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New Urban Mechanics

In 2012, the Commonwealth of Massachusetts had targeted Boston's Citizens Connect, the nation's first big city mobile 311 app, for expansion to more than 35 cities and towns across the state^a. It would reach, at first, 1.8 million people, and then more. And this was on the heels of the app's expansion into other big cities. Versions of it had already been adopted by Baltimore, Chicago, and Seattle.

Two co-creators of Citizens Connect, Chris Osgood (HBS MBA 2006) and Nigel Jacob, were ecstatic. The product the two City of Boston employees had invented in 2009 with Connected Bits, a local software development firm, was already the talk of their town. Citizens all over Boston were using it to report potholes and graffiti, to take pictures of streetlights out and street signs down. Soon, with Commonwealth Connect, this would happen seamlessly across Massachusetts. Then, who knew how far and wide it would spread. And yet, the app's co-creators were torn. Having received a \$400,000 state grant to scale their vision, they now had to lead a formal selection committee. The money, more than 15 times what they had spent bootstrapping the original app, was both a blessing and a burden. It pitted their original partner, Connected Bits, against several players. At least one of them, it seemed, might have the credentials to roll out the now famous app statewide more swiftly.

Moreover, some big questions didn't fit so neatly into Osgood and Jacob's procurement evaluation forms. What would happen to the Citizens Connect brand as their product spread across the state? Who could help scale their work best then nationally? Which business models were best positioned to drive that growth? What intellectual property arrangements would best enable it? And what role should the two city employees have, anyway, in scaling Citizens Connect outside of Boston in the first place? These questions hung in the air as they pondered the one big one about passing over Connected Bits for another partner: should they?

Chris and Nigel

By the time Osgood and Jacob had secured the Commonwealth Connect grant, they were already well known within a relatively small but growing circle of public entrepreneurs and civic technologists. They had been named "Public Officials of the Year" in 2011 (co-workers called it the public sector equivalent of winning an Academy Award) for their work on Citizens Connect and, more broadly, for

^a 3-1-1 was a phone number used by cities and towns in the United States and Canada to receive non-emergency calls. "311" became shorthand for the municipal operations that received and directed these calls.

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their effort engaging citizens in the work of improving neighborhoods.¹ By almost any account, it was an unusually fast rise for both of them.

Osgood earned his MBA from Harvard Business School and had spent much of his short career in public service. In the New York City Parks Department, ultimately as its Chief of Staff, he came to be known as a no-nonsense solver of stubborn bureaucratic challenges. He then landed in Boston city government as an HBS Leadership Fellow in 2006. With his humble approach, he won admirers in Mayor Thomas Menino and in the city's rank and file.

Osgood's first major project in Boston had been to help consolidate departmental complaint lines into the Mayor's single constituent service phone number. That project had its roots in a broad strategic review in January of 2006 as the Mayor had kicked off his fourth term. Ultimately, Lagan, an Irish software company, and Unisys, a systems integrator, were selected to implement a consolidated call-center. Departmental constituent service lines were phased out, and a constituent relationship management database (CRM) and work-order management system (WOMS) were built, as was a new call center in old office space in City Hall. Osgood helped shepherd the \$6 million project through its launch in late October of 2008.

Jacob had arrived at the city about the same time as Osgood, on a fellowship the Mayor had created to bring unconventional talent into City Hall. Jacob had been pursuing his doctorate in computer science when Menino recruited him to the city's IT department in 2006 to work on experimental technologies. Jacob was a magnet for interesting people in City Hall and an entryway for people with novel approaches when they didn't know where else to go. Among his first projects was the city's foray into the virtual world "Second Life."

Osgood and Jacob became an informal pair, combining Osgood's policy knowledge and operational know-how with Jacob's penchant for finding interesting outside partners and pursuing cutting edge ideas. When the Mayor was looking for the next new thing, he had come to simply say in meetings, "Get Chris and Nigel in here."

Sketching Citizens Connect

Osgood and Jacob had their eyes open for the "next new thing" when AT&T called on them in 2008. Two sales engineers brought new iPhones (Apple had launched the devices the prior summer) and a proposition: Would the Mayor consider using a new smartphone to read his speeches from? It was a pleasant enough meeting and a polite enough suggestion, but Mayor Menino avoided technology for the most part himself and demanded that when it was brought into the city that it be for the benefit of the citizens. AT&T was, Osgood and Jacob felt, pitching a solution to a problem that didn't exist. "And that's when we figured out Citizens Connect," recalled Osgood. "They wanted to sell iPhones to government. We wanted to give away a free app to people."

In a small conference room five floors above the Boston residents rushing to and from work through City Hall Plaza, the idea for a citizen-facing app was starting to form. "Our vision was how to get more people to be the eyes and ears in government," Osgood remembered. He and Jacob began crafting their vision for an iPhone app that would enable residents to report issues they saw in their neighborhoods to the city for repair. They left the meeting and mocked up a version of what they called a "Basic City Services Reporter" on a single PowerPoint slide. (See **Exhibit 1**.) With the sketch in hand, but little else by way of resources or know-how in the new mobile device space, Jacob reached out to a contact at the MIT Media Lab: "It wasn't a hard enough problem for them, but a researcher there referred us to Dave Mitchell."

