Leadership for the New Tough Times:

Priorities for IT-enabled Government Innovation

The Leadership for a Networked World Advisory Group

Report of the Harvard Tough Times Project Symposium held in Cambridge, Massachusetts

HARVARD UNIVERSITY

Foreword

Given an aging population, with government responsibilities growing inexorably faster than available resources, tough times for North American governments and those who depend on them will extend far beyond the current financial crisis. Fortunately, help is available from strategic advances in productivity that are now moving from theory to practice. These improvements will be enabled – in defense, public safety, health care, education, human services, energy and transportation, environmental protection, etc. – by using digital technologies to guide and coordinate new and more cost-effective divisions of labor. What's critical now, and especially for the post-election transition year of 2011, is the leadership needed to bring the new solutions to fruition.

In this report we describe key possibilities focusing heavily on: a) extensions of online services to video, wireless, and self-service approaches; b) new open government possibilities for transparency and collaboration with the public; and c) new ways to mobilize resources and reconfigure the business models of government.

The analysis we offer is the product of ongoing discussion among a diverse group of public and private sector leaders known as the Leadership for a Networked World Advisory Group. Over the past year, this group has engaged in monthly conference calls leading to a two-day symposium at Harvard in May 2010. The symposium was preceded by interactive sessions at regional technology conferences around the country, by briefing papers produced through the Harvard Kennedy School's Leadership for a Networked World course, and by months of online discussions with researchers and practitioners around the globe.

We would like to thank all those who contributed to this work, whose activities were known collectively as the Tough Times project. We especially thank our corporate sponsors – Accenture, IBM, and Microsoft – for supporting the May symposium at Harvard. That work enabled us to clarify the ideas and recommendations of this report.

We sincerely hope that this analysis will contribute to informed decision-making and progress on issues of IT-enabled government for 2011 and beyond.

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As we write in the fall of 2010, we remain in the midst of the toughest economic times since the Great Depression. Since 2008, unemployment in the U.S. doubled to hover around 10%, the worst in 30 years. [1] Government debt as a percentage of the gross domestic product has grown from 70.2% to 90.4%, the worst since the 1950s. [2] Individuals and institutions, by necessity, have become defensive. Governments at all levels are "hunkering down" to protect missions, staff, and budgets. At the same time – in a variety of critical settings – new and more cost-effective IT-enabled approaches to public services and problem-solving are opening up, possibilities that a only a few years ago would have been impossible.

This paper assesses major moves and priorities for our current and future "tough times." We focus on the U.S. and Canada and the window of opportunity about to open as many new administrations take shape in the spring of 2011. Key questions: Which innovations now emerging will offer strategic opportunities for changing the way governments work? As leaders, what should we do to succeed?

While it's too early for precision, it's easy to see that the basic patterns of IT-enabled innovation are shifting. Yes, we'll continue to expand the internet and the services we deliver over it. But beyond such obvious "next steps," we'll also create more dramatic changes in the global division of labor. We'll increasingly provide support functions like information technology to take advantage of enterprise-wide or internet-wide ("cloud") economies of scale. On a grander stage, we'll reconfigure major segments of health care, education, energy production, international trade, and the fundamentals of government transparency and accountability. We'll do this – most fundamentally – because we can and we must. Global competition will be the big driver. [3]

This report is based on a series of surveys augmented by face-to-face and online dialog among federal, state, local, and international researchers, practitioners, and leaders. [4] It presents: a) our definition of the tough times problem, b) a framework for analyzing solutions; c) a description of eight emerging moves; d) an assessment of the risks, returns, and priorities of those moves; and e) our recommendations and conclusions.

The Innovation in Tough Times Problem

In government, as in all endeavors, we get better in the short term largely by executing well what we already know. For the long run, however, it's more important to learn new ways of working. Innovation in the value chain is essential for long-term progress. [5]

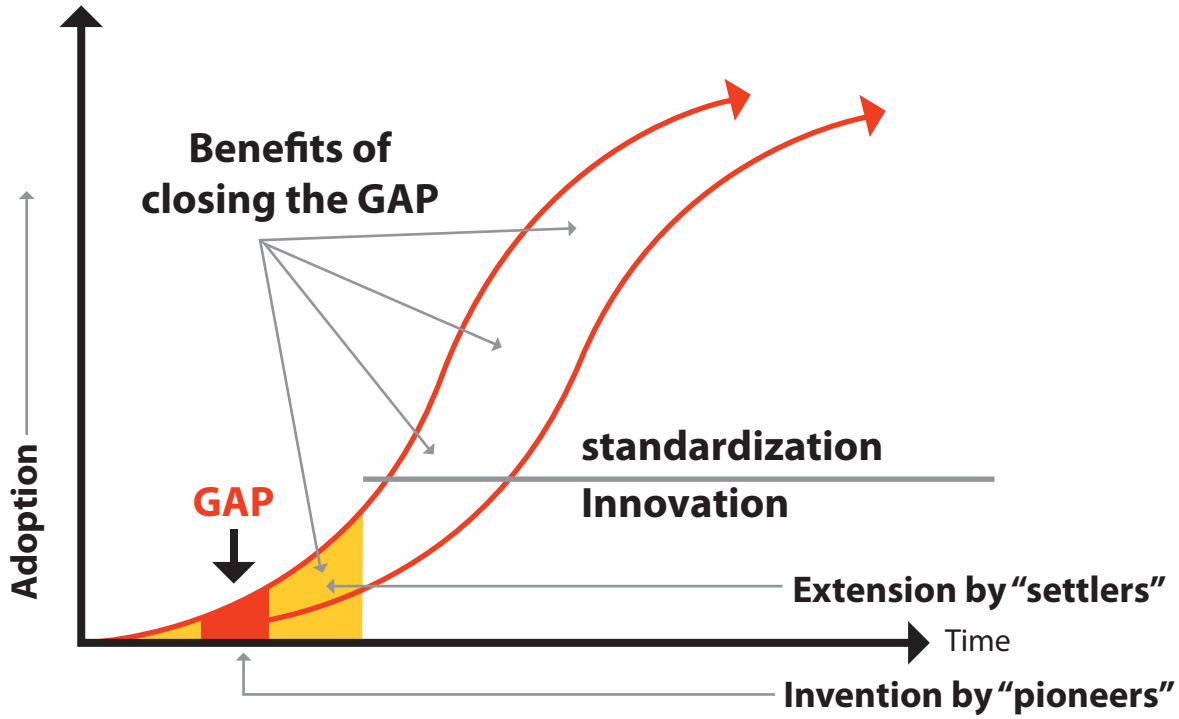
Two major – and arguably THE major – constraints on innovation are: 1) conflicts between potential winners and losers, and 2) poor communication between the "pioneers" who develop new approaches and the "settlers" who later make the new ways more reliable.

