

# city & county of san francisco

mobile and social media implementation for  
delivering effective e-government

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Experts in the past have called California *ungovernable* (Economist, 2009). However, the promise of Gov 2.0 seeks to provide citizens with tools that empower them to interact, influence and even change the way politics is done. Whether through video conferencing to connect city staff and residents who need help, or crowdsourcing to discuss the city budget, technology is changing the way we think about — and participate in — government (Reset San Francisco, 2011).

Under the direction of CIO Jon Walton, the City & County of San Francisco (CCSF) sought to implement a mobile and social media strategy as a means to lower citizens' cost of interacting with the government, and increase government transparency. In this report, we discuss aspects of this evolution to e-government including the trend towards open government, and the CCSF vision for social media and mobile implementation.

### The Promise of e-Government

In January 2009, newly elected President, Barack Obama, issued a memorandum to deliver recommendations for an Open Government Directive within 120 days. In this memorandum, the President noted that openness in government “strengthen[s] our democracy and promote[s] efficiency and effectiveness in Government (Lakhani et. al., 2010, Exhibit 1). The vision was to promote public trust by opening information maintained by the government, which was considered a national asset, and this would in turn drive the public participation and collaboration necessary to maintain a healthy democracy.

The memorandum highlights three core values as part of the vision (Collins, 1996) for the Open Government Directive:

- Government should be **transparent** to promote accountability and make citizens aware of what government is doing;
- Government should be **participatory** to leverage the positive effect public engagement has on the Government's effectiveness and quality of decisions;

- Government should be **collaborative** to engage citizens in the work of the Government and gather valuable feedback (Lakhani et. al., 2010, Exhibit 1).

In March 2009, Vivek Kundra, who had previously launched open government implementations in Arlington County, Virginia, was appointed as Chief Information Officer of the U.S. Federal Government. In May 2009, the first iteration of Data.gov, the technology implementation to support the core values, was launched. The underlying premise was that “if there was no good reason data had to stay secret, it should be published in a machine-readable format so others could easily do whatever they wanted to with it” (Lakhani et. al., 2010).

While transparency is typically a welcomed construct, and was well received after the public announcement, breaking down silos highlighted several issues including the lack of technology administrators to make this data available to the public; the careful balance needed to protect national security while also publishing Government maintained data; and, the need to change a culture that had applied a broad brush stroke to data security in order to *play it safe* (Lakhani et. al., 2010).

Since local governments may find themselves sharing more data with the Federal Government over time, it makes sense to align with a digital data strategy to streamline future collaborations. The CCSF is also taking heed of the Data.gov project from the Open Government Initiative in attempting to deliver a more efficient, transparent and ultimately better government to its citizens (Data.gov, 2010). In the context of making government more accessible via the Internet, CCSF rolled out mobile applications utilizing the SaaS aspect of cloud computing (e.g. a mobile app for paying parking meters) (GovTech, 2011). The other converging technology is that of the mobile devices, and the ability to use said devices to access services that are hosted in the *cloud*. Through the use of social media to make the government more participatory and the use of mobile applications to ease citizens' interaction with the government, CCSF is delivering on the promise of more

## The Theory of the Business

**Assumptions** / The goal of e-government is to make access to public services easier for local citizens. This ranges from having official forms and phone numbers available online, to publishing real-time status for mass transit, public parking and government spending. As Castro et. al. (2008) note, while there is no one-size-fits-all solution for every community, each local government does not need to build its own system from the ground up. But instead the authors recommend that organizations should cooperate in setting common data standards, sharing best practices, engaging with the private and nonprofit sectors. In this way, state and local leaders can drive investment in IT infrastructure to produce economic growth and improve quality of life in their communities (Castro et. al., 2008).

**Position Strategy** / The CCSF carries the advantage of having resources that are tightly linked and cannot be easily imitated. Interdependent resources create complexity, and so copying them and their linkages is challenging and time-consuming” (Bingham et. al., 2011).

**Mission** / The mission of the City and County of San Francisco is to provide its citizens better access to government services both on-line and via mobile devices without compromising information privacy.

**Core Competencies** / The City and County of San Francisco’s core competencies lie in providing government services. However, Amit et. al. (2012) believe that how companies do business will often be as, or more, important than what they do. The business model defines a system of interconnected and interdependent activities that determines the way the company *does business* with its customers, partners and vendors. Thus, “a business model is a bundle of specific activities — an activity system — conducted to satisfy the perceived needs of the market, along with the specification of which parties (a company or its partners) conduct which activities, and how these activities are linked to each other” (Amit et. al., 2012).

“**Technology is a great way to communicate and problem solve. I jokingly say I should be chief marketing officer. I have to be a cheerleader for technology and show how it can be useful and relevant to the community.**

John Walton  
CIO, City & County of San Francisco



accessible and participatory government.

## Market Trends & Emerging Technologies

All too often, organizations fail to watch market trends that seem otherwise peripheral or unrelated to the theory of their business. These trends can include changes in consumer aspirations, attitudes and beliefs, goals, social interactions and behaviors in ways that may not be obvious, such as how the digital revolution overall has led people to value tools that provide instant gratification, and multitasking capabilities (Ofek et. al., 2010). By missing these trends, firms risk falling behind competitors by adopting a *wait and see* approach, or pursuing product features that “only superficially address a trend’s impact on consumers” (Ofek et. al., 2010).

The market, in this case, is other local and county governments, and the actions they are taking to provide government services online, through social media and via mobile devices. The CCSF can look to other

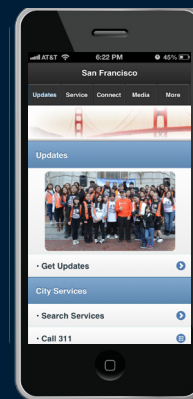
municipalities including Philadelphia, Washington, D.C., the City of Los Angeles and the County of Los Angeles to observe how they deliver e-government services from credit card enabled parking meters to RFIDs on recycling bins.

