GOVLAB RESEARCH

Toward Reimagining Governance

Mapping the pathway toward more effective and engaged governance

By GovLab Research

V.1, April 18, 2013

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"The trouble with simplification is that things are complicated. The trouble with things being complicated is that we need to simplify them" — Charles Crawford

"A group of blind men heard that a strange animal, called an elephant, had been brought to the town, but none of them were aware of its shape and form. Out of curiosity, they said: "We must inspect and know it by touch, of which we are capable". So, they sought it out, and when they found it they groped about it. In the case of the first person, whose hand landed on the trunk, said "This being is like a drain pipe". For another one whose hand reached its ear, it seemed like a kind of fan. As for another person, whose hand was upon its leg, said, "I perceive the shape of the elephant to be like a pillar". And in the case of the one who placed his hand upon its back said, "Indeed, this elephant is like a throne". Now, each of these presented a true aspect when he related what he had gained from experiencing the elephant. None of them had strayed from the true description of the elephant. Yet they fell short of fathoming the true appearance of the elephant."
--Andhgajanyāyah or the parable of the blind men and an elephant

MacArthur Foundation

This paper was made possible with support from the John D. and Catherine T. MacArthur Foundation

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TOWARD REIMAGINING GOVERNANCE

Mapping the pathway toward more effective and engaged governance

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Executive Summary

Perfect Storm

The first years of the twenty-first century have evinced global challenges. We are increasingly aware of the huge problems, from climate change to global poverty, that threaten the health of the planet, society, and the human race itself. We have looked to our governments to solve these problems, or at least lead the way toward finding solutions. And we have been frustrated by the inability of governments around the world to grasp the seriousness of the problems we face, let alone do anything about them.

Our global failure to move forward is distressing but not surprising: We have been trying to tackle 21st Century problems with 19th Century models of government. What we need is a new approach, not only to *government*, but to *governance*. Our existing models of government envision an elite group of leaders working to solve critical problems on their own, without tapping the insights, experience, and brainpower of the people they represent. We need to imagine a new system of governance, where leaders and citizens work together to solve the problems that impact society and our lives.

The shift from top-down government to reimagined governance will be an unprecedented change. But 21st Century technology, combined with emerging models of technology-enabled collaboration, make this transition possible. This paper analyzes the nature of the problems we now face, the reasons governments have been unable to solve these problems, and new trends and technologies that can help us find solutions through reimagined governance.

Complex, unaddressed 21st Century social challenges largely fall into the following three categories:

- **Seemingly Intractable Problems**: complex issues that involve a variety of stakeholders across different sectors and levels of government

[1] Research Team: Andrew Young, Hollie Russon Gilman, Sabeel Rahman, Christina Rogawski, Shruti Sannon and Stefaan G. Verhulst. Editorial Support: Joel Gurin. Map design: Hyperakt

- **Wicked Problems**: massive, amorphous dilemmas that resist complete or testable solutions
- **Interdependent Global Problems**: intractable problems that require unprecedented collaboration and cooperation between international stakeholders

Many of these problems are unique to our time and represent unprecedented challenges to government. And to make matters worse, five central governance challenges, or deficits, make it even more challenging for government to solve them:

- **Legitimacy Deficit**: people are losing trust in their governments due to a lack of transparency, accountability, citizen participation and meaningful citizen input.
- **Effectiveness Deficit**: government's bureaucratic and centralized, one-size-fits-all nature make it nearly impossible for it to respond to modern problems and the varied needs of citizens
- **Budget Deficit**: swelling budget deficits and cuts to reduce them, questionable returns on taxpayers' investments and wasteful spending suggest that government is too inefficient to tackle modern problems
- **Innovation Deficit**: governments are hamstrung by institutional inertia and hierarchical internal structures that make them less agile, innovative, and imaginative than they need to be
- **Expectation Deficit**: at a time when barriers to public participation are being lowered across society, people are growing frustrated that government is not allowing them to be a part of the solution

How do we bridge this governance gap? Our era of unprecedented challenges is also a time of emerging technological and scientific innovation. Today's technological advances are not only revolutionizing science and research, they are also enabling institutions to have a greater direct benefit on our lives. We can divide these advances into six broad categories, based on how they can improve our lives:

- **Making Us Smarter**: Big Data collection and analysis, data visualizations, massive experimentation, systems thinking and design thinking allow us to obtain new insights, share information more broadly and make decisions based on facts rather than intuition
- **Making Us Collaborative**: collaborative platforms and tools, the sharing and peer economy, networks and Web 2.0 are allowing people to more easily work cooperatively, regardless of physical distance, while significantly lowering barriers to engagement and creating capacity for unprecedented co-creation
- **Making Us Unique:** the ability to personalize content and services, moving beyond a one-size-fits-all structure, helps to provide people with more individually meaningful and relevant experiences

- **Making Us Agile:** mobile technology, the cloud, Web 3.0 and the Open/Linked/Agile Web are helping to lift restrictions, physical and otherwise, on how people can collaborate, communicate and work
- **Making Us Empowered**: networks, platforms and the Maker/DIY movement are giving people a stronger voice and demonstrating that traditional hierarchical structures are not the only ways to get things done
- **Making Us Motivated**: gamification, behavioral science, "nudges" and an improved understanding of the brain are creating new ways to incentivize engagement and participation, and help people make smarter decisions

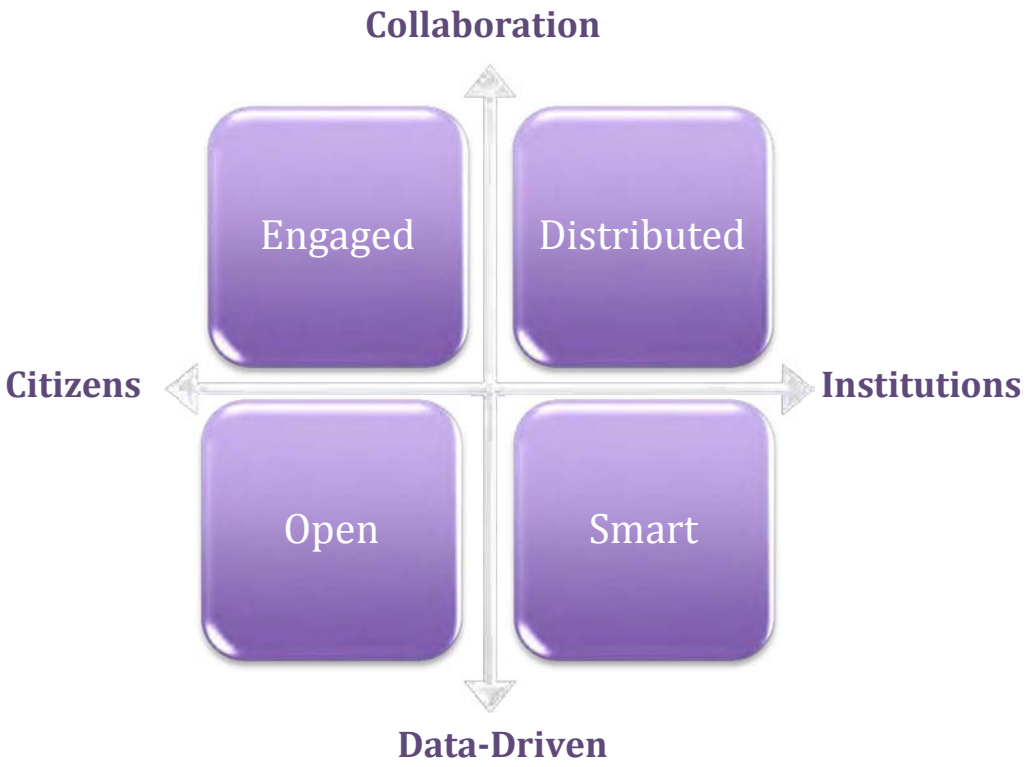
Riding the waves of change

To capitalize on this perfect storm for reimagining governance, we must ride the waves of change, and leverage these new technological and scientific innovations to mitigate current governance challenges and address complex social challenges. Governments and citizens are experimenting with new platforms and methods for solving problems together. Those experiments can be placed into two categories:

- **Collaborative**: Public distribution of information, wider consultation, citizen co-creation, open idea-generation and decentralized decision-making can both involve more voices in the process of governance and make it easier for diverse people and agencies to work cooperatively
- **Data-Driven**: the use of big data to collect and analyze information and open data to release information to the public can help both government and the public make more strategic, evidence-based decisions

Traditionally, the narratives in the field have characterized innovative governance programs in the following way, dependent on whether they are collaboration- or data-focused and addressed at citizens or institutions. Those narratives traditionally fall into one of four categories:

- **Engaged**: collaboration among citizens
- **Open**: providing data to citizens
- **Distributed**: collaboration across institutions and sectors
- **Smart**: data informing institutions

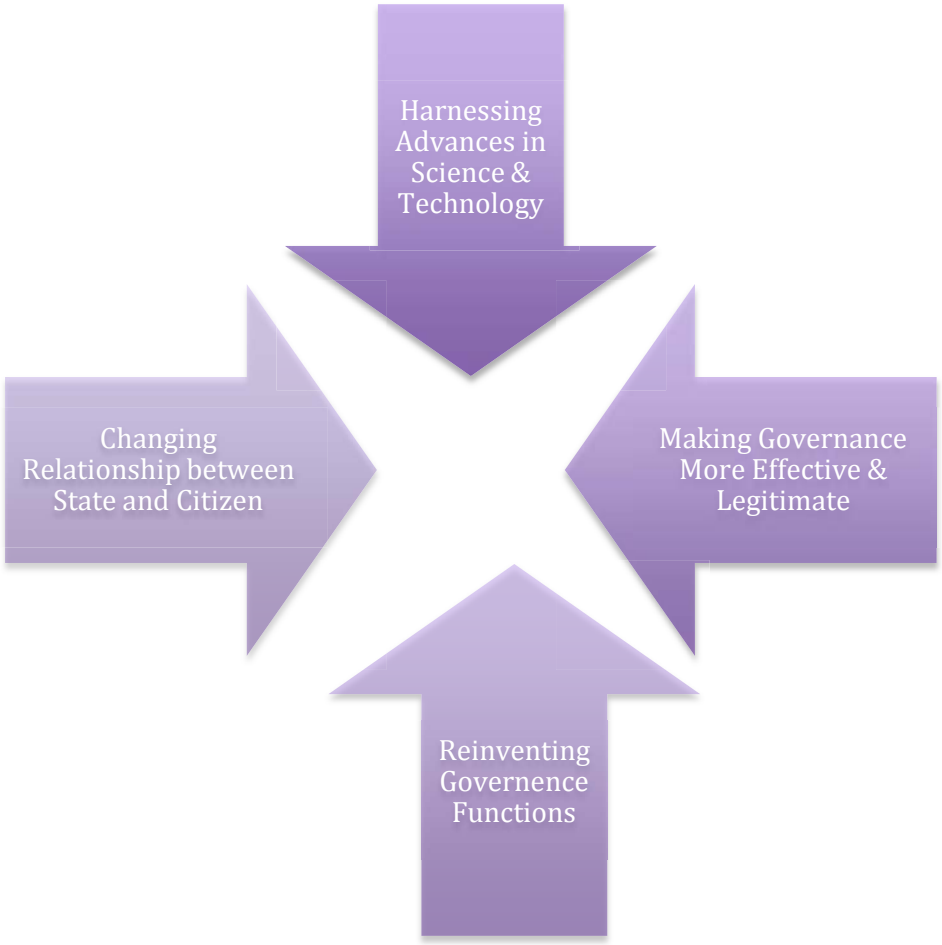


Beyond increasing the collaborative capacity and intelligence of the public sector in general, we are moving toward a reimagined system of governance, which will result in a paradigm shifts, characterized by areas of weakness transitioning into areas of strength. The six broad types of shifts within governance are:

- **From Deliberation to Collaboration**: when barriers to collaboration are broken down, problems can be solved by a wider range of stakeholders and experts, rather than simply relying on the abilities of designated government employees and agencies
- **From Centralized to Decentralized**: moving beyond a push or broadcast culture, the use of technology can involve more voices in the governance process
- **From Faith-Based to Evidence-Based**: rather than placing a premium on "intuition" or experience, an information-rich, experimental governance culture can lead to improved decision making
- **From Uniform/Entrenched to Diverse/Iterative**: leveraging new voices, acting on new ideas and breaking up inertia can make government less homogenous and allow for more experimentation and trial-and-error
- **From Closed to Open**: instead of government existing as separate from the governed, an open, inclusive system will not only lead to more transparency and accountability, it will also increase government effectiveness by involving more people in problem-solving
- **From Intermediary to Platform**: by taking away its responsibility for curating and allocating all information, government can become lighter and more agile, while

creating an infrastructure that permits citizens to utilize public resources beyond ways strictly prescribed by government

The four dimensions of reimimagining governance



All innovations in governance at their core aim to improve individuals' lives and welfare by improving the ways we provide for public goods and solve societal problems. But how can we map, analyze and evaluate the dynamics and unique features of reform initiatives? We suggest governance experiments can be mapped and evaluated according to how they are:

- Reinventing governance functions
- Harnessing advances in science and technology
- Changing the relationship between state and citizen
- Making governance more effective and legitimate

By recognizing needed governance reforms and harnessing innovations in technology and science, we can reinvent governance and change the relationship between state and citizen.

Reimagining governance is not about simply injecting new technologies into old government structures; rather, new innovations can fundamentally remake governance and have a direct, positive effect on people's lives.