Connected Bits

In many ways, Dave Mitchell wasn't the likeliest of partners for Osgood and Jacob or the likeliest developer of what would become Citizens Connect. In some regards, he had come out of the big corporate world that the two had come to shy away from. Mitchell had spent time at Microsoft in their consulting arm. Moreover, Mitchell wasn't a self-described "government guy." He had co-founded Connected Bits with Eric Carlson in 2003 in office space that MIT loaned them. The two built a lucrative business selling push-to-talk software to cellphone carriers that allowed them to provide walkie-talkie like capabilities in the mobile phones they marketed. The two co-founders ran Connected Bits very lean – with never more than a half dozen employees – all the while keeping rights to the code they were writing and looking for the next thing to create. Carlson recalled the company's explorations then:

People are generally either pioneers or settlers. Dave and I both came from the sense that the more established things got, the less interesting. We were always startup guys. The only thing we knew was we wanted our next thing to be in mobile. We spent six months just trying to figure out in what space. We finally came to the conclusion that it had to do two things: We wanted to find a problem that was best solved when you were mobile and we wanted to have a real customer. We went through several ideas, but they failed those tests. Until we came up with the concept we would roughly call "field service." Maybe your washer/dryer wasn't working and you wanted to upload a picture for tech support. We started going along that direction when Chris and Nigel presented their idea of Citizens Connect. It didn't take long for us to say "hey that's pretty much what we were working on just from a different slant."

Osgood and Jacob saw in Connected Bits more than just a happy coincidence. "Mitchell showed us stuff they had built," Jacob would say. "It looked good. He talked in an intelligent way about design and user experience. He talked about how they would develop it. They would do it agile. They would do rapid iterations. They seemed game." (See **Exhibit 2**.)

Mitchell and Carlson felt good, also, about the opportunity to partner with Osgood and Jacob, even before the first in-person meeting. Queried by the two about whether he and Carlson were interested, Mitchell said easily, "Sure." He remembers what Jacob then replied: "I have to tell you something: our budget is only \$6,000," and his own response in turn: "Whatever. We will worry about that later."

Not long after, Mitchell was invited to meet with Osgood and Jacob, and with colleagues of theirs from the city, including Bill Oates, the city's Chief Information Officer and Claire Lane, manager of the city's Geographic Information System (GIS) team. Osgood and Jacob showed Mitchell their paper mock-up. Mitchell recalled, "They showed us their slide. They said, 'This is what we want to do. What do you think?'"

Three weeks later Mitchell came back to meet the team again, this time with a laptop, an iPhone and a request: "Tell us if this is what you are thinking of." And then in a drab city conference room, Mitchell initiated a graffiti case and snapped a photo with a prototype version of what would become Citizens Connect. As the iPhone's GPS figured out the address, he hit the submit button. The case request showed up on the laptop, running a database. Mitchell hit the "closed" button there, and a few seconds later an SMS showed up on the iPhone with a simple message: "Graffiti has been closed."

Everyone in the room looked at Bill Oates. Oates asked the group assembled, "What do we need to do to make this happen?"

Mitchell and Carlson decided that Connected Bits would develop the project for free and retain ownership of the code. They felt the project would open up a new product line for the company and believed it would generate some positive publicity. Knowing what happens after new product rollouts and the user frustration when things don't work quite right, Mitchell did tell the city, though, that they would need to commit \$25,000 so Connected Bits could provide support and maintenance.

Moreover, Mitchell knew much complexity actually remained. "The first 90% is easy. It's the second 90% that's hard." What was required was for the team to tie Citizens Connect into the city's multimillion dollar CRM and WOMS, the same nuts and bolts system on which Osgood had cut his city-tech teeth. Reporting graffiti was one thing. Getting a work order out into the field and to the right person, getting the graffiti cleaned, and getting word of the status back from the streets was something entirely different. Mitchell captured the task at hand: "We really need to make it work."

Testing, Testing

Connected Bits and the city team both had their work cut out for them. The user experience had to be improved and the connections to the CRM/WOMS had to be figured out, but Jacob prioritized one thing on the to-do list for the teams: "The issue is finding people to be testers." Mitchell concurred, "This was all new. No one had done this mobile reporting of city issues. We wanted to do it right. So we put it in the hands of people early on. We handed it to them, to friends and family and people on the street and said, 'What do you think it does?'" Osgood and Jacob also identified groups of civically-minded beta-testers for the Connected Bits team. They enlisted ONEin3, the Mayor's young professional advisory council (named for the notable statistic that one in every three Bostonians at the time was between the ages of 20-34) and Boston World Partnerships, essentially a peer-network of Boston-based business types who helped recruit other businesses to Boston through relationshipbuilding and connection-making.

Mitchell, with Carlson, told their team and the city's that as they iterated on the interface, they had to keep it simple. "If you have to explain it, it doesn't work in mobile. We had to remember not to get so tied up in the app that we forgot it isn't the main part of someone's day. There can't be a manual. There is no FAQ." Mitchell described the design approach as low-friction. "We know the city ultimately wants to get stuff done, so we made a lot of design decisions early on like skip the sign-up – we don't need your name. Get in. Report your issue. Get out." This approach was one Osgood and Jacob had welcomed, but it also generated pushback from some city agencies. There was a movement to request more refined data from the citizen reporters. Is the graffiti on a roof? Do the workers need to bring a ladder? Mitchell pushed back. "We said 'people, we got the person to take a picture!"

Mitchell sensed the frustration build as he rejected departments' requests for more detailed fields, but he also knew he needed them as partners. It would all fall apart if the departments couldn't or wouldn't follow through on the work flow. The Connected Bits team didn't build the information requests into the code, but the frustration didn't boil over. "Nigel and Chris were the conduit between us and the departments. And they were excellent at finding the early department adopters. They would find someone who could take the risk, and then the other departments would follow."

Osgood and Jacob had another angle on where to start inside City Hall, as well. They pulled data on what issues citizens had been calling the Mayor's 24-hour hotline about, and singled out those for the requests for the app's simple reporting interface. There would be no long series of menus, instead, simply: graffiti, pothole, streetlight, and other. And they and Connected Bits agreed to push for issue types that the city had promised to resolve quickly. Mitchell remembered, "We wanted very quick turnarounds. People could get that immediate gratification."

