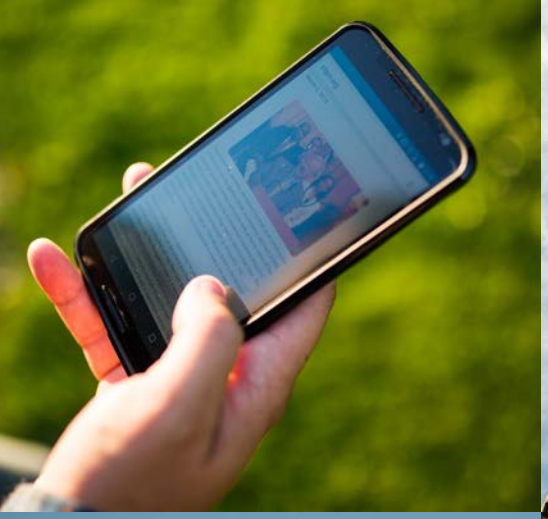


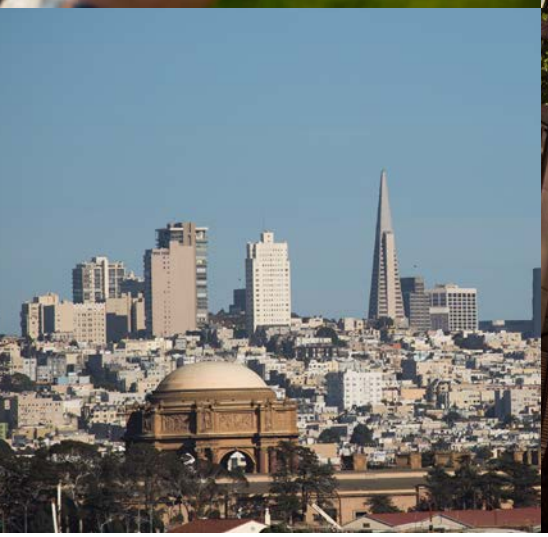

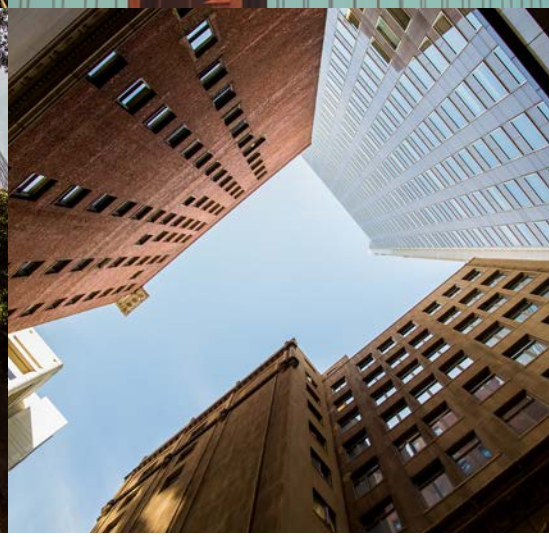

Information & Communication Technology Plan

Fiscal Years 2016-20

City & County of San Francisco



ACKNOWLEDGEMENTS

Committee on Information Technology (COIT)

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About COIT

The Committee on Information Technology (COIT) is the City's technology planning and governance body that is charged with submitting a five-year ICT plan on a biannual basis to the Mayor and Board of Supervisors. As required by the City's Administrative Code, this plan seeks to better align City resources with the City's technology goals and objectives.

COIT is composed of five permanent members (the Mayor, the President of the Board of Supervisors, the Controller, the City Administrator, and the Chief Information Officer) and eight department heads representing a broad range of the City's major service areas. The Committee also includes two members of the public who have backgrounds and expertise in technology, public policy, or both.

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MESSAGE FROM THE COIT CHAIR

Dear Mayor Lee and Members of the Board of Supervisors:

In compliance with the San Francisco Administrative Code Section 22A.6, I am pleased to submit the Proposed City and County of San Francisco Information and Communication Technology (ICT) Plan. As the guiding document for City technology investments, the ICT Plan is an assessment of the City's technology initiatives and investment recommendations for the next five years.

