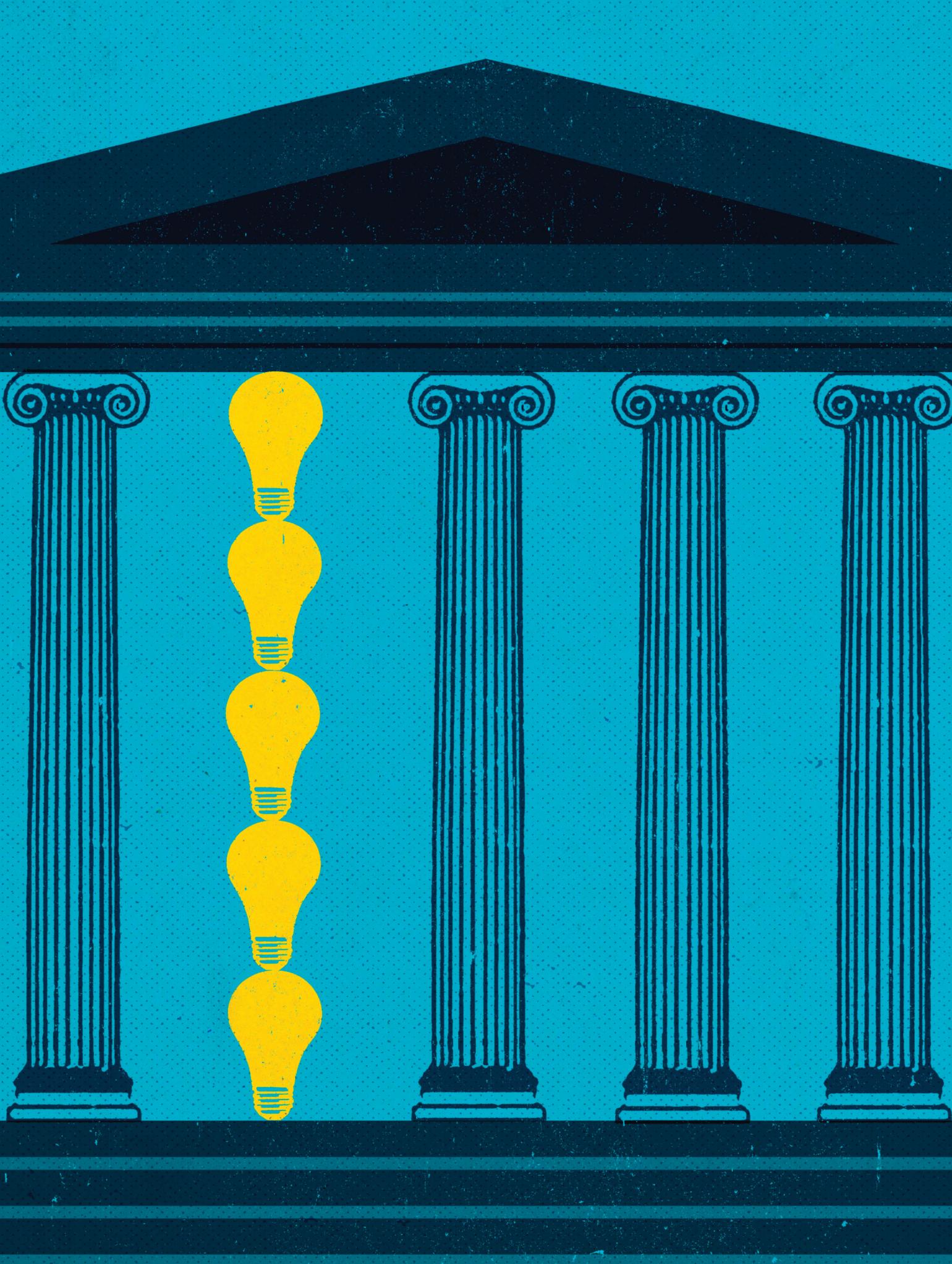


**Unleashing Breakthrough Innovation in
Government**

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Unleashing Breakthrough Innovation in Government

Public sector innovators are improving government by replicating the market conditions that have long fostered breakthrough innovation in the private sector.

The innovators who shake up industries the most do so by reimagining how things should look from the ground up. Apple co-founder Steve Jobs imagined a world where everyone owned a computer, not just the corporations that could afford an IBM mainframe. Twitter co-founder Evan Williams imagined a world where everyone could publish content on the Internet, not just the media companies who could afford expensive Web publishing programs.

