planning**

A central entity typically champions and steers the overall policy-making process and direction (focusing on the concept of "champion" as opposed to "lead"); facilitates the formulation of a national vision and strategy in collaboration with key governmental and various stakeholders; and ensures cascading of the strategy from the vision down to the entities' strategic and operational plans through a national planning framework (see Figure 9).

The central entity also supports planning and optimization of resource usage, and coordinates key legislation and policy advice on key topics presented by the line ministries. Moreover, the central entity has national planning responsibilities to support regional development planning efforts[8] (see Exhibit 2).

In the United Arab Emirates, this entity is the Ministry of Cabinet Affairs.[9] In addition to the traditional functions of a cabinet office (i.e. managing cabinet affairs), the is the Ministry of Cabinet Affairs manages the government performance measurement system in all the ministries, agencies and federal institutions; prepares periodic reports for the prime ministers; develops the leadership capacity of the United Arab Emirates government (via focused capacity-building interventions); develops and coordinates efforts to strengthen the competitiveness of United Arab Emirates; and manages the Sheikh Khalifa Program for Government Excellence (a national government awards programme based on scores in the Business Excellence Model).

This wide scope of activities enables the Ministry of Cabinet Affairs to have a cross-governmental view and identify linkages and related issues from human capital to cross-organizational collaboration. This "central" champion has been a key success factor in the development of the United Arab Emirates, and efforts so far have been positive. Barriers between line ministries have started to reduce, allowing for more collaboration and a true joined-up government.

Figure 9: United Arab Emirates National Strategic Planning Framework

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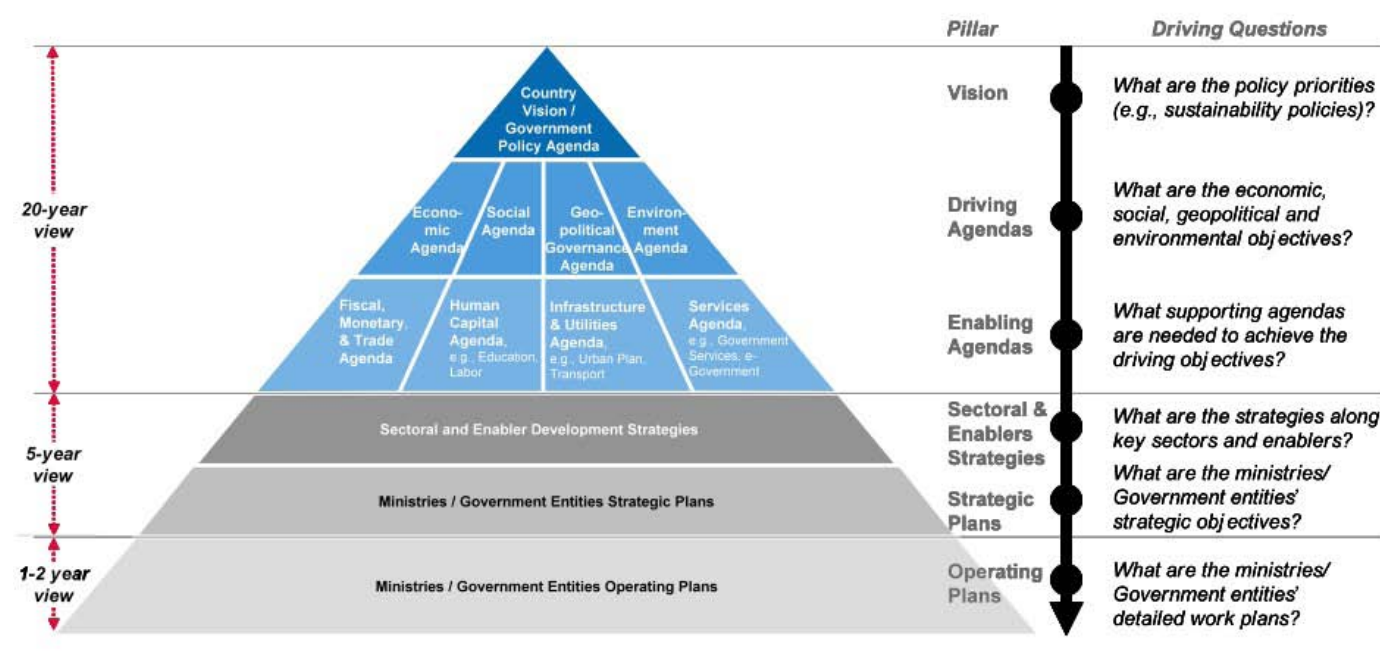
[8] The United Arab Emirates is made up of seven emirates that have their own local government. Each emirate has a considerable degree of autonomy in managing its own local affairs and government budget, within the federal rules and regulations. The two largest of these emirates, Abu Dhabi and Dubai, have achieved notable growth over the past decade and have become regional centres for business and trade.
[9] For more details, see www.uaecabinet.ae

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Exhibit 2: Regional Development Planning

Over the past decade, the two largest emirates in the United Arab Emirates – Dubai and Abu Dhabi – have successfully launched medium- to long-term strategies (e.g. Dubai Strategic Plans; Abu Dhabi Vision 2030) with similar efforts at the federal government level (UAE Vision 2021 and Federal Government strategy 2007-2010 and 2011-2013). More recently, the federal government has taken this step to some of the smaller emirates and supported them in their strategies with the aim of achieving more balanced regional development.