Those threatened by innovation – those who fear for their position or power – often hold strong positions in the status quo. In normal times, these resisters may be able to block progress because supporters are not sufficiently mobilized to weigh in, even though potential supporters are more numerous and represent the public interest. In tough times, however, widespread pain can change the dynamics. Enough supporters may be mobilized to shift the balance. A "burning platform" makes implementation easier. As White House Chief of Staff Rahm Emmanuel and others have noted: "A crisis is a terrible thing to waste." [6]

Inventing solutions, however, doesn't do much if the gap between pioneers and settlers takes too long to fill. What's also essential is finding ways to make the slower moving settlers more comfortable and competent as adopters of the new ways of working. If supporters can be mobilized and settlers can quickly see that innovations are reliable, then we can shorten the lengthy gap between pioneers and settlers. This creates value as the innovation "takes off." In this way we can improve productivity, protect the disadvantaged, increase transparency, and gain other benefits.

Figure 1

Benefits of Closing the Gap between Pioneers and Settlers.



Value from IT-enabled Work Processes and Governance

Our goal was finding new ways for governments to create value via information technologies. To do this we needed to define the values that governments care about. Equally important, we needed to identify moves – i.e., new ways of working – and assess their impacts, pro and con, on those values.

Values at Stake

The value we seek to maximize is for the public -- i.e., for any and all members of the community. It can be captured by individuals (food eaten, clothes used) and/or flow beyond individuals to the larger community (national security, environmental protection, health). We focused on the following categories:

- **Productivity,** or the value produced per unit of resources utilized (education per unit of educational effort, security per unit of security effort, etc.). While technology investments have often fallen short of their productivity targets, research identifies IT-enabled innovation as the biggest single factor behind productivity growth since the early 1990s. [8]
- **Equity,** or fairness in distributing results to individuals and groups (i.e., the distribution of income, wealth, opportunities, etc.). While the knowledge-based economy has thus far resulted in larger gaps between the very rich and the middle classes (in the U.S., at least), the potential for IT-enabled education, health, and employment will be key for a more equitable future. [9]
- **Legitimacy,** or the degree to which the public trusts that government is accountable to the public and is not corrupted. We need government to steadfastly serve the general interest. While transparency and accountability become more difficult as complexity increases on many fronts, digital information and analysis can counterbalance complexity. [10]
- **Predictability,** or the degree to which the results of an innovation can be known in advance. Greater predictability helps us strike a better balance between the upside potential and downside risk of proposed innovations. Information and analysis can improve predictability. [11]

> *This study was organized under the belief that if and when enough pressure for change combines with innovations that are enough better than merely hunkering down, then major changes become possible, indeed likely.* [7]

To assess a mix of the above -- as must be done in setting priorities -- values need to be aggregated with tradeoffs understood. If, for example, we could improve police productivity in combating terrorists, but only with a reduction in the transparency needed to keep the police from overstepping their authority, would that on balance be a good thing? Such judgments are typically difficult and controversial.

Major Moves

IT-enabled innovations are composed of many elements: the technology used, the size of the investment, the roles played by various parties, whether the target is a staff function (budgeting, legal work, human resources) and/or a line service (high school math, tax collection, bridge repair, environmental regulation), etc.

For this study we focused on two characteristics. These were NOT based on the technologies used – e.g., hardware, software, data, or communications. We started instead from a belief that the major impacts of technology-enabled innovation – much as they have been in the past – will be created from new divisions of labor. Based on this belief, we focused on moves to change work processes (i.e., decisions about matching people to tasks in the value chain) and governance (i.e., decisions about resolving conflicts to produce the greatest value).

We first identified process reforms. [12] In general, information technologies create value by supporting new patterns of specialization (allowing individuals to apply their comparative advantage and learn through repetition) and scale (allowing the group to grow larger in settings where bigger is better). Our process targets, running from smaller groups with narrower relationships to the opposite, were:

1. Delivery, or steps that take a service to the place where value is released
2. Production, or steps inside government that produce a service
3. The extended value chain, or steps throughout an industry or policy community that produce and regulate services
4. Infrastructure, or the steps and resources -- standardized data, processing, and communications, etc. – that are shared across multiple programs, agencies, industries, and policy communities

We also identified new ways to govern work, especially in the face of disagreements. In general, information technologies support governance by showing people where they stand relative to goals and/or by supporting the processes and people given authority to make binding decisions on behalf of the group. [13] Our governance moves, ranging from least to most reliance on authority, were:

5. Feedback, or providing information needed to understand current status and to learn how actions influence results
6. Collaboration, or having groups work together to make sense of data and to negotiate decisions about goals and implementation
7. Standards, or rules that apply impersonal authority for pre-authorized coordination (drive on the right-hand side of the road, etc.)
8. Authority, or the decision rights the community allocates to individuals or organizations

