

CHAPTER TEN



Networked Government: Managing Data, Knowledge and Services

Lori Gordon

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NETWORKED GOVERNMENT: MANAGING DATA, KNOWLEDGE AND SERVICES

By Lori Gordon

By 2040, given rapid advances in technology, the federal government will radically improve its ability to engage and involve more of the American public in its policy and administrative processes. Through a new organizational structure less focused on the institution and more focused on communities of interest and a redistribution of responsibilities, the re-engineered government will be more accountable to, and reflective of, its constituency—and more nimble and able to shift priorities, policies, and programs in strategic directions. These successes result from resolving challenges posed in earlier decades by some of the very technologies that the government was betting on to carry it into the future.

As a result, by 2040, the federal government will disband its traditional agency structure and will establish networked teams to perform government work. These teams crowdsource the priority topics or challenges of the moment, then bring cross-disciplinary talent, research, and ideas to develop solutions that they tailor to each individual citizen. To help lead this effort, the government will recruit non-traditional and less-represented individuals—including newly patriated American citizens and younger Americans.

Establishing a New Managerial Class in Government

To organize this new redistribution of decision making and responsibilities, by 2040 the government will establish a new managerial class that redesigns how data, knowledge, and services flow across digital pathways and provide an evolving variety of service offerings that reflect society's changing needs and requirements.

Data Managers will oversee a virtual government workforce comprised of teams that aggregate data in digital workspaces and process it almost instantaneously via the eighth-generation wireless network. Volumes of local anonymized data on transportation, energy, and municipal services that were once only used by insular Smart City ecosystems to increase their efficiency and reduce costs will be fed across state, regional, and even international networks to public and private organizations, to enhance processes and systems at global scale. Data will be stored in distributed ledgers in countless applications across the homeland security, financial, energy, and healthcare sectors and their supply chains.

Knowledge Integration Managers will bridge knowledge, methods, data, and investigative communities. They will serve as catalysts and conveners, bringing together disciplines and experts from different domains to pursue

shared research challenges. They will proactively recruit underrepresented or non-traditional thought networks into government operations. They will train employees on how to interface with their non-human counterparts, determining when artificial intelligence (AI) will lead or augment the human. They will forge stronger ties with universities and other learning centers. They will place students at the cusp of resolving significant national security challenges—often ideated from collage campuses—which will resolve significant workforce pipeline issues and skills gaps in cybersecurity and other STEM fields that were raised in decades prior. From an organizational perspective, Knowledge Integration Managers will also deconflict or synchronize similar or redundant government initiatives.

Customized Services Managers will use the data aggregated by Data Teams and analyzed by Knowledge Integration Teams to provide tailored resources and services to constituents at the community level, which includes everything from prescribing medicine to veterans to providing emergency kits to disaster victims. With the ability to produce tools and resources onsite, the federal government will soft-pedal its role in coordination and logistics, enabling local and state responders an expanded role. The Customized Services Teams will create learning tools in virtual reality and a “in-a-box” so that generalists will be able to do this work—specialists no longer need apply. These virtual cross-discipline networked teams will develop tailored services and solutions that replace government departments and agencies by 2040.

The Data Management Function: Crowdsourcing Citizen Input

After setting up a management system and distributed workforce that bridges disciplines and domains, in 2040 government will focus on data management. It will be clear that new models in societal-government engagement are needed, and that these new collaborations could be based on the handling of these data vaults. Reaching into the technology and scientific communities, Data Managers will peel back how virtual reality, augmented reality, machine learning, and the Internet of Things (IoT) are crunching volumes of unstructured data, and how they can better amass even larger amounts of it. Amidst a world of ‘smart’ everything that thrives on new ways to analyze data, the government will ask for bold answers to big questions: How can we improve how data is being created, collated, curated, and consumed across the sensing spectrum to do things smarter, faster, better? At what risks? And, as we gather more data, how do we manage the additional questions and unknowns that result?

The Data Network will reimagine and reorganize data sensing and feedback loops so that the government can gain rich insights from citizens to inform knowledge-driven decisions. As citizens place a digital imprint on every commercial and retail purchase that they make, Data Managers will realize that people are also making their values, needs, wants, and ethical and moral demands transparent. Government will recognize the value in capitalizing on

this concept as a way to capture constituent input, and so it will develop a variety of crowdsourcing mechanisms to elicit better citizen participation in policy and acquisition processes, creating the ultimate “data lake.” Without needing to procure costly studies or to requisition surveys, government will have instantaneous citizen input on issues that range from early childhood services to flood management to space security.

Data Managers will set up two types of crowdsourcing initiatives:

- **In active crowdsourcing**, government will establish a social media app that tees up issues prior to a congressional vote so that constituents can pass their opinion to their congressperson.
- **In passive crowdsourcing**, government will establish thousands of IoT sensors across a city to pulse instantaneous citizen-level input on transportation, healthcare, municipal services, and the environment. Through ‘adaptive optics’ the government will be able to remove distortion and data noise from high-tech sensing mechanisms and communication tools. These will include gesture-controlled devices, iris recognition systems, and sensor swarms that will enable coordination of their activities and decisions about what to measure—and where—through a self-learning system directing their movements and data collection. Light-emitting drones that sense and follow movement and activity around the city will determine citizen feelings based on how people respond to an ‘issue’ (e.g., placement of a spotlight or recycling bin). In the future, privacy protection technologies will enable a rich personalized experience to be implemented in a way that protects individual data and gives individuals greater control over their information exchange with government.