In this spirit, the federal and local authorities have cooperated to design a socio-economic plan for the development of Umm Al-Quwain (one of the seven emirates); the official strategy was launched in March 2011. Support from the federal level was the key to overcoming resource and capability challenges, and ensuring that all the emirates are on sustainable development path (to avoid un-balanced growth and distribution of wealth).

The local government strategy consists of four pillars:

1. **Economic Sustainability** encompasses topics including Umm Al-Quwain's economic base, competitiveness, entrepreneurship and business environment

2. **Infrastructure** encompasses topics including transportation, environment and municipal and housing services

3. **Heritage and Antiquities** encompasses topics including heritage and archeological sites and awareness

4. **Government Model** encompasses topics including Umm Al-Quwain's government map and public sector employment

The strategy promotes sustainable GDP growth by focusing on key sectors such as eco-tourism, fisheries, whole trade, and land and sea transport and logistics, in addition to building the required institutional setup to support this growth. Moreover, the strategy calls for engaging the private sector, growing the emirate's enterprise base, and increasing the attractiveness of Umm Al-Quwain to local and foreign investments.

Other objectives include enhancing local governance, civil service and public service delivery in addition to developing Umm Al-Quwain's transportation system and improving overall waste management.

**Accountability through Tailored Performance Management**

Accountability is achieved by managing outcome-based performance against set plans and closely overseeing the implementation of a few high-impact and cross-cutting programmes, such as national competitiveness or e-government. This performance management role is the key to ensuring follow-up and the accountability of announced plans, in addition to providing selected programmes with the right level of support and buy-in among government entities (see Figure 10).

As is the case with performance measurement, this role is among the most complex as accountability always incorporates resistance and fear of measurement, especially in cross-cutting programmes that are owned by the "whole of government". While these programmes are technical in nature, their successful implementation relies more on negotiation and internal change management (intra-government) and less on large-scale designs and blueprints.

Moreover, the process of designing the performance measures and discussing the targets is as important as measuring actual results. This process not only has proved vital to achieving better understanding of the cause-and-effect linkages in the work of ministries and their policies, but also – in many cases – has caused the review of the policies in place.

The key lessons are to measure the right things and measure things right. Both components are valuable in deciding on each offer's valuable policy insights.

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Figure 10: Performance Management Cycle
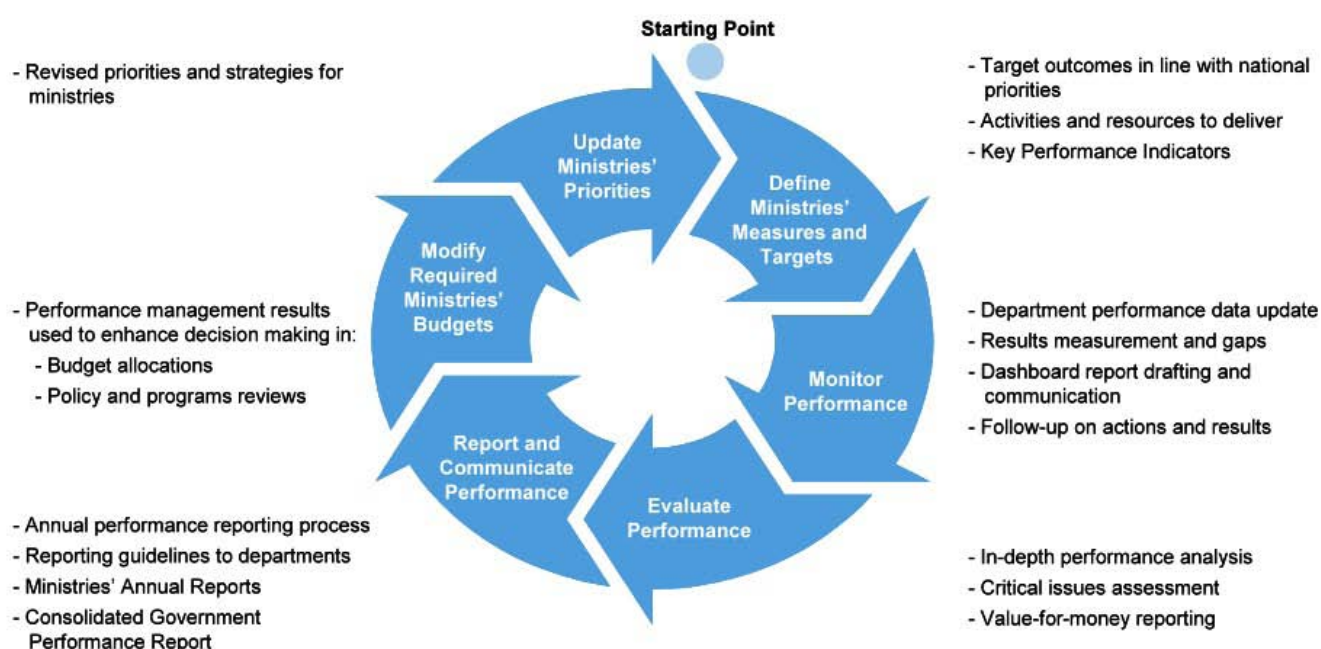
Flexibility for Continuous Change