Social Challenges	Governance Challenges	Innovations in Science and Technology	Governance Experiments	Toward Re(imagined) Governance
The world is getting warmer. Education, sanitation and healthcare remain elusive to many. Inequality is rising.	We lack institutions that can quickly discover, recognize, implement and scale innovative solutions to problems.	New innovations can enable us to create institutions that can integrate scientific advances into policymaking and improve people's lives.	Governments and citizens are experimenting with new platforms and methods for solving problems together.	Paradigm shifts represent the pathway toward more effective and engaged governance.
Seemingly Intractable Problems	**Legitimacy**: transparency, accountability, participation, representation	**Making Us Smarter**	**Collaborative**: information provision, consultation, co-creation, idea-generation, decision-making	**From Deliberation to Collaboration**
Wicked Problems	**Effectiveness**: agility, responsiveness, centralization	**Making Us Collaborative**	**Data-Driven**: open data, big data	**From Centralized to Decentralized**
Interdependent Global Problem	**Budget**: budgets deficits and cuts, taxpayer ROI, wasteful spending	**Making Us Unique**		**From Faith-Based to Evidence-Based**
	Innovation: imagination, inertia, hierarchy	**Making Us Agile**		**From Uniform/Entrenched to Diverse/Iterative**
	Expectations: public involvement	**Making Us Empowered**		**From Closed to Open**
		Making Us Motivated		**From Intermediary to Platform**

1. Introduction

"The map is not the territory."

--Alfred Korzybski

While innovations in governance continue to emerge globally, there have been few attempts at mapping and organizing these innovations towards a structured and directed path for re-imagining governance. Indeed, current literature rarely distinguishes between disparate governance innovations, with little attempt to trace how these initiatives might impact governance. Some scholars have begun attempts to demarcate the field of so-called "open government" more rigorously. For example, Harlan Yu and David G. Robinson note that the nature of data—in particular whether it is adaptable or inert—will shape its distinct use, such as for service delivery or public accountability. Other scholars posit a distinction between transparency focused on revealing public sector information, from that revealing information about the workings of private sector organizations. Such distinctions are a step in the right direction, but still fall short of a comprehensive—and critical—overview of the governance innovations space. For example, in their overview of transparency efforts, Archon Fung and David Weil argue that without a broader understanding of the full ecosystem of reform efforts, the greater goals of improving governmental accountability and legitimacy will be compromised. What is needed is a broad framework that makes important distinctions between different kinds of problems, deficits, innovations, initiatives and outcomes, tracing their diverse impacts on governance in a rigorous manner.

This mapping exercise is a step towards a next generation of open government research and analysis. It aims to survey the current terrain of open government; analyze its diverse challenges, goals and opportunities; and devise a broad overview of the field to inform the structure and direction of future research. Given the limitations of any such mapping, our purposes are more limited—not to define or delineate the field but rather to organize our own approach to research and practice.

To map this universe, we developed individual, but interrelated, entries for each of the above-mentioned societal challenges, governance challenges, innovations in science and technology, governance experiments and accordant paradigm shifts. Each entry features relevant quotes from influential figures, a brief description, a collection of research questions and suggestions for further reading.

2. Social Challenges – Complex and Unaddressed

Pessimism regarding government effectiveness stems from complex 21st Century social challenges that cannot be solved using outdated methods. Issues like childhood obesity, climate change and global hunger have, as yet, failed to be solved through traditional policy-making. These complex social challenges largely fall into the following three categories:

- **Seemingly Intractable Problems**: complex issues that feature a variety of stakeholders across sectors and levels of government
- **Wicked Problems**: massive, amorphous dilemmas that yield neither testable solutions, nor a natural stopping point
- **Interdependent Global Problems**: intractable problems that require unprecedented collaboration and cooperation between international stakeholders

2.1 Seemingly Intractable Problems

"The biggest challenges to traditional power have come from transformations in the basics of life—how we live, where, for how long and how well."

--Moisés Naím

"The challenges we face today—from saving our planet to ending poverty—are simply too big for government to solve alone. We need all hands on deck."

--Barack Obama

"[I]n all areas where problems are complex—'good governance' involves using authority to do things that are not only within the direct production authority of a government. Achieving change requires that politicians, administrators and others exercise facilitative authority and political and social authority as well."

--Matt Andrews

"[W]e've also noticed that very interesting figures from outside of the internet industry are moving into the internet industry because they see an energy, a philosophy, a sort of set of standards and approach to the world that might help solve some very large intractable problems such as health or energy."

--John Battelle

Intractable problems, also referred to as "complex" problems, "have a mix of stakeholders at all levels of government, each of whom have different funding sources, mandates, and expectations; these problems also have private stakeholders, consumers, and communities that cannot be left out." Improving access to healthy foods and achieving energy independence, for example, are seemingly intractable problems because legislation alone—no matter how well crafted—could not adequately

address the myriad of stakeholders, interests and "moving parts" to solve the problems.

Research Questions

What are the governmental deficiencies that are making it impossible to solve intractable problems?

Is improved collaboration enough to solve intractable problems, or is that belief an oversimplification?

Are there any examples from the private sector and civil society where disparate stakeholders worked together to solve an intractable problem?

Have any think tanks, academics or research centers developed a set of best practices for addressing interdependent global problems? If so, could those best practices work for government?

Considering the scope of intractable problems, what type of metrics can be used to provide feedback on solutions and allow for iteration?

What are the funding and budgetary barriers to solving intractable problems?

What are some examples of failed attempts to solve intractable problems? Can we learn anything from them?

Further Reading:

Moisés Naím, The End of Power: From Boardrooms to Battlefields and Churches to States, Why Being In Charge Isn't What It Used to Be, Basic Books, 2013.

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Mark Lundy and María Verónica Gottret, "Learning alliances: An approach for building multi-stakeholder innovation systems," Centre for Tropical Agriculture, January 14, 2013.

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"Humanitarianism in the Network Age (Including World Humanitarian Data and Trends 2012)," United Nations Office for the Coordination of Humanitarian Affairs, March 6, 2013.

Patrick Meier, Crisis Mapping 2.0: Harnessing the Power of Big Data to Deliver the Next Generation of Humanitarian Response Technology. In *Voices on Society*, McKinsey & Company, 2013.

Matt Andrews, *The Limits of Institutional Reform in Development*, Cambridge University Press: Feb 11, 2013.

2.2 Wicked Problems

"Why is the world so good in developing nanotechnologies, implementing cloud computing or shooting people to the moon (or mars), and incapable of tackling wicked problems like child obesity, waste or isolation of elderly people?"

--Geoff Mulgan

"One of the main reasons for the emergence of governance networks is the fact that they need to deal with wicked problems that require the cooperation of many different actors who have to develop innovative solutions together."

-- Erik-Hans Klijn

"Most projects today have a significant wicked component. Wicked problems are so commonplace that the chaos and futility that usually attend them are accepted as inevitable. Failing to recognize the 'wicked dynamics' in problems, we persist in applying inappropriate methods and tools to them."

-- Jeff Conklin

"Since wicked problems are part of the society that generates them, any resolution brings with it a call for changes in that society."

-- Valerie A. Brown

Wicked problems, similar to seemingly intractable problems, are multistakeholder in nature. Wicked problems are even more challenging to policymakers because solutions cannot be meaningfully tested and there is no natural stopping point at which the problem can be recognized as solved. Moreover, wicked problems, in many cases, exist due to entrenched, systemic issues from within the society from which they arise. Such problems not only require unprecedented levels of collaboration and strategic government action but also require meaningful solutions unlikely to be achieved without fundamental societal and institutional changes.

Research Questions

What are some examples of public sector wicked problems?

Are there any examples from the private sector and civil society where disparate stakeholders worked together to solve a wicked problem?

Are there any examples of past wicked problems being solved by government? If so, what methods were used?

Have any think tanks, academics or research centers developed a set of best practices for addressing wicked problems? If so, could those best practices work for government?

What are the funding and budgetary barriers to solving wicked problems?

What are some examples of failed attempts to solve wicked problems? What can we learn from them?

Further Reading:

Valerie A. Brown, John A. Harris and Jacqueline Y. Russell, *Tackling Wicked Problems: Through the Transdisciplinary Imagination*, Routledge, 2010.

Jon Kolko, *Wicked Problems: Problems Worth Solving*, Austin Center for Design

Brian W. Head, "Wicked Problems in Public Policy," *Public Policy*, vol. 3, no. 2 2008.

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Erik-Hans Klijn, "Trust in governance networks: looking for conditions for innovative solutions and outcomes," *The New Public Governance? Emerging Perspectives on the Theory and Practice of Public Governance,* Routledge: Feb 7, 2010.

Horst W. J. Rittel and Melvin M. Webber. "Dilemmas in a General Theory of Planning." Policy Sciences, vol. 4, 1973.

2.3 Interdependent Global Problems

"The world has flattened, and the fates of all its people, whether residing in a Western capital or a village in rural India, are more tightly knit than ever. That's led to a growing sense that the old paradigms of government aid and private philanthropy are simply inadequate to meet the critical challenges of the 21st century."

--McKinsey & Company

"The most important message is that changes in human values, modes of thinking, and visions of the future are needed for us to live more sustainably and harmoniously - indeed to survive - in an interdependent world."

--John M. Richardson, Jr.

"The key question that needs to be answered is what responsibilities we all have toward people who happen not to be our compatriots. [...] Generating meaningful responses to this question will entail starting to imagine-without panic or rush, and with all the care and thoughtfulness this conversation requires-a global civics."

--Hakan Altinay

Today's interdependent global problems, such as climate change or world hunger, require more stakeholder engagement while existing on a greater scale than previously possible in a less connected world. Similar to like seemingly intractable problems, interdependent global problems require government agility and cross-sector cooperation to generate solutions. However, unlike seemingly intractable problems, questions of autonomy, sovereignty, diplomacy, development and international trade further complicate problem solving. Often, global actors struggle to determine which governance body or organization is responsible for addressing these issues, resulting in obstacles and diversions even before any problem solving process can be undertaken.

Research Questions

What are some examples of public-sector interdependent global problems?

Are there any examples from the private sector and civil society where disparate stakeholders worked together to solve an interdependent global problem?

Are there any examples of past interdependent global problems being solved by government? If so, what methods were used?

Have any think tanks, academics or research centers developed a set of best practices for addressing interdependent global problems? If so, could those best practices work for government?

What are the funding and budgetary barriers to solving interdependent global problems?

What are some examples of failed attempts to solve interdependent global problems? Can we learn anything from them?

What agencies are normally tasked with addressing interdependent global problems? Are they sufficiently connected with their fellow stakeholders in other nations?

What is the role of the United Nations and other global governance bodies in solving interdependent global problems? Do such bodies have sufficient legitimacy from citizens and do they adequately engage citizens most affected by these problems?

Further Reading

"What Matters | Social Innovation: Can Fresh Thinking Solve the World's Most Intractable Problems?" McKinsey & Company, 2012.

"Global Governance 2025," Atlantic Council, September 20, 2010.

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Gordon Smith and Moisés Naím, *Altered States: Globalization, Sovereignty and Governance*, IDRC Books, 2000.

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Laurel Weldon and Leigh Raymond, "New Perspectives on Intractable Problems," Global Policy Research Institute's Policy Research for a Changing World "Grand Challenge" Conference, June 27, 2012.

Peter Coleman, "International Focus - Resolving International Conflicts," Nov 22, 2011.

Gordon Brown, "Wiring a web for global good," *TED Talks,* July 2009.

3. The Five Governance Challenges

"Restoring trust, reinventing political parties, finding new ways in which average citizens can meaningfully participate in the political process, creating new mechanisms of effective governance, limiting the worst impact of checks and balance while averting excessive concentration of unaccountable power, and enhancing the capacity of nation-states to work together should be the central political goals of our time."

--Moisés Naím

Part of the inability of traditional governance structures to address complex problems arises from the fact that many such problems are unique to our time and represent unprecedented challenges. However, five central governance challenges, or deficits, make it even more difficult for the public sector to tackle today's problems:

- **Legitimacy Deficit**: due to the current deficit of transparency, accountability, citizen participation and aggregation of citizens' preferences in the public sector, citizens are losing trust in their government
- **Effectiveness Deficit**: government's lack of agility and centralized, one-size-fits-all nature make it practically nonresponsive to all modern problems and citizens' varied needs
- **Budget Deficit**: swelling budget deficits with accordant cuts, questionable returns on taxpayers' investments and perception of wasteful spending demonstrate government's inability to allocate public money to tackle modern problems
- **Innovation Deficit**: institutional inertia and internal hierarchy result in a general lack of imagination in the public sector, leading to less innovation and retaining outdated and/or unsuccessful systems and programs
- **Expectation Deficit**: as barriers to public participation are being lowered across sectors and society in general, people are growing frustrated that government is not allowing them to be a part of a conversation around solutions

3.1 Legitimacy Deficit

"Impelled by government mandate, the private sector and civil society might suggest their own solutions, evolving more robust public-private approaches, which may produce greater legitimacy than government currently enjoys"

--Beth Noveck

"If you're not releasing data that ties to accountability, if you're not engaging your citizens, if you're not doing all these things, you're not actually a legitimate government anymore."

--Wayne Moses Burke, Open Forum Foundation

Many government issues revolve around questions of legitimacy to the citizens it governs, and the accordant levels of citizen trust in governance. Questions of legitimacy revolve around two types of concerns: how well government allows for public scrutiny, in the form of transparency and accountability, and how well government involves citizens in the governing process, through participation and representation.

Further Reading:

"The Contribution of Government Communication Capacity to Achieving Good Governance Outcomes," Communication for Governance & Accountability Program, World Bank.

Bo Rothstein, *The Quality of Government: Corruption, Social Trust, and Inequality in International Perspective*, University of Chicago Press, 2011.

