



## CHAPTER ONE

# The Return of Retail Governance

As he describes his more than thirty years of tech experience, Bill Oates's Boston-accented words come fast and frequently. He has a shock of white hair that makes him look much like a younger Tip O'Neill, but Bill Oates is all boyish enthusiasm. He began his career as a telecommunications specialist for Sheraton Hotels—he was the “phone guy”—while he went to law school at night. He took to the work, becoming the hospitality industry's expert on telecommunications while rising through the information technology (IT) ranks at ITT Sheraton. After Sheraton merged with Starwood and Westin in 1998, Oates served as Starwood Hotel & Resort Worldwide's chief information officer for years. In the world of IT, he could handle anything.

But all of his years had not prepared him for what he heard when he walked into the IT department in Boston City Hall in the summer of 2006 to become the city's first cabinet-level chief information officer (CIO): the sound of typewriters.

Boston had a reputation as a well-wired and digitally savvy city by the time Mayor Tom Menino offered Oates the CIO job. “My biggest fear was that all the good stuff would have been done,” Oates jokes. When he walked in and heard the clacking of nineteenth-century writing machinery, he realized, as he puts it, that government's organizations “take a long time to evolve.”

Oates (who has what Lindsay Crudele, community and social technology strategist for the City of Boston, describes as a



“particular fearlessness”) doesn’t discourage easily. His leadership style is unruffled, he’s always ready with a good line, and he comes across as both energetic and unflappable. “Why is it so important for government to change?” he asks. “Because it hasn’t.”

When he was at Sheraton and Starwood, the companies had to adapt to survive. Consultants from McKinsey would show up every couple of years, soon followed by reorganization. The stock price would go down. A global epidemic would menace the hotel industry. Online bookings made inroads on hotels’ former business model. There was never a year, or even a month, when the organization could ignore the prospect of change.

Government, Oates notes, seldom faced that kind of pressure to innovate until recently, out of necessity. When a tough economy drove Boston’s budget down even as demand for city services increased, Oates told Menino that information technology wasn’t a “would like to have” item anymore. Going more effectively digital was a matter of survival. “If you want to deliver great services to the people in this city,” he told the mayor, “we have to do this differently. And technology is a critical part of it.”

Oates, who had years of experience as a part-time elected official in his nearby hometown of Watertown, has a strong civic bent. He’s a fan of Jane Jacobs, who famously argued that cities have to be made by their residents, not by plans imposed from above. Oates believes that cities can provide for everybody only when they’re created by everybody. Hence, he thinks, city government needs to connect better with the people it serves. That was to become his guiding principle as he figured out how his new office would function. “With the mayor’s leadership, his focus on people, and my ideas around IT,” he recalls, “we started thinking about one word: *engagement*. How could we use today’s technology to better connect with his constituents?”

In fact, constituent engagement was to become the linchpin of Oates’s—and Boston’s—digital success story. Between 2006 and 2013, with Oates as CIO and the mayor’s strong support, the city adopted new digital tools and allowed its government to be changed by those tools, with impressive success. The story of how it accomplished this transformation, full of useful and disruptive lessons for other cities, begins with the ambitions of a nuts-and-bolts, decidedly non-techie mayor.



In 2006, when Oates joined city government, Menino, an affable man with an open, friendly face and a strong Boston accent, had long been famous for his tireless efforts to connect with his constituents. He loved to shake hands with the people he was serving, and he was always out in Boston's neighborhoods, indefatigably attending event after event. People liked to say he had personally met almost half the people of Boston (population 636,000), and a poll published by the *Boston Globe* in March 2013 found that 49 percent of Bostonians surveyed said they had, in fact, met him.<sup>1</sup>

Ever since 1993, when he was first elected after a few months as acting mayor, Menino has been known as an “urban mechanic” for his attention to the gritty details of city management, like snow removal. Oates says, “He wanted to make sure that the streets were clean, and that they were plowed, and that the neighborhoods were nice places to live. It was really all about people.” (Indeed, in early January 2014, when a monster snowstorm bore down on Boston, Menino, just days away from leaving office, called it “a New Year’s gift, to receive one last snowstorm as mayor.”)<sup>2</sup>

It was his endless search for ways to engage his constituents that prompted Menino to look at digital technology. In December 2005, when he’d been preparing his agenda for his fourth term, he was told that technological innovation could provide new points of contact between government and its people. He decided to give the idea a try and announced he would bring on a cabinet-level CIO. For the first time in Boston’s history, a digital official would be on the same level as the police commissioner, the school superintendent, and the other department heads. When Oates agreed to take the job, he found that its role was both well positioned—the new CIO would be reporting directly to the mayor—and completely undefined.