Incremental innovations occur everywhere, but breakthrough innovations—the kind that leverage new technologies and business models to drive down costs, increase accessibility, and improve services—have tended to remain the province of the private sector. Return-seeking investors and entrepreneurs reap the financial rewards of changing the world by tearing down the structures of old industries.

Fortunately, that type of innovation is beginning to trickle into government as well. Leaders inside the public sector are slowly learning to pursue these major breakthroughs without the benefit of the profit motives that drive entrepreneurs elsewhere. Take, for instance, an innovation pursued in the US capital by the District of Columbia Department of Transportation

(DDOT). The agency envisioned a time when the city would no longer need traditional, coin-operated parking meters and the expensive employees required to collect the coins. In its place, DDOT would create a system in which people simply hit a “pay-my-meter” button on their Internet-connected phones. The system would be easier for drivers to use (no more carrying around bags of change) and less expensive for the city to operate. Despite these obvious benefits, the improvement would also require the city to migrate away from an established system that employed many workers and relied on existing infrastructure—the type of situation that has long made it difficult to implement innovations in the public sector. To the surprise of many, DDOT’s two-year endeavor was successful. In a sector known for special interests, unions, and a lack of competition, the agency successfully pioneered a model that embraced new technology to improve convenience for citizens and drive down costs for the city.

All too often, this kind of success has not been the outcome. Many citizens believe that the public sector is incapable of such innovation because of the absence of competitive forces, lack of incentives for employees, and excessive red tape. And ordinary citizens are not alone in their concern. Government leaders and employees are quick to point toward systemic problems such as outmoded human resources systems, a budgeting process that rewards extraordinary performance by reducing future resources, and burdensome request for proposal (RFP) systems as explanations for their lack of change.

For many reasons, this sorry state of public sector innovation cannot stand. The US economy has stagnated for nearly four years. In 2012, gross domestic product (GDP) was \$15.7 trillion, having grown only 0.6 percent in inflation-adjusted terms since 2007. Similar economic conditions exist throughout much of the developed world. At the same time that public leaders struggle to find a means to spur growth, municipal and state governments hurtle toward fiscal

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crises of unparalleled proportions, carrying billions in unfunded debt obligations. During this time of adversity, government, a sector that accounts for 24 percent of US GDP and one-sixth of employment, needs to be a solution to our problems—not one of the sources.¹

Over the past year, our research group at Harvard Business School led an effort to discover how to empower public leaders to drive out unnecessary costs where possible, freeing up capital to help spur economic growth. Our group—supported by contributions from research groups at Harvard Kennedy School, various municipalities, and the Office of Science and Technology Policy of the White House—surveyed hundreds of government initiatives, interviewed public sector innovators, collaborated with academics across the country, and convened some of the brightest minds in the field for a conference at Harvard Business School. We grounded our research in theories of causality from both the studies of microeconomics and the management sciences, such as the theory of disruption.

What we found confirmed our hypothesis: *Breakthrough innovation in government is possible.*

As we studied instances of successful and unsuccessful innovation in government, we identified scenarios in which leaders were able to drive out costs through the implementation of novel technologies and service models that got the job done better for constituents. As the causal theories suggested, the difference between success and failure was the ability to *create or preserve* most if not all of these five conditions for breakthrough innovation:

- Ability to experiment
- Ability to sunset outdated infrastructure
- Existence of feedback loops
- Existence of incentives for product or service improvement
- Existence of budget constraints for end users

For instance, by developing robust feedback loops along with the other conditions into their traditional budgeting process, the government of Hampton, Virginia, was able to survive an 8.4 percent budget gap—including program reductions ranging from 18 to 23 percent for economic vitality and neighborhoods, infrastructure, and leisure services—without experiencing a decrease in citizen satisfaction. Instead of cutting across the board, the feedback loop helped the city of Hampton cut only those programs in which the government was providing taxpayers with luxury services when they were happy to settle for more economical services. In Philadelphia the addition of experimental infrastructure for waste collection empowered the city to identify a new service model that reduced departmental operating budgets by almost 70 percent.

In this article, we illustrate how these five conditions enable

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breakthrough innovation in the public sector. Though our research focused on municipal service innovation, we suspect that the same principles are true at all levels of government. We will also address some of the practical barriers to creating innovative organizations—knowing what to do is only part of the answer; understanding how to create change is an integral part of the solution. To that end, we will offer recommendations on how public leaders, social entrepreneurs, and non-government organization (NGO) managers can encourage innovation in ways that will not be rejected by the system.