To keep pace with global and local change, governments need to continuously reinvent themselves. They need to constantly develop and create new and improved versions of themselves through enhanced institutional efficiency to optimize their operating model, including government map structure (see Exhibit 3), targeted strategic human resource management and innovative public service delivery mechanisms (see Exhibit 4).

In the United Arab Emirates, these factors have been key in driving successful reform, as government entities feel empowered (and indeed are expected) to innovate in creating public value, and to continuously improve their delivery. In fact, as part of the overall annual Government Awards process, there are specific awards for innovations introduced at the ministry level, as well as the unit and team levels.

This focus on innovation and continuous improvement has led to notable savings (some even coming from innovations proposed by citizens, as is the case in local government in Dubai). More importantly, it helped break the old traditional mentality about government (bureaucratic, slow to change). In the United Arab Emirates, more and more government officials see themselves as agents of positive change, as opposed to administrators who simply follow procedures (irrespective of changing environments).

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Exhibit 3: United Arab Emirates Government Map Optimization Effort

Governments tend to grow over the years and, in some cases, forget to ask: "Do we still need to do what we are doing?"

Over the past few years, the United Arab Emirates went through a "government map" review aimed at assessing and enhancing the efficiency of the institutional set-up of its government structure. The programme was championed by the Ministry of Cabinet Affairs and involved a large number of federal entities.

Initially, the review of the government map was conducted through an analysis of entities' typology and sector alignment. Entities were classified by organizational type (e.g. ministry, regulatory authority, executive authority, advisory body, state-owned enterprises) according to their degree of involvement in policy-making, regulation and service delivery functions. Consequently, laws pertaining to entity creation were amended to reflect these changes. Moreover, entities were realigned to their corresponding sectors based on their core mandate and latest government trends in sector institutional set-ups.

The government map was revisited with the aim of streamlining operations. Some entities were merged with larger ones; others were created to emphasize the emergence of select topics/areas, such as competitiveness, national statistics and demographics. In some cases, functions were transferred or reallocated among entities. The approach used to implement these changes was initiated with pilot entities' mergers and creation to test the ground and, once successfully completed, paved the way for a set of similar cases.

Like any successful organization, the government needs to reflect on what is done and why, and to consider what should be undertaken but is not. In today's world, the United Arab Emirates Government recognizes that the world changes at a rapid pace, and government need to keep up, if not stay ahead.

Exhibit 4: United Arab Emirates Government Services Delivery Improvement Programme

In response to the commitment to excellence in government services, the United Arab Emirates Government recently launched a new customer-centric services delivery programme. The programme aims to cater for citizens' needs in a convenient and cost-efficient way.

The programme sets clear directions to improve customer experience through effective feedback tools coupled with a more targeted and enhanced service offering. This translates into introducing entity-specific service catalogues and manuals, setting service standards and charters, and bundling services around life events, user groups and topics. In addition, the programme emphasizes the provision of coordinated multi-channel service delivery (e.g. Web and mobile portals, call centre and one-stop-shop) while simultaneously directing customers to efficient Internet-based channels.

Key enablers to the success of this programme are the re-engineering of the underlying service delivery processes and integration of the front- and back-office technology backbone, initially through CRM and unified authentication gateway. Another enabler is the elevation of human capital capabilities through tailored training. Additionally, several underlying initiatives focus on rationalizing government service delivery costs to maximize the value to citizens while ensuring cost coverage.

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Effective Decision-making

Ministries need to deliver effective policy proposals (based on structured impact analysis tools and scenario planning) to the cabinet to ensure timely, coordinated and data-driven responses to the various entities' policy proposals. This enables effective decision-making and supports transparent internal and external communication, which are critical to cascade and disseminate directions.

The effectiveness of decision-making is being enhanced in the United Arab Emirates by focusing on data-driven policies and much effort is being focused on improving data collection and analysis methods, especially using the power of technology.

There is a balance to be struck between excellent data and analysis, and speed of decision-making. This is one area that is constantly under review and improvement; in many cases, speed has proven to be the key factor in national competitiveness, while in others more detailed analysis was the key. While there are various frameworks to guide such processes, it remains an area of continuous improvement in search of the right balance.

Shifting Gears through Different Phases of Modernization

The success of governments that have adopted a holistic approach to modernization and sustainable development – from national planning to performance management and innovative service delivery – hinges on their ability to balance each of the above-mentioned roles and their sub-activities according to the priorities and requirements of the reforms.