“I asked the mayor, ‘What do you think I should be doing, boss?’ And he said, ‘I don’t know; that’s why I hired you,’” Oates remembers. Technology had never been the mayor’s thing. “He was convinced by other people he trusted that he needed one of these guys,” Oates says. Despite his new, citywide CIO title, Oates’s department in 2006 was in fact more “City Hall Management Information Systems.” They were well respected for supporting finance and administration systems and being responsive to PC,



network, and mainframe issues when required. But “no one was really attacking [the question of], ‘What do we need to do with technology to drive all of city government forward?’” Oates recalls. It would be three years before Oates was able to rebrand his office as the Department of Innovation and Technology.

And yet as Menino left office in early 2014, after an unprecedented five terms, his team knew that the CIO and his office had contributed a great deal to a remarkably successful mayoralty. A few months earlier, a poll had found that 82 percent of Bostonians said they had a “generally favorable” opinion of the mayor (that put him one point ahead of even the city’s beloved Red Sox). When he stepped down, the *New York Times*, under the headline “Two Decades of Change Have Boston Sparkling,” called Menino “an incrementalist who, with prodding and cunning and by exercising total control, nonetheless took advantage of national trends like the back-to-city migration and helped propel Boston forward.”<sup>3</sup> While many of the mayor’s accomplishments had their roots in his earlier terms, there was no doubt that in his last decade in office, technology had made city hall more responsive. There had been, for example, dramatic improvements to the Mayor’s 24-Hour Hotline; the introduction of a Citizens Connect mobile app for constituent reports to the city; and the establishment of an innovation center in the mayor’s office (called the Mayor’s Office of New Urban Mechanics).

“The mayor’s technology efforts were part and parcel of his opening up the city, making it livable, and earning its people’s trust,” says Menino’s last chief of staff, Mitchell Weiss. Mayor Menino had been described in the *Boston Globe* as “an uncommonly intimate figure in a time when urban politics and American cities have become anything but,” and his technology team had absorbed this insistence on the personal.<sup>4</sup> For all of them, technology was a cure for the governmental mistake of keeping people at a distance. The mayor’s high-touch ethos had been translated into a high-tech world.

It hadn’t been easy. When Oates had started as a new CIO in city hall that June 2006, the city hadn’t been actively investing in its technology infrastructure. “Out of a one-hundred-plus million-dollar capital budget, less than half a million dollars was directed toward technology initiatives,” Oates says. In order to



create technology initiatives that would have an impact, he'd need the city to spend some money.

Unfortunately, many earlier IT projects at city hall had a bad track record: they tended not to get finished and thus also tended to show no return on investment. Boston's chief financial officer was wary of investing in needed technologies and infrastructure like fiber networks for the city, information platforms, and enterprise systems. At his first budget meeting, Oates had his head handed to him in front of his whole team. Not only were his early requests denied, but the entire enterprise was made to look unserious. He remembers his department's administration-and-finance manager looking at him wonderingly afterward, saying, "Bill, I've been here a long time. I've never seen anything as bad as that."

Worse yet, resistance to his ideas wasn't only about money. Oates also learned that he was up against the pain and agony associated with government's procurement rules. "I went in and immediately started thinking about the things we needed to do and needed to buy, and talked to the budget office, and then they said, 'Okay, here's your three hundred thousand dollars for Project X.' I said, 'Let's get going.' They said, 'It'll be a year and a half, two years, because we have to go through the procurement process and it's a Chapter 30 procurement' [governed by state law] or whatever. It was really frightening."

Oates remembers saying, "Give us a chance, and we'll show you how this investment is going to have value for the city, in the quality of the services that we're delivering, in how efficient the departments can be, and how much better the data will be." He needed, he says, "to overcome the conservative nature the city had about doing some of these more forward-looking things," and loyally mentions that Boston's fiscal prudence has served the city well over time. But when it came to technology, the city administrators felt "being prudent" equated to "saying no." Oates was blunt with the mayor and the chief financial officer. "All the city was doing was deferring investments that would need to be made, because we can't ignore this," he recalls saying.