Turnaround

Osgood, Jacob, and Connected Bits weren't the only ones looking for speed from Citizens Connect. Mayor Menino had an eager and anxious eye on their work. The Mayor had come into office in 1993 with a reputation as an "Urban Mechanic." The *Boston Globe Magazine* noted that he was fond of driving around the city with a notecard and pen to jot down the little urban issues that vexed neighborhood residents. The magazine portrayed him on their cover at the time with the question, "Can a nuts and bolts Mayor revitalize the city?" By most accounts, he had. A program to revitalize local business districts had helped breathe new life into the neighborhoods. Strong relationships with downtown businesses had helped attract investment and development and, in turn, support for summer jobs for teens. The school district, while still marked by substantial struggles, had been named the country's most improved big school system.

But by the spring of 2009, the Mayor's campaign for a record fifth term in office was almost underway, and the criticism had started coming in. Mitchell remembered, "There was all this political stuff going on that we weren't too much a part of. But the opposition was painting the Mayor as a Luddite^b and were trying to say this next term would be all about technology and transformation. There was a lot of pressure on us to make Citizens Connect work and making sure we did it fast." Leading the opposition was City Councilor Michael Flaherty who went on to run campaign advertisements that suggested Menino was an old, bulky 1980s style cellular phone and that the younger councilor was the new, fresh, iPhone.² Citizens Connect would be part of Menino's rebuttal.

Implementation challenges meant that Citizens Connect wasn't ready to launch broadly by Labor Day that year. The "second 90%" as Mitchell had called it, had lived up to its name. Linking the app with the Lagan CRM system proved time consuming, but with Connected Bits, Osgood, Jacob, and David Hume from Lagan led the charge and, ultimately, succeeded. Two weeks before the November 2009 election, Citizens Connect launched to the public. The widely attended and tightly orchestrated press conference held at the operations center of the Mayor's 24-hour hotline belied the more organic way news was spreading on the new app. Mostly, the beta-testers started telling their friends.

The first official case was a graffiti complaint. Black paint now covered the sign outside the West Roxbury Education Complex. (See **Exhibit 3**.) The picture with its GPS coordinates was submitted at 11:58 am on October 22. The city's Graffiti Busters team cleaned the sign on October 27, closed the case in their files, and sent by SMS a note to the neighbor. "This request has been completed."

We are All Urban Mechanics

Osgood and Jacob weren't done improving Citizens Connect or with the mission that had inspired them to create it: "to get more people to be the eyes and ears in government." In January 2010, as Mayor Menino was preparing to be inaugurated to his fifth term as Boston's Mayor, his two aides were busy working on the second version of Citizens Connect. They and Connected Bits would make some tweaks to the user interface and incorporate some user feedback, but the biggest change would be a

^b Merriam-Webster's online dictionary defines Luddite as "one who is opposed to especially technological change."

new social component. Citizens Connect 2.0 would, fittingly, allow citizens to see what issues other citizens had been reporting, too, and how quickly they were being addressed.

And when, on the first Monday that January Mayor Menino addressed the city from historic Faneuil Hall to preview his fifth term, he made clear that the new way of governing that Citizens Connect represented would be central to his vision:

Sixteen years ago I was labeled the Urban Mechanic and described as a sort of oneman 'Mr. Fix-it' when it came to the basics that make our city work. The nickname was overstated then, but it's outdated now – we are all urban mechanics. Smartphones, GPS, wireless technology, and a resurgent spirit of civic engagement mean that all of us are eyes and ears on the streets, that neighbors are our greatest source of data, and our citizens the best civic entrepreneurs. This is an open call to foundations, entrepreneurs, technologists, and neighbors...Be the heart of this approach – one we call New Urban Mechanics.

Across the street in City Hall, the organizational building blocks for New Urban Mechanics were put into place. Osgood and Jacob would lead the effort. They would co-chair a new office: the Mayor's Office of New Urban Mechanics. Oates and the Mayor's Chief of Staff would provide some governance and advice. There would be no staff to dedicate to the office beyond the two leaders at the outset and no new funds, but Osgood and Jacob would have wide latitude to tap talented colleagues inside the Mayor's Office and throughout the administration for help, and Oates would cobble together some modest financial resources for the early going as they needed. The two had a large mandate, cubicles around the corner from the boss, all the wall space they wanted for ideas and prototypes, and, since it was government, a new acronym: MONUM.

MONUM became known as one of the early U.S. city innovation offices, but was probably more widely recognized for the products it went on to co-produce. Citizens Connect gained fame as the country's first big-city mobile 311 app. MONUM, working with Connected Bits, issued updated iPhone versions and an Android version (see **Exhibit 5**). Street Bump, which ran on mobile devices and sensed and reported potholes as drivers traversed the bumpy city, followed. Osgood and Jacob had developed it in partnership with a professor at the Worcester Polytechnic Institute; then through an open-innovation challenge on Innocentive, the crowdsourcing platform; and in its final form with Connected Bits. Mitchell and Carlson again partnered with the city team on City Worker, which was in many ways a worker-version of Citizens Connect, and allowed the city's front line employees to monitor, add, and close requests from the field on their mobile devices. MONUM and partners also created The OneCard, a universal student ID card for linking school, community, and library participation and an app, Where's My School Bus, for helping parents follow their children's travel to and from school. Other experiments were tried and scaled or abandoned.

The projects and the approach drew some criticism, but mostly praise. Osgood and Jacob were recognized as Public Officials of the Year in 2011 by *Governing* Magazine. Later the White House named them Champions of Change. They secured grants from Bloomberg Philanthropies and the MacArthur Foundation. The two New Urban Mechanics were invited to present at SXSW – the festival in Austin, Texas that had become a focal point of new things cultural and digital – on shaping future cities with mobile data. Their work was also featured at TED, the global conference focused on spreading ideas, and a host of other conferences around the world. Of course, none of the praise mattered so much as the constituent who grabbed Mayor Menino by the elbow at a clambake to sing Citizens Connect's virtues and the hundreds like him who tracked down the mayor at events across the city.