Local governments are typically challenged in three technology tiers. The first includes information usually provided offline at city halls, such as council agendas, agency departments and phone numbers, photos and links to other entities. Every California county, and all but 12 cities, have websites that meet this basic level. The second tier adds more information and city documents and also sometimes invites citizens to provide feedback on the site. The final tier incorporates the idea of Gov 2.0 and crowdsourcing to change the paradigm and allows citizens to steer and define the process of governance” (Reset San Francisco, 2011).

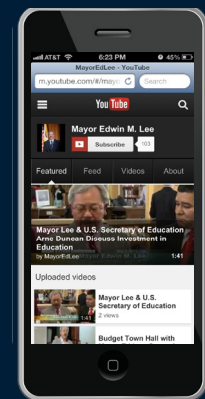
Ignoring, or misreading trends, is especially critical when the theory of the business is impacted by consumer

# San Francisco County

population	825,863
square miles	46.87
homeownership	37.1%
bachelor’s or higher	51.4%
median income	\$72,947



SFgov.org Mobile



YouTube Channel

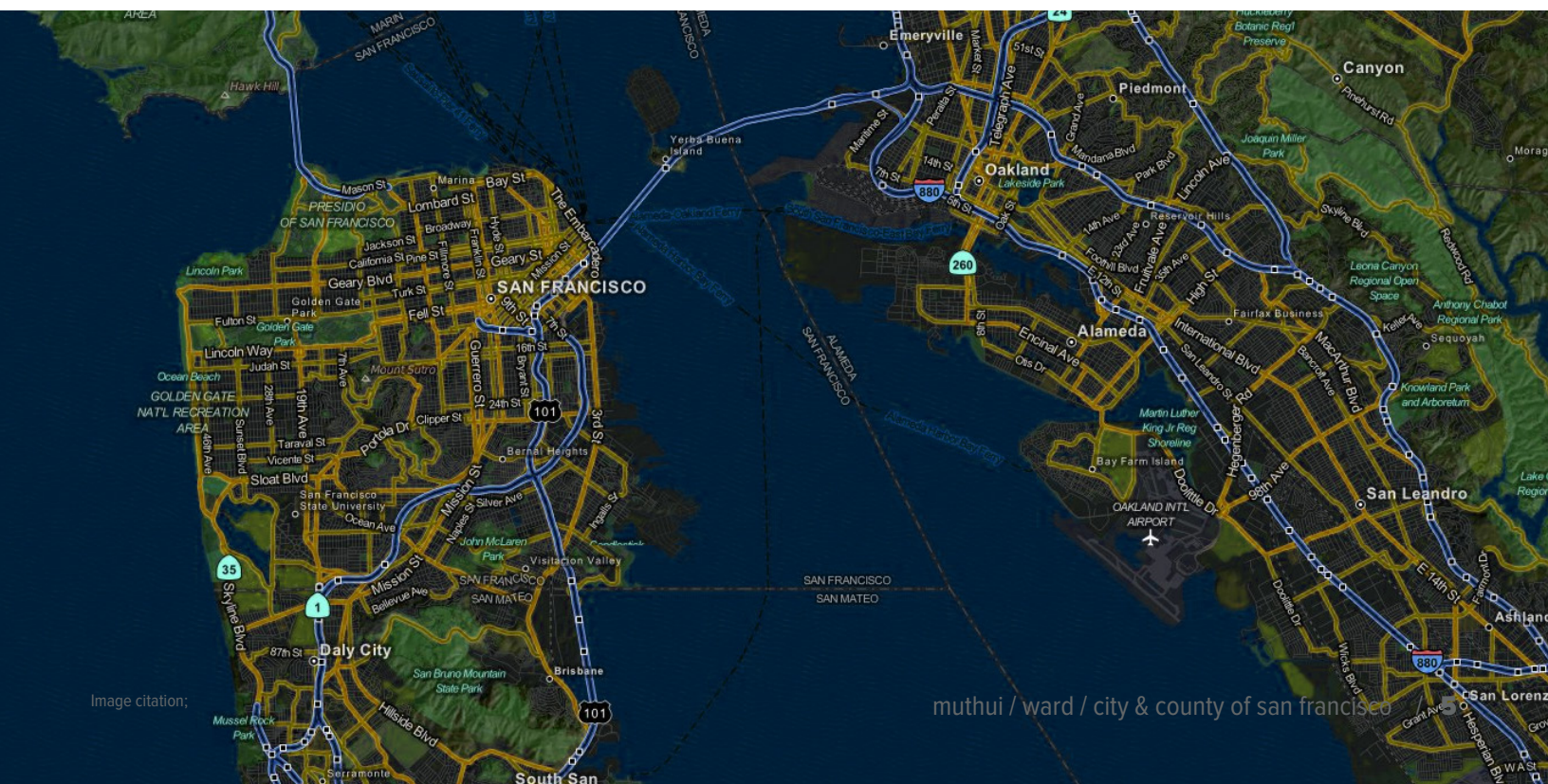
technology adoption and usage, as is the case with the CCSF. The ease of use of smartphones, for example, does not match the perception of government, which is not traditionally associated with ease of use. Some industry critics feel that government initiatives for open data have not gone far enough. Social engagement and two-way collaboration have not been factored into the process, but instead the focus is on one-way communication out for Government procured and managed data, and one-way communication in for citizen engagement (De Maio, 2009). This is where emerging technologies can help to grow government capability for citizen engagement.