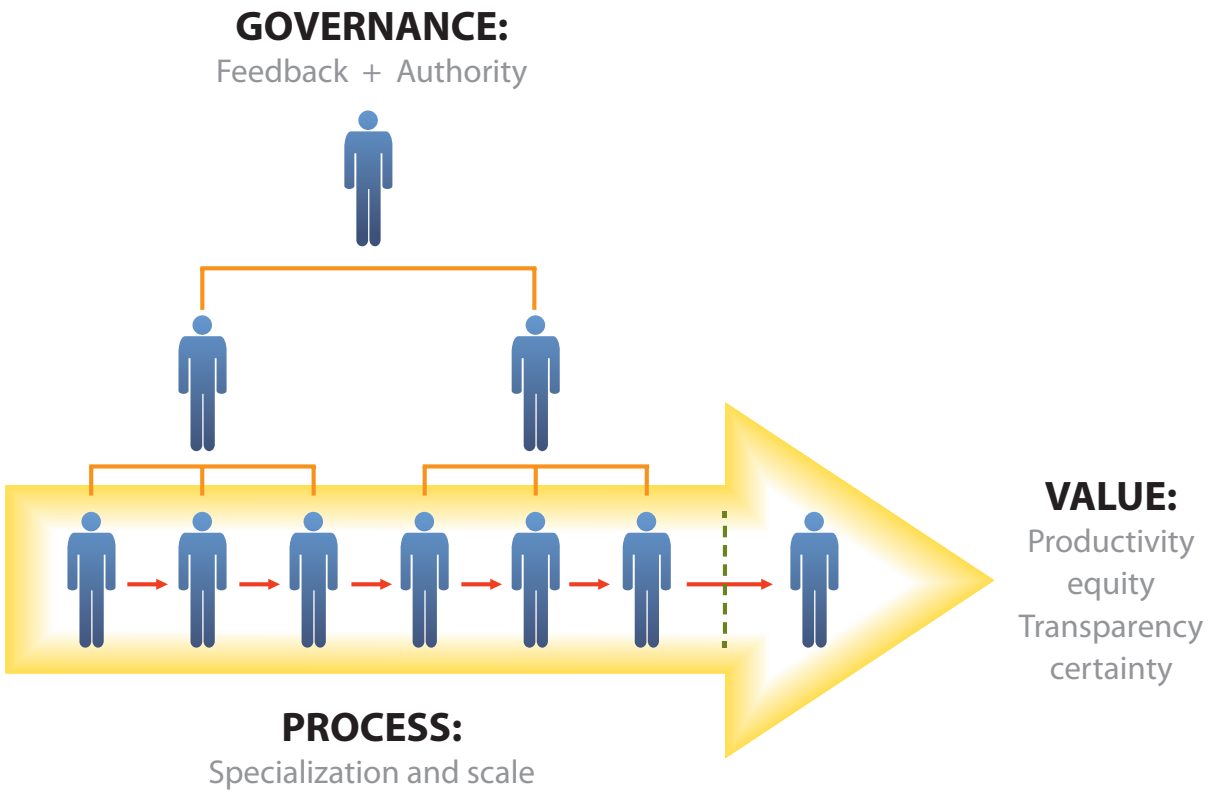
Effective innovations typically involve changes in both work process and governance. Innovations like online government services, for example, require that the public use computers and that the government produce services to be delivered over computer networks. Fundamentally, innovations require that some people change their behavior to make the new system work (process), and that we resolve issues when we don't agree (governance). While both process and governance are involved to one degree or another, we found it useful to analyze each of the "major moves" individually.

Analysis and Assessment

Our analysis relies primarily on observations and judgments from practitioners. We explored case studies and collected survey data. We made sense of the available information through face-to-face and online dialogs. Of critical importance was the process of drafting, discussing, and then revising this report. In general, we explored the value production system outlined below.

Figure 2

The Value-Creating Work Process and Governance System

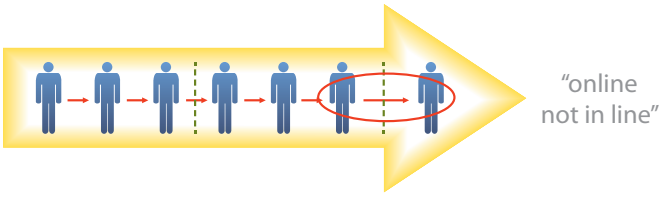


Our goal was to identify IT-enabled innovations that will soon become strategically important. Below we describe the process moves first and then the governance moves.

Work Process Moves

For each move we defined what it meant, explained its status, described where emerging practice seems headed, and then provided an example along with our thinking about benefits, costs, and risks (compared to the "do nothing" alternative).

1. Delivery – to video and wireless services and interactive delivery



What is it? Delivery involves using IT and particularly the internet to improve interactions with the public – i.e., the last few steps of the value chain.

Where is it now? Over the past two decades we have invented and then begun to use the web to offer many services via "online, not in line" channels. [14]

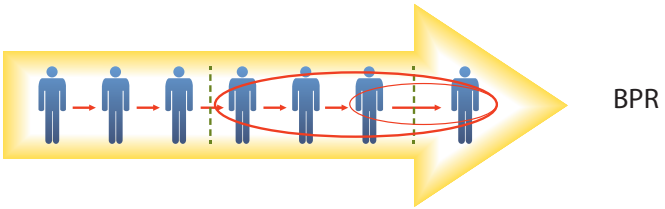
Where is it headed next? Online services are moving to video and wireless options, along with new opportunities for interactive and self-service delivery (where the public becomes a service co-producer, not just a passive recipient). Think parking tickets you pay by yourself online rather than using a teller. [15]

Key example? The Obama campaign effectively utilized web 2.0 technologies to mobilize support for co-production. While the challenges and constraints are clearly different for governments than they are for campaigns, similarly interactive approaches are now being explored for broader application. How about an "online Peace Corps," computer-mediated public dialog on budget issues, mobilization of volunteers for community self-help projects, and other IT-enabled ways to make it easier for the public to participate in problem solving? [16]

Benefits, costs, and risks? Service delivery innovations benefit from a longstanding coalition between the technology community and public leaders. Online interactivity can mobilize supporters at relatively low cost, especially via self-service. Cutting back on online services at this point would be dangerous because the public demands online access and because online services are less costly than traditional channels. However, public support raised online may be hard to sustain; many leaders worry that interactivity and civic engagement may get out of control. [17]

2. Production – to enterprise-wide shared services

What is it? Business process redesign uses IT to support smoother workflows that take advantage of enterprise-wide economies of scope and scale; the target is the value chain of the work that has traditionally taken place within government.