Citizens Connect was downloaded just shy of 20,000 times in the 18 months since its soft launch in July of 2009, and new downloads continued at a rate of approximately 800 a month. By then, the app was channeling almost 15,000 cases per year from residents to the city and back.³ These cases represented close to 20% of all cases coming into the city, and, most importantly to Osgood and Jacob, they appeared additive to the requests that were still coming in over the phone and over the web. (Phone requests, for example, were still growing at 2,000 - 3,000 a year, and the web was growing at more than twice that rate.)

Commonwealth Connect

It turned out that Boston residents weren't the only ones using Citizens Connect. The team was also receiving service requests with GPS coordinates in neighboring towns. "We got a ton from Brookline," Jacob remembered. "We reached out to their CIO. They were game to try to work on something together, but they had zero capacity. We brokered a connection. They would work with Connected Bits to create an app for Brookline." The idea for a regional Citizens Connect was on their mind when a grant opportunity from the state crossed their desks. Matt Maryl, a Harvard Kennedy School graduate, former performance management head for the City of Boston, and now Chief of Staff to the Commissioner of Public Works, saw the Community Innovation Challenge Grant Program introduced by the administration of Governor Deval Patrick in November 2011. The program was meant to encourage innovation in the state's municipalities and regionalization of their approaches.⁴ Maryl thought it could be a source of funds to further develop their City Worker app. He tipped off Osgood and Jacob, and the three of them then agreed on a bigger idea: What about bringing Citizens Connect to all the cities and towns in the commonwealth? In March of 2012, the state announced that Boston would be awarded \$400,000 to develop Commonwealth Connect, a Citizens Connect-type app for use in local governments across Massachusetts.⁵

The grant was a logical extension of the Citizens Connect work in Boston. And to Osgood and Jacob, Connected Bits seemed the logical partner in many ways. "We had talked to Dave. We knew people wanted Citizens Connect. We had asked him 'how we do get it to citizens across the communities?'" Mitchell had told them it would take about \$200,000 to \$300,000 at first to defray the development costs. That would be necessary because most of the other cities and towns in the state didn't have a CRM/WOMS to plug into. Connected Bits could build one. Without a hosted CRM and some basic work order management system, the cases would come in, but would have nowhere to go. Mitchell recalled, "We said we would do it just for the development cost. We don't have to make a dime." It was the same basic strategy the company had approached the first versions of Citizens Connect with and the subsequent roll-outs. Connected Bits wouldn't aim to profit on the development they were doing with Boston. They would keep ownership of the code though, and would have Boston as a reference case to sell to other cities. A statewide version of the app would give them a platform to sell to other states.

Mitchell's impression was that Osgood and Jacob wanted Connected Bits to do the project and could figure out a way to partner with him on it. "Chris and Nigel were aiming to sole-source it," he noted, referring to a procurement process they might be able to use which would obviate the need for opening up the work to bids from other companies. A possible exemption for uniquely qualified vendors could allow them to choose Connected Bits out of the gate, without having to use the usual procurement processes that sometimes could be rigid and drawn out.

Carlson had some concerns about pursuing the project. Among them was that Connected Bits had been shifting strategy to focus more on City Worker type apps. "We had seen an opportunity to address

the other side of the coin; the workers in the field who were fixing the issues." Commonwealth Connect might take the company away from that direction.

Osgood and Jacob had some hesitations, as well. Some of the city personnel had expressed frustration with Connected Bits. Because of their continued success together, MONUM had enlisted the company's help on a slew of projects – including City Worker, Street Bump, and a new project called Street Cred they had in mind to create a "gamified" platform where citizens could earn and share credit for engaging in their neighborhoods. Some timelines had been missed and rollouts delayed. Osgood and Jacob were sympathetic to the challenges and valued their partnership with Connected Bits, but they also had to preserve their credibility with the departments. Jacob wondered at the time, "If we give Connected Bits another contract to scale up across the state, how will that affect us?"

In addition to their concerns about capacity, Osgood and Jacob had emerging concerns about attention and control, too. Osgood remembered, "Citizens Connect was becoming very popular in other cities around the country. This thing we had invented in Boston, the design of it, was now being driven by many voices. And not just ours. So now Dave and the team had to consider all of them."

Still, Osgood and Jacob valued the products Connected Bits had ultimately turned out and enjoyed the back-and-forth they had with Connected Bits, the design, and the testing along the way. Eventually, it was the city's lawyers who shut the door on the sole source possibility with Connected Bits. Though the Boston team and Connected Bits had created in many ways a new market category of mobile citizen reporting, similar products now existed. Osgood remembered, "We had to go back to Dave. We said, 'We have to stop our conversations with you. We can't talk to you about this if you want to bid for it.'" The effect on the back-and-forth the teams had enjoyed was swift. Mitchell felt that, "all of a sudden there was a gag order. The wall went down. I couldn't communicate what our vision was. How it might be architected."

Osgood and Jacob and their colleagues drafted a Request for Proposals (RFP) to solicit bids from companies who wanted to scale Citizens Connect across the commonwealth. They issued their RFP during the fall of 2012. The response was disappointing. Osgood reflected on why: "We wrote the RFP poorly. We got 8 responses. Four we had to throw out because they had procedual flaws, and the prices from all were too high." Mitchell himself, having submitted one of the responses for Connected Bits, had a theory, also. "The RFP required all of what Citizens Connect did and required that it be developed open-source. We felt betrayed. If it was about giving it all away, what's the point in doing it?"