The Proposed FY 2016 through FY 2020 ICT Plan is the third iteration since the original plan four years ago. Since the last Plan, great progress has been made on critical technologies including the migration of the City's email system to promote better communication and collaboration; the new Business license portal that helps businesses in San Francisco grow and be successful; and an upgrade to the City's Computer Aided Dispatch (CAD) system to ensure that citizens are able to receive the critical services they need when they call 9-1-1. These technology improvements have fundamentally changed how the City does business and how the public interacts with us.

Looking forward, the Proposed ICT Plan continues the City's commitment to support critical technology by recommending $150.0 million in General Fund support. Compared to the last ICT Plan, this is a funding increase of $91.0 million in General Fund dollars that will go towards the replacement of several of the City's aging legacy technology systems. This significant increase in funding has greatly improved the City's ability to plan, fund, and implement large projects like the City's financial and accounting system and the radio infrastructure that is a critical communications network for public safety departments.

Even with historic levels of investment, the City will be unable to fund all proposed ICT projects. The Proposed ICT Plan defers $61.8 million in identified ICT projects. With this in mind, we look forward to working with the Mayor and Board to develop solutions and take advantage of current economic conditions to achieve or exceed the recommendations of this Plan.

Additional copies of the Proposed ICT Plan and related materials can be found at www.sfcoit.org.

Sincerely,

Naomi M. Kelly
City Administrator


STAY BACK
FROM EDGE
GIVES
YOU WINGS.
Bank of America

EXECUTIVE SUMMARY

PURPOSE OF THE PLAN

The Five Year Information and Communication Technology Plan (ICT Plan) is required under the San Francisco Administrative Code section 22A.6. The Administrative Code requires the plan to include an assessment of the City's enterprise and general fund ICT capital and operating infrastructure, hardware and software needs, an estimate of timelines and investments required to meet the needs identified through this assessment, and recommendations to budget for or otherwise finance the investments.

OVERVIEW

The ICT Plan provides a framework for the City to proactively plan, fund, and implement projects which align with the City's goals of innovation, sustainability, and resilience. As the City's third iteration, the ICT Plan outlines a path to maximize current and future resources to support technology projects. The ICT Plan is updated every other year and covers the next five fiscal years.

The FY 2016-20 ICT Plan outlines a path to coordinate ICT investments to improve City services. While the City has made significant progress to invest in and improve ICT systems Citywide, more work is needed to support a modern and efficient government.

CITY INITIATIVES

ICT should support residents and employees of the City and County of San Francisco and help government deliver the best service possible. Towards this end, the City has engaged in several initiatives, including:

- Open Data Initiative: The City continues to engage in its effort to make government data more available to the public. Through the City's open data portal SF Open Data, departments publish government data that describes their work and the San Francisco community, helping spur use of the City's data.

- Civic Innovation Plan: By actively promoting strategic innovation, the Mayor's Office of Civic Innovation works as a catalyst to transform how government works by bringing new ideas, tools, and processes into the City.

- Connectivity Plan: Within the next five years, the City and the Department of Technology will connect every City building to the City's fiber network and offer free, wireless Internet service through #SFWiFi to more parts of San Francisco.

- IT Hiring Group: The Department of Human Resources has formed the City Technology Hiring Group to develop new ways to attract and retain information technology professionals, with the goal of making it easier to hire and increasing the City's ICT capacity.

In support of these efforts to transform government, COIT is also engaging in several initiatives, including:

- **Public Experience Strategy:** As technology has developed, the public's expectations of City services has changed as well. The City's online services should be seamless, easy to use, and responsive to the public's needs. In order to deliver better services, COIT will work with City departments to develop a Public Experience Strategy. The City's Public Experience Strategy will be presented to COIT in the next fiscal year.

- **Shared Services Strategy:** The City's Chief Information Officer (CIO) will work with City departments to develop strategic shared services. In particular, the City CIO will create a shared services strategy for the City's network. To do this, the City CIO has established a framework to improve process transparency and inter-departmental communication.