By documenting what empowers successful innovation, we hope to make the process repeatable and scalable. Government progress should not have to rest on the herculean efforts of lone innovators; it must be based on sound theory if it can help us to solve the pressing problems facing our society.

THE FIVE CONDITIONS FOR INNOVATION

In the book *Seeing What's Next*,² members of our research group introduced a framework to evaluate innovation systems. The authors suggested that two primary factors set the stage for innovation: *ability* and *motivation*. These broad categories simplify underlying economic conditions of market structure and information flow within well-functioning free markets. When both ability and motivation are present in a market, a hotbed of innovation forms—in much the same way as the Internet has led to a deluge of entrepreneurship and innovation. When ability and motivation are not present, innovation stalls.

This framework had one principal limitation, however: The scope of the analysis was limited to the private sector, where access to markets (ability) and the profit motive (motivation) are intrinsically present. In the public sector, by contrast, we cannot assume that entry and exit are as simple as incorporating and declaring bankruptcy, or that profit will serve as the primary motivation.

Our challenge was to discover what underlying conditions inherent to private sector innovation needed to be replicated in the public sector. We found that the *ability* to innovate is derived from the first two conditions—the ability to experiment and the ability to sunset outdated infrastructure. Fundamentally, innovation requires something new to replace the old. Often, it is difficult for incumbents with a vested interest in the status quo to participate in pushing their own obsolescence. In the public sector where startups do not naturally attack incumbents for market share, leaders must find other methods to preserve these two conditions.

The remaining three conditions—the existence of feedback loops, the existence of incentives for product or service improvement, and the existence of budget constraints for end users—all can motivate government innovators in the right direction. Whereas profit and price work together to drive private sector innovators toward optimal solutions, motivating government innovators toward socially optimal outcomes requires more thoughtful direction.

Together, the five conditions allow public sector innovators to try, test, adopt, and reject new technologies and service models. The conditions ensure that the dramatic transitions to less expensive products, which generally perform worse when compared to incumbents, occur only in situations where customers are overserved by existing solutions. These same conditions ensure that

public managers do not pursue unnecessary incremental innovation when constituents do not value it. By thoughtfully creating and preserving the five conditions, public innovators can harness much of the power previously relegated to the private sector.

To illustrate how these conditions affect the innovation process, we will examine each of the five conditions and their influence on the implementation of the mobile-payment parking system in Washington, D.C. (In 2010, the municipal government contracted with the private firm Parkmobile to provide a remotely monitored parking system alongside traditional parking meters. The technology was developed and managed by Parkmobile, and the deployment parameters and budgeting decisions remained in the hands of local government.)³

Ability to experiment | Any organization that wishes to adapt to its changing environment needs a system for experimenting with new technologies and delivery models. Without the *ability* to develop experimental infrastructure, fundamentally new and different approaches rarely emerge. In the private sector, we see this mechanism arise in both the form of corporate innovation and new entrants in existing industries. Unfortunately, public managers often encounter structural barriers when they attempt to experiment. Instead of eliciting exuberance from voters, deployment of capital for experimental projects draws scrutiny from watchdog groups and regulators alike. Without data to validate an initiative's existence, the public sector attacks the experimental efforts. Yet the inherent paradox is that in order to generate data, experiments are required. To overcome this dilemma, public leaders must behave like venture capitalists by placing small bets based on a theory about the future and using those bets to guide subsequent action.

In the case of Washington's parking innovation, the DDOT created a thoughtful methodology for experimentation. In 2010, a year before a full rollout was planned and approved, the city started a pilot program for Parkmobile in a single area of the city. This experiment allowed the municipality to gauge how citizens would react to the new service. The positive reception and uptake of the Parkmobile system indicated that the service had promise and would likely be successful across the city. An important feature of the initial system was that it did not require removing the legacy infrastructure. Instead, the Parkmobile system was overlay as an alternative experimental system, minimizing the disruption to citizens' lives.

Ability to sunset outdated infrastructure | If an experiment is successful, a new challenge is revealed—namely, phasing out the old product or service. In the private sector, when businesses fail to adopt the appropriate technologies or service models, competitors steal their customers and market forces push laggards out of the market. Most government agencies do not experience this process—just look at the difficulty the US Postal Service is having in cutting back its delivery schedule. In fact, many agencies actually lack the *ability* to freely remove outdated technology and business models.