The United Arab Emirates' experience makes clear that what is applicable and needed at the beginning of a large transformation programme (e.g. during the foundation setting phase) may not be as effective in other phases. Moreover, responsiveness to change and the external environment may impact how people react to certain practices. This means the government needs efficient and effective feedback loops and "change management radar" to know when to shift gears.

Successful governments are those that have managed to adjust the emphasis of each role within that holistic approach, based on institutional maturity, stakeholder reactions and external developments. For example, in the post-financial crisis period, the focus shifted towards service efficiency and cost optimization. This took precedence over innovation in creating public value.

More focus is now given to performance measures and accountability. Another example from the United Arab Emirates is related to the maturity and experience of the civil service. As internal capabilities are developed, the nature of performance management takes a different angle and becomes less intrusive (shifts from control and monitoring to collaborative dialogue on improvements).

Moving Forward

There is no universal model for government modernization. Success depends greatly on a nation's needs, goals, political structure and history and the make-up of its government. What works for one government may not be the best solution for another. In this context, one of the key lessons in the United Arab Emirates Government example is that the ability to learn and adapt is *the* main capability that a government needs to modernize and continuously improve. No single answer exists; instead, much experimentation and continuous learning are needed.

Regardless of its approach and structure, a holistic methodology seems to bear fruit in most cases. It helps form an inclusive national vision and strategic plan, and then helps execute this plan and monitor progress so that it can suggest and introduce changes as needed. Key is the ability for governments to adapt their approach according to changing requirements and external factors to ensure consistency, inclusiveness and effectiveness in the design and implementation of their programmes.

United States: Open Government and Beyond

The United States has been a leader in digital and e-government even before the beginning of the Internet and Web in the early 1990s. The federal civilian IT budget exceeds US$ 75 billion per year, and the federal government has spent more than US$ 500 billion on civilian IT during the past decade.

As a first mover, the government has had the advantage of several decades of experience, learning and a cultural shift in the mindset of many civil servants and government officials towards tech-enabled, service-oriented, rigorously managed government on a par with the highest standards of high-performing firms.

This shift began with "virtual agencies" – Web portals bringing together information and services from the perspective of citizens developed during the Clinton Administration in the 1990s – followed by the development of 25 cross-agency initiatives during the Bush Administration meant to consolidate and standardize key business functions across federal agencies. The United States has moved forcefully to leverage the potential of digital technologies and media to modernize government. At the same time, the structure of government acquisition processes, budgetary constraints and the sheer scale of the US Federal Government have constrained modernization.

In these and other efforts, the government's conception of e-government has always been deeper than a move towards greater efficiency or delivery of public information and services online. The primary impetus behind three decades of growth is to build the government of the future by examining structures, administrative and business processes, and core operations within and across departments and agencies. Technology is a key enabler. But throughout this period of development, a core refrain has been that "technology is not the solution."

Open Government: Transparency, Participation and Collaboration

President Barack Obama's first official communication was the Memorandum on Transparency and Open Government of 21 January 2009. The memorandum directed the executive departments and agencies of the government to "offer Americans increased opportunities to participate in policy-making and to provide their government with the benefits of their collective expertise and information."

The purpose of the directive is to change the relationship between the US Federal Government and its citizens. The memorandum directed that government officials and "executive departments and agencies should harness new technologies to put information about their operations and decisions online and readily available to the public." The president's approach to creating more effective and efficient government focuses on three principles: government should be *transparent*, *participatory* and *collaborative*.

As ordered in President Obama's initial memo, the director of the US Office of Management and Budget followed the memorandum with an executive directive giving federal agencies a two-month deadline to publish plans for implementing open government and upload initial public datasets to the government's new data website, Data.gov. This is a dedicated one-stop website to bring together all of the public and publicly accessible data of the federal government.

In April 2010, the White House published a memorandum guiding agencies on the use of social media and how to manage content posted on such media. The US General Services Administration published "Terms of Service Process for Free Social Media Products" to guide agencies in their use of social media applications to promote transparency, collaboration and participation.

The website, WhiteHouse.gov, includes the White House blog, extensive information on open government initiatives, an Innovations Gallery and an enormous amount of easily searchable information including the president's budget, YouTube discussions by federal officials and a host of interactive sites.

To implement these commitments to openness, the US Federal Government has accomplished the following:

Data.gov, an initiative to put hundreds of thousands of public datasets in easily used and retrievable form in one location, is meant to democratize access to data. Data.gov was launched in May 2009. By December 2010, more than 300,000 federal government datasets had been posted to Data.gov, providing what the Administration has called "unprecedented

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transparency" in policy areas including healthcare, employment, drug safety, nutrition, air travel, automobile safety and workplace safety.

The public availability of these datasets has been viewed as an incentive for the development of applications, or "apps", using private sector and civil society innovation to make data easily searched and used by the public. More importantly, every major department and agency is in the process of inventorying its data and putting it online. For example, the Department of Labor, the Environmental Protection Agency and Department of Transportation have data catalogues online with even more information that has yet to make its way onto Data.gov.

Open Government Web pages and plans have been developed by approximately 30 federal agencies with the goal of disclosing more information and encouraging public participation in agency activities. Among the most widely used have been initiatives of the Environmental Protection Agency, the Department of Health and Human Services, the Food and Drug Administration and the Department of Housing and Urban Development.