Where is it now? While work process redesign within government has sometimes been successful, especially for technology and back-office services, the public sector has lagged considerably behind the private sector on cost-cutting reforms. True "reengineering" has been largely a private sector phenomenon.

Where is it headed next? The economic crisis is now pushing governments to enterprise-wide consolidation and shared services, especially for human resources, financial management, procurement, IT and other support functions. These functions are turning to cost-cutting via economies of scale. [18]

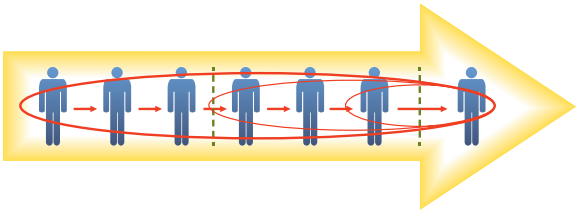
Key example? Having faced tough times earlier and more urgently than others, the state of Michigan has implemented an impressive series of consolidation and standardization projects for statewide IT services. [19]

Benefits, costs, and risks? Shared services have been shown to be efficient, reliable, and professional, especially when implementation takes advantage of the change-management lessons of both public and private sector pioneers. Doing nothing on tough consolidation issues is no longer an option. Departmental stakeholders, however, still worry about poor responsiveness from distant central suppliers.

3. Extended Value Chain – to reform entire industries and policy communities

What is it? Governments can be powerful agents for catalyzing cross-boundary transformation throughout the value chain -- i.e., not just

for the work within government, but within and among the many independent institutions that interact in delivering health care, energy, counter-terrorism, education, emergency response, environmental protection, and other services.



Where is it now? Governments have primarily focused on procurement and supply chain improvements; these are "close in" segments of the extended value chain.

Where is it headed next? While procurement and supply chain reforms remain critical, the most dramatic reconfigurations are "ripe" larger targets such as health care, green energy, counter-terrorism, and education. [20]

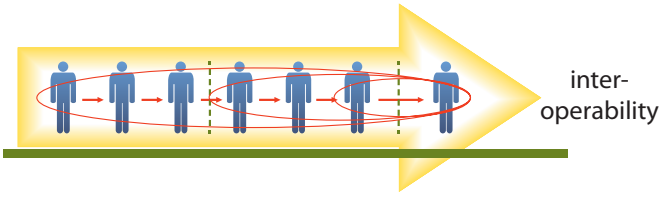
Key example? The work on electronic medical records requires serious change not only within government, but among patients, laboratories, hospitals, doctors' offices, insurance agencies, and government programs. Years of innovative work on technologies may soon be given both urgency and power in alignment with the recently passed health care reforms. [21]

Benefits, costs, and risks? As the unit of change moves to become major segments of entire industries, the potential benefits grow huge. Unfortunately, however, for individual governments or leaders, the risks also grow more formidable. The process of "creative destruction" is clearly risky at this scale.

4. Infrastructure – to extend access including broadband and wireless

What is it? Information infrastructure is the standardized "platform" of interoperable channels, routing, processing, and data. It supports transactions and sharing of information among extremely broad groups of individuals and institutions.

Where is it now? Over the past 20 years, the Internet and web have grown explosively, but many people and types of information are yet to be connected. [22]



Where is it headed next? Information infrastructure is expanding to improve broadband and wireless access, especially in the U.S. where high-end capabilities have lagged relative to other nations.

Key example? Many jurisdictions are building broadband and health infrastructure via the American Recovery and Reinvestment Act (ARRA). [23]

Benefits, costs, and risks? Largely because the bulk of internet investments are funded commercially, government can provide information infrastructure at low cost and risk compared to other infrastructure such as transportation. What the government typically does is promulgate standards and regulations that allow private networks to interoperate, thus gaining the economies of scale that used to require huge government investments. [24]

Governance Moves

We also explored four governance moves. These are required to coordinate work, especially when the parties involved can't agree.

5. Feedback – to release government data in computer-readable form

What is it? The concept is to improve performance by making it easier to see what's going on and where things stand relative to goals.

Where is it now? Governments have long worked to improve data sharing and performance measurement within and among agencies. More recently, information sharing has been greatly boosted via web sites and projects like CompStat and CitiStat (where digital tools have been aggressively used in analyzing police and other operations problems). [25]

Where is it headed next? The new idea is to release "all" data in computer-readable form unless privacy and security concerns intervene. To make data useful and government more transparent, some governments are encouraging the development of new applications to tap into and analyze the data.

Key example? Recent initiatives include the award-winning "Data Feeds" program of the District of Columbia and data.gov and usaspending.gov in the U.S. federal government. [26]

Benefits, costs, and risks? Releasing data can improve service effectiveness (e.g., GPS data from buses allows riders to make better connections at bus stops); more important, it may generate trust through transparency and accountability. Many worry, however, that releasing raw data will lead to "gotcha" analysis, reducing rather than increasing trust, at least in the near term. [27]

6. Collaboration – to engage many more people in dialog and decision-making

What is it? Collaboration is the process of having people work together to analyze problems and then to possibly make and implement decisions.