There are two convergent emerging technologies that are relative to the CCSF effort to provide government services both online and via mobile devices. First, social media is being used by CCSF to maximize transparency and accountability and to allow citizens the option to more fully participate in government decisions by

increasing outgoing communication (Thomas, 2013). Social media are the platforms that enable the interactive web, or Web 2.0, by engaging citizens to participate in, comment on and create content related to their interactions with government services, as well as and activities within the government (Cohen, 2011).

CCSF is striving for Gov 2.0 in which “government is a convener and an enabler — ultimately, it is a vehicle for coordinating the collective actions of citizens” (O’Reilly, 2009). To accomplish this, the CCSF has leveraged several Web 2.0 platforms to increase communication and engagement:

- YouTube (<http://www.youtube.com/user/SFGTV>) to broadcast city council hearings;
- IdeaScale for people to make suggestions on budget-making efforts;
- Facebook (<https://www.facebook.com/SF>) to keep citizens up to date and informed on recent CCSF



activities;

- Twitter (<https://twitter.com/sfgov>) so that citizens can follow city events and get updates.

CCSF sees social media as a means of increasing government transparency (Bertot, 2010). Perhaps, the best example of the CCSF use of social media can be seen in their web site ([sfgov.org](http://sfgov.org), 2013). CCSF also has a blog and RSS feeds for citizens to track government activities and find out what key government personnel think; e.g. about solar energy, public safety, and infrastructure improvements: [http://www5.sfgov.org/sf\\_news/](http://www5.sfgov.org/sf_news/). SFGovTV (<http://www.sfgovtv.org>) is also a means in which citizens can watch public broadcasts of their government in action.

### Vision for CCSF

This shift to open government exemplifies what Amit et. al. (2012) describe as business model innovation where “how companies do business will often be as, or more, important than what they do.” In an open government, the content, structure and governance are all transformed. Content is no longer just gathered by agencies, but must also be shared digitally, and made accessible to developers by way of real-time capable APIs. The structure of the open government activity system, or how its activities are linked and in what sequence, as well as governance pertaining to who performs activities (Amit et. al., 2012) shifts some of the innovation and development needed to achieve transparency, participation and collaboration to the private sector. The visionary goals that CCSF can pursue through open government and emerging technologies would be to:

- Make engagement with government services a fully digital experience citizens can engage in from the comfort of their preferred location, anytime of the day or night;
- Never have to circle the block or sit in gridlock looking for a parking spot;

- Attract the best and brightest business owners and neighbors by being the most well connected and digitally progressive city in North America.

Outlining the vivid story to support CCSF’s digital vision helps to shape collective ambition, and is an opportunity to build and strengthen the organizational glue. This is also a chance to launch enterprise-wide change initiatives, which require disciplined execution — the grease (Ready et. al., 2011). Our audit of the collective ambition for CCSF is as follows giving them a total score of 33, which highlights the need for more public articulation of clear goals about how IT will deliver on the big goals for its citizens:

- Does your company have a clear and meaningful statement of its core at all purpose—why it exists? **6**
- Is your company’s vision compelling and aspirational yet achievable, motivating employees to contribute their very best? **6**
- Has your leadership team gone through the hard work of identifying targets, milestones, and metrics that ground the vision in reality? **6**
- Has your company ruthlessly prioritized the choices it will make to build the capabilities required to win on a sustainable basis? **6**
- Does your company’s brand promise capture the experience you intend to deliver to stakeholders (customers, communities, investors, employees, and business partners)? **3**
- Do your company’s articulated values represent what you stand for as an enterprise and as a group of people working together? **3**
- Do senior leaders’ day-to-day behaviors reflect the leadership behaviors that you say are critically important to your company’s success? **3**