- **Performance Reporting:** COIT will continue to develop performance reporting for all new and ongoing City ICT projects. In addition to quarterly reporting, COIT will expand its efforts around recently completed projects in order to identify best practices and centers of excellence for other departments as they implement their own projects.

FINANCIAL STRATEGIES

In order to make City government more responsive and effective, the City must prioritize and smartly invest in ICT. A major component of the ICT Plan is recommending strategic investments in projects that accomplish City goals.

In the FY 2016-20 ICT Plan, COIT recommends investing $150.0 million in General Fund sources to ICT projects Citywide. Through the annual budget process, COIT will make recommendations to the Mayor and the Board of Supervisors on the use of $59.0 million of COIT's Annual Projects Allocation and $91.0 million of the Major IT Projects Allocation. The FY 2016-20 ICT Plan will serve as a guiding document for COIT and the City throughout the annual budget process to take a longer term view of ICT needs and ensure the efficient allocation of resources.

Towards this end, COIT has received more ICT requests than ever before with department's submitting a total of 158 ICT project proposals with a total cost of $613.3 million. Of these requests, 97 proposed projects have requested General Fund support, representing 61.4 percent of all projects for a total of $211.8 million. With a current allocation of $150.0 million, COIT faces a funding gap of $61.8 million.

Although City departments continue to submit more funding requests than resources allow, COIT's General Fund allocation has been greatly enhanced in the FY 2016-20 ICT Plan. Specifically, COIT has been allocated $91.0 million more in General Fund support over the next five years due to the addition of the Major IT Projects Allocation. Compared with the last Plan, COIT was only allocated $49.1 million in General Fund support and had a funding gap of $205.4 million. The addition of the Major IT Projects Allocation has resulted in an increase of approximately 200 percent in funding from the City's last ICT Plan and has greatly improved COIT's ability to make funding recommendations for critical ICT projects.

Despite this substantial growth in available funding, City resources are limited and COIT must continue to prioritize funding towards the most impactful projects. As such, COIT evaluates ICT project proposals with reference to the City's Strategic ICT goals, which are:

GOAL 1: Support, Maintain, & Secure Critical Infrastructure

The City's ICT infrastructure is the basic set of systems which support government operations. Investments are continually needed to ensure that the City's critical infrastructure is appropriately secured and supported.

GOAL 2: Increase Efficiency & Effectiveness

COIT prioritizes investments in technology that support a more efficient and effective government.

GOAL 3: Improve Access & Transparency

COIT also highly prioritizes ICT projects that improve access to City services and help make government more transparent.

Using these goals, COIT will develop General Fund recommendations for both the Major IT Projects Allocation and the Annual Projects Allocation.

Major IT Project Recommendations

Under current budget projections, COIT will recommend the distribution of $91.0 million towards Major IT Projects over the next five years. With $101.7 million in Major IT Project requests, COIT will need to prioritize funding for projects based on its relative need, impact, and the department's readiness to implement. To that end, COIT will focus on the following strategies:

Better Project Planning of Major IT Projects: Major IT Projects must be sufficiently scoped and planned before they are approved for implementation and funding. Since FY 2013-14, COIT has provided funding recommendations to support projects in the Critical Development phase.

Alternative Funding Sources: For large-scale ICT projects, COIT encourages departments to identify alternative funding sources and share costs between Enterprise Departments and the General Fund when possible.

Breakdown Large Projects to Access Diverse Funding Sources: In some cases, departments may be able to create smaller expenditure categories in order to provide funding through multiple sources.

One-time Sources of Funding and Budget Reallocation: When possible, the City should identify one-time funding sources and explore the reallocation of existing ICT dollars to fund Major IT Projects.

Project Sequencing: COIT funding recommendations for Major IT Projects should be sequenced so that as project implementations are ending, new project funding is phased in.

Deferral: COIT may defer funding recommendations until comprehensive planning is complete or when sufficient resources become available.

Based on the funding strategy described above, COIT recommends the following Major IT Projects for funding:

- **1. Financial Systems Replacement Project:** For the next five years, the Controller's Financial Systems Replacement Project is one of the City's highest priorities. Should additional resources be available, COIT recommends fully funding this project.