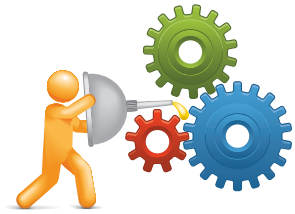
Where is it now? Technologies such as email and the web have greatly expanded the size of collaborating groups; the world of carbon paper, for example, engaged far fewer people than are reached via email and the web. [28]

Where is it headed next? Collaboration is moving toward "massive" collaboration – i.e., working with much larger groups inside and outside of government. Individuals can be engaged via blogs, wikis, and other Web 2.0 tools. [29]

Key example? Wikipedia is an astounding example of large-scale collaboration. Its effectiveness has spawned government-focused analogs such as Intellipedia, Diplopedia, and others. [30]

Benefits, costs, and risks? Up to a point, collaboration increases the probability of finding better answers and getting them accepted. Even with Web 2.0 technologies, however, groups that grow too large can make it harder rather than easier to reach a decision, and harder for individuals to feel they have been properly heard.

7. Standards – to develop a trustworthy and open "cloud"



What is it? Standards provide prior authorization that coordinates without the dependencies and delays of waiting on ad hoc decisions from a common superior.

Where is it now? Internet standards – especially TCP/IP and HTML and, more recently, XML – have dramatically increased information sharing. [31]

Where is it headed next? Increasing use of audio and video requires high speed/low latency communications; standard approaches will be needed to improve the quality of high-speed communications while at the same time preserving the open and competitive access historically protected by Internet standards.

Key example? Software and hardware are increasingly available at internet-wide (or "cloud") scales of operation; this raises powerful new opportunities, but also raises new issues for privacy, security, and openness. [32]

Benefits, costs, and risks? Much as TCP/IP and HTML have created benefits in the past, new standards will be critical for the future. Decisions about such standards are difficult, however, because of risky uncertainties; many standards don't "take off," while others create monopoly power not well aligned with the public interest. [33]

8. Authority – to create new processes and organizations

What is it? The authority of the community to regulate behavior is often applied through the creation of new processes and organizations.

Where is it now? Over time we have created an extensive body of laws, regulations, and organizations to protect the public; on IT issues, we have focused most heavily on the authority of Chief Information Officers. [34]

Where is it headed next? We are moving now to create processes and organizations to govern "cross-boundary" relationships – i.e., those involving parties from different organizations or jurisdictions. [35]

Key example? Government budgets need to better allocate attention and resources to long-term, cross-boundary innovations – the type of investment most likely to yield major future benefits. [36]

Benefits, costs, and risks? Defining new authority may be our most critical Information Age task. At the same time, gaining support for new processes and organizations is a risky political challenge; predicting and controlling the behavior of new governance entities is problematic at best, and often avoided because of these uncertainties. [37]

* * *

The above innovations are all at a relatively early stage. They are now being implemented by perhaps one in twenty jurisdictions. While leaders are interested in what such innovations may eventually hold, most are not ready to implement them today.

The key issue then: Given the new tough times, what are the relative risks and returns of the above ideas? Which should be included now in action portfolios? If "pioneers" have shown that the above are effective somewhere, how can we help the "settlers" learn to follow-up more quickly and reliably?

Risks, Returns, and Priorities

Sequential surveys followed by online and conference-based discussions have produced rankings of the eight major moves as summarized in Table 1 below.

Table 1

Value and Feasibility Rankings of Eight Major "Moves"

Eight Major Moves	Value	Feasibility
PROCESS MOVES		
1. Delivery: to video and wireless services and interactive delivery	2	2
2. Production: to enterprise-wide shared services	3	5
3. Extended value chain: to reform entire industries and policy communities	1	8
4. Infrastructure: to extended access including broadband and wireless	4	1
GOVERNANCE MOVES		
5. Feedback: to release government data in computer-readable form	8	4
6. Collaboration: to engage many more people in dialog and decision-making	7	3
7. Standards: to develop a trustworthy and open "cloud"	6	7
8. Authority: to create new processes and organizations	4	6

In using the above assessments, a broadly accepted approach is "feasibility first" – i.e., because all moves are difficult in government, and because visible progress is essential for maintaining support, first assemble the steps likely to show early results. Push for value, but keep in mind that feasibility is the foundation of success. Politics is the art of the possible.

After enough predictably successful moves have been included, focus can turn to higher value, riskier options. Tough times increase the risk of doing nothing, thus reducing the relative risk of moves that were previously too risky.

Based on the above table, "feasibility first" logic suggests the following priorities:

The First Tier: The Most Feasible Moves

- Infrastructure extension is, for many jurisdictions, the most feasible move. Support for infrastructure is reasonably well-established. In addition, stimulus funding has been made available by the federal government, especially for health and broadband infrastructure. Infrastructure itself generates little opposition. The benefits are diverse, since a growing internet becomes geometrically more productive while also improving equity and transparency. [38]
- Investments in online delivery and interactive services are highly feasible. They also score high on economic and political value because of their contributions to efficiency, equity, and transparency. The public supports online delivery and will likely support new opportunities for two-way interactivity and transparency.
- Massive collaboration with Web 2.0 technologies. This is already taking place via low-cost, bottom-up experiments. If Intellipedia can nudge the hyper-secret intelligence community from "need to know" toward "need to share," then we should certainly be able to make progress in many less tight-lipped environments. [39]

The Next Tier: The Highest-Value Moves

- Value chain transformations are likely to produce huge productivity breakthroughs over the next decade and more. Tough times will force tectonic shifts in health care, green energy, counter-terrorism, and education. While these changes will typically be disruptive, and none will succeed as "technology only" reforms, all will need to combine technology with strong leadership.
- Service delivery will continue to expand via video, wireless, and interactive applications emphasizing co-production and self-service. Online delivery will be visible and strongly supported by much of the public. Online services have become popular in recent years and will remain so.
- Production reforms are creating enterprise-wide and even internet-wide economies of scope and scale. Consolidation and "shared services" are now essential for cost-cutting. These otherwise difficult reforms are reliably feasible when leadership is clearly committed to training, discipline, and ongoing front-line support.