To promote **transparency and accountability**, several agencies have developed "dashboards" that allow the public to monitor and track expenditures and activities using visualization tools, geocoding and mapping to gain precision about geographic data. For example, the Information Technology dashboard (http://it.usaspending.gov/) includes the source code for the IT Dashboard, a set of tools to allow users to analyse IT budget data over time and across agencies.

The IT Dashboard is meant to promote transparency and effectiveness. It has been used by the Administration to identify underperforming IT programmes, including US$ 54 million in information technology projects in the US Department of Veterans' Affairs. Other dashboards track the use of economic recovery funds appropriated through the Recovery Act through Recovery.gov.

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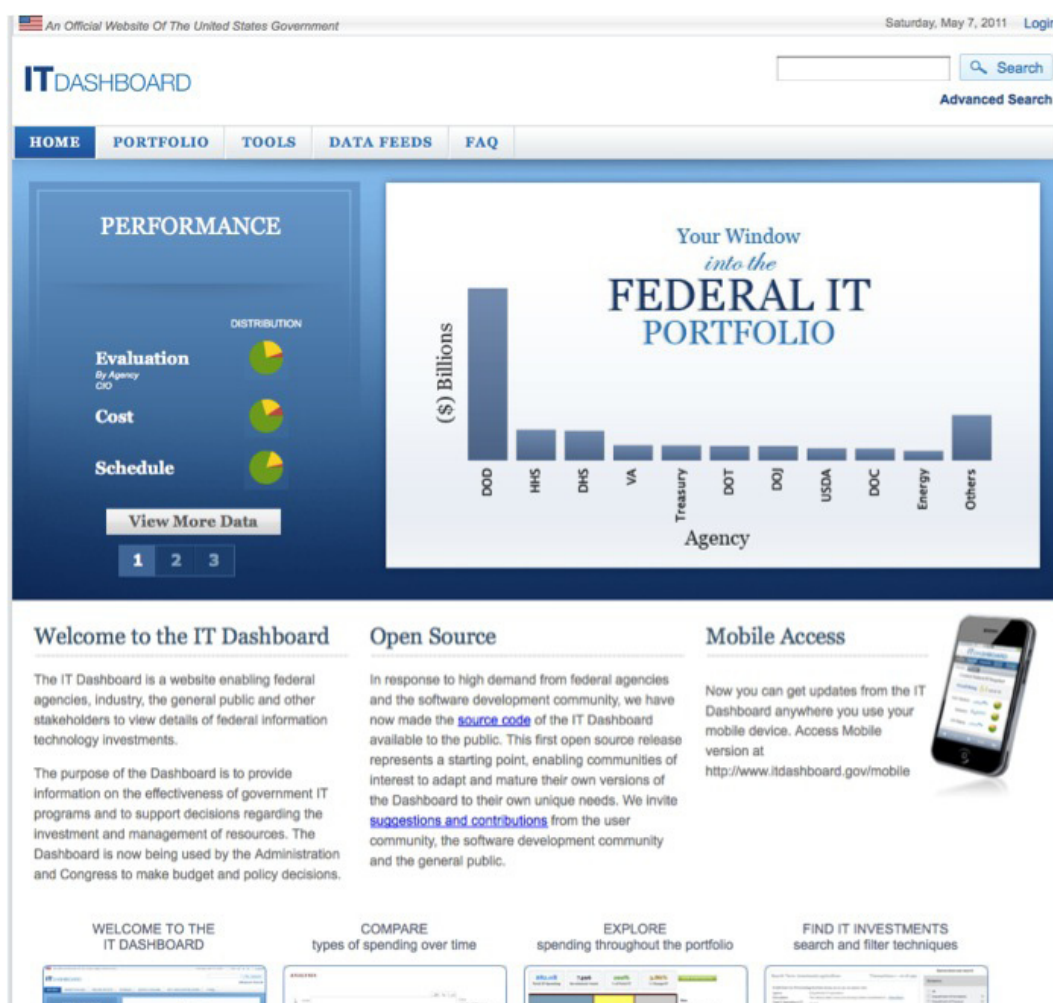
Social media to tap expertise. The Administration has initiated a variety of new technologies, prizes, competitions and new guidance to leverage developments and use of social media to gather expertise from people inside and outside government. The government launched Challenge.gov to allow government agencies to improve outreach and increase collaboration to solve some of the country's most pressing problems.

A second successful example draws on the expertise of federal employees to make the government more effective and efficient. The SAVE Award (Securing Americans' Value and Efficiency) has garnered more than 38,000 proposals from civil servants, many of which are being implemented.

In the US Federal Government, departments and agencies at all levels are using social media and social networks including Facebook, Twitter, YouTube and other Gov 2.0 tools on their websites to promote interaction with citizens, increase the effectiveness of outreach and bring more information to the public.