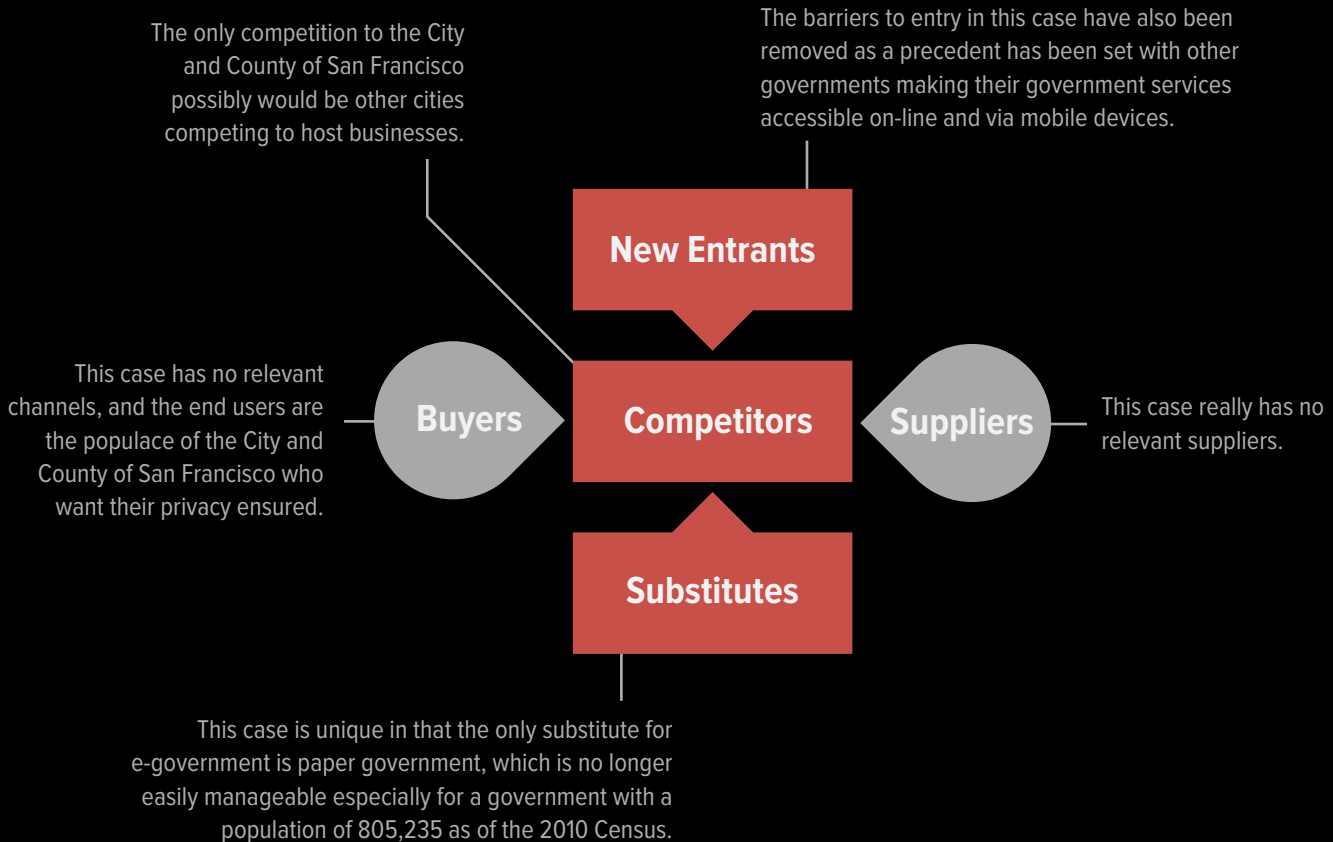
### Diagnosing Risk

CCSF has several unique challenges when it comes to assessing the risk of using emerging technologies to

## The Theory of the Business & Porter's Five Forces

**Environment** / The CCSF operates in a highly regulatory environment, and must ensure the privacy of individual citizens' information, while, at the same time, balance the goal of easy access to public information. The CCSF has no competitors, per se, but individuals will look to it to be on the leading edge given that the state of California is also leading the other states in the United States with online access

to government services. An example of this is in on line voter registration. (ACLU, 2012). Reeves et. al. (2011) speak about the need for organizations to become really good at learning how to do new things because it is the firms that are quick to read and act that will thrive. Advanced data-mining technologies to recognize relevant patterns are valuable for The CCSF (Reeves et. al., 2011).



“ Whether a small town uses its municipal website to provide 24x7 access to online services or a state develops a system to allow residents and businesses to pay fees online, IT can help make government more responsive.

Castro et. al., 2008

deliver a mobile platform for applications that interface with the city government. The first of these is that the city needs to keep its business processes running and recovering quickly from interruptions. For example, people still need to be able to check out library books even if the computing system is down, and the computing system should be able to quickly recover from any service interruptions.

The second is that the city services need to be accessible in that the right information is provided to the right people, and not the wrong ones. For example, people and businesses need access to their own utility bills, but not someone else's. The third is that the city services need to be accurate by ensuring that information is timely, complete and correct. When the city is accepting monies for mobile payment transactions from parking meters, the city needs to ensure that payments are accepted in a timely manner and credited to the appropriate parking spot. The fourth is agility in that as the city progresses to move an increasing number of services online, the systems ecosystem must adapt with appropriate speed and cost for each new service that is brought online (Westerman, 2009).

### **Dealing with Change**

Change initiatives often backfire because managers apply one size-fits-all approaches (Kotter et. al., 2008). To mitigate this, the CCSF needs to apply a different approach for each application that is to go online. By gaining a quick win with moving the parking meter payment system to mobile, the CIO can set a precedent for successfully moving a simple application online. It is important for the city to realize the resistance that the city employees will have when the applications that they work on are moving to an Internet platform. One way that the city can meet the resistance is by having the CIO demonstrate that the mobile applications are actually saving the city money and consequently jobs. Mobile applications also enable city employees to have more challenging work as they are the only ones able to work on the exceptions that mobile applications and online

applications are not built to handle correctly.

The other important thing to consider is situational factors. For example, the city revenue may fluctuate because there may be a decrease in the amount of business taxes collected. The city would have two opportunities available here: one would be to further decrease business taxes to encourage more businesses to come to the city and the other would be to figure out how to cut costs in other areas. The other concern in the city is the ratio of people collecting benefits to those paying into the system. The city needs to be able to provide cost-effective services so that they are able to serve more members of the community and still be able to provide services on-line that are of the same or better quality as those services provided off-line. This way the city will ensure increased revenue and adapt to change.

### **Creating Short-Term Wins**

The challenge for the CCSF CIO is not so much as for him to prove himself, but prove that the city can go online and be both cost effective and cost efficient. He has to be able to communicate a clear vision, develop the capabilities of the people that work for him, be willing to learn from any mistakes that are made along the way and pull everyone together to make the project of moving the city online a success (Kotter, 2002). The CIO must prove to the city that making government services available on the Internet adds value, is feasible and has a collective positive impact on all stakeholders (Van Buren et. al., 2009). A good example from the reading of "The List on the Bulletin Boards" points to the way the CIO can make the project a success. By focusing on a few key areas: parking meters, library services and utility services, he can achieve successes with little cost, high value and demonstrate to city managers that CCSF can go online and lower costs while also providing provide better service to its constituents.