Even the mayor, for all his talk about innovation, was concerned that Oates's infrastructure proposals would scratch some techie itches without doing anything tangible for the City of



Boston. “The mayor would say, ‘What’s this doing for me out there?’ once again bringing the focus to the people that lived and worked in his city,” Oates recalls. Initially, Oates says, he just asked for time. “You need to trust me,” Oates told the mayor. “You’ll be happy with what we’re going to be able to deliver.”

Although the mayor wasn’t completely sold on all of Oates’s ideas, their relationship nonetheless proved key to overcoming inertia and resistance at city hall. Oates made a point of meeting often with the mayor “to have the conversation about the things we needed to change.” The two got along well. Oates jokes that because he grew up outside Boston, he “wasn’t one of the 60 percent of the people who had personally met” Mayor Menino before he started as CIO. He teased the mayor that his home in Watertown was closer to city hall than the mayor’s Hyde Park residence. Oates was part of Menino’s fourth-term effort to bring some new ideas and outside perspective to his leadership team. Despite the hurdles, he had faith in the mayor’s commitment to move the city forward in interesting and innovative ways.

Demand for services like subsidized housing, job training, and public safety was increasing across the city. From Oates’s perspective, the only way for Mayor Menino to be able to deliver more services, given the fiscal constraints that the city had, was to take a completely different view of technology, the importance of information platforms, and the need for departments to share information. Oates’s direct connection to the mayor made it possible to make these points about technology over and over again.

Oddly enough, the vagueness of Oates’s job description also helped. Mayor Menino didn’t have a preconceived notion of what his new CIO should be doing, so Oates was able to define his own role and “kind of get [his] feet wet in the organization,” he says. He decided to build credibility for himself at city hall by showing good-quality project management, getting projects done on time, on budget, and “delivering what we said we were going to deliver.” The first step was to build trust by improving the quality of service for the servers and systems that Boston’s eighteen thousand employees used, “because if we didn’t do that, we would never have the credibility to do the more interesting,



bigger, more proactive, and aggressive things that we wanted to do that we knew were important.”

As he worked on the meat-and-potatoes aspects of his job, though, Oates saw a choice opportunity to demonstrate how digital technology could improve services in an area that had long been dear to Mayor Menino: the city’s hotline for citizens.

### **Customer Relationship Management Goes Public**

Before the development of 311 apps and centralized call centers, whenever a snowstorm hit Boston, government had a simple method for allocating plows and salt: staffers in the mayor’s office answered phone calls from constituents requesting help. Those staffers would then call friends in other parts of the government and ask them to pitch in with the citizens’ requests. There were no follow-ups, no calls to note the completion of a request, and separate departments were connected only to the extent they spoke to one another by way of phone, memo, or informal personal contacts.

During Menino’s term, the mayor himself was a frequent caller to the Mayor’s Hotline, a twenty-four-hour service that launched in 1968, dialing the number (617-635-4500) at all hours of the day and night to report streetlight outages and potholes. Menino felt it was vitally important that a live person answer his and everyone else’s calls. He long refused to permit voice mail use in city hall, because he didn’t want people to get an automatic response of any kind when they called; the personal touch mattered a great deal to him. “Not having voice mail is incredibly inefficient operationally,” says former chief of staff, Weiss, “but it’s about the most efficient cultural symbol that you will find.”

Then, one day, the mayor had a new mattress delivered to his house and the store followed through by calling him to find out how he had slept. Soon afterward, he asked his staff why the city didn’t do the same thing for constituent requests. That kind of tracking would require technical updating of the hotline, and that upgrade would have to embody the mayor’s obsessive focus on constituent services and personal touch.

Oates saw how he could make that happen. And, crucially, operating the improved hotline wouldn’t cost the city more than



it was already spending on the service. (One of the mayor's top goals was "improving city services at the same or better cost," Oates notes.) Moreover, he realized, those improvements would also end up improving officials' communications with each other. In his early days in city hall, he had been surprised by the virtual and physical barriers to collaboration. The hotline itself, he'd discovered, consisted of four people sharing space with Department of Transportation employees working on Boston's fifteen-year-long highway and tunnel project, the "Big Dig." When the mayor announced a plan to move Boston City Hall to the South Boston waterfront, Oates recalls talking to the mayor about the opportunity that such a move would offer. "Whether we actually move or not, I just want you to turn the building upside down and shake everybody out of it." As he recalls, "I had never seen a building exacerbate the challenge of fragmentation and poor communication. You literally can't even find where the other departments are in a building like this. It was horrendous."