Osgood and Jacob had believed that "open" was an important principle in the evolving space of public entrepreneurship that they were helping to grow. They had also had formed a related, practical sense that open-sourced code would be key to allowing projects to scale across cities, states, and countries over time. They didn't want to abandon the principle in a revised RFP. However, their own views on the practicalities of "open" were shifting, in part because of the tepid response to the first RFP. Osgood and Jacob opted in the second version to rely only on mandating that the winning partner comply with Open311 standards and that just the parts of the code that link the mobile app to any Open311 endpoints be open-sourced; not the entire project.^c

^c Boston, Connected Bits, SeeClickFix, and a handful of other cities, companies, and coders had been collaborating to create a standard technological way of submitting new issues and querying existing issues. These standards were commonly known as Open311 standards. Compliance with these would, the participants felt, allow more innovation in the space of non-emergency reporting and also facilitate open, ready access to the data generated by it. The Open311 endpoints that Boston's RFP referred to were the jurisdiction-specific links that outside apps could connect to in order to push issue data or pull reporting data. Boston

The city team rewrote the RFP and re-published it. (See **Exhibit 9**.) Osgood felt that this time it was clean and clear. The team had also provided more direct messaging about the pricing they were expecting. Osgood felt much better about the eight responses they received back: "All we could end up using." Carlson worried as the process had dragged on, that the project had become too tactical. Still, Connected Bits was one of the eight respondents.

SeeClickFix

One of the strongest responses was from SeeClickFix, and Osgood and Jacob were not surprised. SeeClickFix had entered the neighborhood reporting space just months before Osgood and Jacob started work on Citizens Connect with Connected Bits. Connected Bits and Boston had produced the first U.S. big-city mobile 311 app. SeeClickFix had produced one of the country's first web-based reporting platforms for local issues. Citizens Connect and versions of it were now in many big cities across the country. SeeClickFix was now partnering with dozens of cities and towns, too, with their web platform and a mobile version.

But if SeeClickFix and Citizens Connect now seemed to share much in common, it hadn't always been this way in one regard. Citizens Connect was conceived by Osgood and Jacob out of their deep belief that government could productively engage citizens and effectively improve the quality of their neighborhoods and their lives. SeeClickFix's Ben Berkowitz co-founded his neighborhood reporting tool in New Haven, Connecticut out of frustration with government and its frequent failure to fix the small things that matter or to be accountable for doing so. He thought back to when he co-founded the company in 2008 and his feelings then, "We felt we needed to put government on notice. We harnessed the social culture of the web and pointed it directly where it needed."

Berkowitz recalled the neighborhood issues that were popping up from citizens on the web. "We took a fire hose of neighborhood complaints that was spraying all over, and we pointed it somewhere." SeeClickFix invited residents to report the locations and nature of their local issues on the web platform, and then the company directed those towards the local leaders' email boxes. A large part of their early strategy was to partner with media companies who would host reporting widgets on their websites as another way of generating attention for the issues and accountability for fixing them.

Berkowitz's vision and his ability to get SeeClickFix up and running across the country won him wide recognition. He was named one of the Top 25 Public Sector innovators by the Center for Digital Government⁶, one of Connecticut's "40 under 40"⁷, and was a sought after speaker on the civic-tech circuit and more broadly in conferences on data, transparency, and democracy. Jacob recalled, "Ben was heralded as one of the first new civic entrepreneurs in a way. He got his friends together. They saw a problem and they wanted to fix it."

SeeClickFix meanwhile experienced significant growth. In the first two years, 10,000 issues had been reported through the platform. By the end of 2012, SeeClickFix was working directly with 135 municipal clients and routing issues to additonal cities with Open311 connections. The number of issues reported had climbed to more than 330,000.⁸ More than 200,000 had been resolved. SeeClickFix, now at 11 employees, was generating approximately \$800,000 in revenue per year. In early 2011, O'Reilly AlphaTech Ventures and Omidyar Network partnered on a \$1.5 million round for the

required that the code produced to connect the eventual statewide mobile app with these endpoints be available for other developers to use.

company, making SeeClickFix one of the early civic-tech companies to secure venture backing and the first of Omidyar Network's for-profit government transparency investments.⁹

SeeClickFix used the funding to add features to the web-based and mobile reporting platforms. They also developed a hosted CRM so that cities without existing CRM and WOMS could assign open cases, run reports based on request types and geographies, and run analyses on citizen issues and responsiveness.

Berkowitz's response when he learned of the Commonwealth Connect opportunity was much the same as Mitchell's had been when Osgood and Jacob first reached out with their single slide and big vision. "How could you use one app to report in multiple cities? That's what we were doing. It was a no-brainer."

The Open Case

SeeClickFix's response to the city's RFP reflected Berkowitz's belief that what Osgood and Jacob wanted was very much what SeeClickFix already had to offer. He felt that SeeClickFix would score well on key criteria the RFP responses would be assessed on: the mobile reporting app, a WOMS, and price. But Connected Bits, too, had submitted a strong response. It reflected their focus on simple design, on their strong track record with the city, and on their ability to create a WOMS.

Adding to the decision drama for Osgood, Jacob and the rest of the selection team (see **Exhibit 12**) was the pressure from the state to move swiftly. Governor Patrick would soon be underway in his own battle for re-election, and his administration was keen to show they could scale great local innovations across the state. The grant to MONUM for Commonwealth Connect was the second biggest the state had made out of that program. It was a high profile project leaving little space for Osgood and Jacob to fail. Osgood recalled one thing about a state IT employee's reaction when he was told as the effort was unfolding that there was some chance it might not work: "His horror."