### **Conclusion**

The emerging technologies of cloud computing and mobile computing enable the CCSF to deliver



## SWOT Analysis

**Strengths** / The City and County of San Francisco excels in providing government services. Its strength will be in continuing to provide excellent services as it goes on-line and to provide those services in a way that does not compromise information security as CCSF will also provide mobile access (Glaeser et. al., 2000).

**Weaknesses** / “All of the existing and potential e-government applications are dependent on localities actually having high speed broadband connections. Even the most innovative technology solutions to government problems are moot if the backbone isn’t there. The potentials that Atkinson and Castro point out add to the case for high speed Internet access for all of America” (Speedmaster, 2009).

**Opportunities** / The City and County of San Francisco has an opportunity to provide government services both on-line and via mobile devices that it must take advantage of to stay competitive for businesses (Glaeser et. al., 2000). “Now we’re reaching a tipping point. The confluence of faster processors, better storage, greater bandwidth and advanced software — coupled with new technologies such as geographic information systems, global positioning systems and distributed sensor networks — makes it possible for state and local governments to harness IT to solve pressing societal challenges in the areas of education, health care, energy and transportation. The communities that are most successful in addressing those challenges will be those that use IT to vastly improve the availability and use of information” (Castro et. al., 2008). “If data is accessible and reusable, then citizens and nongovernmental organizations will be able to bring their creativity to bear. For example, volunteers working around the world established the KatrinaHelp Wiki as a clearinghouse for information

on multiple disaster recovery efforts. One major initiative — the Katrina PeopleFinder project — aggregated data on survivors from multiple sources into a single repository using an interoperable XML standard called the People Finder Interchange Format....Digital images are used to update the online maps in real time, which makes them far more accurate and efficient than the paper maps of the past. In the near future, as local governments and utility companies amass more GIS data on underground pipes and cabling, workers will be able to use GPS-enabled equipment to avoid potential hazards.” (Castro et. al., 2008).

**Threats** / Online interactions with the government pose a threat to the privacy of citizen data and records. Third-party apps accessing public records and/or open data can draw users away from the more official government records. While more usable, they may not be accurate, which can lead to public dissatisfaction. However, municipalities that are first to embrace open data can gain advantage when wooing businesses to their jurisdiction. While this can be great for business leaders, less tech savvy municipalities could see businesses relocate away. “As interest in open data continues to grow around the world, cities have become laboratories for participatory democracy. They’re also ground zero for new experiments in spawning civic startups that deliver city services or enable new relationships between the people and city government. San Francisco was one of the first municipalities in the United States to embrace the [city as a platform](#) paradigm in 2009, with the launch of an [open data platform](#). Years later, the city government is pushing to use its open data to [accelerate economic development](#)” (Howard, 2012).

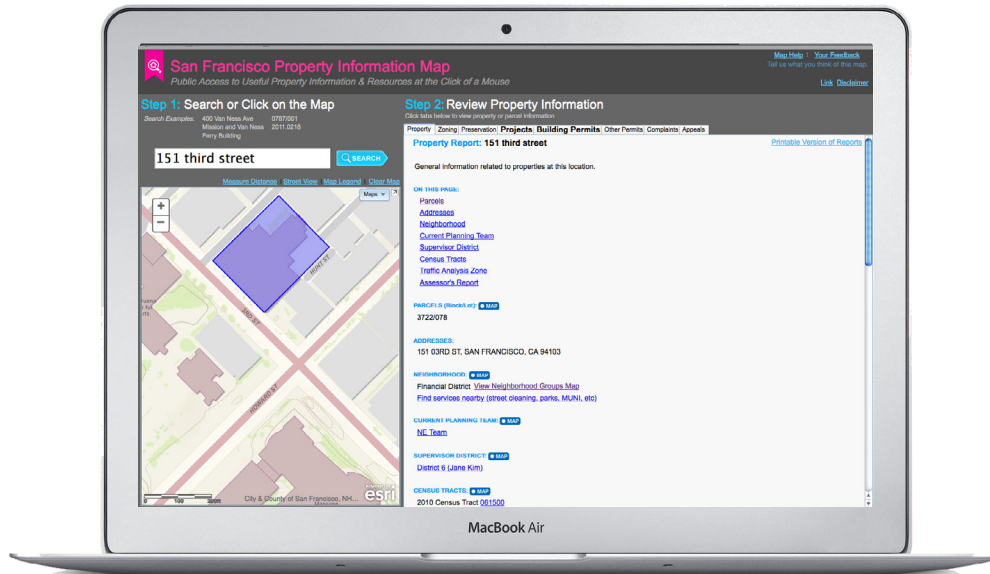
“ Even more than on-demand government, Dakin Sloss, the Executive Director of California Common Sense and a Stanford senior, said that 10 years from now we’ll have real-time government, with cities and counties tracking spending online and making it available to citizens...People have said there’s no value in being involved in state or local government, but technology provides a great opportunity for changing the power structure.

Reset San Francisco, 2011

government services more cost effectively. With total expenditures and revenue in excess of \$6M in fiscal 2007-08, it was in CCSF's best interest to cut expenditures (Wikipedia, 2013). According to the CCSF's Five-Year Financial Plan for fiscal 2011-12 through 2015-16, the CCSF plans to continue to make significant financial investments in its online presence (CCSF, 2011). Even the library plans to not only increase free citywide public wireless internet access, but also to have online learning

podcasts (CCSF, 2011). In 2011, the SFMTA launched SFPark, an initiative using real-time parking demand data, online and cell phone payment methods for drivers, and market-based pricing (CCSF, 2011). This initiative will help with the estimated \$19M loss in parking revenue (CCSF, 2011). This and other e-government, social and mobile initiatives have helped to save the CCSF operating costs each year, and will continue to do so for the projected next five years (CCSF, 2011).