Though Parkmobile has been successful as an additional layer of Washington's transportation infrastructure, the full value of the innovation will be realized only after the old infrastructure and collection system is phased out. It was not possible to phase out the old system until the new one was in place. Thus during the rollout, traditional and mobile-payment technology were duplicated for all of the more than 17,000 parking spots. Now the city

can phase out the old parking meters and begin to realize the benefits of the new system.

Existence of feedback loops | Once the experimental infrastructure is in place, it should be no surprise that strong feedback loops between the citizens and public servants are required to *motivate* investment into and adoption of the right innovations. In the private sector, when products and services fail to meet customer expectations, firms have a natural incentive to improve their offerings: the allure of increased market share and the pursuit of premium prices. The feedback loops offered through free market transactions also help private sector innovators identify when their offerings have exceeded customer desire: At some point customers stop paying for incremental improvements. In government, this sort of signal is often lost. Citizens can express dissatisfaction through votes, but these votes are rarely effective at critiquing the performance of specific programs. Unfortunately, without explicit feedback, it is difficult for managers running these programs to judge when to focus on improving service versus reducing cost.

For the mobile-payment rollout in Washington, D.C., a feedback loop was embedded into the experimental system itself. Municipal leaders captured and analyzed a great deal of data from Parkmobile's online system. The behavior of people using the system led them to see the value the system created directly. After one year, transactions through the mobile-payment system increased by more than 430 percent. This aggressive adoption rate and widespread usage indicated that parkers preferred the new system, providing justification to sunset the old one. The city also learned that 74 percent of all transactions were occurring through the cell phone application, a fact that allowed the government to extrapolate which geographic areas would be more likely to embrace the system upon full implementation.

Existence of incentives for product or service improvement | Armed with the knowledge of what customers want, suppliers can improve their offerings. They must also, however, have the *motivation* to make improvements. In the private sector, this motivation often stems from the ability to charge higher prices or reach more customers, thereby increasing profits. Though the profit motive does not exist in the public sector, motivation can still be created. For example, decreasing their budget difficulties through access to increased revenue and reduced costs will incentivize senior managers to innovate. Similarly, individual government employees can be motivated by the mission of the work or by recognition for doing it. The difficulty in public management is not creating motivation—it is ensuring that motivation is appropriately aligned with the goals of the organization.

In Washington, D.C., the motivation to improve performance was twofold. First, municipal leaders saw the mobile payments system as a way to capture savings and increase revenue—thereby decreasing budget burdens on the city. Municipal innovators also had another meaningful motivator: being considered forward-thinking. Adrian Fenty, the mayor of Washington, D.C., at the time of the effort, was known to promote this trait in his managers. Innovators inside the government knew that they would be recognized for their innovative solutions, a public reward that provided a powerful, non-financial incentive.

Existence of budget constraints for end users | In any transaction, customer behavior is affected by budget constraints. Budgets

force prioritization. For example, when a person has a limited amount of money, she will probably pay the rent on her apartment before she goes on a vacation. Not only do limited financial resources force people to prioritize, they also create incentives to cut costs. If the same person can find a less expensive apartment, she can use the savings to go on vacation. For breakthrough innovation to take hold, government leaders should ensure that budget constraints exist for end users in order to *motivate* the appropriate prioritization. In some situations, such as in the case of individually distributed services like postal delivery, those constraints should be placed on the customers themselves. In other situations, such as in the case of defense procurement, the constraint should be placed on the person responsible for acquisition. Regardless of where the constraint falls, it is vital that budget incentives be used to force prioritization.

In the case of Parkmobile, customer time and cash constraints naturally force prioritization. Setting up Parkmobile can be a hassle: the user needs to download an app, create an account, and register her car before she can pay for parking. Fortunately, after the initial set-up, the enhanced functionality compared to parking meters is realized: the ability to pay without quarters; receiving text messages warning that time is about to run out; and the ease of paying for more time when the driver is miles away from the car. The mobile payment story in Washington, D.C., is still unfolding, but it is undeniable that following the five conditions has allowed the city to pursue a breakthrough in a core service. And the US capital is not an outlier. There are many other examples of municipalities successfully embedding the five conditions for successful innovation. (See “Breakthrough Innovations in Government Across the United States” below.)