The "Sweet Spot:" Next Steps with Online Delivery

- Service delivery offers top-tier feasibility AND value. We need the continued development of online services to keep the e-government momentum going. In many jurisdictions this will be a "simple next step" move. At the same time, online services can be dramatically different by using video, wireless, and Web 2.0 social networking. Given the need for budget reductions, cutbacks should not be made in online services, but rather in the high-cost face-to-face channels. The time has come to move users to self-service wherever possible. Beyond cost-cutting, online services can be used to reach the poor, the elderly, and the undereducated. They also offer transparency, accountability, and the analysis needed for predictability and control. When an option scores this high on feasibility and value, it merits serious and sustained attention.

In many settings the above analysis will work nicely. But it will not be great for everyone. Priorities may require pragmatic adjustment to fit local conditions. Leaders must recognize that, while the above moves may often be risky, failing to move will likely be even more dangerous. Don't be the deer caught in the headlights.

Recommendations

For maximum coherence and impact, we recommend packaging the above moves into three themes or models along with the leadership teamwork required for success.

21st Century Government Models

As technology, economics, and society change, so too must government. Under the strain of continuing tough times, governments will need new models for service delivery, open government, and finance/business. We can use our moves to construct these models roughly as follows:

- **Service delivery models.** The 21st century service models will rely heavily on net-delivered services as described above. We envision combinations of information infrastructure and online service delivery, augmented by data feedback and collaboration that are naturally enhanced in a networked world. Aggressive shifts to self-service will create some of the productivity needed to help keep up with the demands of an aging population and a global, knowledge-based economy. Key targets will be health care, lifelong education, public safety, and human services. While difficult, the development of online self-service models is technologically, economically, and politically feasible as well as desperately needed.
- **Open government models.** The 21st century open government models will take advantage of the low costs of information feedback and collaboration to mobilize civic engagement and hold government properly accountable to the public will. Progress on open government is very immature, however. It must ultimately resolve unstable but deeply held feelings about the rights of the community to security and the rights of individuals to privacy. Given new capabilities for transparency and collaboration, and given the need to improve trust in government, the time has come to explore the new open government approaches. Democracy must yet again reinvent itself.
- **Government financing/business models.** For the long term, technology-enabled productivity will help government meet its commitments, but productivity alone won't be enough. Governments will also need to find new sources of revenue and/or new ways to balance their commitments against the resources required to meet them. This may mean collecting taxes and fees that were ignored and/or unimportant in the industrial age when most of our current revenue systems were designed. It may also mean mobilizing volunteered resources (ala open source software and no-cost volunteers for neighborhood watch crime control). Finally, it may require tough decisions about cutting back in what we expect from government.

  The models described above will involve disruptive change in government operations and missions. They will not succeed without much more effective communications to engage the general public in the debate about why such change is needed.

21st Century Teamwork

Government operates primarily as a bureaucracy. In general, this is a good thing. We establish routines for predictable problems. To the extent that the problems remain routine, we can stay within channels to efficiently implement good responses.

But our current problems are NOT routine. They cannot be well-solved via pre-defined solutions, nor innovations found "close to home." We need to search outside of normal channels and outside of our normal comfort zones. We need teamwork that cuts across jurisdictional and bureaucratic boundaries. Fundamentally, we need problem-solving that:

- **Searches more broadly.** We need to engage leaders from multiple layers of government (federal, state, and local) as well as the private sector.
- **Searches more deeply.** We need to get beyond the "good news" stories of pioneers and vendors to share meaningful lessons re: what doesn't work. As we learn what does work, we need to share the "how to" nuts and bolts of project plans, budgets, job descriptions, RFPs, contracts, press releases, status reports, program evaluations, and other bureaucratic tools.
- **Leverages long-term forces.** We need to look not only for what others are doing now, but for what the environment will require long term. The institutional changes we seek will not be fostered by technology leaders who can't see outside their technology boundaries. They won't be helped by program or political leaders who can't see outside their program or political boundaries. And they won't be helped by federal or state or local leaders who can't see outside their federal, state, or local boundaries.

What we need for success now is dramatically better cross-boundary teamwork. For the U.S. in particular, we need to shape this teamwork during the transition year to follow the 2010 elections. During this period, financial pain for the vast majority of states will be yet more severe than it has been to date. More than 30 new state governments will be assembling their staff and plans. This will create a window of opportunity for what needs to be done.

We need to plan immediately for this opportunity. We need to make smart choices as the new administrations recruit personnel, as they formulate their priorities and budgets, and as they begin to task action. To respond effectively, the new governments will need to start from the beginning with 21st century models as their goal.

We have a crisis to respond to. We also have IT as a catalyst for strategic change. Let's move now to build the governments and leadership we need.

Appendix: Members of the Tough Times Project

Participants in the Harvard Tough Times Symposium

Professor David Ager, Harvard
Honourable Reg Alcock, former President of the Treasury Board, Canada
Guruduth Banavar, IBM
Phil Bertolini, Deputy County Executive/CIO, Oakland County, Michigan
Mark Bohlman, former Administrator, Ohio Dept. of Mental Health
Claudia Boldman, Information Technology Division, Commonwealth of Massachusetts
Corinne Charette, CIO, Canada
Aneesh Chopra, CTO, Executive Office of the President, U.S.
Curtis Clark, IBM
Karen Evans, former Administrator for EGov and IT, OMB, U.S.
Stephen Fletcher, CIO, State of Utah
Michael Henry, Executive, Accenture
Gopal Kapur, CEO, Center for Project Management
Bill Kilmartin, Executive, Accenture
Arnold Kishi, Director eGovernment Programs, State of Hawaii
Robert Knisely, former Deputy, National Performance Review
Anne Margulies, CIO, Commonwealth of Massachusetts
Stuart McKee, Executive, Microsoft
Professor Jerry Mechling, Harvard
Bill Oates, CIO, City of Boston
Antonio Oftelie, Executive Director, Leadership for a Networked World
Martha Parker, Research Associate, Leadership for a Networked World
Amy Ramsay, Program Director, Leadership for a Networked World
Doug Robinson, Executive Director, National Association of State Chief Information Officers
Teri Takai, CIO, State of California
Ken Theis, CIO, State of Michigan
Michael Tremblay, Executive, Microsoft
David Wennergren, Deputy CIO, U.S. Department of Defense