The solution for the hotline, Oates saw, would have to be a city hall equivalent of private enterprise's customer relationship management (CRM) system. So he took some early work from a mayoral steering committee and agreed to lead Boston's first CRM project. (Since no one at city hall understood what the term *customer relationship management* meant before he got there, he rebranded the term as "constituent relationship management.") Oates worked closely on the project with two others hired by city hall in 2006, Chris Osgood and Nigel Jacob, who would later become collectively known as the Mayor's Office of New Urban Mechanics.

Nigel Jacob, a gregarious Canadian who had worked on several start-ups, had won Boston's first Urban Mechanics fellowship—a program to put talented young people into government, where they could learn the ropes and generate new ideas. Chris Osgood, a low-ego, collaborative Bostonian with a family history of civic involvement, had come into the mayor's office as a Harvard Business School fellow that same year. Oates, Jacob, and Osgood began working together on the CRM upgrade as a group.

There were other public sector constituent-relations systems already deployed elsewhere, so the trio commissioned the Gartner





Group, the technology research and advisory firm, to review those and compare them with Boston's current offering. Gartner confirmed the problematic divisions Oates saw in city hall, discovering, for example, "thousands of listings for City of Boston services in local phone books." Some cities, Gartner found, had mastered the back end—the service delivery component that allowed them to adequately address issues as calls for service arrived but often in a less-than-systematic fashion. Other cities had the front end covered. They had methods to manage the notifications of issues but often without a systematic way to address the problems and repairs. So Oates and his colleagues concluded that Boston needed a CRM system whose front end and back end were both robust and tightly integrated. Oates presented the team's vision to the mayor and quickly received his approval in early 2007. Menino announced that city hall was working on a new, improved call center.

Integrating the new technology into the hotline was tricky and took longer than expected. Mayor Menino was still the most frequent caller of the Hotline—often at 6:00 a.m.—and was not happy when he wasn't able to reach a person. The mayor would call his CIO and ask, "Billy, what are you doing to my hotline?" Oates would reply, as he often did in those days, "Mayor, just give me a little time."

But time kept passing, and the press became impatient. In April 2008, a *Boston Globe* story quoted "senior city officials" as saying, "It could be nearly two more years and \$2 million more before the administration has a citywide system to keep track of residents' complaints."<sup>5</sup> Fortunately, the article merely stiffened the mayor's resolve. After it was published, the Mayor's Office issued a press release ("Mayor Reaffirms Dedication to Constituent Services and Hotline") and appointed a special assistant to the mayor, Patrick Harrington, to work with Oates to bang heads and get the project done.

In October 2008, the new CRM system formally launched. Within months, city hall was touting the new system's response to citizen inquiries as well as the speed with which city employees were performing repairs on public works. The system not only made it easier to report a problem but also possible to track when it was completed. "The length of time it took city workers to deliver new recycling bins, for example, decreased from a month



on average last fall to just one week earlier this month,” said a *Boston Globe* story in May 2009.<sup>6</sup> “City workers now fix burned-out street lights within a week, down from an average of 17.5 days last year. And park maintenance requests, which took an average of 10 days to be fulfilled last fall, are now being addressed within six days.” Citizens were still calling the Mayor’s Hotline in numbers to report issues like potholes or streetlights, but now they could also chat live with hotline employees online or use the city hall website’s self-service option.

Today, follow-up—notices of work completion and follow-up e-mails and phone calls—is standard in the CRM system. “Contrary to belief, it’s not really so much that the first impression is the most important,” says Justin Holmes, Boston’s former director of constituent engagement and current interim chief information officer. “It’s really the last that lingers the most in the mind of our customer or in our case, the constituent. So what we do now, not only do we close the loop with people by e-mail—you report a pothole to us, you get an e-mail when the case is closed by the public works employee. And that affords you the opportunity to reply to us and have any further discussion that might be necessary by that report. We also pick up the phone and give you a call back every once a while just to check and make sure you’re satisfied.” Boston’s CRM is so finely grained, in fact, that a citizen who makes a particular complaint can track its progress through the system—“like tracking a package,” as Thomas Tinlin, commissioner of transportation, puts it. The constituent can even get a photo of the finished product.

For the mayor, the idea of technology that let the city reach more people was very appealing. Oates explained, “The mayor gave us his complete support through this whole thing. And in this city, I always say to people, when they say, ‘Wow, how have you guys got so much done here?’ I say, ‘Because it’s who we are and it’s the way we’re organized.’ And you know, the mayor, in my view, is as empowered a CEO as any private sector CEO I’ve ever reported to, and so the fact is, it was a leadership issue. He was saying, ‘This is how we’re going to do things.’”