Daniel Lathrop, Laurel Ruma, *Open Government: Collaboration, Transparency, and Participation in Practice,* O'Reilly Media: Feb 23, 2010.

3.1.1 Transparency

"Liberty cannot be preserved without a general knowledge among the people, who have a right…and a desire to know."

--John Adams

"Government ought to be all outside and no inside."

--Woodrow Wilson

"Executive departments and agencies should harness new technologies to put information about their operations and decisions online and readily available to the public."

--Barack Obama

"We need to show ministries that collecting data adds value. The next step is to create a legal requirement that data should be sent to a central place for processing. We need to ensure the sustainability of this effort"

--Bitange Ndemo

From the Freedom of Information Act to opaque budgeting decisions, citizens and civil society are continually frustrated by lack of transparency in government. The power to make decisions that do not benefit the public good is one of the gravest dangers of government. An equally pressing concern is engendering distrust and disengagement from a public that believes its government operates unchecked by public scrutiny.

Research Questions

What are some examples of opaqueness in government not connected to national security or other concerns that take precedence?

Which government agencies are particularly transparent? Which are particularly opaque? What are the structural, political, and leadership factors within these respective agencies?

Has the vocal valuing of transparency, by President Obama and other leaders, resulted in a meaningful increase in openness, or simply more surface-level information provision? How would we measure success?

Are there any examples of technology-aided transparency initiatives rooting out corruption?

Further Reading

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James R. Hollyer, B. Peter Rosendorff and James Raymond Vreeland, "Measuring Transparency," Social Science Research Network, July 19, 2012.

Archon Fung, *Full Disclosure: The Perils and Promise of Transparency*, Cambridge University Press, 2007.

"Innovation in Government: Kenya and Georgia," *McKinsey Quarterly,* Sept 2011.

Video

Sarah Schacht, "Knowledge as Power." Comcast Newsmakers, December 2011.

3.1.2 Accountability

"The government we desire is completely different from the government of yesterday. The citizens have become more aware—they want more information, they want their government to account for the actions they are taking, that is what makes a difference."

"A fully empowered public which is holding the government to account. That is where we want to be. Anything below that, we would still have a lot of problems. If people have no access to what happens or to data, they will still be manipulated."

--Bitange Ndemo

"The less those outside the government know about its activities, self-evidently, the greater the need to rely on internal experts. When the public cannot see how decisions are arrived at, it cannot identify problems and criticize mistakes. Accountability declines and so does government effectiveness."

--Beth Noveck

"Accountability is at the core of public knowledge and understanding government processes and results. Transparency is insufficient unless citizens can act effectively if they disapprove of what they've learned."

--Dan Gillmor

Government accountability—the capacity of citizens to hold their government responsible for its actions—is related to transparency, yet not always transparency's natural byproduct. When citizens' role in governance is largely limited to a vote every four years, the process of politics including gerrymandering, executive orders and filibusters can minimize the public's ability to act as an active check against centralized power, even if the decision making process is relatively transparent.

Further Reading

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Harlan Yu and David G. Robinson, "The New Ambiguity of 'Open Government," *UCLA Law Review,* 2012.

3.1.3 Participation

"There's no democracy worth the name that doesn't have a transparency move, but transparency is openness in only one direction, and being given a dashboard without a steering wheel has never been the core promise a democracy makes to its citizens."

--Clay Shirky

"The core challenge for us on the government side…is to develop a richer sense of participation that includes substantially more than simply voting every four years or complaining to our representative once in a while."

--Yochai Benkler

"Reinventing democracy as collaborative democracy will create work for government. [...] [A] collaborative culture does not place the burden on government or the public alone to address complex social problems. Instead, by organizing collaboration, government keeps itself at the center of decision making as the neutral arbiter in the public interest and also benefits from the contributions of those outside of government."

--Beth Noveck

"In the context of government as a platform, the key question is what architectures will lead to the most generative outcome. The goal is to design programs and supporting infrastructure that enable 'we the people' to do most of the work."

--Tim O'Reilly

"No matter who you are, most of the smartest people work for someone else," states Joy's Law. Given this, the persistence of public problems is particularly frustrating in part due to the wealth of expertise, civic-mindedness and innovative-capacity dormant in the public. With relatively few calls for open innovation and a lack of significant opportunities for citizens to help address public problems in their free time, government is largely not leveraging its most valuable asset: the governed.

Further Reading

"Government Designed for New Times: A Global Conversation," *McKinsey & Company*, 2012.

Stephen Macedo, ed., *Democracy at Risk: How Political Choices Undermine Citizen Participation, and What We Can Do About It*, Brookings Institution Press, 2005.

3.1.4 Representation

"We're now living in a post-bureaucratic age, where genuine people power is possible."

--David Cameron

"[A] minimum requirement for any shared medium is that the participants are interacting with it."

--Jeff Conklin

In an increasingly networked world, government does not involve citizens in the decision making process to the extent possible. As it stands, many citizens feel as though governance is the task undertaken by their representatives between elections. On the other hand, many citizens would like to be more involved in the solving of public problems, but the barriers to engagement are too numerous and frustrating. It is incumbent upon government to institute structures that lower barriers to engagement for both types of citizens. While a representative democracy is premised on the few making decisions for the many, we are witnessing the destruction of traditional justifications for government making decisions without the input of those most affected by those decisions.

Further Reading

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3.2 Effectiveness Deficit

"The United States is still living with an operating system that was conceived and designed before railroads were invented."

--Steven Berlin Johnson

"We have a connection here that's broken in the larger scheme, but it works at the local level. We care, and it's important that we care about government, because government really is the way we do things collectively that we can't do individually."

--Jennifer Pahlka

"Institutions themselves haven't been asked to be responsive to citizens…In the private sector, corporations are responsive to their customers because it is measured on whether you're getting paid or people are buying your products…In government, we don't actually measure happiness of customer satisfaction."

--Sonal Shah

As government bureaucracy continues to swell, many believe that government agencies have lost the agility to be consistently effective. With more and more entrenched standards and practices, government is often seen as a one-size-fits-all entity, rather than an agile, targeted, decentralized service provider meant to address the problems of its citizens. While public problems grow larger and more complex, government continues to struggle to swiftly and effectively perform even relatively simple, traditional tasks.

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3.3 Budget Deficit / Cost-effectiveness

"In my years of polling, there has never been an issue such as the deficit on which there has been such a consensus among the public about its importance – and such a lack of agreement about acceptable solutions."

--Andrew Kohut, Pew Research

"Transparency projects helped citizens "take on the entrenched interests in Washington--from mega-contractors that were putting in place armies of consultants with nothing to show for it, to government officials that were so vested in making sure that they continue the project they started, despite throwing good money after bad money."

--Vivek Kundra

With growing federal and state deficits and tightening agency budgets, government agencies and employees are increasingly being asked to do more with less. However, finding intelligent ways to reduce wasteful and redundant spending remains a significant challenge. Like each of the governance deficits, financial concerns, particularly regarding taxpayers' return on investment, threaten to elicit further citizen disengagement. Moreover, many citizens are under the impression, whether or not grounded in fact, that government spending is largely orchestrated by the will of special interests and other back-room negotiators, not the public's best interests or the will of the people.

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3.4 Innovation Deficit

"Government does not have a monopoly on the best ideas"

--Vivek Kundra

"This is the right way to frame the question of Government 2.0. How does government become an open platform that allows people inside and outside government to innovate?"

--Tim O'Reilly

"There's all kinds of hidden value in our systems which you can't even understand until you open them up to see what people do with them. The thing that drives me craziest in conversations with large institutions about large data sets is they want to know in advance what will happen. Why should we open up our data? To which the answer is, you open up your data to see where the value is. It's the value you can't even predict until you try it that you get back."

-- Clay Shirky

While Facebook's unofficial mantra—"move fast and break things"—would likely not make for a strong campaign slogan, its imaginative, innovative message is not incompatible with government. A refusal to succumb to inertia is driving innovation in the private sector. In contrast, government agencies often retain outdated and/or ineffective policies and programs due to some combination of comfort with the status quo, lack of time, resources, or imagination to dream up better solutions. While not the only way to create more innovative governance, increased public participation would likely help inject new ideas into the public sector.

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Videos

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3.5 Expectation Deficit

"...there [is] a growing recognition and frustration that our institutions [are] ill prepared to tackle the complex challenges ahead of us, from climate change to rising inequality...While Millennials strongly believe in an activist government, fewer than 30 percent believe their voice is currently represented in the democratic process."

"Millennials don't want a government that just talks at them. They want to build it together."

--Roosevelt Institute

"You don't need to get everyone in the world to agree. It's a matter of activating the people who want to contribute. It's about getting the doers to do."

--Anil Dash

"The world is becoming younger with over half the population under the age of 25. With many having grown up bathed in digital bits, they are adept with interactive media and completely comfortable with technology. Research shows that those with access to the Internet are the first-ever global generation -- with strong norms for freedom, customization, collaboration, integrity and innovation. [...] What do firms, governments, and educational institutions need to do to embrace them? What can we learn from them when redesigning our institutions for the new realities?"

--Don Tapscott

As barriers to participation and engagement continue to fall across society due to information technologies, government lags behind the private sector and civil society in engagement entries. Not surprisingly, many citizens are growing frustrated that one of the central pillars of society cannot keep pace with their expectations and mirror the institutional advances evident in other areas of their lives. Millennials, or "digital natives," in particular are unaccustomed to unresponsive, monolithic institutions that do not adequately represent their interests or facilitate their involvement. The danger for government is that if these expectations continue to go unmet, they will eventually disappear, resulting in a further disengaged population.

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4. Innovations in Science and Technology

Far from hopeless, the current prevalence of complex social challenges and governance deficits coincides with an era of incredible technological and scientific innovations. These new tools, services, systems and ideas are helping to catalyze paradigm shifts that are moving us from a push culture to a pull culture, and from a consumption-based society to a production-based society. We can categorize these advances broadly into six categories, based on how they can improve our lives:

- Making Us Smarter:
    - Big Data and Visualizations
    - Systems Thinking and Design Thinking
    - Massive Experimentation
- Making Us Collaborate
    - Collaborative Consumption / Sharing and Peer Economy / Networks
    - Web 2.0
- Making Us Unique and Diverse
    - Diversification and Personalization
- Making Us Agile
    - Mobile / The Cloud
    - Web 3.0
    - Open/Linked/Agile Web
- Making Us Empowered
    - Maker / DIY
- Making Us Motivated
    - Gamification
    - Behavioral Science / "Nudges" / The Brain

4.1 Making Us Smarter

Innovations allowing us to obtain new insights, share information more broadly and make decisions based on facts rather than intuition.

4.1.1 Big Data and Visualizations

"Just as the Internet radically changed the world by adding communications to computers, so too will big data change fundamental aspects of life by giving it a quantitative dimension it never had before"
--Viktor Mayer-Schönberger and Kenneth Cukier

"Infographics should (quite literally) be seen more as interfaces to interpersonal engagement than aesthetically pleasing packages of numbers and analytics. The essential question smart 'visualization' and

'visualizers' should address is not, 'What's the best and most accessible way of presenting the data?' but 'What kinds of conversation and interaction should our visualization evoke?'

--Michael Schrage

"Big data—giant datasets amassed by companies, governments, and others—can be used by social innovators to better understand problems and formulate responses. To take full advantage, though, organizations will have to identify or develop appropriate datasets and develop critical analytical skills, currently in short supply."

--Jonathan Bays, McKinsey & Company

Many believe that Big Data "can create significant value for the world economy, enhancing the productivity and competitiveness of companies and the public sector and creating substantial economic surplus for consumers." Big Data generates value by: creating transparency; enabling experimentation to discover needs, expose variability, and improve performance; segmenting populations to customize actions; replacing/supporting human decision making with automated algorithms; and innovating new business models, products and services. The insights drawn from data analysis can then be visualized in a manner that passes along relevant information, even to those without the tech savvy to understand the data on its own terms.

Research Questions

What types of problems can best be addressed by government use of big data?

What types of data are governments not yet collecting, but should be?

What are some examples of particularly effective uses of big data in government?

Can big data using sensors be used to address environmental issues, like climate change?

Are there best practices from the private sector and civil society that government should seek to emulate?

How can government collect valuable data on citizen behavior without creating fear of a surveillance state? How can government protect privacy of data and prevent the "mosaic" effect?

Should agencies commingle government data with commercial data?

How should government strategize an increase in hiring data scientists? Should each agency have a certain allotment? Should a Department of Data be created?

Can government develop a strategy combining the use of big data and other technological innovations--behavioral science and nudges, for example--that will further increase the effectiveness of data collection and analysis?

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4.1.2 Systems Thinking / Design Thinking

"Thinking like a designer can transform the way you develop products, services, processes—and even strategy"

--Tim Brown

"Design thinking, which encourages consideration of a wide array of solutions, can be applied in the field, and used incrementally, is an important tool for social innovators. It approaches problem solving from the point of view of the end user and calls for developing a deep understanding of unmeet needs, thus avoiding the pitfall of imposing the wrong solution on a community."

--Tim Brown

[The fundamental rationale of systems thinking] is to understand how it is that the problems that we all deal with, which are the most vexing, difficult and intransigent, come about, and to give us some perspective on those problems [in order to] give us some leverage and insight as to what we might do differently."

--Peter Senge

"Design thinking—inherently optimistic, constructive, and experiential—addresses the needs of the people who will consume a product or service and the infrastructure that enables it."

--Tim Brown/Jocelyn Wyatt

"We need to radically rethink our approach. Rather than separating systems by function —water, food, waste, transport, education, energy, and so on— we must consider them holistically. Instead of focusing only on access and distribution systems, we need dynamic, networked, self-regulating and resilient systems that take into account the complex socio-economic interdependencies of today's hyperconnected world."