Breakthrough Innovations in Government Across the United States

	Philadelphia	Boston	Hampton, Va.	Indianapolis	Washington, D.C.
EXAMPLE	Reduced operating costs and size of workforce by installing BigBelly solar trash compactors.	Increased usage of a community hotline by introducing a mobile application called Citizens Connect.	Secured deep reductions in many city services while maintaining citizen satisfaction.	Reduced the cost of servicing the city's fleet of vehicles by compelling city agency to compete with private companies.	Installed Parkmobile mobile payment system to replace coin-operated parking meters.
ABILITY					
Ability to experiment	With stimulus funding, the city experimented with BigBelly trash compactors in one location before rolling them out city-wide.	After installing a new service request tracking system that could handle increased usage, the city beta tested the new mobile app.	Facing a budget crisis, the city administrator empowered municipal managers to experiment with severely reduced budgets.	Mayor informed the city agency (IFS) responsible for servicing the vehicles three years in advance that their contract would be put out for bid, giving the agency time to become more efficient.	New system was first installed in one area with plans for expansion following feedback; the initial program was backward-compatible, minimizing switching cost.
Ability to sunset outdated infrastructure	City developed a plan to reduce the size of the sanitation workforce as people either quit or retired, reassigning some to other departments.	Outdated software for employee-driven requests was removed by integrating that capability into Citizens Connect, creating an application used by both citizens and government employees.	To manage workforce reduction, the city created retirement incentives and reassigned remaining employees as necessary.	With clearer understanding of pricing structure, IFS began outsourcing certain services to private garages that had lower cost structures.	Certain streets were tested as Parkmobile-only in order to phase out the need for meters.
MOTIVATION					
Existence of feedback loops	Labor usage and truck routes were tracked to adjust supplies and services on the basis of citizen demand.	Citizens Connect not only allowed people to report problems (such as potholes or graffiti) but provided feedback showing whether the city responded to the problem and fixed it.	Citizens were engaged in “I Value” campaign to distinguish “wants” from “needs” through community meetings, town halls, scientific evaluation, and online polls.	Feedback loops already existed regarding the quality of fleet services in the form of internal transactions and reviews.	Digital records of every transaction gave city insight into the behavior of customers using the mobile payment system.
Existence of incentives for product or service improvement	BigBelly Solar, which supplies the trash compactors, has an incentive to continue to improve technology so that the city will buy more trash compactors.	New Urban Mechanics, the city department that rolled out Citizens Connect, continued to strive for innovation in other areas by encouraging public sector innovators.	Insufficient funds to continue all programs drove unneeded costs out of system and led to the improvement of current programs, freeing capital and avoiding future cuts.	Budget provisions were tied to service quality, and employee raises were tied to cost reductions.	Government innovators were motivated because the mayor would recognize them as forward-thinkers; the private partner was driven by profit motive.
Existence of budget constraints for end users	The city, acting in the role of the end-user buyer, had a tight budget that compelled it to look for alternatives like BigBelly.	Because of time constraints, people were more likely to use Citizens Connect, which was easier, faster, and more responsive.	Taxpayers were educated about the upcoming budget cuts and offered choices between services and tax hikes.	Transfer pricing between fleet services and other organizations with set budgets ensured that customers maintained budget constraints.	After high initial hurdle to get on the system, consumers saved time by not having to put coins in meters and saved money by getting fewer parking tickets.
RESULTS	Reduced workforce from 33 people working 3 shifts to 9 people working 1 shift, saving 70 percent in annual operating costs.	Citizens Connect users made two more reports per year than users of other systems; 18 percent of all reports to the city were made via Citizens Connect; geographic coverage increased by 4 percent.	Closed \$19 million (8.4 percent) budget gap with program reductions ranging between 18 percent and 23 percent while maintaining constant level of citizen satisfaction.	Cut cost of servicing the city's fleet of vehicles by 54 percent between 1991 and 1997; reduced size of workforce by 41 percent between 1991 and 2005.	In the first year, monthly Parkmobile transactions grew nearly 500 percent to more than 400,000, with more than \$10.7 million collected.

The five conditions for innovation make continuous change possible. Though many of our examples highlight cities that have embraced new service models and technologies and driven unnecessary costs out of their systems, continuous change also allows for improvements in other areas of government such as transparency, performance-based funding, civic engagement, and measuring social outcomes, each of which provides an even stronger argument for enabling breakthrough innovation in the public sector.

PLANNING FOR BREAKTHROUGH INNOVATION

Of course, ensuring that the five conditions are properly embedded in a public service or product does not by itself guarantee successful innovation. Innovation is always an uncertain endeavor —no innovator ever enjoys a 100 percent hit rate. Therefore, ensuring that the system facilitates experimentation even in the wake of failures, identifying what is working through small-scale data gathering efforts, and then scaling up new solutions become even more important. Successful public sector innovators actively shield themselves from the scrutiny and interference that can derail their efforts. Through our study, we identified four best practices to help public leaders succeed.