- **2. Public Safety & Public Service Radio Replacement:** Also identified as a high priority for funding is the Public Safety & Public Service Radio Replacement project. This project will be phased in for funding through the Major IT Projects Allocation as the Financial Systems Replacement Project implementation closes out. This project will be funded through a number of sources including Capital Planning, the City's equipment budget, COIT's Annual Projects Allocation, and user department support

- **3. Property Tax Database:** The Assessor seeks an updated property tax database system capable of handling all assessment functions in a fully integrated manner. This project is in the Critical Project Development phase. Once completed, this project is the next priority for funding through the Major IT Projects Allocation.

COIT has also identified an additional Major IT Project as a potential emerging need:

- **4. Electronic Medical Records (EMR):** The Department of Public Health (DPH) must transition to a new EMR system that unifies all hospitals and clinics under a single system. The Department of Public Health anticipates being able to fund this project through its operating budget and outside sources. However, should there be a need for additional General Fund resources for this project, this emerging need could impact the proposed Major IT Project funding schedule.

Table 1 below shows COIT's proposed funding recommendation for Major IT Projects over the next five years.

Coit Funding Reccomendation (millions)	FY 16-20 TOTAL
Major IT Projects	
Financial Systems Replacement	$27.1
Public Safety & Public Service Radio Replacement	$30.0
Property Tax Database Replacement	$13.0
Emerging ICT Needs	$20.9
TOTAL	**$91.0**

Table 1: Major IT Projects Funding Recommendation

In the future, COIT recommends the following for Major IT Projects:

RECOMMENDATION 1: COIT recommends that the City continue to grow the Major IT Projects Allocation by 10 percent annually.

RECOMMENDATION 2: To the extent possible, COIT recommends allocating one-time funds to Major IT Projects if they become available during the budget cycle.

RECOMMENDATION 3: To the extent possible, COIT recommends full funding of projects to support an optimal project implementation timeline.

Annual Projects Allocation

In addition to Major IT Projects, COIT also evaluates all other ICT projects across the City. Over the FY 2016-20 timeframe, departments have requested a total of $110.1 million in General Fund support. Over the same time period, COIT will make recommendations on the approval and funding of over $59.0 million in General Fund dollars, leaving a projected funding deficit of $51.1 million.

To prioritize funding recommendations, COIT uses the following strategies:

- **Better Project Planning of Major IT Projects:** Major IT Projects must be sufficiently scoped and planned before they are approved for implementation and funding. Since FY 2013-14, COIT has provided funding recommendations to support projects in the Critical Development phase.
- **Alternative Funding Sources:** For large-scale ICT projects, COIT encourages departments to identify alternative funding sources and share costs between Enterprise Departments and the General Fund when possible.
- **Breakdown Large Projects to Access Diverse Funding Sources:** In some cases, departments may be able to create smaller expenditure categories in order to provide funding through multiple sources.
- **One-time Sources of Funding and Budget Reallocation:** : When possible, the City should identify one-time funding sources and explore the reallocation of existing ICT dollars to fund Major IT Projects.

Yet even with funding strategies in place, many of the City's critical ICT infrastructure systems require immediate investment. Faced with growing General Fund requests for infrastructure projects, COIT recommends revisiting the Annual Projects Allocation to determine if the funding levels are sufficient to support the improvement of the City's critical ICT infrastructure and individual department requests.

Further, COIT recommends funding the Department of Technology's Fix the Network project over the next five years. As a Foundational ICT system, all City departments rely on the network to support their critical systems and applications. As a critical ICT project, COIT will require regular updates and oversight of the Fix the Network project.

Fix the Network

Improving the City's fiber network is one of the highest priorities for the City. A reliable and high capacity network is essential to core business function. The Fix the Network project will help achieve these goals by simplifying network configuration, updating software and hardware, eliminate single points of failure for Internet and the core network,

Table 2 shows the projected funding schedule for the Fix the Network Project.

Fix the Network (M)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	TOTAL
COIT Recommendations	$2.9	$1.9	$2.0	$1.2	--	$8.0

Table 2: COIT's Recommended Funding Schedule for the Fix the Network Project.