--Sandy Pentland

Two related philosophies are currently helping institutions make smarter decisions at earlier stages of the development process: design and system thinking. Design thinking is characterized by four elements: defining the problem, creating and considering many options, refining selected decisions, picking the winner and executing. Systems thinking, on the other hand, is defined by a focus on the relationships between a system's parts, not just the individual parts themselves.

Researchers at the University of Pennsylvania argue that, by allowing designers and decision-makers to better understand how each of their choices affects the bigger picture, a combined focus on systems and design thinking can lead to more intelligent and sustainable design and strategy.

Research Questions

Can systems and design thinking be incorporated into current government processes, or will their implementation require systems to be overhauled?

What types of problems can best be addressed by systems and design thinking?

Are there any current examples of systems and design thinking being used in government?

What government agencies could benefit most from systems and design thinking?

Are there examples of systems and design thinking from the private sector or civil society that are particularly instructive for government?

Can systems and design thinking be used in conjunction with other technological advances to bolster their effectiveness?

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4.1.3 Massive Experimentation

"By rendering the unmeasurable measurable, the technological revolution in mobile, Web, and Internet communications has the potential to revolutionize our understanding of ourselves and how we interact."

--Duncan Watts

Unlocking the true potential of technology for social good will require a shift in the social sector. We need to see greater experimentation, more funders willing to put money behind early-stage tech experiments, and more people with strong technology backgrounds focusing their attention on how to solve vexing social problems.

--Matt Bannick

As noted above regarding Big Data, more and more decisions are being informed by near-constant data collection and analysis. A/B Testing—presenting two different iterations of a website, for example, to two different segments of the population and determining which is the optimal configuration—is one particularly prevalent example of this culture of massive experimentation. "Over the past decade, the power of A/B testing has become an open secret of high-stakes web development. It's now the standard (but seldom advertised) means through which Silicon Valley improves its online products. Using A/B, new ideas can be essentially focus-group tested in real time." *Wired* lists four central principles of the A/B culture: choose everything, data makes the call, the risk is making only tiny improvements, data can make the very idea of lessons obsolete.

Research Questions

What types of problems can best be addressed by more experimentation in government?

Can an increased focus on experimentation be easily incorporated into current government practices, or is a fundamental restructuring required?

Are there any instructive examples of massive experimentation being used in government?

What government agencies could benefit most from an increased focus on experimentation?

Are there examples of experimentation thinking from the private sector or civil society that are particularly instructive for government?

Can experimentation be used in conjunction with other technological advances to bolster their effectiveness?

How can agencies share with each other best practices uncovered from more experimentation?

Can the benefits of A/B testing inform any offline government practices?

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4.2 Making Us Collaborative

Innovations allowing people to more easily work cooperatively, regardless of physical distance, while significantly lowering barriers to engagement and creating the capacity for unprecedented co-creation.

4.2.1 Collaborative Tools / Sharing and Peer Economy / Networks

"Peer networks are a practical, functioning reality that already underlies the dominant communications platform of our age. They can do things as ambitious as writing a global encyclopedia or as simple as fixing a pothole. In all these efforts you can see the emergence of a new political philosophy. It takes seriously Hayek's insight about the power of decentralized systems to outperform top-heavy bureaucracies, but it also believes that innovation and progress can come from forms of collaboration beyond the market. I like to call the members of this movement 'the peer progressives'."

--Steven Johnson

"I think it's important to design new systems that work in a distributed way. We must make systems that create these social systems, or what I call "social machines", in which people can collaborate together, but do it in a way that's decentralised, so it's not based on one central hub [....] What I'm excited about is when we move from taking existing things like peer review and auctions, which we've now implemented on the web, and we invent completely new social machines."

--Tim Berners Lee

[D]ecentralized networks are more efficient for creativity and problem solving where people have more autonomy to find and use knowledge"

--Lee Rainie

"I think realistically we can see a large improvement in the number of people who can effectively participate in the production of information, knowledge, and culture. I think more people are creating media; more people have access to a community or site where they can speak their minds. More does not mean everyone. Disparities in access and skill continue. But there are many more, and more diversely motivated and organized voices and creative talents participating than was feasible ten years ago, much less 30 years ago."

-- Yochai Benkler

"That principle of collaborative and cumulative creation is a fundamental aspect of modern culture in general. Remixing, rebooting, remaking and re-imagining culture require a "Yes, and..." aesthetic. When a moment of online inspiration blossoms into a full-fledged meme, communities from 4Chan to YouTube are demonstrating their embrace of improvisational culture."

-- Anil Dash

From collaborative word processing and wikis to video conferencing and asynchronous online courses, people are better able to work together, share knowledge and produce new products, services and innovations than ever before. The continuous evolution of the information communication technology space is not only making people more productive, but also making people more connected to their friends, family and community through new networks and platforms. The development of these improved or unique collaborative tools, not surprisingly, has also helped to stimulate significant economic activity.

This boom in collaborative tools and platforms coincides with the growth of a new sharing or peer economy. By leveraging the time, skills and possessions of the crowd, three types of collaborative systems are currently gaining popularity: product service systems, redistribution markets and collaborative lifestyles. Not only do "some see sharing, with its mantra that 'access trumps ownership', as a post-crisis antidote to materialism and overconsumption,"[2] but the new system, with people acting as both consumers and producers, is helping to increase trust between strangers, reemphasize community, benefit the environment, increase producers disposable income and save consumers money.

Research Questions

Should government use collaborative tools built for public use, or develop specifically public-sector options?

[2] "All eyes on the sharing economy," The Economist, March 9, 2013, http://www.economist.com/news/technology-quarterly/21572914-collaborative-consumption-technology-makes-it-easier-people-rent-items

What are some examples of improved collaboration between employees leading to improved effectiveness and productivity?

Can collaborative networks be structured in a way to simultaneously lower barriers to participation for all and ensure that expertise is still valued?

What are some examples from the private sector and civil society where collaboration revolutionized the institutional infrastructure?

How can agencies best catalyze collaboration between its employees?

What are the best practices for maintaining incentives for individual effort while creating a more collaborative atmosphere?

How can government best leverage the growing valuation of use over ownership?

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4.2.2 Web 2.0

"How do we get beyond e-mail to these new social platforms that include an industrial-strength social network? Not through Facebook, because that's not the right tool. But there are tools now: wikis, blogs, microblogging, ideation tools, jams, next-generation project management, what I call collaborative decision management. These are social tools for decision making. These are the new operating systems for the 21st-century enterprise in the sense that these are the platforms upon which talent—you can think of talent as the app—works, and performs, and creates capability."

-- Don Tapscott

"[T]he very heart of Web 2.0 as I define it — I've since boiled that paper down to a one- or two-sentence definition — is it's the fact that the Internet is becoming the platform, and because the Internet is a platform, it's possible to build true network applications. And a true network application is one that uses network effects to get better the more people use it."

-- Tim O'Reilly

Web 2.0, or the "participative web," is driven by the use of platforms that become embedded in people's lives, leading to the near-constant generation of "user-created content" (UCC). "User-created content is already an important economic phenomenon despite it originally being largely non-commercial." The growth of Web 2.0 has allowed people to connect with more people and move beyond a passive role defined by consumption rather than production.

Research Questions

Should government Web 2.0 strategies revolve around existing platforms or the creation of new ones?

What types of problems could Web 2.0 tools help to solve?

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4.3 Making Us Unique

Innovations helping to provide people with more individually meaningful and relevant experiences.

4.3.1 Diversification / Personalization

"We need to create an environment where businesses (and Government) provide information to consumers in simple and relevant ways, and where consumers are readily able to access, control and use information that businesses hold about them."

-- Department for Business Innovation and Skills, Cabinet Office Behavioural Insights Team

"One provocative way of thinking about it is, in terms of a lot of people say that when you type into the search box, that's your query. In the future, you become the query—it's what you typed, it's your background, it's where you are, it's your preferences, it's what you looked at yesterday."

-- Marissa Mayer

The diversification of content and advertising—moving beyond the one-size-fits-all model and working toward greater personalization—is a major ongoing technology-enabled trend. Many, like IBM, believe that the consumers of the future will continue to move toward more highly targeted and personalized content and services. The driving force behind personalized content is relevance—for both the institution/service provider and the consumer. However, as algorithms and end users make more and more decisions, another likely outcome is the waning influence of traditional curators and gate-keepers.

Research Questions

What problems can best be addressed by the increased diversification and personalization of services?

What are some instructive examples of diversification and personalization in the private sector and civil society?

Which government agencies are particularly in need of moving beyond a "one-size-fits-all" culture?

Is there a risk of over-personalization? Can personalized services lead to a limiting of options, particularly in terms of socioeconomic status?

How can agencies best share data with each other regarding personalization, making it possible for citizens' identities to seamlessly travel between agencies?

What other technological innovations can work in conjunction with diversification and personalization to increase their effectiveness?

How can diversification and personalization be informed by big data and geospatial mapping?

Further Reading

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Eli Pariser, *The Filter Bubble: How the New Personalized Web Is Changing What We Read and How We Think*, April 24, 2012

4.4 Making Us Agile

Innovations helping to lift restrictions, physical and otherwise, on how people can collaborate, communicate and work.

4.4.1 Mobile / The Cloud

The proliferation of mobile technologies "is transforming the economic opportunity for millions."
--Brookings

"Clouds don't have to be smarter than the web we have now, but they are likely to be. The web can be thought of hyperlinked documents. The clouds can be thought of as hyper-linked data. Ultimately the chief reason to put things onto the cloud is to share their data deeply. Not just to have a convenient backup, or to have always on access, which the cloud WILL give, but to be able to weave together the data and interactivity of the parts, and thereby make all the pieces much smarter and more powerful than they could possibly be alone."

"As the cloud keeps improving 'network effects' kick in and those improvements draw in more devices, more sensors, more chips, making it even more attractive, until the cloud is omnigenous and includes every kind of thing. Cameras, microphones -- anything producing data will shift toward the cloud. So the cloud is the first place we go to for whatever we want. We may not always find it there, but it will always be the place we begin."
--Kevin Kelly

"M-entrepreneurship" is "allowing people around the world to generate new ideas, business models, and ways of selling goods and services. As we move further into a "post-desktop" world, smartphones' penetration and importance to the economy are only likely to grow. Relatedly, cloud computing—"scalable on-demand provision of remote computing and data storage"—is creating "economic advantages of scale and scope that lower costs, improve speed of service, expand operational flexibility for users and reduce risks in IT deployment," for all types of users, including smartphone users with little physical storage.

Research Questions

Can government develop useful tools that can be used by all mobile phone users, not just those who own expensive smart phones?

What are some examples where the flexibility of cloud storage led to more productivity or the

creation of new economic opportunities?

What government agencies could most benefit from an innovative mobile strategy?

Are there any current examples of innovative mobile initiatives in government?

Can mobile and cloud computing be deployed in conjunction with any other innovative technological tools to increase their effectiveness?

How can government further improve the proliferation and accessibility of inexpensive mobile technology?

Can mobile help government big data initiatives without violating privacy norms?

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4.4.2 Web 3.0

"My view of web 3.0 is that as we are able to do more and more smart things together with machines on the web, so almost as if we were seeing lots and lots of augmented new capabilities, extended capabilities, that one of the key requirements is to have high quality data and content available a kind of a knowledge base that is going to drive these applications."

--Nigel Shadbolt

"[I]t's kind of the sensor revolution, and everything that goes with that, I think is going to be profound and significant. With a GPS just as a particular class of sensor. Our devices are going to be participating in this network."

-- Tim O'Reilly

"I think the Semantic Web is such a broad set of technologies and is going to do so many different things for different people. [...] So, different communities have different faces, different communities always have different social considerations and often there is social steps, which when you finally get people to share data more, to be able to re-use data more; then, just like with interaction of the Web, there is a lot of echos of the same sort of social concerns."

-- Tim Berners-Lee

"[T]he growth of an Internet of things is an important evolution. What we saw during Hurricane Irene is the increasing importance of an Internet of people, where citizens act as sensors during an emergency."

-- Alex Howard

Moving beyond and building upon the platforms that defined Web 2.0, Web 3.0 is defined by mobile and geo-spatial awareness. Some of the distinct elements of Web 3.0 are: real-time, ubiquitous (always connected, always with you), location aware, sensors, tailored, smaller screen; high quality camera and audio. The central effects of Web 3.0, other than an even greater focus on mobile, are expected to be more real-time, real-world services for people, and the continued evolution of the "Internet of Things".

Research Questions

What types of problems could Web 3.0 tools help to solve?

Should government develop an opt-in geo-spatial awareness system, or should sensors automatically collect location data and personalize citizen experiences?

Are there any current examples of geo-spatial tools being used within government to improve service delivery?

What are some private sector or civic society examples of geo-spatial tools, and do they have any lessons for public-sector uses?

Which agencies would be particularly well-suited to geo-spatial projects?

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Video

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4.4.3 Open / Linked / Agile Web

"When governments begin to release data openly on the web, the growing movement of hackers and activists and even internal government agencies and corporations, can begin to use the previously unconnected and undissected numbers, images and graphs to create new ways for you to access valuable new information."

--Tim Berners-Lee

"Many departments have a duty and requirement to publish their content, often in very different forms for very different consumers, and I think one of the things that will be interesting is to imagine a world in which they produce the content in these new standards and it's for the consumer of the content to take that very accessible open standard of data and present it as they wish, so it could take a huge burden off just the publication side [...] It should also help in the way in which data and information can be interlinked between departments."