 **DGAA 2012 Winner**



“ Expecting a city to be run like a private corporation is unrealistic. For that to happen, it’s not so much about the technology; there needs to be a major culture shift. I struggle to see how a government can be run like a corporation and still benefit the public.

John Walton  
CIO, City & County of San Francisco

## References

1. ACLU. (2012). California Leads the Nation in Promoting Voter Access. Retrieved from <http://www.aclu.org/voting-rights/california-leads-nation-promoting-voter-access>
2. Amit, R., & Zott, C. (2012). Creating value through business model innovation. MIT Sloan Management Review: 53(3), 41-49.
3. Azzghayer, S., Bonn, D., & Robinson, V. Group Project—San Francisco 311. Retrieved from <http://userwww.sfsu.edu/~trobinsva/documents/311paper.pdf>
4. Bachman, K. (2012). Franken's Location Privacy Bill voted out of judiciary committee proposal won't advance until next Congress. AdWeek. Retrieved from <http://www.adweek.com/news/technology/frankens-location-privacy-bill-voted-out-judiciary-committee-145938>
5. Bertot, J. C., Jaeger, P. T., Munson, S., & Glaisyer, T. (2010). Social media technology and government transparency. Computer, 43(11), 53-59.
6. Bertot, J. C., Jaeger, P. T., & Grimes, J. M. (2010). "Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies." Government Information Quarterly, 27(2010), 264–271. Retrieved from [http://www.milholland.org/phocadownload/2011\\_Files/11\\_Nov/transparency%2520government.pdf&sa=X&scisig=AAGBfm3FbcCTWOKwEmN8UD5\\_8tGJK9Q&oi=scholar](http://www.milholland.org/phocadownload/2011_Files/11_Nov/transparency%2520government.pdf&sa=X&scisig=AAGBfm3FbcCTWOKwEmN8UD5_8tGJK9Q&oi=scholar)
7. Bingham, C. B., Eisenhardt, K. M., & Furr, N. R. (2011). Which strategy when? MIT Sloan Management Review: 53(1), 71-78.
8. Blue, V. (2012). Why the Apple, FBI and AntiSec UDID debacle won't go away. CNET. Retrieved from [http://news.cnet.com/8301-13579\\_3-57507165-37/why-the-apple-fbi-and-antise-udid-debacle-wont-go-away/](http://news.cnet.com/8301-13579_3-57507165-37/why-the-apple-fbi-and-antise-udid-debacle-wont-go-away/)
9. Caine, J. (2012). "Smart parking meters in San Francisco charge more than \$5/hr." Retrieved from <http://grist.org/cities/smart-parking-meters-in-san-francisco-charge-more-than-5hr/>
10. Cashmore, P. (2012). Why 2013 is the year of responsive web design. Mashable. Retrieved from <http://mashable.com/2012/12/11/responsive-web-design/>
11. Castro, D., & Atkinson, R. (2008). The next wave of E-Government. Retrieved from <http://www.statetechmagazine.com/article/2008/12/the-next-wave-of-e-government>
12. Center for Digital Government. (2012). Government-to-citizen Local government category winners: San Francisco Property Information Map. Retrieved from <http://www.centerdigital.gov.com/survey/88/2012>
13. City and County of San Francisco. (2011) Five-Year Financial Plan Retrieved from <http://sfcontroller.org/Modules/ShowDocument.aspx?documentid=2017>
14. CCF5 Social Media Center. Social Media. Retrieved from <http://www.w6.sfgov.org/index.aspx?page=166>
15. Cohen, H. (2011). 30 Social Media Definitions. Heidi Cohen: Actionable Marketing.
16. Connors, K. (2009) "STEP 1: Obtaining and integrating data." Retrieved from [http://www.laep.ced.berkeley.edu/classes/PastProjects/cp204c\\_2009/KConnors\\_FinalProject.doc](http://www.laep.ced.berkeley.edu/classes/PastProjects/cp204c_2009/KConnors_FinalProject.doc)
17. Connors, K. (2009). Introduction to the Problem.
18. De Maio, A. (2009). US Open Government Directive is disappointing. Retrieved from [http://blogs.gartner.com/andrea\\_dimajo/2009/12/08/us-open-government-directive-is-disappointing/](http://blogs.gartner.com/andrea_dimajo/2009/12/08/us-open-government-directive-is-disappointing/)
19. Drucker, P. with Macriarello, J. (2005). Management, Revised Edition. Collins, Part II - Chapter 8 (The Theory of the Business).
20. Farber, D. (2012). Why Romney's Orca killer app beached on election day. CNET. Retrieved from [http://news.cnet.com/8301-13578\\_3-57547183-38/why-romneys-orca-killer-app-beached-on-election-day/](http://news.cnet.com/8301-13578_3-57547183-38/why-romneys-orca-killer-app-beached-on-election-day/)
21. Fawcett, J. (2007). "The WiFi Blues: Townsend letter for doctors and patients." Arizona Center for Advanced Medicine, 288(78). Retrieved from [http://www.arizonaadvancedmedicine.com/articles2/wifi\\_blues.html](http://www.arizonaadvancedmedicine.com/articles2/wifi_blues.html)
22. France-Presse, A. (2013). "Kenyan election bloggers become cyber-activism pioneers." The Raw Story. Retrieved from <http://www.rawstory.com/rs/2013/01/26/kenyan-election-bloggers-become-cyber-activism-pioneers/>
23. Fuller, B. K., & Bradbard, D. A. (2009). "An Entrepreneurial Application of a Geographic Information System." Decision Sciences Journal of Innovative Education, 7(1), 163-170. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1540-4609.2008.00211.x/full>
24. Glaeser, E., Kolk, J., & Saiz, A. (2000). "Consumer city" (No. w7790). National Bureau of Economic Research. Retrieved from <http://www.nber.org/papers/w7790>