The time to pick a partner to scale Citizens Connect to dozens of cities and towns and, eventually, the entire state was approaching. If they could pull this off, Osgood and Jacob felt, it would mean much for the state's citizens and for its cities and towns. It would also show that episodes of public entrepreneurship, which started small and locally, didn't have to stay that way.

iPhone Application: Basic City Services Reporter







We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value: Individuals and interactions over processes and tools Working software over comprehensive documentation Customer collaboration over contract negotiation Responding to change over following a plan That is, while there is value in the items on the right, we value the items on the left more. James Grenning Kent Beck Robert C. Martin Mike Beedle Jim Highsmith Steve Mellor Arie van Bennekum Andrew Hunt Ken Schwaber Alistair Cockburn Ron Jeffries Jeff Sutherland Ward Cunningham Jon Kern Dave Thomas Martin Fowler Brian Marick

Source: agilemanifesto.org, accessed January 2015. "© 2001, the above authors this declaration may be freely copied in any form, but only in its entirety through this notice."



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Exhibit 3 First Complaint



Source: https://mayors24.cityofboston.gov/media/boston/report/photos/5339ab026963b00e32e539f4/graffiti.jpg, accessed November 2014.

Exhibit 4 Citizens Connect in the App Store





Source: iTunes.apple.com, accessed November 2014.

Version	Date	Theme	Major New Features		
1.0	Soft Launch Jul. 2009 Official Launch Oct. 2009	Citizen Reporting	iPhone. Geo- stamped photo capture. Note back when closed		
2.0	Oct. 2010	Citizen Engagement	Android as well as iPhone. Can view recent 100 cases, not just your own		
3.0	Sep. 2011	Reach	Open311, SMS, and Twitter interfaces		
Source:	Connected Bits.				

Exhibit 6

Citizens Connect User Interface



Create & Submit A Report

View Recent Reports Via Map or Submitted Images



Source: http://www.cityofboston.gov/doit/apps/citizensconnect.asp, accessed November 2014.

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Exhibit 7 SeeClickFix Pothole Widget on Boston.com in February 2009



Source: http://blog.seeclickfix.com/blog/2009/02/seeclickfix-map-on-bostoncom.html?rq=boston.comm, accessed November 2014.

Exhibit 8 SeeClickFix Version 3.0 in August 2012



Source: http://blog.seeclickfix.com/blog/2012/08/seeclickfix-summer-updates.html?rq=new%20version, accessed November 2014.

Exhibit 9 Commonwealth Citizens Connect RFP - Overview

Request for Proposal: Commonwealth 311 App

RFP #DOIT090412

1. Overview

1.1. Summary

The City of Boston, through a Commonwealth of Massachusetts Community Innovation Challenge (CIC) Grant, is supporting the development of a suite of applications that work across municipalities that allows individuals to report basic problems, such as potholes, directly to the appropriate local government.

This suite is composed of three components: (1) the mobile app; (2) the router that allows that app to report cases across municipalities; (3) the work order management system / Open311 adapter that allows local governments to respond to requests made through the mobile app. These components are described in detail below, and the relationship between them is described in Section 2 of the RFP.

Based on the quality and cost represented in the responsive submissions, the City of Boston may elect to select separate vendors for any of the three components or more than one vendor for any or all components. Vendors who believe they have a quality solution for any one of the components are strongly encouraged to submit.

Through this grant, we intend to support up to thirty (30) Massachusetts' cites & towns use of this system for up to the next three (3) years. This includes five (5) municipalities by the end of calendar year 2012 and twenty (20) to twenty-five (25) additional municipalities by the end of the first quarter of calendar year 2013. To the extent of available grant funds, participating Massachusetts cities and towns will be able to use these products at no cost to them, under the terms of this RFP. Cities and towns must comply with Massachusetts procurement law as well as their own local rules, and may add local contractual requirements. The City of Boston shall not be a party to any agreement between a contractor and a city or town and each city or town will be required to sign a participation agreement with the City of Boston acknowledging same.

For more background information on the organizations involved in this effort, visit:

- www.cityofboston.gov
- www.mass.gov/anf/budget-taxes-and-procurement/working-for-you/community-innovationchallenge-grant/

The budget for this project is \$300,000 of the grant available for the scope of work described in this RFP. This amount will cover costs for all three components described in this RFP for up to three years. The final number of Massachusetts municipalities included in this project will be determined by the fixed cost of each component, and the per municipality costs of the mobile app and WOM / Open311 adapter. Lower costs per component and per municipality will allow this project to include more Massachusetts municipalities, and extend the positive impact of this project.

1.2. The Mobile App

We are looking for an app that meets four main criteria.

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Request for Proposal: Commonwealth 311 App

1. App Functionality

The app should allow a resident to submit a description, photograph and location of a service request (SR) to a local government. The app should show the tracking number for that SR and contact details from that relevant municipality. The app should show the status of that SR (e.g., the case is open or closed.)

2. App Integration

The app should be able to integrate with two types of services: a Massachusetts-wide router and an Open311 GeoReport v2-compliant (Open311) endpoint. When a user reports a SR through the app, the router directs the app to the geographically appropriate Open311 GeoReport v2-compliant (Open311) endpoint. The Open311 endpoint connects to a work order management (WOM) system, and brokers all communications between them.

3. App Look & Feel

We want municipalities to have the opportunity to customize the app so that, when you are reporting an SR to a particular municipality, the user knows that she or he is connecting with that municipality. Consequently, the look & feel of this app should support dynamic branding (i.e. the branding of the app should change on the fly to represent the branding of the municipality receiving the SR)

The intent of this effort is to draw a closer connection between the public and the public sector. Any response that features an app that is heavily branded as a 3rd party intermediary will not be seen as advantageous.

4. App Platforms

This app should work on smartphones that leverage iOS and the Android operating system. Preference will be given to those that also operate well on other platforms.

The criteria each response will be evaluated by for the app component is outlined in detail in Section 3.