--Nigel Shadbolt

The open, linked, agile web is working toward the creation of a "Web of Data" that allows for the "large scale integration of, and reasoning on, data on the Web." Allowing systems to work together seamlessly can help foster innovation; positively impact consumer choice and ease of use; provide more access to content; and improve autonomy, flexibility, and diversity. The sharing of data has catalyzed a wide variety of new innovations and entrepreneurship as a result of more potential users having access to valuable raw information—particularly when that data represents more information than the institution collecting the data can adequately leverage.

Research Questions

What types of problems can improved interoperability within government help to solve?

What are some examples of the linked, agile web creating economic activity and/or solving problems in the private sector and civil society?

What agencies could particularly benefit from improved interoperability and linked data?

Do government agencies currently have enough employees with the technical skills necessary to link public data? If not, how should staffing strategies be developed?

How does linked data relate to open data? Are currently "open" datasets as reusable and interoperable as they could be?

How can open, linked and agile data work together with other technological innovations to increase its effectiveness?

What are some examples of open data creating new value for society?

What types of currently closed data would be particularly beneficial to the public if opened?

What agencies are trailblazers in open data? What agencies are lagging behind?

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4.5 Making Us Empowered

Innovations giving people a stronger voice and demonstrating that traditional hierarchical structures are not the only ways to get things done

4.5.1 Maker / DIY

"The DIY movement in science and technology is demonstrating that it can do inexpensively what large companies and even Big Science have spent millions doing. I call them "make-offs," low-budget knock-offs of scientific and industrial technology built with off-the-shelf components. It is a version of what China has been doing to America, benefiting from the R&D that goes into refining the specifications, developing prototypes and building a finished product. Only now, with new digital fabrication techniques and open

source hardware and software, individuals and small companies are in a position to compete globally with a distinctly DIY approach to innovation."

--Dale Dougherty

"Transformative change happens when industries democratize, when they're ripped from the sole domain of companies, governments, and other institutions and handed over to regular folks. The Internet democratized publishing, broadcasting, and communications, and the consequence was a massive increase in the range of both participation and participants in everything digital — the long tail of bits. Now the same is happening to manufacturing — the long tail of things."

-- Chris Anderson

"It's exactly what happened with the Web, which was colonized first by technology and media companies, who used it to do better what they already did. Then software and hardware advances made the Web easier to use for regular folks (it was 'democratized'), and they charged in with their own ideas, expertise, and energy. Today the vast majority of the Web is built by amateurs, semipros, and people who don't work for big technology and media companies."

--Chris Anderson

"[T]he jobs that many of us have in 2030 will be determined by young people who attended a Maker Faire, in industries that they've created. There is no other political movement in America today with a credible claim at creating the jobs of the future."

-- Anil Dash

The Maker/Do-It-Yourself movement, and the related 3D-printing space, are allowing people to move beyond traditional institutions and good-procurement practices to create exactly what they need on their own terms. This "New Industrial Revolution," however, is not just about hobbyists using technology to bypass stores and traditional manufacturers. Tim O'Reilly argues that the "big tent" of the maker movement not only includes DIY, "but the way in which computing is re-engaging the physical world…What makers are telling us is that the physical world is the next frontier for technology."

Research Questions

What are the most popular types of physical products being constructed by makers?

Are there any examples of government procuring products from makers rather than traditional companies?

What are some possible ways for government to engage makers?

Can government provide for greater information sharing and collaboration between makers when working on projects to benefit the public at large?

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Videos

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4.6 Making Us Motivated

Innovations creating new ways to incentivize engagement and participation, and help people make smarter decisions.

4.6.1 Gamification

"*Game developers know better than anyone else how to inspire extreme effort and reward hard work. They know how to facilitate cooperation and collaboration at previously unimaginable scales. And they are continuously innovating new ways to motivate players to stick with harder challenges, for longer, and in much bigger groups. These crucial twenty-first-century skills can help all of us find new ways to make a deep and lasting impact on the world around us.*"

--Jane McGonigal

"Games are the new normal. [...] As games have become ubiquitous, both the private and public sectors have begun to seriously look at the role that gamification can play in their work. Game design, techniques and mechanics, have something to teach those of us who are seeking to engage people on issues of social importance."

-- Al Gore

"While the last decade was the decade of social and the decade of where the framework in which we connect with other people was built, this next decade will be the decade where the game framework is built, where the motivations that we use to actually influence behavior, and the framework in which that is constructed, is decided upon, and that's really important."

-- Seth Priebatsch

Game elements are increasingly being integrated into unexpected areas and expanding engagement in those areas. "Gamification is about taking the essence of games—fun, play, transparency, design and challenge—and applying it to real-world objectives rather than pure entertainment." More than simply integrating "fun" into tedious activities, gamification uses progress paths, feedback and rewards, social connections and optimized interfaces and user experiences to create incentives. Analysts believe that, by 2016, gamification will be an over $2.8 billion industry.

Research Questions

Are game elements currently being integrated into any government services?

What government agencies currently have programs with incentive and/or feedback structures that could easily be gamified?

Are there any examples of gamification from the private sector or civil society that are instructive for gamifying government services?

What types of problems can gamification help to solve?

What agencies would particularly benefit from gamification?

What types of incentives should government use in gamification initiatives? Are badges and the like enough?

Can gamification be combined with other technological advances to increase its effectiveness?

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4.6.2 Behavioral Science / Nudges / The Brain

"If national or local governments are to use these approaches, they need to ensure that they have public permission to do so – i.e. that the nudge is transparent, and that there has been appropriate debate about it."

--David Halpern

"[O]ur understanding of human behavior can be improved by appreciating how people systematically go wrong."

--Cass Sunstein

In their influential book Nudge: Improving Decisions About Health, Wealth, and Happiness, Richard Thaler and Cass Sunstein brought behavioral science and its ability to gently steer people toward smarter decisions to the public consciousness. They argue that by some combination of how the brain works and any relevant esoteric cultural norms, it is possible to present ideas or suggestions in an optimal way, helping people to improve decision making, without directly making decisions for them. Instead of relying on regulation, it is possible for government to initiate social changes without infringing on the public's free will.

Research Questions

Are there any relevant examples of behavioral science being used by government now?

What types of problems are behavioral science and nudges particularly well-suited to solve?

What are some instructive examples of behavioral science being used in the private sector and civil society?

Can behavioral science help address the obesity epidemic?

Can behavioral science help minimize energy usage and slow climate change?

What are the ethical implications of government using behavioral science to nudge people to take actions that they otherwise would not take?

How can behavioral science be used in conjunction with other technological and scientific innovations to increase its effectiveness?

Is it possible to allow citizens to opt-in to government behavioral science projects without undercutting projects' effectiveness?

Can the use of behavioral science help decrease government spending?

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5. Governance Experiments

To capitalize on this perfect storm for reimagining governance, we must ride the waves of change, and leverage these new technological and scientific innovations to mitigate current governance challenges and address complex social challenges. Governments and citizens are experimenting with new platforms and methods for solving problems together. Those experiments can be placed into two categories:

- **Collaborative**: Public information provision, wider consultation, citizen co-creation, open idea-generation and decentralized decision-making can both involve more voices in the process of governance and make it easier for traditionally segregated people and agencies to work cooperatively
- **Data-Driven**: the use of big data to collect and analyze information and open data to release information to the public can make both government and the public smarter and facilitate more strategic, evidence-based decision making

5.1 Collaborative

A more innovative system of governance is, among other things, premised on leveraging the expertise, opinions and abilities of the public. While increased transparency and accountability are also open government goals, the involvement of citizens is not simply a one-way street, in which government pulls back the curtain and allows citizens to more closely scrutinize its doings. Rather, an innovative government calls on its citizens to participate in improving governance itself. Allowing for more engagement and participation from the public is desirable because: everyone has some expertise; when asked, people contribute to publicly beneficial projects; citizens are willing to do real work beyond simply checking a petition box; and, if designed well, participation does not simply lead to plebiscite. Programs focused on increasing the collaborative capacity of government largely fall into one of five categories: information provision, consultation, co-creation, idea-generation and decision-making. In each category, citizens act as collaborative partners with government and/or with each other, not simply as the constituents of a powerful, centralized institution.

5.1.1 Information Provision

"Liberty cannot be preserved with a general knowledge among the people, who have a right…and a desire to know."

--John Adams

"The informing function of Congress should be preferred even to its legislative function."

--Woodrow Wilson

Often the first step in collaborative governance projects, information provision refers to the systems put in place to allow citizens to better monitor their government. While open data and specifically

transparency-oriented innovative governance initiatives are similarly focused on providing citizens with more raw information on the workings of government—often to catalyze the private sector or to root out corruption and improve accountability—information provision as a step toward greater citizen engagement and collaboration, on the other hand, is more focused on providing citizens with the knowledge necessary to make informed choices on policy matters, formulate solutions to pubic problems, collaborate with other citizens equipped with the same knowledge base and recognize any current governance blind-spots or deficiencies.

Tools

Crowdsourced Monitoring: allowing citizens to observe and scrutinize the workings of government and public concerns under government's purview

Raw Transparency: an open-by-default system for government information

Case Studies

Mumbai Votes

Mumbai Votes is a non-partisan NGO that aggregates data on MPs, MLAs, Corporators, and candidates, and allows citizens to track and monitor public officials' activity by searching for information on a specific official or browsing by geographic location.

Mumbai Votes uses a vast database of profiles, interviews, articles, manifestos, and public data to create profiles, and rates officials' activities in specific areas, such as attendance, campaign promises, participation, spending, and court records.

By aggregating such a wide set of sources, government officials' activities become more transparent and citizens can better hold their elected officials accountable.

Research Questions

- How does the provision of information impact behavior?
    - Does transparency of governmental activities change political attitudes or behavior?
    - Does smart disclosure of risks and dangers alter private behavior?
- What are some of the results of crowdsourced monitoring projects?
- Are citizens more likely to engage with monitoring projects related to a certain government responsibility or public concern?
- Are there certain types of government information or certain government agencies that are well-suited to a system of raw information by default?

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5.1.2 Consultation

"Many forms of Government have been tried, and will be tried in this world of sin and woe. No one pretends that democracy is perfect or all-wise. Indeed, it has been said that democracy is the worst form of Government except all those other forms that have been tried from time to time"

--Winston Churchill

"The core challenge for us on the government side…is to develop a richer sense of participation that includes substantially more than simply voting every four years or complaining to our representative once in a while."

--Yochai Benkler

"We have a connection here that's broken in the larger scheme, but it works at the local level. We care, and it's important that we care about government, because government really is the way we do things collectively that we can't do individually."

--Jennifer Pahlka

With the lowered communications barriers created by the proliferation of ICTs, citizens are increasingly able to have their voices heard within government. Moving beyond the traditionally available analogue forms of citizen participation—letters to an agency or representative, for example—people with a particular stake in a certain policy decision, or those with particular expertise in the subject area, are increasingly demanding that government consult with them, and factor their opinions and recommendations into eventual policy-making. This form of public consultation can also take the form of e-petitions, which, while not likely to include the thoughts of only experts on a given subject, serve to give representatives a better understanding of public opinion on an issue. Few are advocating a move to fully direct democracy, but there is little excuse for government not to at least consult the increasingly accessible public opinion on issues.

Tools

Participatory Budgeting: citizens deciding how to allocate government budgetary funds

E-Petitions: online citizen-generated petitions that elicit an official response when they receive enough public support

Rating and Reputation: feedback and assessment systems allowing citizens to grade government employees, agencies and services

Case Studies

Mobile-Enhanced Participatory Budgeting in the Democratic Republic of Congo

The World Bank Institute's ICT4Gov program is leveraging mobile technology to enhance participatory budgeting processes in the Democratic Republic of Congo, making governance more inclusive, and empowering citizens to demand and work towards improved governance.

Through mobile technology, including simple SMS services, citizens vote on the priorities they believe to be most pressing for their communities. Once a consensus is reached, the local government devotes a percentage of the local investment budget to the project selected by the citizens.

Mobile phones are also used to announce the decision, making the process more transparent. Through text messages, citizens can then offer feedback and monitor the projects.

YouChoose

YouChoose is an interactive platform developed by the London Borough of Redbridge to engage its citizens in the decision-making process of a potential £25 million reduction to its revenue budget. The tool lets citizens choose programs to expand or to cut, vote on revenue proposals, and submit broader feedback. The Borough Council weighed submissions during its official budget meeting in March 2012.

The custom platform allows the local community to more actively participate in governing, while increasing the transparency of the budgeting process.

FixMyStreet

FixMyStreet is a site to help people report, view, and discuss local problems directly with their local council by simply locating them on a map and submitting a report. The site creates a permanent record of the issue and is submitted to the relevant council by email. Alternatively, citizens can discuss the problem on the website with others, and then together lobby the council to fix it, or fix it directly themselves.

The platform is simple yet effect, in that it directly connected citizens to their local officials, who can then respond and improve government service-delivery accordingly.

Research Questions

- Considering that a network effect is necessary for most consultation projects to be successful, how can government "market" consultation opportunities and draw in as many participants as possible?
- What are the best practices for engaging all those potentially affected by a policy decision, including those who may not be technically savvy?
- Is there a way to give special precedence to expert opinions without disenfranchising ordinary citizens with opinions on a matter?
- How can government ensure useful e-petition submissions without acting as a censor?
- What are the effects of rating and reputation programs on the efficiency, responsiveness and innovation of government agencies and employees?
- What are the risks of inaccurate or spiteful government ratings by citizens?
    - How can systems be optimized to encourage construction criticism while minimizing the effects of scurrilous ratings?

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5.1.3 Co-creation

"We need to start with our youngest people…we start by teaching young people that we live not in a passive society–a read-only society–but in a writeable society where we have the power to change our communities, to change our institutions."