While the success and utility of these types of tools remains to be measured, it is clear that many have increased possibilities for innovation, transparency, participation and collaboration. Recent examples include:

- The Centers for Disease Control use social media to communicate with the public concerning public health threats such as a salmonella outbreak or the H1N1 influenza virus. Use of mapping and visualization tools allows the public to see the spread of public health threats and their severity by location.

- GovLoop.com began in 2008 as the idea of a federal civil servant who thought there was a need for a social network for the government community to share information. The network now has 40,000 plus members and has been "spun off" as a subsidiary of a private firm, govDelivery, which develops digital communications management platforms for federal, state and local governments.

- The General Services Administration has launched a wiki – betterbuy.fas.gsa.gov – to gather input and crowdsource ways to make the federal acquisition process more efficient and effective. The wiki was used to gather information on the requirements for the data repository Data.gov and has run "pilots" – information gathering initiatives on several questions and projects.

The US Federal Government launched Challenge.gov, an "online challenge platform" for the government to pose challenges to the public. Challenges are particular problems that government is trying to solve. They are posed with a time delimitation for solution and, typically, with a prize or reward if the problem is solved.

In March 2010, the federal Office of Management and Budget issued a memorandum on the use of contests and prizes as an incentive for innovation. The figure below shows the Challenge.gov platform with a challenge from the Centers for Disease Control. The challenge states: "We're looking for an innovative use of technology to raise awareness of influenza and/or educate consumers on ways to prevent and treat the flu."

The challenge requires that the solution involve the use of one of a list of several CDC datasets on influenza including vaccination estimates, flu activity reports and other information. If a satisfactory application is developed, the CDC will pay US$ 15,000.

During the first quarter of 2010, Challenge.gov extended 57 challenges to the public from 27 executive agencies, resulting in novel solutions in the areas of childhood obesity, small business financing, advanced technologies for vehicle and management of type one diabetes.

Challenge.gov is one of many platforms developed by the government to promote collaboration and participation. Early in the Administration, the White House Open Government Initiative launched an online public consultation in three phases. The public brainstormed and produced more than 900 ideas for policies to promote and implement open government.

The brainstorming website allowed people to post ideas and for others to give a "thumbs up" (or down) to produce an overall ranking of the ideas. The second and third phases involved winnowing of ideas and refinement. Based on this initial exercise, the government set up brainstorming sites on every cabinet department and major agency website.

White House openness. The White House has established new levels of openness by posting salaries, staff financial disclosures, visitor records and ethics waivers on the White House website and increasing access to presidential records and initiating reforms to the Freedom of Information Act (FOIA). For example, the Department of Justice established a FOIA dashboard to allow users to evaluate FOIA compliance over time and across 92 federal agencies.

The White House is also modelling new levels of openness by posting online records of the Troubled Assets Relief Program, stimulus lobbying and the Emergency Economic Stabilization Act.

During 2010, the Open Government Initiative developed through the establishment of an Open Government Working Group, which includes a senior official from every executive agency. The focus for 2010 was design and implementation of platforms to promote public participation and collaboration with crowdsourcing and participatory input into the design of these platforms and applications.

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Modernizing Government Operations

In the current economic environment, cost savings, efficiency and productivity are important criteria and complements to transparency, participation and collaboration. In January 2010, President Obama addressed a White House Forum on Modernizing Government and underlined the importance of efficiency: "We've got to get the best bang for every single dollar that the government has in its possession. And when Washington lags a generation behind in how we do business that has real and serious impact on people's lives, when we waste billions of dollars, in part because our technology is out of date, that's billions of dollars we're not investing in better schools for our children, in tax relief for our small businesses, in creating jobs and funding research to spur the scientific breakthroughs and economic growth of this new century. And we know that the tools, the technology, the solutions are out there."[10]

A group of the country's top business leaders gathered with government and union executives in January 2010 to recommend paths for government reform and concurred that strong and strategic management, visionary leadership, in-depth and on-going evaluation of processes, detailed reporting and strong attention to the perceptions of the public are critical drivers of effective government modernization.[11]

The key recommendations echo many made in this report and have transferability worldwide:

Leverage technology to streamline operations. Select the best talent to lead change efforts. Line or programme managers must be as deeply engaged in the change process as technology managers to ensure that changes make sense for programmatic, policy, operational and other key criteria. Establish projects with a 12-18 month time horizon to keep them feasible and practical. Choose the right processes to re-engineer.

Leverage technology to transform service to citizens and the public. Improve measurement and monitoring of citizen satisfaction, as described in a previous section of this report. Use technology to "hardwire customer feedback into operations". Use the design of administrative processes to build in excellent service to citizens. Use technology to allow citizens to help one another through discussion boards, comment features, rating and ranking and other user-generated communication and networking applications.

Maximize technology return on investment. Use careful strategic planning, often across government agencies, to focus analytically on key IT investments. Improve processes for managing the government's IT portfolio of projects. Avoid costly customization when possible. Keep end users and their needs constantly in mind throughout a project. Use rigorous oversight to flag problems quickly and early.

Ironically, the value of economic scarcity lies in its potential catalytic effect on plans to promote greater efficiency, productivity and streamlining. Lessons for sound acquisition, budgeting, strategic planning and public management have remained stable amid dramatic developments in new media and Web-based technologies and applications.