Identify white space for innovation | Academics often point private sector managers toward innovation in areas lacking competition. Our colleague Mark Johnson codified this sort of thinking in his 2011 book *Seizing the White Space*.⁴ By delivering differentiated products and services in underdeveloped segments of the market, innovators can avoid profit-inhibiting competition. Though public sector innovation does not suffer the same competitive threat, the threats of special interests and existing regulation create equally compelling support for innovating in new ways. For instance, Web and mobile application development, bike sharing, and pop-up retail represent burgeoning areas of opportunity for municipal innovators. As each of these areas is relatively novel, little policy has been created that dictates how public leaders can leverage them to affect change. This white space empowers government innovators to test novel solutions to problems on top of existing structures, in some situations generating compelling evidence for how products or services can be further developed.

Minimize expenditure, embed in an existing budget | Watchful public interest groups are always on the lookout for new, unnecessary, or redundant programs that might be evidence of pork barrel spending or waste. Although transparency is generally a good thing, it can make it more difficult for government innovators to launch new programs, especially ones that might seem to replicate existing services (as the D.C. parking program did). One way to avoid such scrutiny is to stay lean, spending the least amount of money to learn the most in any experimental process. The Office of Science and Technology of the White House, for example, created a program called RFP-EZ to solicit solutions from non-traditional sources. Because RFP-EZ is restricted to projects costing below \$125,000, a small amount for federal procurement, the executive branch has been able to minimize scrutiny and increase efficiency in the procurement process. Another way to protect programs is to embed them inside existing offices. Boston's Office of New Urban Mechanics and New York City's Innovation Delivery Fellows have both positioned themselves inside mayoral offices in order to provide risk-tolerant spaces for innovators.

By minimizing attention in these ways, innovators can ensure that they are not seen as harming so-called sacred cows before they have collected valuable data in support of their hypotheses.

Invest in constituent alignment | Nothing breaks down barriers better than making sure that the people affected by an innovation are aware of and in agreement with the change. Many of the programs and services that we have identified as shining examples of public sector innovation were led by managers who were very conscious of bringing along their various constituencies. In Philadelphia, for example, when a new trash collection system was implemented, municipal employees could have resisted efficiency improvements in fear for their jobs. The mayor's office, however, made it clear that reductions in workforce would be achieved through natural attrition (retirement), not through layoffs. Employees no longer required by the new system would not be fired, but instead would be redirected toward services that needed additional support. By taking into account employee interests, Philadelphia could roll out its program without resistance.

Validate with data | The best case against the status quo is one grounded in scientific research. When the benefits of new services are speculative—even if supported by pundits and academics—it is easy for stakeholders to resist change. Innovators should know what they are testing for and experiment in such a way that makes their achievement irrefutable. Boston's Office of New Urban Mechanics, for example, has done so with the Citizens Connect mobile application—what some might consider a quantum leap in 3-1-1 services. By demonstrating quantitatively how much additional geographic coverage is achieved, the group has made it difficult for stakeholders in the legacy call center to resist the city's investment in the program.

The five conditions we have identified lie at the core of breakthrough innovation, enabling a repeatable process that can overcome the absence of competitive forces, lack of incentives for employees, and proliferation of red tape. We no longer need to think of public sector innovation as an exception to the time-tested rule; in fact, we believe the pursuit of breakthrough innovation in government can turn into a more scientific practice than the art form it resembles today.

Throughout the United States and much of the developed world, governments are on the brink of crisis. They need answers to a paradoxical challenge—how to spur economic growth while simultaneously reducing spending. This can be done only when we find novel solutions to the real problems that we have relied on government to solve. By embedding the five conditions for innovation inside new services and products, public innovators can best position their organizations for success in these trying conditions. Though there is no silver bullet for our problems, ensuring that the ability and motivation to innovate effectively exists throughout the public sector is a vital piece of any solution we develop. ■

Notes

- 1 Data from US Office of Management and Budget and US Bureau of Labor Statistics
- 2 Clayton M. Christensen, Scott D. Anthony, and Erik A. Roth, *Seeing What's Next: Using the Theories of Innovation to Predict Industry Change*, Harvard Business School Press, 2004.
- 3 Information gathered through interviews with the Parkmobile team.
- 4 Mark W. Johnson, *Seizing the White Space: Business Model Innovation for Growth and Renewal*, Harvard Business Press, 2010.