25. Glover, M. (2012). Q&A with San Francisco City and County CIO Jon Walton. Retrieved from <http://techwire.net/q-a-with-san-francisco-city-and-county-cio-jon-walton/>
26. Gohring, N. (2011). San Francisco migrates to hosted exchange. Retrieved from [http://www.cio.com/article/682561/San-Francisco\\_Migrates\\_to\\_Hosted\\_Exchange](http://www.cio.com/article/682561/San-Francisco_Migrates_to_Hosted_Exchange)
27. GovTech. (2011). San Francisco launches pay by phone parking meters. Retrieved from <http://www.govtech.com/e-government/San-Francisco-Launches-Pay-by-Phone-Parking-Meters.html>
28. Guynn, J., & Chmielewski, D. C. (2012). "Social media turns election night into a conversation.
29. Halper, D. (2013). "Google celebrates 'Data Privacy Day' by discussing its practice of turning over data to government." The Weekly Standard. Retrieved from [http://www.weeklystandard.com/blogs/google-celebrates-data-privacy-day-discussing-its-practice-turning-over-data-government\\_698164.html](http://www.weeklystandard.com/blogs/google-celebrates-data-privacy-day-discussing-its-practice-turning-over-data-government_698164.html)
30. Hayes, J., Ledesma, J., & Le Monte, G. Visualizing San Francisco 311 Data. Retrieved from [http://cluster.ischool.drexel.edu/~cchen/courses/INFO633/1112/g2\\_HayesLedesmaLeMonte.pdf](http://cluster.ischool.drexel.edu/~cchen/courses/INFO633/1112/g2_HayesLedesmaLeMonte.pdf)
31. Heaton, B. (2013). Virginia releases emergency preparation smartphone app. Government Technology. Retrieved from [http://www.govtech.com/e-government/Virginia-Releases-Emergency-Preparation-Smartphone-App.html?utm\\_source=twitterfeed&utm\\_medium=twitter](http://www.govtech.com/e-government/Virginia-Releases-Emergency-Preparation-Smartphone-App.html?utm_source=twitterfeed&utm_medium=twitter)
32. Holly, R. (2013). The White House demonstrates a spectacular grasp on current technology. Geek.com. Retrieved from <http://www.geek.com/articles/mobile/the-white-house-demonstrates-a-spectacular-grasp-on-current-technology-20130122/>
33. Howard, Alex. (2012). San Francisco looks to tap into the open data economy. Retrieved from <http://radar.oreilly.com/2012/10/san-francisco-open-data-economy.html>
34. HowTo.gov. Using social media in government. Retrieved from <http://www.howto.gov/social-media/using-social-media>
35. Hudson, H. E. (2010). Municipal wireless broadband: lessons from San Francisco and Silicon Valley. Telematics and Informatics, 27(1), 1-9. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0736585309000033>
36. Hudson, H. (2006, August). Lessons from the Left Coast: San Francisco's community wireless broadband initiative. TPRC. Retrieved from [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=203643](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=203643)
37. Hughes, J. (2012). Walton connects residents to local government. Retrieved from <http://www.bizjournals.com/sanjoise/print-edition/2012/06/15/walton-connects-residents-to-local.html?page=all>
38. laep.ced.berkeley.edu/classes/PastProjects/cp204c\_2009/KConnors\_FinalProject.pdf
39. Isikoff, M. (2013). Obama campaign gives database of millions of supporters to new advocacy group. Open Channel on NBC News.com. Retrieved from [http://openchannel.nbcnews.com/\\_news/2013/01/28/16726913-obama-campaign-gives-database-of-millions-of-supporters-to-new-advocacy-group?lite](http://openchannel.nbcnews.com/_news/2013/01/28/16726913-obama-campaign-gives-database-of-millions-of-supporters-to-new-advocacy-group?lite)
40. Kaye, K. (2012). Capitol Hill focuses on mobile privacy with spate of actions: Regulatory and legislative groups work to create standards around data gathering. Advertising Age. Retrieved from <http://adage.com/article/news/capitol-hill-focuses-mobile-privacy-spate-actions/238799/>
41. Kaye, K. (2012). Mobile-privacy bill edges closer to Senate vote: Would require apps to obtain consent for data collection. Adage digital. Retrieved from <http://adage.com/article/digital/mobile-privacy-bill-edges-closer-senate-vote/238768/>
42. Kotter, J. P., & Cohen, D. S. (2002). The Heart of Change: Real-life Stories of How People Change their Organizations. Harvard Press.
43. Kotter, J. P., & Schlesinger, L. A. (2008). Choosing Strategies for Change. Harvard Business Review, 86(7), 130-139.
44. Laird, S. (2012). "Mobile site or mobile app: Which should you build first?" Mashable. Retrieved from <http://mashable.com/2012/06/06/mobile-site-mobile-app-infographic/>
45. Lakhani, J. R., Austin, R. D., Yi, Y. (2010). Data.gov. Harvard Business School.
46. Lester, A., Pratt, M. K., Rosencrance, L., Waxer, C. & Zetlin, M. (2012). "2012 Winner Profile: City and County of San Francisco, Dept. of Technology." CIO Magazine Online. Retrieved from <http://www.cio.com/cio/100/detail/2216>
47. Los Angeles Times. Retrieved from <http://articles.latimes.com/2012/nov/08/business/la-fi-election-social-media-20121108>
48. Melli, P., & Grance, T. (2011). The NIST definition of cloud computing (draft). NIST special publication, 800, 145.
49. mGCI. (2012). "about mGCI: Mobile Government Consortium International." Retrieved from <http://www.mgovernment.org/about-mgci.html>