Yet all this change really only brought Boston up to the point where it required even more technology and more change, setting the stage for a project that would always improve.



## Connecting Citizens via App

The year after Oates arrived at city hall, Apple had launched the first iPhone. A few months later, in early 2008, the company issued a software development kit for people who wanted to write apps for the device. That gave Chris Osgood and Nigel Jacob an idea: What if the city offered an app that allowed people to report graffiti, potholes, or other problems just by taking pictures with their iPhones? That was the seed of Citizens Connect, the first “mobile 311” app.

It was Osgood’s and Jacob’s ability to partner with organizations outside the walls of city hall that turned their idea into a powerful digital tool. In 2008, their first stop was the MIT Media Lab, where famed professor Hal Abelson knew of someone who had started a smartphone application development company—in those early days, such people were rare. The company was called Connected Bits, and Abelson introduced Osgood and Jacob to one of its founders, Dave Mitchell. Mitchell, who had worked with Microsoft Research and MIT, had gotten interested in mobile technology very early: he and a coworker, Eric Carlson, had launched Connected Bits in 2003. Even before the iPhone and its imitators, “we found we could do some interesting things on the phone and communicate it back to a browser,” Mitchell says.

He recalls an initial meeting with Jacob, Osgood, Oates, and some city GIS staff: “So we [Connected Bits] were excited, did a bunch of work, and returned a few weeks later with a functioning prototype. We met with the same city hall people and showed a demo that captured a photo, added a GPS location and some basic information, and transmitted it all to a server for managing. And if you closed the request on the server, it would send a text message back to the reporting phone.”

The city hall staffers were stunned, Mitchell says. “They’re not used to that kind of turnaround, going from concept to visible functional prototypes between two meetings.” But Connected Bits was nimble because it was a private company. That also meant it needed to be paid to develop the prototype. Unfortunately, Osgood and Jacob were offering just five thousand dollars, hardly enough for a functioning big-city product.

Luckily for Osgood, Jacob, and Oates, Connected Bits was generous. “We said, ‘Look, this is what we’ve been working on for a while. And having a good partner and a use case and a reference



is good,” Mitchell recalls. “‘So we’ll do it for free.’ But we asked the city to kick in twenty-five thousand dollars for support for the first year, because we knew that once we launched it, support is a continuing, ongoing thing.” Oates agreed to that request on the spot.

When the app was deployed in the fall of 2009, it was cutting-edge technology. “Nobody was doing this,” Mitchell says. The largest portion of the work was getting the application to work smoothly with the basic CRM system that Boston had purchased; integration took about six months.

Even as the team worked diligently on the technical issues that had to be overcome, they found that the problems they had anticipated didn’t materialize. They had worried about protecting privacy and preventing abuses in such an open system, but neither issue proved important. As Mitchell recalls, “after a whole year and ten thousand reports going through, there were one or two slightly inappropriate things. But it turns out all of that worry was almost for nothing.”

Citizens Connect provided an additional channel for citizen reporting that was both novel and, for many people, easier to use than a website. As Public Works chief of staff Matt Mayrl explains, Citizens Connect “slimmed it down, what previously was starting up a computer, waiting for it to start, loading the Internet, going to it, remembering the website page. It made that whole process easier. There’s a little button ... there are four choices and you just do it.” Justin Holmes believes that adoption and use of Citizens Connect signals that the city is now “tapping into a population that would not have been engaged ... previously had we not developed these new channels.”

Chris Osgood believes Citizens Connect has “been a great service improvement and culture change for the city as a whole.” Dave Mitchell agrees. He thinks the same culture change is evident from the constituent side as well: “What’s really interesting is that people have said when they call in, they feel like they’re complaining. When they use mobile, they feel like they’re helping.”

Citizens Connect also allowed the reporting of more useful and actionable information about each complaint or request. For example, a geocoded picture allows a viewer to zero in on an exact location and determine exactly the source of a citizen’s problem.



That is a great deal more precise than a phone call about a “light out,” says Mayrl:

There was always that margin of error. Okay, is that a streetlight? Is that a light in a ball field? Is that a traffic signal that you referred to as a light? ... Now if somebody [using Citizens Connect] takes a picture of that, and it goes to the person whose job it is to know what the difference between all those different things is, and who might be responsible for this light, we get a much better higher-quality service.