RECOMMENDATION 1: COIT recommends that the City continue to grow the Annual Projects Allocation by 10 percent annually.

RECOMMENDATION 2: COIT recommends re-evaluation of the Annual Projects Allocation to determine if the funding levels are sufficient to support the City's critical ICT infrastructure and priority requests.

RECOMMENDATION 3: COIT recommends identifying one-time sources of funding to support high priority projects when possible.

INTRODUCTION

The Committee on Information Technology (COIT) is pleased to present to the Mayor and Board of Supervisors the City's Information and Communication Technology (ICT) Plan for Fiscal Years (FY) 2015-16 through FY 2019-20. The ICT Plan provides a framework for the City to proactively plan, fund, and implement projects that align with the City's goals of being innovative, sustainable, and resilient. The City's ICT Plan is updated every other year and submitted to the Mayor and the Board of Supervisors by March 1. In the third iteration of the City's ICT Plan, COIT builds off of the previous plans to present a vision to improve City services through ICT.

The FY 2016-20 ICT Plan outlines a path to coordinate ICT investments to improve City services. While significant progress has been made over the past few years, more work is needed to support a more modern and efficient government.

Over the last several years, the City has prioritized projects that have the greatest impact and that support the ICT Plan's Strategic ICT Goals. In particular, COIT has recommended investments in ICT projects that support infrastructure, create Citywide efficiencies, and improve access and transparency of City services. Several of these accomplishments include:

eMerge Upgrades: The Controller's Office recently completed upgrades to the Citywide human resources and payroll system simultaneously increasing functionality and replacing aging IT infrastructure. The Controller's Office has also recently commenced a pilot deployment of Employee Self-Service which allows employees to access, view, and modify their personal and payroll information in PeopleSoft.

Computer Aided Dispatch (CAD) Upgrade: The Department of Emergency Management completed an upgrade to the City's CAD system in 2014. The new system better supports all public safety departments, most especially the Police, Fire, and Sheriff Departments through greater data retrieval and communication with other City departments and agencies.

Disaster Recovery: The City is proactively taking measures to protect itself from disasters through the mirroring of the Citywide financial, human resources, and payroll systems through the State of California's data center in Rancho Cordova. Should there be a disruptive event in San Francisco, the City will be able to rely on the continuity of these critical systems.

Gross Receipts Tax Implementation: The Treasurer-Tax Collector upgraded their business tax system to integrate Gross Receipts Tax legislation in 2012. This new system reflects changes to the business taxes, which are now based on the amount of money businesses earn in San Francisco rather than on their payroll. The system went live in January 2015. The project was completed on-time and under-budget.

E-mail Migration: The City migrated to a modern e-mail system. Through this consolidation effort, City departments can better communicate, schedule meetings, and collaborate.

#SFWiFi: The Department of Technology has continued to unify and expand the City's free, public wireless network, #SFWiFi. Currently, the City offers #SFWiFi on 3.0 miles along Market Street and at 30 public parks.

San Francisco Business Portal: The development of the Business Portal is a collaborative effort between the Mayor's Office, Department of Technology, Office of Economic and Workforce Development, and Office of Small Business. With comprehensive information and tailored tools, the Portal helps business owners navigate the complex regulatory process and access resources. The Portal officially launched in November 2014, with over 1,000 unique users in its first two days.

Microsoft Enterprise Agreement: In 2014, the Department of Technology, Office of Contract Administration, and the City Attorney's Office successfully negotiated a Citywide Microsoft Enterprise Agreement. This effort consolidated several individual procurement efforts to a central contract that leveraged the purchasing power of the City and its 30,000 employees.

While a great deal of progress has been made over the past few years, the City will need to continue investing in ICT to replace outdated legacy systems, move from paper forms to digital services, and ultimately keep pace with the technology demands of those that live, work, and play in San Francisco.

Towards this end, COIT's mission is to govern the City's technology policies and to help coordinate ICT investments. Over the next five years, COIT will make recommendations for the investment of $150.0 million in General Fund support for ICT projects throughout the City.