50. Millard, J. "Is there a business case for governments using social and mobile media?" CeDEM Asia 2012, 45. Retrieved from [http://193.170.242.194/imperia/md/content/departement/gpa/zeg/dokumentum/cedem\\_asia\\_2012\\_proceedings.pdf?page=47](http://193.170.242.194/imperia/md/content/departement/gpa/zeg/dokumentum/cedem_asia_2012_proceedings.pdf?page=47)
51. Mulholland, J. (2013). Will California create an earthquake early warning system? Retrieved from <http://www.govtech.com/public-safety/Will-California-Create-an-Earthquake-Early-Warning-System.html>
52. Ofek, E., & Wathieu, L. (2010). Trends that could shake up your business. Harvard Business Review: July-August 2010, 125-131.
53. O'Grady, J. D. (2013). About the new 'Reset Advertising Identifier' button in iOS 6.1. ZDNet. Retrieved from <http://www.zdnet.com/about-the-new-reset-advertising-identifier-button-in-ios-6-1-7000010463/>
54. O'Reilly, T. (2009). What is Web 2.0. Sebastopol: O'Reilly Media.
55. Ozer, N. A. (2006). Companies Positioned in the Middle: Municipal Wireless and Its Impact on Privacy and Free Speech. USFL Rev., 41, 635. Retrieved from [http://heinonlinebackup.com/hol-cgi-bin/get\\_pdf.cgi?handle=hein.journals/usflr41&section=31](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/usflr41&section=31)
56. Peart, M. N., & Diaz, J. R. (2008). Taking stock: local e-democracy in Europe and the USA. International Journal of Electronic Governance, 1(4), 400-433. Retrieved from <http://inderscience.metapress.com/index/V6343420Q2356076.pdf>
57. Reeves, M., & Deimler, M. (2011). Adaptability: The new competitive advantage. Harvard Business Review: July-August 2011, 134-141.
58. Pokharel, M., & Park, J. S. (2009, November). Cloud computing: future solution for e-government. In Proceedings of the 3rd international conference on Theory and practice of electronic governance (pp. 409-410). ACM.
59. Porter, M. E. (2008). On competition. Harvard Business Press.
60. Ready, D. A., & Truelove, E. (2011). The power of collective ambition. Harvard Business Review, December 2011, 110.
61. Reset San Francisco. (2011). Is E-Government more effective or just more hype? Retrieved from <http://www.resetsanfrancisco.org/news/nov-14-11/e-government-gov-20-more-effective-or-just-more-hype>
62. Roberts, C. (2013). San Francisco's next IT chief has big job with CIO Jon Walton's departure. Retrieved from <http://www.sfxaminer.com/local/2013/01/san-franciscos-next-it-chief-has-big-job-cio-jon-waltons-departure-fixz25iyqIG8d>
63. Roosa, S. B. (2013). A critical appraisal of California AG's privacy to go best practices for mobile apps. Lexology. Retrieved from <http://www.lexology.com/library/detail.aspx?g=ca5d825c-c5c5-49d4-9ae3-2917063dd953>
64. Shirky, C. (2011). The political power of social media: Technology, the public sphere, and political change. Foreign Affairs." Retrieved from <http://www.bendevane.com/FRDC2011/wp-content/uploads/2011/08/The-Political-Power-of-Social-Media-Clay-Sirky.pdf>
65. Social-Media-Clay-Sirky.pdf
66. Snider, J.H. (2012). The White House's We The People petition website: First year report card. Huffington Post. Retrieved from [http://www.huffingtonpost.com/jh-snider/we-the-people-petition\\_u\\_1899075.html](http://www.huffingtonpost.com/jh-snider/we-the-people-petition_u_1899075.html)
67. Speedmatters Blog Team. (2009). E-Government enters new age. Retrieved from <http://www.speedmatters.org/blog/archive/e-government-enters-new-age/#.USO6Mjye6s>
68. United States Census Bureau. San Francisco County, California. Retrieved from <http://quickfacts.census.gov/qfd/states/06/06075.html>
69. U.S. General Services Administration. Center for excellence in digital government. Retrieved from <http://www.gsa.gov/portal/content/142785>
70. U.S. General Services Administration. GSA social media navigator. Retrieved from <http://www.gsa.gov/portal/category/101299>
71. Van Buren, N., & Safferstone, T. (2009). The quick wins paradox. Harvard Business Review, January 2009, 55-61.
72. Westerman, G. (2009). IT Risk as a language for alignment. MIS Quarterly Executive, 8(3).
73. The White House. The White House Mobile App. Retrieved from <http://www.whitehouse.gov/mobile>
74. Wikipedia. Government of San Francisco. Retrieved from [http://en.wikipedia.org/wiki/Government\\_of\\_San\\_Francisco](http://en.wikipedia.org/wiki/Government_of_San_Francisco)
75. The World Bank. (2012). ICT Transformation in Afghanistan: Symbol of reconstruction and driving the transition. Retrieved from <http://www.worldbank.org/en/news/2012/10/26/ict-transformation-afghanistan>

## Images

76. CIO John Walton: Mulholland, J. (2012). SF CIO Jon Walton Accepts Position in San Mateo County. Retrieved from <http://www.govtech.com/pcio/articles/SF-CIO-Jon-Walton-Accepts-Position-in-San-Mateo-County.html>
77. Map of San Francisco County: Adapted from <http://www.mapquest.com>
78. San Francisco Property Information Map: Screenshot taken on MacBook from <http://ec2-50-17-237-182.compute-1.amazonaws.com/PII/#BookmarkParcels>

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