The first version of Citizens Connect was focused solely on taking residents’ reports. By the time the second version launched, in October 2010, the app allowed people to see on a map what other issues besides their own had been submitted and resolved by the city. What had begun as an app for service requests and problem reports now has the additional function of providing transparency. (Citizens Connect was in its third version as of fall 2013. Each version was subject to extensive testing by beta users.)

Michael Norton, a professor at the Harvard Business School, has found that governments that explain what they have done gain the trust and satisfaction of their constituents. It’s a principle visible in many relationships that require trust: a pupil reassures a teacher when he shows not just an answer but the work that he did to get that answer. And Domino’s Pizza adds to customer happiness by letting people on its website see exactly how their pie is coming along (down to the moment when the pepperoni gets added). In the same way, “showing your work” to citizens adds to their satisfaction with their government. Dave Mitchell agrees: “Usually cities are fixing as many things that come in and more, but most people aren’t aware of that. And so [adding transparency] was a good PR move for the city, because people who used the system would see, ‘Oh, look, I see fifty things were opened today, but I also see sixty things were closed today.’”

### **Connecting City Workers**

In early 2011, Connected Bits released a version of the Citizens Connect idea for Boston’s public employees at work in the field: an app called City Worker. Like Citizens Connect, the newer app



ties constituent requests to points on a map of Boston and displays them on the screen of a mobile phone. City Worker also allows workers to respond to dynamically updated requests and even to close them on the spot. City Worker has been instrumental in changing the culture within the Department of Public Works. Four years ago, many of the department's workers had said having to use a computer at work would make them quit. Today they feel they could not do the job without the technology. It not only makes their workday more efficient, it also increases the scope of discretion they have in doing their jobs.

This is an enormous improvement in what had been a paper-based work flow system. In the past, suggestions for needed fixes would come into a traditional office, be printed out, and then be handed to a worker before he or she went out into the field. Mitchell describes this static prior system:

And so city workers would arrive in the morning, get this printout, and then leave to visit the sites. Meanwhile new requests are coming in while they are out in the field. A city dispatcher might call them on the radio if it's important. But usually they would go out and fix things, and at the end of the day return with a piece of paper filled with little Xes and checkmarks and notes scribbled on it. And so somebody in the city would have to enter that into the CRM. So then the next morning, it all begins again with a new round.

With City Worker, by contrast, about two hundred Boston Public Works employees, many parks employees, waste management employees, and others have with them in the field a personalized perspective on their work, via Boston's CRM system. Mitchell explains it:

Potholes, graffiti, or any of the common requests that come in via the system are automatically placed in a queue for the fieldworkers to work on. And they now have a mobile device [so] boom, it's going to show up. Here's your list of things to do ... And they can view the photos and all the details. They can reassign it. They can put notes in. They can take photos. They can finish the case and close it, all in real time. And so when new things come in, they can say, "Oh, okay, I'm doing this one and there's one right next to me." They can create new cases as well.



Commissioner of Public Works Joanne Massaro, who struggled at first to persuade her staff to use the CRM system, said that there was no such resistance when City Worker was added to the mix. “The more we could make it user-friendly, the more easily they adopted it,” she said of her staff.

City Worker is quite user-friendly, as it avails itself of the same design features that work so well on apps that workers use in their personal lives: clarity, simplicity, and ease of use. Mitchell explains, “City Worker is very single purpose, one thing you can do. Here’s a list of issues. Tap it, it says, do you want to inspect it? Do you want to close it? Do you want to assign it to somebody else? And if you say assign to somebody else, it says, well, who? Or where do you want it to go? If you say, new pothole, it will then ask you [for] just the pertinent information.”

Workers who might have said “I’ll quit if you make me use a computer” are fine with using that familiar tool of daily life, the smartphone. That comfort level made it easy for the Department of Public Works to make City Worker an integral part of the job and its performance management. And that, according to Mayrl, has yielded useful new metrics: “When we did the [CRM integration] and all this stuff could be digitized, we started measuring each of the district yards on the number of mobile cases that their inspectors created. And then we put in a system to track the number of hours that people were assigned to ... so we could manage the number of cases ... But the foundation was, we had one core set of data that was undeniably accurate and ... people were fully bought into [it].”

Public works fieldworkers began using City Worker in February 2012. Because of the app, says Mayrl, among other performance measures, pothole repair rates improved dramatically: in February 2011, only 48 percent of repairs had conformed to the department’s service-level agreement with the public—two days from start to completion. In January 2013, that rate was 96 percent.