Harvard Kennedy School, Leadership for a Networked World Student Participants

Ryan Androsoff
M. Bade Balde
Momar Dieng
Chris Edell
Seth Flaxman
Philipp Schroegel
Ale Vallejos
Jerome Albright
Lora Brill
Thomas Gates
Kaneisha Grayson
Boris Jamet-Fournier
Peggy McReady
Andrew Murray
David Payne
Jason Reece
Jeanine Torres
Dario Trevino

Participating in the Tough Times Project online:

PK Agarwal, State of California
Susan Allen, Corpus Christi, TX
Jaro Berce, University of Ljubljana
Rollie Cole, Sagamore Institute for Policy Research
Randy Hughes, State of Utah
Alexander Hunziker, Berne University
Carol Macdonald, New Brunswick, Canada
Erik Mickelson, State of Wisconsin
Brand Nieman, U.S. Environmental Protection Administration
Phil Noble, Politics Online
Andris Ozols, State of Michigan
Ann Sulkovsky, U.S. National Park Service
Jim Taylor, Oakland County, Michigan

End Notes

1 Bureau of Labor Statistics, "The Unemployment Situation – August 2010," http://www.bls.gov/news.release/pdf/empsit.pdf

2 See the Wikipedia article on public debt: http://en.wikipedia.org/wiki/United_States_public_debt

3 Improvements in communication and transportation over time have expanded the geographic reach of markets and the governments that regulate them. See, for example, Cairncross, Frances, The Death of Distance: How the Communications Revolution Is Changing Our Lives, Harvard Business School Press, 2001.

4 The surveys were taken at 20 regional conference sessions offering about 250 survey respondents each, with data captured initially by real-time radio response devices. However, this technology took too long to facilitate discussion and was replaced by "raise your hands" surveys. The survey totals are thus not statistically valid with known margins of error. However, given the self-selected nature of the audience and discussion, the results would not have been rigorously objective in any case. We used them to promote discussion and to help produce the rankings reported here. While we would have liked more precision, we think the results are a useful representation of practitioner views.

5 For data on long-term progress in per capita incomes, see Statistics on World Population, GDP and Per Capita GDP, 1-2008 AD (Angus Maddison, University of Groningen). For a broad and interesting analysis of the growth of productivity see Productivity and American Leadership: The Long View; Baumol, Blackman, and Wolff; MIT Press, 1991. For an information-oriented analysis of productivity and innovation, see Yochai Benkler, The Wealth of Networks: How Social Production Transforms Markets and Freedom, available as .pdf: http://www.benkler.org/Benkler_Wealth_Of_Networks.pdf

6 While Emmanuel has recently made it famous, the originator (who explains it as a derivation from the United Negro College fund slogan "A mind is a terrible thing to waste") was economist Paul Rohmer of Stanford, referring to declining American educational performance. See the NYTimes article: http://www.nytimes.com/2009/08/02/magazine/02FOB-onlanguage-t.html

7 The classic and still-useful study of innovation is Everett M. Rogers, Diffusion of Innovations, 4th edition, Free Press, NY, 1995. The difficulties of getting new adopters to switch from old ways is well-explored in John T. Gourville (2003). "Why Consumers Don't Buy: The Psychology of New Product Adoption," Harvard Business School Case No. 504-056. (Revised April 5, 2004).

8 An in-depth and understandable treatment of the impacts of IT on productivity can be found in Brynjolfsson, Erik and Saunders, Adam (October 2009) Wired for Innovation: How Information Technology is Reshaping the Economy. The MIT Press.

9 U.S. recent trends towards greater income inequality are defined and measured by Gini coefficient trends here: http://en.wikipedia.org/wiki/Gini_coefficient. A broad summary of the impacts and causes of economic inequality can be found in: http://en.wikipedia.org/wiki/Economic_inequality

10 Issues of control and leadership in complex systems are well-explored in Senge, P. M. (1990) The Fifth Discipline. The Art and Practice of the Learning Organization, London: Random House. Issues of declining trust in leaders and government are well-explored in Nye, Zelikow, and King (eds.) Why People Don't Trust Government, Harvard University Press, 1997.

11 Estimating and then valuing outputs can be improved via tools of statistics, econometrics, and decision theory. An accessible and usable presentation on decision-making can be found in: Smart Choices: A Practical Guide to Making Better Decisions, Hammond, Keeney, and Raiffa, Harvard Business School Press, 1999.

12 Classic and relevant IT-related process redesign books include: Thomas H. Davenport, Process Innovation: Reengineering Work Through Information Technology, Harvard Business School Press, 1993; and Michael Hammer and James Champy, Reengineering the Corporation: A Manifesto for Business Revolution, HarperCollins, 1993. Thomas H. Davenport (Author)

13 Governance, or the process of governing, can be reviewed in Wikipedia articles including: http://en.wikipedia.org/wiki/Governance. An important recent treatment focused on IT-related issues is found in IT Governance: How Top Performances Manage IT Decision Rights for Superior Results, by Peter Weill and Jeanne Ross, Harvard Business School Press, 2004.

14 An earlier analysis of e-government development and issues is found in Eight Imperatives for Leaders in a Networked World available at http://www.innovations.harvard.edu/cache/documents/754/75491.pdf. An often-updated history of e-government can be found at http://en.wikipedia.org/wiki/E-Government. The "online not in line" phrase is now a featured tag line of the U.S. Federal Government's portal at http://www.usa.gov/

15 Some examples: Video services have been successfully used to train drivers to prepare for the California Department of Motor Vehicles examinations. See: http://www.dmv.ca.gov/video/index.html. Boston has gotten impressively strong response to its Citizens Connect iPhone application for service requests. See: http://www.cityofboston.gov/doit/apps/iphone.asp

16 A NYTimes article on technology and the Obama campaign provides good coverage of the impact of technology on campaign-style civic engagement. See http://bits.blogs.nytimes.com/2008/11/07/how-obamas-internet-campaign-changed-politics/

17 While government leaders strongly support using the net for service productivity and tapping expertise in the wider community, there is widespread concern that greatly expanding the voice of the public or government workers may undercut the authority and control of the political system and its leaders. Others, however, see net-enabled expansion of "the conversation" of politics as inevitable and something to be embraced.