These crowdsourcing practices will balloon voter turnout and capture feedback from those who are often underrepresented. Just as people in the 2020s had become increasingly addicted to their personal devices, by 2040 this will translate to them becoming consciously attuned to continuous civic engagement, connecting to their city as they move around town, and owning their rights as a citizen to participate in civic processes.

The Knowledge Integration Management Function: Taking a Cross-Discipline Approach to Analyzing Data

These large governmental data sets will be observed by Knowledge Integration Teams that bridge talent and research in a cross-discipline approach to investigate ever-evolving citizen needs. Using crowdsourced data, they will build heatmaps of high-priority issues. A net assessment will result in local, regional, national, and global issues that affect citizens—from rising cyber dependency, to increasing income and wealth disparity, to the shifting landscape of geopolitical power and international governance. This will trigger government processes to move resources and develop responsive solutions.

To do this well will require entirely new actors—from volunteer groups to nascent organizations which are both passionate about mission—to bring rich ideas and analytical techniques into the process. Because these groups will encourage exploration and a higher tolerance for failure, they will be more iterative, more agile, and more innovative, and will take more risk in predicting, optimizing, and adapting processes. The government will have been scripting these types of organizations for years, and by 2040 it will have finally structured its acquisition and hiring processes, new contracting categories, and new tax structures to accommodate this dynamic workforce. The government will tap the gig economy, giving it an open door to a global market of specialized communities to obtain sought-after knowledge. Government's more inclusive and diverse workforce—such as starting apprenticeships for students while in high school—will be a signal to the private sector to do the same.

The Customized Services Management Function: Tailoring Programs to Individuals' Needs

Similar to how design thinking helps to enhance user experience and elicit values and ethics, Customized Service Teams will seek tech-enabled feedback mechanisms as an opportunity to better understand constituents' changing values and ethics that are embedded in their digital fingerprint. They will see it as an opportunity to tailor programs to an individuals' needs, getting them the services and products that matter to them.

Led by Customized Services Managers, these teams will facilitate deliberative dialogue between technologists and policy makers to ensure they understand the privacy, security, trust, physical and psychological wellbeing, and intellectual property rights they demand from government-produced services. Alongside the Knowledge Integration Teams, they will recommend policies and controls that embed stakeholder values, and they will design out those that are at odds. One significant hurdle they will overcome is a fear that quantum computing's ability to process at astronomical speed would break database encryption, changing the paradigm for privacy and security.

Technologies like blockchain are built with enough modularity that they will withstand decryption, and distributed ledger technologies will be used in synchrony with quantum computing to secure data. This will enable processes that once took months to now take mere seconds. For example, blockchain and artificial intelligence will enable once-belabored and protracted processes such as the U.S. procurement system to instantaneously adjudicate decisions like eligibility requirements and other critical factors in the acquisition process.

Customized Service Teams will provide solutions tailored to the relevant community of interest. For example, new algorithms—benefiting from the growing volume and complexity of data afforded by machine learning and artificial intelligence—will aggregate information in a natural disaster to

predict how much response capacity the government and private sector must provide. Teams will recommend ways in which precision medicine can improve prediction and treatment for disease, and how physicians can better tailor a patient's medical treatment to their life expectancy. They will design solutions using 4D printing and create objects that reshape themselves and self-assemble over time. In many cases, the constituents will have a hand in directly creating the services they will receive, as people place higher value on products and services when they have a role in developing and shaping the product or service.

With these technologies, the government will also be better at collecting and disseminating performance data as it responds to natural disasters, ensures the provision of safe food and medicine, and manages the U.S. immigration system. As this data is shared transparently for the first time with the public, the gaps, incongruities, and redundancies, as well as strengths and successes, will rise to the forefront. As examples, by 2040, the resounding gap in cybersecurity jobs and the lagging innovation in digital identity will be resolved with world-class STEM education and digital research.

Operationally, these teams will set a standard for how the rest of government begins to operate. The process will work like this: as Customized Service Teams solve challenges, they will be rewarded with more complex, challenging issues. Once they resolve these challenges, they will become eligible for bonus pay. This will incentivize them to prioritize tackling and resolving the toughest challenges, and to encourage constituent feedback and response. A new era in government-constituent engagement will begin.

2040: A More Accountable Government

By 2040, government will realize that technology is the best lens through which it can understand its constituency. Advances in technology will enable it to not only better aggregate data, but to analyze that data and lay out a compelling picture of everything from what risks society is willing to take to what it chooses to buy. For the first time, government will capture a first-order look—the first accurate look—at how its policies, governance, and structure can be informed by a citizenry that will engage and determine more acutely how the government should spend billions of dollars, from designing future transport hubs to distributing veteran benefits.

Society's allegiance to bytes—regardless of technology booms or busts and even in periods of 'irrational exuberance'—will be the means through which government can connect to its constituency. And so government will reshape its structure, distribution of responsibilities, and technology investment to engage the American public more directly. The newly re-engineered, networked government will be more accountable to and reflective of citizens, and much better able to shift priorities, policies, and programs in strategic directions.

Lori Gordon advises a range of government and nonprofit organizations in foresight and strategic planning, workforce development, and process improvement. She has specialized in cyber and infrastructure security and resilience in the Federally Funded Research and Development Center and private sector communities, and currently serves on technical advisory groups, including ISO's Sustainable Development in Communities, ANSI's Standards Consortium, and the National Institute of Standards and Technology's National Initiative for Cybersecurity Education. Ms. Gordon has an MPA from the University of Massachusetts.