In the next version of City Worker, Dave Mitchell would like to add a view of real-time statistics tailored to the individual employee, displaying performance metrics for the worker, his or her district yard, and the city at large: “Because right now, two days before the end of the month when their meeting is, they all of a sudden put on a big burst of energy and go fix those potholes that are overdue.



And they all come in, bated breath, waiting to see. ‘Oh, just missed it.’ Or, ‘Oh, yes, I’m on top.’ But they really don’t know where they are throughout the week. And so giving them a real-time perspective graphically of how they are in terms of their goals—individually and as a group—we think will be empowering.”

Meanwhile, the planned next version of Citizens Connect will focus on collaboration between public servants and their constituents. Mitchell describes Version Four as a mini-CRM system: it includes a call center, allows city worker completion of tasks to be made visible, and generates reports. A dashboard will allow citizens to watch reporting at a neighborhood level and send triggered alerts to constituents. In other words, Version Four represents what Mitchell calls “grand unification”—making it possible for a worker to communicate directly with a constituent about repair options. Constituents may even be able to thank workers directly via the app. This version will be available to other cities, which will be able to license it and deploy the software for their own needs.

Bill Oates and Boston have come a long way since Oates started his job to the sound of clacking typewriters. The iPhone version of the Citizens Connect app has been downloaded tens of thousands of times and has been used to create tens of thousands of citizen requests. The Department of Public Works is operating more efficiently thanks to City Worker. And the creation of City Worker and Citizens Connect has arguably helped to generate reliable data for the Department of Public Works, which has led to much improved performance management by the department. Public Works is a more accountable place than it was before the advent of Citizens Connect.

This virtuous cycle not only makes government more responsive; it encourages city workers to use their initiative to solve problems and in return generates citizen trust and confidence—the civic glue necessary for all cities to prosper. As Alex “Sandy” Pentland, the futurist-thinking head of the MIT Media Lab, comments, “There is growing evidence that the power of engagement—direct, strong, positive interactions between people—is vital to promoting trustworthy, cooperative behavior.”<sup>7</sup>

All of these lessons were not lost on Mayor Menino. It was the launch of the city’s more interesting and innovative tech-based services—and Citizens Connect in particular—that made the mayor “very trusting” of the CIO function and the Office of New





Urban Mechanics, Oates says. And, in turn, colleagues credit the core team of Weiss, Osgood, Jacob, and Oates for finding a way to translate the mayor's focus on constituent services into digital tools.

### The Next Step

Oates, of course, has a vision of what could happen next, including both a more truly personalized CRM system and a large step into the world of big data and predictive analytics. First, a city's CRM system could accommodate the urban government equivalent of a loyalty program to encourage citizen engagement in problem solving. "That connection with our customer is a huge deal for us," Oates says excitedly. "We're trying some things later that could actually credential, badge, and recognize people for reporting potholes, or for public workers who have done a good job."

Someday a future version of Citizens Connect may let a constituent know the name of the worker who fixed the broken streetlight on his corner. And the app may be providing the visualized data that citizens need to work with city officials to codesign plans for their community instead of just responding to pronouncements from experts and bureaucrats. Citizens Connect was the beginning of the beginning—a tool to further crucial citizen engagement. And that, more than its technical finesse, may be its most valuable contribution.

Weiss, for one, respects the way CRM has increased efficiency and generated useful data, but for him, the technology's greatest contribution has been to make it easier for citizens to participate in governance. "The biggest problem cities face are not efficiency problems," says Weiss. "They're participatory problems. They're democracy problems."

From the mayor's perspective, the CRM system represented a technological enhancement of his central philosophy. Even as the CRM system expanded to websites and smartphones, the sign on the wall still read "The Mayor's Hotline." Commissioner of Transportation Thomas Tinlin, himself a twenty-five-year city hall veteran who says he has always worried about technology replacing the "personal touch," said, "I see Tom Menino's fingerprints on the city everywhere I go, but I also know why he and, by extension, we, have been so successful ... We never relied on the old ways of



doing business.” The enhanced CRM system and the launch of Citizens Connect aligned with the mayor’s strategic vision.

And the mayor’s leadership was essential to getting it done. As the mayor puts it: “I never expected to be the mayor for twenty years. My first one, I had two newspaper stories saying that I won’t last four years. I’m not handsome. I don’t speak well. I didn’t go to the right colleges and all that stuff. But I lasted twenty years. Not bad. I’m getting the job done, that’s why.”