--Beth Noveck

"We know a whole world of pressing social problems can be improved by peer networks, digital or analog, local or global, animated by those core values of participation, equality and diversity. That is a future worth looking forward to. Now is the time to invent it."

--Steven Berlin Johnson

"I think government will look like in ten years or twenty years is really more people participating in more effective manners—not just waiting for the government to solve their problems but being a part of solving that problem, because it's going to become easier to do it."

--Sonal Shah

"But we have always understood that when times change, so must we; that fidelity to our founding principles requires new responses to new challenges; that preserving our individual freedoms ultimately requires collective action."

--Barack Obama

As evidenced by the rise of Wikipedia, people often do not require a hierarchical management system in place to create useful things. As such, citizen participation need not always be directed toward better informing government or collaborating directly with policymakers. While the "Government as a Platform" ideal is largely informed by Open Data, it can also apply to governments simply putting platforms in place for citizens to collaborate with one another. US CTO Todd Park, for one, has espoused the transformational possibilities of simply giving people with different backgrounds and expertise the ability to collaborate and fill in their respective knowledge gaps. Whether through crowdsourcing, open innovation contests and challenges, or cross-industry and cross-sector partnerships, citizens working together can create new solutions to public problems.

Tools

Crowdsourcing: soliciting public contributions from the online community

Wikis: evolving websites or documents that permit users to add, modify and delete content

Contests: prize-induced calls for submissions, innovations or solutions directed to the public

Hackathons: events in which computer programmers extensively collaborate toward an end project goal

Games / MOOCs: massively open online games or courses that drive engagement through low barriers to entry and a sense of fun

Predictive Markets: speculative markets that allow citizens to wager on the probability of an event

Case Studies

The People' Assembly Rahvakogu (Estonia)

The People's Assembly Rahvakogu is an online platform for crowdsourcing ideas and proposals to amend Estonia's electoral laws, political party law, and other issues related to the future of democracy in Estonia.

The Assembly focuses specifically on five areas: the electoral system, political parties, competition between the political parties and their internal democracy, financing of the political parties, strengthening the role of civic society in politics between the elections, and stopping the politicization of public offices.

During the first stage, which was completed in January 2013, proposals were submitted, commented on, supported, or criticized online.

- Stage Two, February 2013: Analysts will group the proposals and comments into bundles of different possible scenarios and perform an impact analysis.
- Stage Three, March 2013: "Deliberation Day" for selecting the most preferred scenarios at public meetings, which will then be presented to the parliament, Riigikogu, by the President of the Republic.

By using a web platform to crowdsource citizens' proposals, The People's Assembly Rahvakogu seeks to increase effective participation and potentially generate new solutions to policy and implementation problems.

Avaaz.org

Avaaz seeks to empower millions of people from all walks of life to take action on pressing global, regional, and national issues—from corruption and poverty to conflict and climate change—through a model of Internet organizing. This model allows thousands of individual efforts, however small, to be rapidly combined into a powerful collective force.

The Avaaz community has 18m members, campaigns in 15 languages, and is served by thousands of volunteers, in addition to a core team spread over 6 continents. Each year, Avaaz sets overall priorities through all-member polls, and campaign ideas are polled and tested weekly using 10,000-member random samples—only initiatives that find a strong response are taken to scale. Campaigns that do reach the full membership are then super-charged by, often, hundreds of thousands of Avaaz members taking part within days or even hours.

Avaaz aims to be a "grassroots United Nations," that, through organizing efforts aided by social media and other Internet platforms, can unite a collective, global voice to affect government change around the world. It exemplifies how citizens can work together to affect real political, legislative, and governmental change. Avaaz claims its efforts contribute to progress in a wide range of issues,

including the 2012 UN decision to recognize Palestine as a state and initiatives aimed at preventing deforestation in certain parts of the Amazon.

Research Questions

- How can government facilitate collaboration and partnerships across the public, private and civil sectors?
- What kinds of collaborative structures and settings are best suited to increasing citizen trust in government?
    - Should government continue to play the role of middleman in collaborative structures, or should government focus on creating platforms that do not require a continued role for government?
- What structures are best suited to increasing participation?
    - Have certain agencies or technical platforms been more successful in inspiring citizen participation?
    - How can structures be designed that take advantage of the potential of state-of-the-art technology, without alienating those who are not tech savvy?
- What factors incentivize this kind of citizen engagement?
    - Is concern for the public good enough, or are more personal, tangible incentives required to spur engagement?
- How does participation in co-creation impact citizen engagement and trust in other areas of politics?
    - Do positive co-creation experiences lead to more civic-minded citizens? Do negative experiences have the opposite effect?
- What are the legal concerns, particularly related to intellectual property, that arise when government makes use of publicly co-created offerings?

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5.1.4 Idea-generation

"Governments have to become better at leveraging the creativity of those closest to the problem, be they employees or citizens."

--Stephen Goldsmith

One of the effects of allowing for more voices in governance is an increased awareness within government that it is not always the government employee tasked with solving a problem who has the greatest expertise in that area or specific knowledge about that individual problem. As such, government is increasingly turning to the public to help provide ideas for addressing problems and bring previously unnoticed issues to light. In addition to helping government accumulate more ideas, leveraging the public in this way can help lower government costs, like research and development.

Tools

Brainstorming: a collaborative system of generating new solutions to problems

Policy Agenda-Setting: citizens helping to influence which issues are taken up by their representatives

Challenges: large-scale audacious goals that are meant to drive innovation and cross-sector partnerships

Open Innovation: an open call meant to draw on the ideas and expertise of citizens, the private-sector and civil society to solve public problems

Case Studies

Challenge.gov; VA Center for Innovation

Challenge.gov is an online challenge platform administered by the U.S. General Services Administration (GSA) that crowdsources ideas from the public to address the nation's biggest challenges in multiple sectors (e.g., Defense, Economy, Education, Energy & Environment, Health, International Affairs, Jobs, Public Safety, Science & Technology, Software, Technology.)

When a government agency posts a challenge, any member of the public can submit a solution, according to the given criteria. Once a challenge is created, other people can join the challenge to propose a submission, discuss the challenge, and show support. Prizes, which are payable only if a challenge is solved, provide an incentive for members of the public to engage with problems and work toward solutions. The prizes may be monetary or non–monetary.

Challenges can range from the fairly simple—idea suggestions, creation of logos, videos, digital games and mobile applications— to proofs of concept, designs, or finished products that solve the grand challenges of the 21st century.

Following a similar competitive crowdsourcing process, the VA Center for Innovation uses internal and external crowdsourcing competitions to find solutions for its department-specific challenges.

By tapping into the crowd in these challenges, the government generates more ideas (both internally and externally), encourages citizen participation (especially with prizes), and inspires citizen collaboration as people work together on solutions to public problems that they might otherwise not have addressed.

Research Questions

- What kinds of platforms and systems elicit the most high-quality policy ideas from the "wisdom of the crowd"?
- What are the measurable impacts of publicly generated policy ideas? How can this be optimized?
- What kinds of collaborative structures, settings, or mechanisms are best suited to generate effective policies? Which mechanisms elicit high-quality policy ideas?
    - What is government's role in the most successful examples? Agenda setter? Matchmaker?
- What are the ideal incentive structures for eliciting ideas from the public?
- Are ideas gathered through ICTs more likely to reflect the desires of the technically savvy and relatively affluent? How can more voices be brought into the idea-generation conversation?
- How should government decide when to look to the public for ideas or invest in traditional research and development?

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5.1.5 Decision-making

"Part of the problem is lack of information. The bigger problem is power. The people experimenting don't have legislative power. The people with legislative power are not experimenting with participation. They are experimenting with transparency, but transparency is openness in one direction."

--Clay Shirky

"We pledge to engage more of our citizens in decision-making -- because it makes government more effective and responsive."

-- Barack Obama

"Government institutions haven't typically been in the business of involving citizens so directly in the way we make decisions or using new technology. We haven't been able to do so because we haven't, frankly, had the technology by which to do so before. So there hasn't been a lot of institutional experience with citizen engagement in the way that might now become possible in a Web 2.0 environment, but there also hasn't been as much experience in civil society, either."

--Beth Noveck

Beyond consulting with their representatives regarding policy decisions, technological innovations are opening up the possibility of more direct democracy in public decision-making. The ability to quickly and easily collect provide a voting mechanism to the public can greatly enhance public decision-making even within traditional representational democracy. Perhaps not optimal in every policy decision, an increased role in decision making for the public at large, or, at least, those directly affected by certain policy decisions containing hyper-local expertise, could help decisions more accurately reflect public opinion. Citizens can also participate in the decision making through proxy voting—a system where representatives selectively surrender their voting rights to other individuals or the public. The German Pirate Party, in particular, is experimenting with a system where representatives essentially act as the proxies for public party members in all decision-making processes.

Tools

Direct Democracy: a system in which citizens may cast a vote on an issue, rather than delegating that responsibility to an elected representative

Proxy Voting: citizens declining their vote and delegating it to a chosen representative

Research Questions

- Do direct democracy projects accurately reflect public opinion, or only the opinion of a vocal minority?
- How can government inspire people to take part in decision-making who do not represent a biased, entrenched opinion on one side of an issue or the other?

- How can citizen decision-making be optimized so as not to slow down the legislative process?

Case Studies

Liquid Feedback / Liquid Democracy

Liquid Feedback is an open-source software platform that creates a sliding scale of citizen engagement, ranging from direct democracy to fully representative democracy. Voters have the opportunity to choose which topics they would like to directly vote on, and for all other topics, they can use a representative proxy to cast a vote for them. The German Pirate Party uses Liquid Feedback both to provide party members with a forum to propose ideas and crowdsource policy suggestions (i.e., idea-generation and co-creation) and to give them the choice to directly participate in decision-making, by casting votes that shape the official party platform.

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5.2 Data-Driven

The modern world is increasingly awash in potentially valuable information from quantified behavior, sensors and user-generated social media information, to name just a few. The innovative use of data within government falls into one of two categories: Open Data or Big Data. Both categories are premised on the idea that a focus on data collection and analysis can lead to new and potentially valuable insights resulting in more intelligent decision-making and new economic activity. The critical difference between government Open Data and government Big Data is the direction of

data flow—Open Data is defined by government-collected information being released to the public, and Big Data refers to the massive collection and analysis of data by government.

5.2.1 Open Data

"Openness is about accountability. Openness is about participation. And it is about how people can take part in and influence decisions in their societies….These are the very values that should govern our societies."

--Jens Stoltenberg

"Open data is an important pillar of open government initiatives and those are about changing the way government and its constituencies relate and communicate."

--Jose M. Alonso

"It's about turning government into a platform for open innovation. Data by itself is useless. I can't feed my baby daughter data, as much as I'd love to because I love data. It's only useful if you apply it to create an actual public benefit. You need appliers — you need entrepreneurs to know data's there available in order for them to turn it into awesomeness."

--Todd Park

"A new, more dynamic approach is now emerging--one that enlists private actors as allies in making government information available and useful online. [....] These changes justify a new baseline assumption about the public response to government data: when government puts data online, someone, somewhere, will do something innovative and valuable with it."

--David G. Robinson, Harlan Yu, Edward W. Felton

Considering its scope and the thoroughness of the public bureaucracy, the government holds a massive amount of publicly generated data. Yet, in these increasingly budget-conscious times government cannot even approach utilizing all of its potentially valuable data. Open Data, the public release of government information in reusable formats, not only helps to increase government transparency and accountability, it also helps to catalyze private-sector economic activity and make use of valuable data that otherwise would not go toward benefiting the public good. Like many Open Government projects, Open Data is not only about making government itself run better, it is also about shifting responsibilities that government cannot address to willing and able private and civil actors.

Tools

Data Portals: websites that collect datasets from across government agencies, providing them to citizens through a single entry point

Innovation and Entrepreneurship Data Programs: initiatives specifically focused on providing government to the private-sector in the interest of creating new companies and catalyzing economic activity

Linked Data: interoperable data formats that allow for a wider variety of uses

Case Studies

Data.gov

In 2009 the U.S. government launched Data.gov, an open data website that provides citizens with free and open access to public data in interactive formats (e.g., maps), downloadable datasets, or through APIs.

A primary goal of Data.gov is to improve access to federal data and expand the creative use of those data beyond the walls of government, by encouraging innovative ideas (e.g., web applications). Data.gov strives to make government more transparent and is committed to creating an unprecedented level of openness in government. The openness derived from Data.gov improves democracy by fostering transparency and accountability, while also promoting the efficiency and effectiveness of government.

Recovery.gov

The U.S. Recovery Act required the Recovery Board to create and manage a website "to foster greater accountability and transparency in the use of funds made available in this Act." The site—Recovery.gov— aims to achieve this goal by displaying for the American public the distribution of all Recovery funds by federal agencies and how the recipients are spending those funds. All the data on the site comes from two sources:

- Federal agencies submit Weekly Financial Reports that can be found in the Agency Reported section of the site.
- The recipient data displayed on the site is pulled directly from the reports submitted by the recipients themselves at FederalReporting.gov, also managed by the Board.

Citizens can explore data on the overall categories funded by the Recovery Act (e.g., education, health, housing, unemployment, family services, tax benefits); data on their own state (e.g., total dollar amounts for all contracts, grants, and loads); and local-level data—obtained by entering a zip code—to obtain details on specific projects in their neighborhood (e.g., job numbers, funding for each project, and top funding recipients.) Data is provided in a searchable map, as downloadable sets, or by accessing the site API.

Aside from using data technology to make Recovery Act fund distribution transparent to the public, the site also offers the public the ability to report suspected fraud, waste, or abuse related to Recovery funding, thereby enabling citizens to hold agencies and officials accountable.