1.3. The Router

The router is the component that tells the mobile app which Open311 endpoint to contact. This router will be similar to previous efforts such as GeoWebDNS (<u>http://wiki.open311.org/GeoWeb_DNS</u>) or LoST (<u>http://lost.cs.columbia.edu</u>).

Additionally, we view this router as a potential platform to allow for discovery of and connection to municipal services beyond both the current scope (participating municipalities in Massachusetts) and duration (3 years) of this grant. The following criteria are intended to ensure that this component is an open platform that is of enduring value to developers.

1. Location-based Routing

The router should be able to respond quickly to calls from any app and connect that app to the appropriate Open311 endpoint. The router must contain a geo-coded list of Open311

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Request	for Proposal:	Commonwealth 311 App
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endpoints. The app will report a location, and the router will respond with the appropriate Open311 endpoint(s) that match that location.

2. Open Sourced & Separate

To ensure that this router is available for developers, the code and all components of the router should be open source software.

3. API Key Management

To make this router a convenient discovery tool for municipal APIs, there should be an API Key management platform as part of the router. Developers should be able to register for a key, and that key should automatically be available to any municipality using this system.

The criteria for each response will be evaluated for the router component as outlined in detail in Section 4.

1.4. The WOM System / Open311 Adapter

This component serves three purposes that are dependent upon the needs of the participating municipality: it provides a light WOM tool for municipalities that do not already use a WOM system; it provides an Open311 endpoint to the public, and it can serve as a general integration point for municipalities that operate an existing WOM system.

1. Service Request Management

For municipalities that do not have WOM systems, we want to provide a lightweight tool that allows them to manage the cases. At a minimum, the system should allow the municipality to see SR's on a map, filter/group them by type, and allow them to set the status of the SR (open, closed, pending, etc.).

2. Open311 Endpoint

This system will serve as the public Open311 endpoint for the municipality. This endpoint must be 100% compliant with the Open311 GeoReport v2 specification. This system must also allow the municipality to configure the Open311 endpoint, specifying SR types (and other details) and blacklisting API keys.

3. Integration Point

For municipalities that have an existing WOM system (with a published API), we want to provide an adapter that can be configured to talk to that system. We would like to see a skeleton framework that can be configured by a moderately technical person, but we will also look favorably on pre-existing custom integrations.

Some of the existing WOM systems in use in Massachusetts include, but are not limited to, Cartograph, EnerGov, IntelliGov, GovQA, Lagan and Munis.

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Request for Proposal: Commonwealth 311 App

RFP #DOIT090412

The criteria each response will be evaluated by for the WOM System / Open311 Adapter component is outlined in detail in <u>Section 5</u>.

1.5. Submission Requirements

Section 7 outlines the list of documents you must submit as well as the form in which you must submit them. Please pay careful attention to this section, if you fail to meet any of the requirements outlined in that section, your submission will not be considered.

1.6. Important Things to Know

Section 8 lists other key factors you should know about this RFP process and the contracting that would follow. Please read it.

1.7. Timeline

Request for Proposals Available Pre-Bid Conference Questions Due to the City City Responses to Questions Posted Requests for Proposal Due RFP Award Decision Wednesday, September 5, 2012 Wednesday, September 12, 2012 at 1pm EST Friday, September 14, 2012 Tuesday, September 18, 2012 Monday, September 24, 2012 at 12pm EST Friday, September 28, 2012

1.8. Submission Address

City of Boston DoIT Department Attn: Paul Kresser One City Hall Plaza, Room 703 Boston, MA 02201

1.9. Contact Information

Paul Kresser, Department of Innovation & Technology, paul.kresser@cityofboston.gov

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Source: City of Boston.

Exhibit 10 Connected Bits and SeeClickFix RFP Response Excerpts - Summary Letters

Summary Letter



Connected Bits is the developer of Spot Reporters, a system which serves as the backbone of the Citizens Connect mobile reporting applications. Spot Reporters was architected for secure, seamless data exchange and is in production today with work order (WOM) systems such as Lagan, Motorola CSR, Active Networks, and Azteca Cityworks. The Spot Reporters server stages all incoming service requests and properly routes the requests for resolution, although in Brookline, Massachusetts, Spot Reporters is a stand alone system including work order management functionality itself. Municipal corporations using Spot Reporters range from 60,000 to over 3,00,000 in population.

Connected Bits has developed an Open 311 module for the Spot Reporters system featuring a fully functional public Application Programming Interface (API) for third party developers. This module has been implemented in cities such as Baltimore, Chicago, Seattle, and Grand Rapids--in addition to Boston--and has been recently selected by many other large cities such as San Francisco, Dallas, and New Orleans. In addition to the Routing component, Connected Bits plans to open source the Open 311 WOM layer such that the City of Boston may share with other interested municipal partner and redistribute the source code.

The Spot Reporters system supports the submission and tracking of geo-stamped, photographic reports through various proprietary and third party applications. The system includes a robust Web-based administrative console for system monitoring, service definition, and management of security tokens for third party developers. With some enhancement, this system will meet the requirements set forth in this proposal and lay the foundation for various mobile and Web applications for the Commonwealth of Massachusetts as it has in the City of Boston and abroad.

Connected Bits is sensitive to the City's aggressive time table and has developed a riskmitigation plan to meet the target deployment goals by leveraging our existing software systems and deployment and configuration experience. City of Boston DoIT Department Attn: Paul Kresser One City Hall Plaza, Room 703 Boston, MA 02201

September 20, 2012

7.2 SUMMARY LETTER

Dear Paul Kresser,

Enclosed please find SeeClickFix's proposal in response to the City of Boston's notice of request for proposal *RFP DOIT090412 Commonwealth Citizens Connect/311 App.*

The following contact is authorized to make representations on behalf of SeeClickFix:

Charles "Kam" Lasater, CSO, is based at our office at 746 Chapel Street, Suite 207 New Haven, CT 06510 Office phone: (203) 752-0777

SeeClickFix serves as the first and largest open government community with over 70 government clients, 700 media partners, and thousands of communities participating in 11 languages on 6 continents. With over 25 million page views served monthly on scalable servers, this growth continues as more and more communities adopt the SeeClickFix platform.