Research and Development for the Future of Government

Through energetic, continuous efforts to develop broader participation and collaboration, coupled with transparency, open government initiatives in the United States will help to make possible "the future of government" related to healthcare, energy, transportation and other complex challenges. For example, the President's Council of Advisors on Science and Technology recently recommended that the government invest in a "national, long-term, multi-agency research initiative on [networking and information technology] for health that goes well beyond the current national program to adopt electronic health records."

This initiative has the goals of making feasible "comprehensive lifelong multi-source health records for individuals"; development of a health IT ecosystem in which medical professionals and the public can obtain and use health information from a wide variety of sources; and development of tools and assistive technologies to allow individual citizens to take greater charge of their own health and healthcare to reduce costs and to promote well-being.[12]

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[10] "White House Forum on Modernizing Government: Overview and Next Steps," March 2010.
[11] "White House Forum on Modernizing Government".
[12] President's Council of Advisors on Science and Technology, Report to the President and Congress, Designing a Digital Future: Federally Funded Research and Development in Networking and Information Technology," December 2010.

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In the areas of energy and transportation, information and communication technologies play a vital role in achieving dynamic power management to promote energy efficiency by providing information on energy use to individuals using single devices to regulation of regional power grids. Development of interoperable standards, using multistakeholder engagement in their development, is meant to promote innovation in energy, transportation and other complex system management by allowing multiple vendors to compete.

Similarly, transportation systems managed with state-of-the-art information, and communication and computation tools promote green, efficient and more user-oriented transportation from surface to air transportation.

As one of the world's leading producers of scientific discovery and technological innovation and a major funder of research and development in networking and information, the United States is making investments in the future of government in a digital age through research on the issues just described, as well as through research on the fundamentals of privacy and data protection; basic understanding of social collaboration and problem-solving in networked, on-line environments; data storage and management; open standards and interoperability required for pervasive digital environments; and development of the technologies and tools of tomorrow.

Lessons from the Asia-Pacific Economic Cooperation Telecommunications and Information Working Group

APEC TELMIN, the ICT ministerial meeting, focused this year on challenging the future of government in terms of ICT sector in the Asia-Pacific region. Several leadership areas of opportunity and challenges were identified for e-governance in the region.

Leadership in government is the top priority and a necessity for e-governance. The key leadership issue concerns implementing ICT use for highly efficient management of governments for new technologies, which can be seen as a way to achieve internal effectiveness and efficiency in governmental operations. The issue includes the broader scope of e-government policies that support implementation, such as the development of legal frameworks, promotion activities, organizations/bureaus involved, budgetary distribution system and the existence of third-party committees for oversight evaluators.

Three priority areas have been identified as ripe for ICT in governance in the Asia-Pacific region: business continuity planning for disaster reduction; green ICT for environment and climate change; and building linkages between federal and local governments.

Business continuity planning (BCP) for disaster reduction. The 2005 Indian Ocean tsunami and 2011 earthquake in Japan highlight the need for early warning and disaster reduction. Both demonstrate the importance of addressing disaster reduction issues far in advance of their occurrence.

Terrorism is also a threat to many governments and can negatively affect their ability to govern. The ever-increasing reliance of government on ICT to provide services suggests that major technological failures as well as malicious electronic attacks can severely interfere with government operations and service delivery to citizens.

Countries that have addressed disaster recovery issues ahead of time respond better when disaster strikes. In light of terrorist threats, natural disasters and cybersecurity threats, governments must review their disaster reduction and business continuity plans.

Green ICT for environment and climate change. In recent years, awareness of the environment through daily contact with air pollution and industrial waste has been increasing, helping to put such issues in the public mind. Some of the more popular environmental issues are the global warming effect and its potential impact on rapid climate change. A number of governments have responded and are looking at ICT as a tool to address environmental problems, as well as making ICT usage itself more environmentally friendly.

Strong mutual linkages between central and local governments. Strong coordination and collaboration between central and local governments are key factors for the delivery of public services and are essential for ensuring

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interoperability, avoiding duplication, ensuring coherent action in a range of crucial areas – such as security and privacy – and providing a framework and capacity for seamless services.

Many countries in the Asia-Pacific are focusing attention on how to collaborate more effectively across agencies and various levels of governments. However, the major impediment that government must overcome is the lack of talented ICT manpower (such as CIOs). One solution is for governments to train local government staff so they can apply their acquired skills to new ICT tools.

The use of social media in the Asia-Pacific region has been characterized by a very noticeable rise in the use of Web 2.0 technologies. This does not refer to an update of technical specifications, but to cumulative changes in the ways software developers and end-users use the Web.

Web 2.0 is commonly associated with applications that facilitate interactive information sharing, interoperability, user-centred design and collaboration on the Web. The technologies and forms based on Web 2.0 include RSS (Really Simple Syndication) and other syndicated Web feeds, as well as blogs, wikis, photo- and video-sharing, podcasts, social bookmarking and social network systems for e-government interactive communication tools. This has resulted in a very real possibility of welcoming Government 2.0.