Finally, citizens can also search for job opportunities and contracts up for bid, as well as apply for grants and find loan information.[#]

Kenya Open Data Initiative

The Kenya Open Data Initiative seeks to foster an innovation eco-system around government data by providing citizens access to government datasets and encouraging developers to interact with the data and create innovative applications to help solve public sector problems.

On July 8 2011, President Mwai Kibaki launched the Kenya Open Data Initiative, making key government data freely available to the public through a single online portal. The 2009 census, national and regional expenditure, and information on key public services are some of the first datasets to be released. The website is a user-friendly platform that allows for visualizations and downloads of the data and easy access for software developers. Indeed, tools and applications have already been built to take this data and make it more useful than it originally was.

The initiative has been widely acclaimed globally as one of the most significant steps Kenya has made to improve governance and implement the new Constitution's provisions on access to information. As of November 2011, there are close to 390 datasets that have been uploaded to the site, with a plan currently in place to upload more data over the next year. There have been over 17,000 page views and over 2,500 dataset downloaded and embedded to various websites and portals. There are now over a hundred requests from the public for new datasets, and there is a clear demand for more data to be made available.

The goal of the Kenya Open Data initiative is to make core government development, demographic, statistical, and expenditure data available in a useful digital format for researchers, policymakers, ICT developers, and the general public.[#]

Research Questions:

- What kinds of data sources and representations are most accessible to citizens?
    - Does the original data format or source agency impact the data's accessibility?
- How does trust in government change in response to the provision of data?
- How does confidence in government effectiveness change in response to the provision of data?
- Does the provision of new data measurably improve governmental effectiveness or service delivery?
    - What is the appropriate timeline to determine whether or not new data provisions have been effective?

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5.2.2 Big Data

"Data is the new oil."

--Clive Humbly

"Information is the oil of the 21st century, and analytics is the combustion engine"

--Peter Sondergaard

"Data is the new oil? No: data is the new soil."

--David McCandless

"The fact that we can now begin to actually look at the dynamics of social interactions and how they play out, and are not just limited to reasoning about averages like market indices is for me simply astonishing. To be able to see the details of variations in the market and the beginnings of political revolutions, to predict them, and even control them, is definitely a case of Promethean fire. Big Data can be used for good or bad, but either way it brings us to interesting times. We're going to reinvent what it means to have a human society."

--Sandy Pentland

While Open Data is defined by government data being released for public scrutiny and use, Big Data refers to the wide-scale collection and analysis of data by government. With the proliferation of cheap storage, the quantifiable nature of digital technologies and the growing omnipresence of sensors, government, like businesses, have unprecedented access to an overwhelming amount of potentially valuable information. While raw data is largely useless until analyzed, either through algorithms or human intervention, and put to use, government is increasingly in control of a massive amount of what many are calling the raw material of 21st Century innovation. Indeed, the mantra, "Data is the new oil," is meant to illustrate both the incredible value of data and the idea that, in the modern world, those who control data are those with the most power. For government, the intelligent use of Big Data can lead to new insights on everything from public opinion to environmental concerns. And while government is not necessarily focused on creating innovative new startups, a public-sector culture of data and analytics can lead to better decision-making, more strategically sound allocation of resources and, eventually, more valuable datasets to release to the public, unlocking even more value to the public.

Tools

Data Mining and Analysis: the collection, aggregation and study of massive amounts of data, often using algorithms to arrive at new insights

Sensor Data: automatically collected information from electronic devices

Predictive Analytics: projections based on data collection and analysis that can lead to preemptive interjections and/or improved planning

Sentiment Analysis: using new technologies to identify and extract subjective information from source materials, like social media submissions

Experimentation / Trial and Error: learning from failures by meticulously documenting steps taken, therefore allowing for more strategic iteration

Geospatial Mapping: using data collected at a specific geographic location to gain insights about that area

Visualization: presenting data in an attractive way that is understandable for those without advanced data analysis skills

Case Studies

BioSense 2.0

BioSense 2.0 is a U.S. public health surveillance system managed by the Center for Disease Control with the flexibility to monitor for all hazards and health outcomes. It is the only system that helps state and local health departments and CDC quickly share information with each other across city, county, or state borders.

BioSense is the only public health tool that provides officials a picture of what is happening in near real-time with any health condition, anywhere and everywhere in the country by aggregating information on emergency department visits and hospitalizations from multiple sources, including the Department of Veterans Affairs, the Department of Defense, and civilian hospitals around the country.

Analysis of data through BioSense provides insight into the health of communities across the country. Such data are vital to guide decision making and actions by public health agencies at local, regional, and national levels.[e]

Atmospheric Radiation Measurement Climate Research Facility

The Atmospheric Radiation Measurement (ARM) Climate Research Facility is a multi-platform scientific user facility that supports the study of alterations in climate, land productivity, oceans or other water resources, atmospheric chemistry, and ecological systems that may alter the capacity of the Earth to sustain life. Global climate change research also includes the study, monitoring, assessment, prediction, and information management activities to describe and understand the Earth's physical, chemical, and biological processes.

ARM provides the national and international research community with an unparalleled infrastructure for obtaining precise observations of key atmospheric phenomena needed for the advancement of atmospheric process understanding and climate models, and creates enormous sets of data, which are all available to the public through its data archive.

Research Questions

- What are the most vital untapped sources of data?
- What are the most effective mechanisms for generating, analyzing, and transmitting data in the policymaking process? How should these mechanisms vary with different policy contexts?
- Do these improvements in service delivery measurably improve trust in government?
    - Does the amount of data stored and analyzed by the government—with noble intentions—still create public concern about privacy and security?
    - Do people want government to be smarter considering the means of gaining that intelligence?

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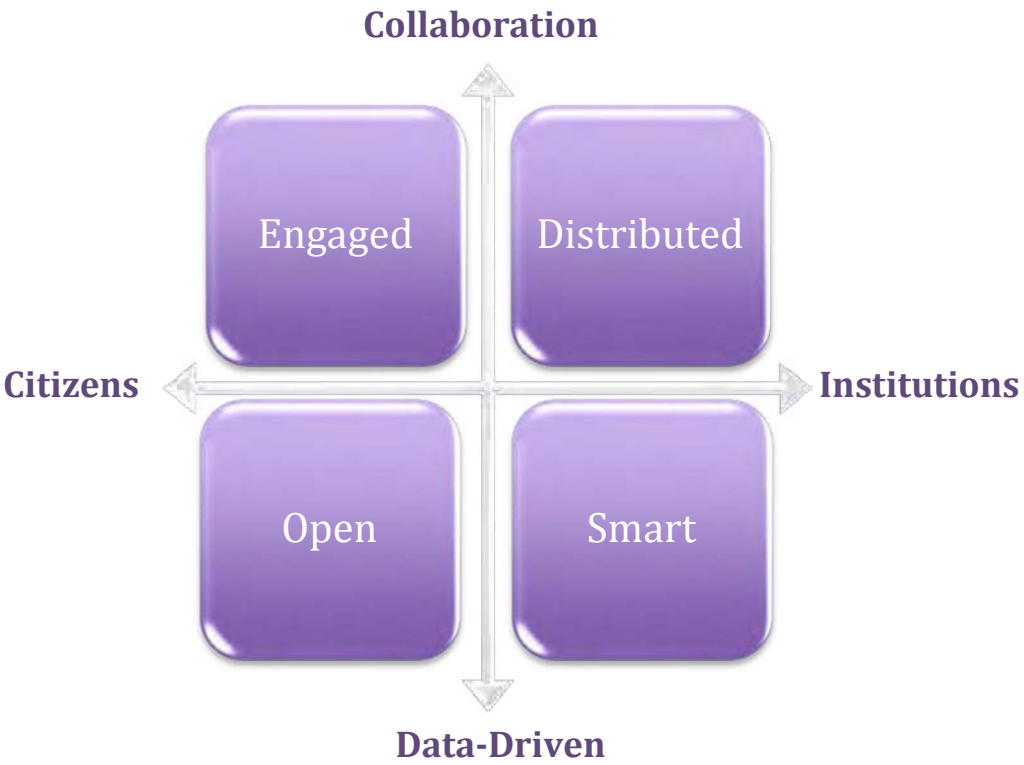
Traditionally, the narratives in the field have characterized innovative governance programs in the following way, dependent on whether they are collaboration- or data-focused and addressed at citizens or institutions. Those narratives traditionally fall into one of four categories:

- **Engaged**: collaboration among citizens
- **Open**: providing data to citizens
- **Distributed**: collaboration across institutions and sectors
- **Smart**: data informing institutions



6. Toward Re(imagining) Governance – Paradigm Shifts

Beyond increasing the collaborative capacity and intelligence of the public sector in general, we are moving toward a reimagined system of governance, which will result in a paradigm shifts, characterized by areas of weakness transitioning into areas of strength. The six broad types of shifts within governance are:

- **From Deliberation to Collaboration**: by breaking down barriers to collaboration, problems can be solved by a wider range of stakeholders and experts, rather than relying on the abilities of designated government employees and agencies
- **From Centralized to Decentralized**: moving beyond a push or broadcast culture, the use of technology can involve more voices in the process of governance
- **From Faith-Based to Evidence-Based**: rather than placing a premium on "intuition" or experience, an information-rich, experimental culture in government can lead to improved decision making
- **From Uniform/Entrenched to Diverse/Iterative**: leveraging new voices, acting on new ideas and breaking up inertia can make government less homogenous and allow for more experimentation and trial-and-error
- **From Closed to Open**: instead of government existing as separate from the governed, an open, inclusive system will not only lead to more transparency and accountability, it will also make government more effective by involving more people in problem-solving
- **From Intermediary to Platform**: by taking away its responsibility for curating and allocating information, government can become lighter and more agile, while creating an infrastructure that permits citizens to utilize public resources in ways not directly prescribed by government

6.1 From Deliberation to Collaboration

"The Web does not just connect machines; it connects people."

--Sir Tim Berners-Lee

"Collaboration is a new form of political power."

--Susan Crawford

"The emergence of social production on the Internet has given us countless newer, cheaper, easier, and more rewarding platforms for collaboration than we have ever had before."

-- Yochai Benkler

"Collaboration offers a huge potential payoff in the form of more effective government. Effective government, in turn, translates into better decision making and more active problem solving, which could spur growth in society and the economy."

-- Beth Noveck

"We know a whole world of pressing social problems can be improved by peer networks, digital or analog, local or global, animated by those core values of participation, equality and diversity. That is a future worth looking forward to. Now is the time to invent it."

--Steven Berlin Johnson

Of the new technological innovations that can be leveraged by government, a large proportion is communicative and/or collaborative in nature. As such, a re-imagined government can move beyond individual or small-group deliberation to a system that draws in the efforts and opinions of a wider array of stakeholders and problem-solvers, both within government and in other sectors. Newly collaborative processes are closely related, both in terms of influencing and being influenced by, other features of re-imagined governance like decentralization, networks and diversity.

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6.2 From Centralized to Decentralized

"Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has."

--Margaret Mead

"I think the Arab Spring and a lot of activities we see going on today show that the public is now sophisticated enough to disrupt those in power who should be disrupted."

--Joi Ito

"The role of citizens in our democracy does not end with your vote. America's never been about what can be done for us. It's about what can be done by us together through the hard and frustrating, but necessary work of self-government."

--Barack Obama

"Let us never forget that government is ourselves and not an alien power over us. The ultimate rulers of our democracy are not a President and senators and congressmen and government officials, but the voters of this country."

--Franklin Delano Roosevelt

"Humanitarianism in the Network Age calls for "more diverse and bottom-up forms of decision-making—something that most Governments and humanitarian organizations were not designed for. Systems constructed to move information up and down hierarchies are facing a new reality where information can be generated by any-one, shared with anyone and acted by anyone."

--United Nations Office for the Coordination of Humanitarian Affairs

Closely related to its collaborative nature, a re-imagined government is defined by decentralization, rather than centralized, consolidated power at the top. The so-called vending machine structure of government—taxes go in, services come out—is gradually being replaced by a more bottom-up, networked system. Instead of citizens being governed, they act on the opportunity to take part in the governing process. Instead of a strict chain-of-command and a decision making process that is disproportionately influenced by "HiPPO" (highest paid person's opinion), a new governance structure can act on the *best* ideas, whether they come from inside government or otherwise, without consideration for the title or salary of the individual(s) responsible for them.

In his book *Future Perfect*, Steven Berlin Johnson coins the term "peer progressives" to describe those who believe in such a decentralized power structure. Peer progressives have "an outlook that favors building the kind of society where power is distributed more or less equally among a self-regulated network of peers, who are free to contribute to the greater good according to where their strengths lie."

Of course, for this networked form of governance to become reality, citizens must be willing and able to participate. With this in mind, Susan Crawford argues that the first step toward meaningful

open government is the creation of affordable, national high-speed fiber networks. In other words, to allow for a network of citizens to influence the workings of government, they must be given the technological ability to network.

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6.3 From Faith-Based to Evidence-Based / Smart

"This feels like an idea whose time is coming, or at least returning. If governments want to know what works, they have to be willing to invest in finding out. That will require them to experiment."

--Geoff Mulgan

In optimistic moments, I hope that we are moving towards a period of more overtly experimentalist governance, where governments are willing to test their ideas out – to run RCTs and embed continuous

learning and feedback into everything they do. Experimental government would certainly be better than government by instinct, government by intuition and government solely guided by ideology.

--Geoff Mulgan

"A culture of persistent regulatory experimentation and evaluation would build upon both of these great ages and propel us into a third era of regulatory reform."