SeeClickFix currently provides a cloud-hosted environment that allows any user to report issues anywhere in the world. To support this system we have built extensive GIS and geo-bounding functionality directly into our core offering. Currently in production we have loaded 75,237 civic and neighborhood boundaries as well as 18,730 user-defined geo-fences. The civic and neighborhood boundaries are gathered from a wide variety of official and adhoc sources including Tigerline data and municipalities. All issues flowing through the SeeClickFix system are processed through these boundaries to determine correct routing. We are very experienced with the complex layering of geographic boundaries with attendant routing complexity, as well as complex boundary layer data.

Our experience in building, hosting, servicing and maintaining this system gives us the expertise to develop an open source system that will comply with all three components (1) the mobile app, (2) the router that allows that app to report cases across municipalities, and (3) the work order management system / Open311 adapter that allows local governments to respond to requests made through the mobile app.

SeeClickFix is willing and able to perform the commitments contained in this proposal and is able to comply with the City's contract requirements.

By:

Charles "Kam" Lasater, Founder and CSO

Source: Connected Bits and SeeClickFix Technical Proposals, provided by City of Boston.

Connected Bits

			Project		Per Mu	Per Municipality Per Year	
			One-Time	1 Year	2 Years	3 Years	4th, 5th & 6th Year
	# of Municipalities		Costs	M&S	M&S	M&S	M&S
	1 - 9	Local	\$100,000	\$5,000	\$5,000	\$5,000	\$5,000
(package)		Hosted		\$5 <i>,</i> 000	\$5,000	\$5,000	\$5,000
	10 - 19	Local	\$50,000	\$5,000	\$5,000	\$5,000	\$5,000
Router		Hosted		\$4,000	\$4,000	\$4,000	\$4,000
Mobile Apps	20 - 49	Local	¢10.000	\$5,000	\$5,000	\$5,000	\$5,000
Open 311 / WOM		Hosted	\$10,000	\$3,000	\$3,000	\$3,000	\$3,000
	50+	Local		\$5,000	\$5,000	\$5,000	\$5,000
		Hosted	-	\$3,000	\$3,000	\$3,000	\$3,000

SeeClickFix

	Per						
			Municipality Per Municipality Per Year			Per Year	
			One-Time	1 Year	2 Years	3 Years	4th, 5th & 6th Year
	# of Mu	unicipalities	Costs*	M&S*	M&S*	M&S*	M&S*
			Incl. in price	Incl. in price	Incl. in price	Incl. in price	Incl. in price below
		1-9	below	below	below	below	
			Incl. in price	Incl. in price	Incl. in price	Incl. in price	Incl. in price below
Mahila Ann	10 - 19		below	below	below	below	
wobile App	20 - 49		Incl. in price	Incl. in price	Incl. in price	Incl. in price	Incl. in price below
			below	below	below	below	
			Incl. in price	Incl. in price	Incl. in price	Incl. in price	Incl. in price below
		50+	below	below	below	below	
Router			\$10,000	\$10,000			
							\$8,500 (Y4), \$8,500
	1 0	Local	\$4,000	\$8,000	\$0	\$0	(Y5), \$9,000 (Y6)
	1-9						\$7,500 (Y4), \$7,500
		Hosted	\$1,000	\$7,200	\$0	\$0	(Y5), \$8,000 (Y6)
		Local					\$8,500 (Y4), \$8,500
	10 - 10		\$3,000	\$8,000	\$0	\$0	(Y5), \$9,000 (Y6)
	10-15						\$7,500 (Y4), \$7,500
WOM / Open 311		Hosted	\$1,000	\$4,800	\$0	\$0	(Y5), \$8,000 (Y6)
							\$8,500 (Y4), \$8,500
	20 - 49 Loca Hos	Local	\$2,000	\$8,000	\$0	\$0	(Y5), \$9,000 (Y6)
							\$7,500 (Y4), \$7,500
		Hosted	\$1,000	\$3,600	\$0	\$0	(Y5), \$8,000 (Y6)
	50+	Local					\$8,500 (Y4), \$8,500
			\$1,000	\$8,000	\$0	\$0	(Y5), \$9,000 (Y6)
							\$7,500 (Y4), \$7,500
		Hosted	\$0	\$1,000	\$0	\$0	(Y5), \$8,000 (Y6)

*Please note: Our mobile app and WOM components are fully integrated; Mobile app costs are included in WOM / Open 311 Costs and M&S; Pricing includes unlimited Admin user accounts to the SeeClickFix Dashboard; After the Year 1 costs, there will be no annual cost in Year 2 or Year 3; Estimated annual costs for Year 4, Year 5, and Year 6 are included.

Source: Connected Bits and SeeClickFix Price Proposals, provided by City of Boston.

315-075

Exhibit 12 Selection Team for Commonwealth Connect

Technical Review Committee

Alan Heatherley, Program Manager for Commonwealth Connect

Nigel Jacob, Co-Chair, Mayor's Office of New Urban Mechanics

Bill Oates, Chief Information Officer

Chris Osgood, Co-Chair, Mayor's Office of New Urban Mechanics

Price Review Committee

Paul Kresser, Administration & Finance Director, Department of Innovation & Technology Kevin Parker, Business Analyst, Department of Innovation & Technology

Source: Chris Osgood, City of Boston.

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