18 Consolidation with centralized and/or shared governance has been a major reform theme in the private sector for more than a decade. It is now also becoming a "front burner" issue in many governments. See, for example: http://www.accenture.com/Global/Services/By_Industry/Government_and_Public_Service/PS_Global/R_and_I/SharedServices.htm The National Association of State Chief Information Officers put forward a useful report on shared services at http://www.nascio.org/publications/documents/NASCIO-Con_and_SS_Issue_Brief_0306.pdf

19 The Michigan experience was in response to dramatic decline in the auto industry and was supported by long-term gubernatorial and CIO alignment beginning with Governor John Engler and CIO John Kost and then migrating to Governor Jennifer Granholm with CIO Teri Takai followed by CIO Ken Theis. Sustained leadership brought a sequence of IT-related reforms that have won numerous national awards.

20 For context and depth on making procurement reforms work, see Unleashing Change: A Study of Organizational Renewal in Government, by Steve Kelman, Brookings, 2005. Technology-enabled innovations falling outside the normal domain for government CIOs are also being aggressively pursued for health care, green energy, counter-terrorism, and education.

21 See The Costs and Benefits of Health Information Technology by the Southern California Evidence-based Practice Center at http://www.ahrq.gov/downloads/pub/evidence/pdf/hitsyscosts/hitsys.pdf

22 The amazing evolution of the internet and world-wide-web is well introduced at http://en.wikipedia.org/wiki/History_of_the_Internet#See_also

23 For ARRA money distributions see http://en.wikipedia.org/wiki/American_Recovery_and_Reinvestment_Act_of_2009

24 As a key example, note the role of DARPA (the U.S. Defense Advanced Research Projects Agency) in creating the TCP/IP standards that enabled interoperability among previously proprietary networks, thus opening up the scale economies that have greatly expanded the global information infrastructure.

25 For depth on CompStat, CitiStat, and performance measurement more generally, see the policy note by Bob Behn at http://www.hks.harvard.edu/thebehnreport/Behn,%207PerformanceStatErrors.pdf

26 See the Wired Magazine article on Vivek Kundra's vision for open data at http://www.wired.com/politics/onlinerights/magazine/17-07/mf_cio

27 For an extensive review of transparency issues and opportunities, see Fung, Graham, and Weil, Full Disclosure: The Perils and Promise of Transparency, Cambridge University Press, 2007. Most of those worried about the downsides of massive collaboration and transparency see the recent trends as inevitable and to be well utilized and controlled rather than stopped.

28 For a suggestive and readable analysis of the ever-growing reach of communications, see The Death of Distance, Cairncross, 2001 .

29 See Don Tapscott and Anthony Williams, Wikinomics: How Mass Collaboration Changes Everything, Penguin Books, 2007

30 For a concise government-generated introduction to the use of wikis in government see http://www.usa.gov/webcontent/technology/wikis.shtml

31 A valuable source on standards and information sharing is the National Information Sharing Standards Help Desk at http://www.it.ojp.gov/default.aspx?area=implementationAssistance&page=1117.

32 See a thoughtful Jonathan Zittrain op ed covering this at http://www.nytimes.com/2009/07/20/opinion/20zittrain.html?pagewanted=1&_r=2&ref=opinion. The book length argument is in The Future of the Internet and How to Stop It, Yale University Press, 2008, available for free download at http://futureoftheinternet.org/.

33 Scale economies are important but may create monopolies that reduce innovation and longer-term efficiency, as is argued in the Zittrain book referred to above. Many believe that the TCP/IP success story is mostly about how standards decisions evolved quickly enough to sustain a "start small, scale fast" development approach that promises major benefits for the future.

34 For a history of CIOs in government and elsewhere see http://en.wikipedia.org/wiki/Chief_information_officer.

35 Cross-boundary initiatives are typically riskier to implement than those contained within the boundaries of existing institutions, since negotiations of authority among independent institutions can be difficult. Still, the internet has opened up major opportunities to cross the boundaries separating different services, levels of government, and the public and private sectors. Exemplary cross-boundary initiatives include the development of Singapore Network Services, efforts to "harmonize" policies across the European Union, and the recent emergence of cloud-based offerings to have governments or the private sector produce services for a wide range of relatively small government institutions.

36 See Improve Budgeting and Financing for Promising IT Initiatives, Harvard Policy Group, available at http://www.lnwprogram.org/library/view/compass-library/HPG_Imperative_4.pdf.

37 For IT governance, see Weil and Ross, IT Governance: How Top Performances Manage IT Decision Rights for Superior Results, Harvard Business School Press, 2004. For a broader view of the challenges of governance in governments, see an interesting report from the Netherlands: http://www.ecgi.org/codes/documents/public_sector.pdf

38 For broad assessments of e-government and infrastructure see for example the UN report on the status of and trends in the development of e-government at http://unpan1.un.org/intradoc/groups/public/documents/un/unpan008253.pdf. Also see: The Economist Intelligence Unit The 2007 e-readiness rankings at http://www.eiu.com/site_info.asp?info_name=eiu_2007_e_readiness_rankings&rf=0 and the Brookings Institution report on State and Federal Electronic Government in the United States, 2008, available for download at http://www.brookings.edu/reports/2008/0826_egovernment_west.aspx.

39 In the internet age, the shift is from a need to know to the need to share. See Open Government: Collaboration, Participation, and Transparency in Practice, by Daniel Lathrop and Laurel Ruma (eds), O'Reilly Media, 2010.

Leadership For A Networked World

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