--Michael Greenstone

"By thinking hard about evaluation even during the development of a new rule, agency officials will not only be better positioned to conduct high quality evaluation research at some point down the road – but the discipline such thinking imposes should also help officials improve the design of the rule at the outset."

--Cary Coglianese

Traditionally, governments have funded research grants, broadband infrastructure and science education, but they spend relatively nothing on reinventing government institutions. Instead of experimenting with different policies in disparate jurisdictions, government needs to begin experimenting with how we make policies, spend money, and legislate in the first place. Improved data collection, analysis and visualization capabilities can help to create a more experimental culture in governance. Whether it is analyzing the return on investment of a particular program, analyzing changes in citizen engagement depending the file format of released data or using A/B testing to optimize government websites, new intelligence technologies provide government with the ability to move beyond using faith and intuition and toward using evidence as the basis for decision making.

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Launch of the What Works Centres

6.4 From Uniform/Entrenched to Diverse/Iterative

"What's the kind of political theory that we need? A political theory that has more to do with hacker ethics and the culture of duocracy and meritocracy and participation…without giving up the sense of quality of representation and equality of voice."

--Yochai Benkler

"[I]n an era when information and communications technology makes it possible for many more people to work together, we can redesign our institutions and create more diverse mechanisms for solving problems. If we proliferate many more ways of working together, these collaborative practices can change the culture of governance."

--Beth Noveck

"Government could look more agile, more used to using technology, more willing to engage with different publics as government decisions are made, more willing not to claim power, but to push along the public interest."

--Susan Crawford

A natural consequence of a more networked, decentralized, collaborative system of government is a move from uniformity to diversity. This diversity comes in the form of previously disengaged voices taking part in the governing process, concerns that traditionally have avoided the attention of governance being acted upon and government's procurement of ideas, goods and services reaching beyond the usual sources. In sum, technological advances allow government to be more influenced by the diverse ideas, opinions and offerings of individuals and companies that traditionally fall outside of the purview of government.

New technological innovations can now create a comparatively frictionless system for citizens to access government information, leading to a more informed electorate, and allotting more time for government employees to focus on responsibilities more pressing than jumping through the bureaucratic hoops necessary to respond to individual requests for public information.

As evidenced by congressional clashes over the federal deficit, the ability to improve upon unsuccessful programs and strategies, rather than allowing them to linger or cutting them outright, is badly needed in government. The combination of incorporating more diverse voices into governance and a more experimental government culture can serve to will provide decision makers with a third way to act upon an unsuccessful program or strategy—instead of simply allowing it to continue or ending it outright, targeted improvements and iteration are now more achievable.

Improved government intelligence and analytical capabilities, as well as real-time, location-aware technologies are making possible a shift from an action-reaction system of governance to a more seamless, predictive and integrated system. Instead of government existing as an inert institution, it can become a more fluid, agile, accessible and adaptable to the needs of the public.

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6.5 From Closed to Open

"Fundamental to our way of life is the belief that when information which properly belongs to the public is systematically withheld by those in power, the people soon become ignorant of their own affairs, distrustful of those who manage them, and—eventually-incapable of determining their own destinies."

--Richard Nixon

"The course of human progress is never straightforward. But the human spirit is such – with our curiosity to know, our impulse to speak out, our tenacity to get things done, and our deep rooted desire for freedom and dignity – that in the end we will settle for nothing less than open government."

--Rakesh Rajani

"Open data is not just about transparency and accountability; there is potential for economic innovation and value to come from it."

--Nigel Shadbolt

"When governments begin to release data openly on the web, the growing movement of hackers and activists and even internal government agencies and corporations, can begin to use the previously unconnected and undissected numbers, images and graphs to create new ways for you to access valuable new information."

--Sir Tim Berners-Lee

"Also there is inherent in a society built on data sharing a certain level of transparency and choice for individuals that I believe will tend to mitigate against central control. It tends to dissolve the power of the

state and big organizations because you can build things that are far more efficient and robust if they're distributed and without the hard information boundaries that you see today."

--Sandy Pentland

"In a well-functioning, democratic society citizens need to know what their government is doing. To do that, they must be able freely to access government data and information and to share that information with other citizens. ***Transparency isn't just about access, it is also about sharing and reuse*** *— often, to understand material it needs to be analyzed and visualized and this requires that the material be open so that it can be freely used and reused."*

--Open Knowledge Foundation

While re-imagined governance can affect things like procurement, citizen participation in policy decisions and public-private partnerships, improved openness—and the accordant transparency and accountability that comes with it—is one of the central goals and capabilities engendered by new technologies. The move from closed to open governance gives citizens a greater understanding of how their government makes decisions, spends money and, in general, represents the interests of its constituents. While individual citizens might not directly take advantage of government openness—in the form of open data, for example—academics, investigative journalists and others can translate newly available raw information into understandable narratives and visualizations that can benefit the public. In other words, citizens do not necessarily have to directly act on government openness to experience its benefits.

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Examples

Data Bootcamp by Ghana Open Data Initiative (GODI)

6.6 From Intermediary to Platform

"This is the right way to frame the question of Government 2.0. How does government become an open platform that allows people inside and outside government to innovate?"

--Tim O'Reilly

"In my future, institutions serve as platforms for self-organization. Call it DIY governance."

--Patrick Meier

"[T]he internet is an infinitely flexible and extensible platform for manipulating human knowledge, with a potential that is open-ended."

--Michael Nielsen

"The world needs more open platforms. The term is loaded, but it's worth unpacking. To me, an open platform is a consistent opportunity space where anyone – without prior permission – can attempt to create value, and the market gets to vote on that attempt."

--John Battelle

"Digital public services should be easy to find and simple to use – they must also be cost effective and SME-friendly"

--Francis Maude

Due to the incredible scope of government, and new technological data and storage advances, the public sector holds a greater store of potentially valuable information than any private or civil institution. Traditionally, this treasure trove of information has remained locked away in government databases, with only a small percentage being acted upon by government agencies with the capacity, both in terms of budget and employees, to utilize it. Presently, government can convert itself from an intermediary or data silo to a platform, through which the private and civil sectors can obtain valuable information to convert into products and services. Instead of allowing publicly generated information to go to waste in closed government databases, a platform system of government can benefit the public good, both in terms of the new offerings available to citizens and the economic activity catalyzed by providing valuable, actionable information to the private sector.

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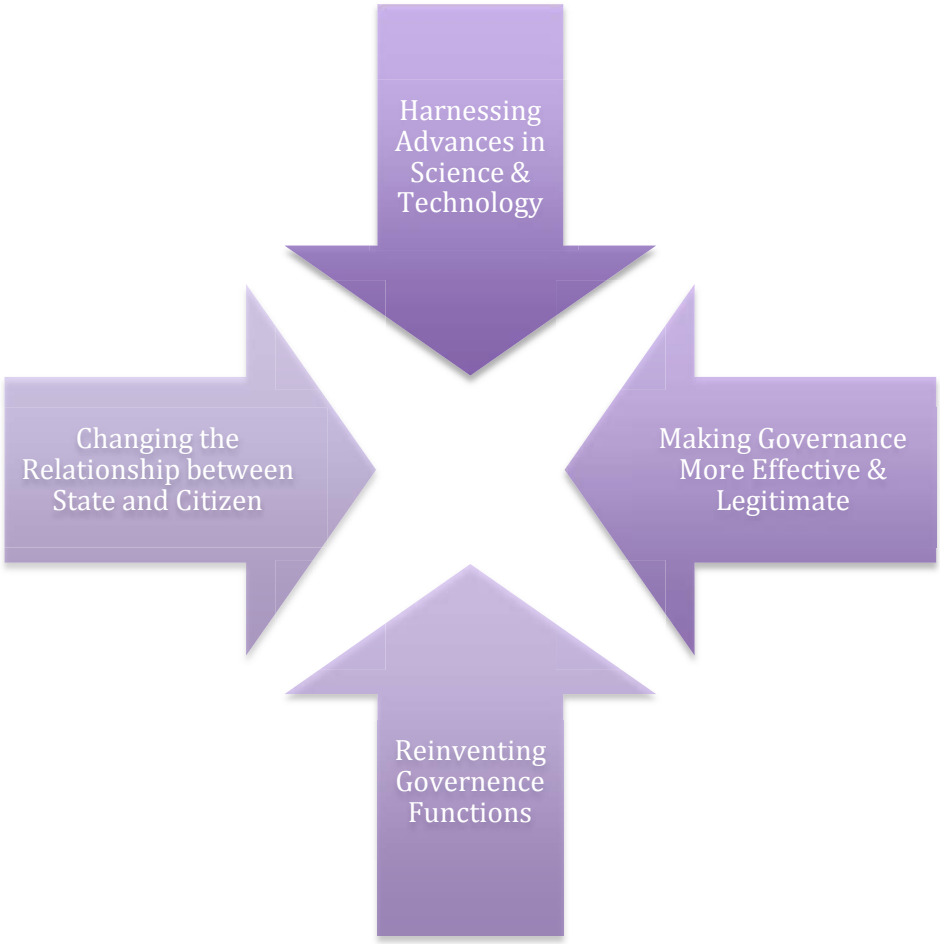
Tim O'Reilly and Aneesh Chopra (Federal Office of Science and Technology Policy), "From the Digital Commonwealth to the Digital Nation", Gov 2.0 Summit, September 2009

7. Conclusion: The Four Dimensions of Reimagining Governance



All innovations in governance at their core aim to improve individuals' lives and welfare by improving the ways we provide for public goods and solve societal problems. But how can we map, analyze and evaluate specific reform initiatives? We suggest governance reforms can be mapped according to how they are:

- Reinventing governance functions
- Harnessing advances in science and technology
- Changing the relationship between state and citizen
- Making governance more effective and legitimate

7.1 Reinventing the way we govern

Governance deficits are undermining the ability of our public institutions to address big problems. Dividing the responsibilities of government into roles can help define the reforms we need to reinvent the way we govern. Government's three central responsibilities are to act as policymaker, as enforcer, and as service provider. Government's role as policymaker includes drafting legislation and

regulations, setting standards, levying taxes, and performing other legislative or regulatory activities. Government's role as enforcer involves implementing, policing, and adjudicating those public policies once they are finalized. Government's role as service provider involves producing and distributing goods and services, including education, welfare support, public health services, and more.

Governance reforms vary according to which aspect of these governmental functions are being reinvented.

Reforming government as policymaker:

- Agenda-setting: e.g., using new collaborative and technological approaches to enable citizens to propose agenda focus for state actors
- Generating policy options: e.g., using new collaborative and technological approaches to generate more legitimate and effective policy proposals

Reforming government as enforcer:

- Implementing and monitoring regulatory standards: e.g., improving the implementation of regulatory systems and the monitoring of violations through technology and/or collaboration
- Adjudicating disputes between parties or between different policies, e.g., through judicial or administrative proceedings
- Policing and other regulatory activities that implement public policies, e.g., through oversight, inspections, or enforcement actions

Reforming government as service provider:

- Public goods provision: e.g., roads, environmental monitoring, education
- Public awareness services: e.g., disclosure, consumer awareness, "targeted transparency"
- Welfare and social insurance services: e.g., healthcare exchanges, food stamps

7.2 Harnessing advances in science and technology

Technological and scientific innovations alter and accelerate the very process through which knowledge is acquired, assessed, and disseminated. As citizens begin to interact with each other, their communities, and institutions in new ways, governments will need to adapt appropriately. Advances in technology and science can provide new tools to policymakers, allowing for more effective policies, greater engagement with citizens, and improved processes at all levels. Opportunities can be found in networks enabled through technology, which have ranged historically from the Defense Advanced Research Projects Agency's (DARPA) invention of computing, to the "social machine" of the World Wide Web. Advances in technology and science continually upend the status quo, rendering change the only constant. It is critical that governments evaluate these advances as they seek to reform their own processes and functions.

7.3 Changing the relationship between state and citizen

Governance reforms can reinvent the relationship between the state and citizens. New collaborative techniques and data dissemination are upending the traditional governance hierarchy, shifting from a broadcast to a networked nature. In this context, "citizens" may include different types of publics, including area experts, lay experts, and private-sector collaborators. The time frame, types, and end results of interaction may vary, for example from the use of prize/contest-oriented involvement to engaging citizens in effective service delivery. The opportunities for governance reform here can be framed through the different roles that citizens are empowered to play in governance:

- Citizen as information provider: e.g., harnessing local knowledge, citizen monitoring, and transmitting preferences to policymakers
- Citizen as advisor to policymakers: e.g., citizens engaged in consultative forums
- Citizen as policy developer: e.g., grand challenges, open innovation, and brainstorming.
- Citizen as collaborator: e.g., collaborative problem solving, peer to patent, and participatory budgeting

7.4 Making governance more effective and legitimate

The fourth dimension of governance reform begins with the value proposition that networks leading to more transparency, legitimacy, participation, and representation will result in better governance.

Governance reforms in this area can focus on one or more of the following objectives.

- Improving the effectiveness of government policies or services, for example by:
    - enhancing the impact of stated policies;
    - facilitating the agility of policies and their adaptability to changing conditions;
    - making government more streamlined;
    - improving the cost-to-benefit ratio of policies.

- Improving the democratic responsiveness and accountability of government, for example by:
    - increasing transparency;
    - improving accountability of government to stakeholders;
    - facilitating the representation of stakeholders and the aggregation of citizen preferences;
    - enabling greater participation by citizens in governance;
    - fostering innovation and job growth, including through the creation of new technology economies.

- Enhancing the legitimacy of government, for example by:
    - increasing citizens' voice in decision making;

- increasing citizen trust;
- increasing willingness to participate;
- providing monitoring opportunities;
- enhancing electoral accountability.