Governments in Asia-Pacific are still facing major challenges in terms of ICT development. A major challenge for policy-makers at the national and international levels is the digital divide and providing digital opportunity for all. Despite the potential benefits that can be offered by ICT, developing countries face significant obstacles to ICT connectivity.

The underlying causes of low levels of ICT penetration in developing countries include a lack of awareness of what these technologies can offer, insufficient infrastructure and Internet connectivity, expensive ICT access, the absence of adequate legal and regulatory frameworks, a shortage of requisite human capacity, the failure to develop local language content and a lack of entrepreneurship and business culture open to change, transparency and social equality. These problems are reflected in highly uneven growth in the use of ICT across countries.

Why Is Super-fast Broadband so Important? Lessons from the United Kingdom and Elsewhere

In 1981, Bill Gates famously said, "640K ought to be enough for anybody." Since then, the world has transformed; we are fundamentally technology dependent, and customers demand speed. Super-fast broadband enables a wealth of opportunities.

In business, the new opportunity is to provide state-of-the-art technological platforms for new enterprises to drive wealth creation, and localized technology "hotspots". Businesses and governments need faster broadband speeds to innovate, increase efficiency, improve productivity and compete.

Multiple bandwidth-hungry applications must be able to run at the same time and transmit large amounts of data much more quickly and efficiently. Computer processing and file storage must become more sophisticated and secure, using cloud computing technology. The technology will enable faster back-up of computer systems and wider use of high-quality videoconferencing. It will help keep costs low and provide greater control of resources and the quality of services, backed by tighter security management.

In society, the opportunity for a sustainable and inclusive way of living is enhanced, providing citizens with opportunities to live and learn in different ways and interact with government and each other, facilitating the growth of the ICT sector. Home and agile jobs can become a realistic option for many, leading to more efficient working practices and a reduced carbon footprint.

Applications such as high definition and 3D content on demand will become widespread and customers will run not just one but multiple high-definition channels at the same time. This facilitates growth in the development of data-rich, real-time public services, including eHealthcare applications such as remote access to medical experts; enhanced online education and training for eLearning; low-carbon economy ICT solutions such as for integrated smart communities; and the introduction of a range of eGovernment services such as eProcurement.

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A number of international case studies and related research support the positive impact that super-fast broadband can have on a country's outlook. In 2009, the World Bank concluded that cheaper access to broadband is key to economic development: for every 10% increase in high-speed Internet connections, there is an increase in economic growth of 1.3%.

A study by the Public Policy Institute of California (January 2010) into whether broadband boosts local economic development concluded that a 6.4% change in employment growth could be associated with an increase in broadband availability.

Policy discussions about the scale of deployment of fibre and high bandwidth mobile are taking place in every country.

These include at least three core economic factors:
1. Substantial investment is required and there is no airtight commercial case for fibre and 4G; governments and business have to believe that customer demand will follow, and countries estimate affordability and return on investment differently
2. Countries face the challenge of maintaining competition while avoiding a patchwork of local players and ensuring economies of scale can be realized
3. Rural areas must be reached (the "challenge of the final third"), where either full government funding or a public-private partnership are required; this challenges governments to work innovatively, often crafting public-private partnerships

The extent of service and infrastructure competition and public investment varies country by country, but some public funding support is needed, at least in remote areas, to ensure digital inclusion.

The **Government of the United Kingdom** is proposing public tenders for rural area deployment and will offer some public funding (approximately US$ 750 million) to support private investments; avoiding a patchwork of systems with interconnection issues will be crucial. Much more substantial public funding is available in the United States to operators providing services in remote areas, e.g. via stimulus package monies.

The **South Korean government** spent over US$ 3 billion (approximately US$ 200 per household) on first-generation broadband deployment and demand stimulation programmes to 2005, and has plans to spend another US$ 1 billion or more (around US$ 65 per household) on super-fast broadband deployment activities. South Korea's population density is very different from the United Kingdom's, with 40% of the population living in multi-dwelling units (MDUs) and 75% of all new homes being built as MDUs.

Singapore has 1.1 million households; 90% of people live in MDUs. This significantly reduces the cost of deploying fibre-to-the-premises per customer. However, government funding of US$ 750 million – the equivalent of US$ 600 for every household in Singapore – has been required for this deployment. State policy to drive broadband infrastructure will see next-generation access networks cover 60% of homes this year and 95% of homes by 2012.

In **Australia**, the government has created a new, functionally separate entity to deliver the national Next Generation Broadband Network. The Australian government will pay Telstra over US$ 10 billion for the migration of assets (duct, poles, fibre) into the new entity as customers migrate from copper services.

Finland aims to cover 99% of residences with 100 Mbps connectivity by 2015: the Next-generation Access for All policy requires a fibre backhaul connection to be provided within two kilometres of a community, where a "community" is defined as an area with 70 people per square kilometre. However, when the Finnish government kicked off their procurement process for their nine next-generation access lots, three were "no bid" because no operator could make them commercially viable. This implies that a public-private partnership is need in some areas.