When it came to his future, the mayor said straightforwardly, “My next life, I don’t know what I’m going to do, but I’ll make sure in my next life it’s going to be all about people, how to help people. That’s what we did here. And we did a lot of stuff.”

As Mayor Menino’s fifth term drew to its close, Bill Oates, Boston’s CIO, was getting ready to move to a job as the CIO of the Commonwealth of Massachusetts. Although a key CIO role has traditionally been to provide technology infrastructure for the city, Oates believes that future CIOs will be stewards rather than providers: managing cloud services for servers and storage; harnessing mobile services in order to redefine how government can work for its constituents; encouraging employees to use third-party apps rather than proprietary services; ensuring that all of these third-party services are adequately secure; and, perhaps most important, “becoming incredibly proficient in everything around data.”

Second, he says, digital technology could provide workers in finance and administration a window on police, fire, and emergency medical data. That would give the finance and administration people much better-informed views about resource allocation, he says. It’s a natural extension to Oates, who, with his private sector background, often thinks of the city as an enterprise. The ability to make predictions—about crime and fire risks, for example—based on the very latest data from public safety data would lead to better decisions for the city as a whole. “We want this [data] to roll up so that we can make better enterprise decisions,” he says.

As the digital governance revolution takes hold, Oates says, more and more cities will require their CIOs to be “great stewards of the data, both [data from] inside the city and other sources of data that allow our business users [city departments] to make



smart decisions.” Part of this transition, he thinks, will involve CIOs helping city departments to start looking at cross-agency data in a way that prompts them to say, “Boy, if I could get a little more of this data, I could be more effective.” Right now, cities are “just scratching the surface,” Oates says: “Everyone talks about big data. My view is that we’re not big data. We’re a lot of different data, but our ability to take that data, bring it together in interesting ways, and present it effectively to the folks that want to make decisions [will be critical]. [Data] will grow and become big data.” Wise enterprises, Oates believes, find ways to manage others rather than build and maintain very complex systems.

He tells a cautionary tale from his early days on the job. His department had launched a project to make business licensing and permitting available in the City of Boston by way of streamlined online processes. The project wasn’t a success, Oates says, because his team listened all too carefully to the city agencies involved, which wanted the digital system to automate what they were already doing. The resulting system ended up being an implementation of archaic processes. “As the system came up, it [became] clear to the users—because now they’re seeing it in a computer system—they’re seeing, ‘Wow, this is kind of crazy how we do this stuff,’” Oates says. “So, [now] it’s time to rip it all out and start all over again.”

Oates now thinks this was a learning experience for him and for his organization. What the city had done with Citizens Connect needed to be done on the business-facing front for licensing and permitting: work with outside partners, find multiple channels for engagement (including mobile apps), do extensive user-based testing, and release new versions with agility. “All our organizations need to be more nimble,” Oates says. “We need to do more of that visible testing.”

There is, no doubt, still a long way to go. City systems still fall far short of what leaders can imagine. “We have to find better ways to solve the complexity of government,” Oates says.

The ideas around smart and connected cities are great, but implementing those solutions requires an enterprise view that is hard to find. We suffer from convoluted procurement processes that require us to prescribe solutions in detail and often limit our choice of partners. We also miss opportunities to effectively



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collaborate across jurisdictional boundaries. The only way we're really going to change government is if we take our anecdotes about collaboration and turn them into something much bigger, so that we truly are sharing our resources across government jurisdictions more effectively than we do today. Today, individual government departments still try to figure out ways to kind of glue it all together, while the requirements change, and the parts kind of get separated from each other. And then you very quickly try to pull them all back together again.

The challenges evidenced by the release of HealthCare.gov are faced on a smaller scale every day in American cities.

But the city CIOs of the near future will have great rewards to match the great demands of the job, Oates says. Today creative ideas in governance are coming from cities more than from state capitals or Washington, DC. "We're being creative because we have to be," Oates says.

That's why Oates cannot imagine a better place to be than in a leadership role in the public sector on technology and innovation. There are so many tools available now with which governments can engage constituents: visualizations of cross-agency data, cloud services, social media (which Oates says is "instrumental for us in our conversations that we have with our constituents every day"), the power of mobility, ubiquitous sensors, and, coming soon, robotics and flexible displays on every flat surface. Technology and innovation, says Oates, are "no longer in the basement" when it comes to local government: "It's no longer in the back of the house. It's right there. It's at the cabinet table. It's in the mayor's office. It's in the governor's office." As is Bill Oates.