COIT's ability to recommend ICT investments was significantly increased due to the earmarking of a new Major IT Projects Allocation that is now an integral part of the ICT Plan. Still, even with an additional allocation, City departments have requested $211.8 million in General Fund support. Faced with a funding deficit of $61.8 million, COIT must identify the highest priority ICT projects.

The FY 2016-20 ICT Plan is the City's guide on how to coordinate and prioritize ICT investments that support a more modern and efficient government. The ICT Plan will begin by describing the City's ICT investment principles, Citywide ICT spending, the City's ICT needs, and ultimately make recommendations for how the City can bridge the resource gap between ICT requests and available funding.

KEY CHANGES TO THE PLAN

The FY 2016-20 ICT Plan builds on the progress made in the first two plans and provides a framework for how the City is proactively planning ICT projects that support the City & County of San Francisco. Key changes to the Plan include:

- **1. Improved Performance Data:** COIT has continued to emphasize regular reporting of performance metrics for all ongoing City ICT projects. Since FY 2013-14, COIT's Budget and Performance Subcommittee has led the effort to review project implementation with a focus on each project's scope, schedule and resources. The goal of this data collection effort is to increase transparency and to help identify areas of opportunity for the City to support departments as they implement projects.

- **2. More Balanced Data Collection:** Through a broad outreach effort with all City departments, the FY 2016-20 ICT Plan was developed through a more balanced approach. Over the last year, COIT has facilitated several data gathering efforts to collect a wide range of perspectives into the Plan. The figure below describes the additional data collection efforts undertaken, which include individual surveys, department IT plans, and most critically, Strategic IT Workshops.

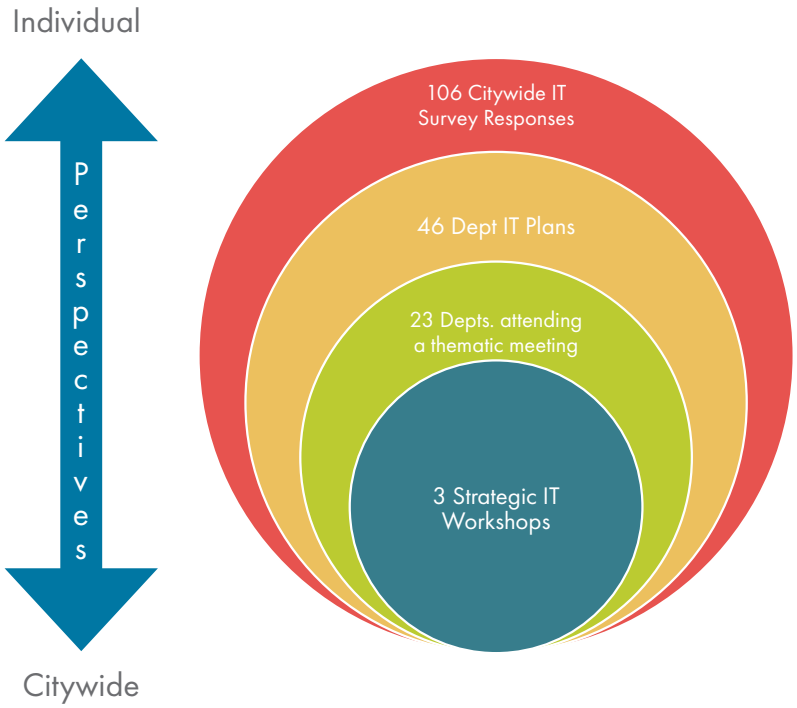


Figure 1: Data Collection Stages in the Creation of the FY 2016-20 ICT PlanRecommendation

- **Better Financial Planning:** A significant change to this Plan is the improved financial planning of Major IT Projects. This change is a result of the inclusion of the Major IT Projects Allocation in FY 2013-14 to address large legacy system replacement projects that the City is anticipating over the next several years. The addition of this funding source has significantly increased the City's ICT funding and will help reconcile the substantial financial investment needed. Within the Major IT Projects Allocation, COIT will evaluate and recommend the sequencing of these large projects to ensure funding feasibility and to defer projects until planning is complete.

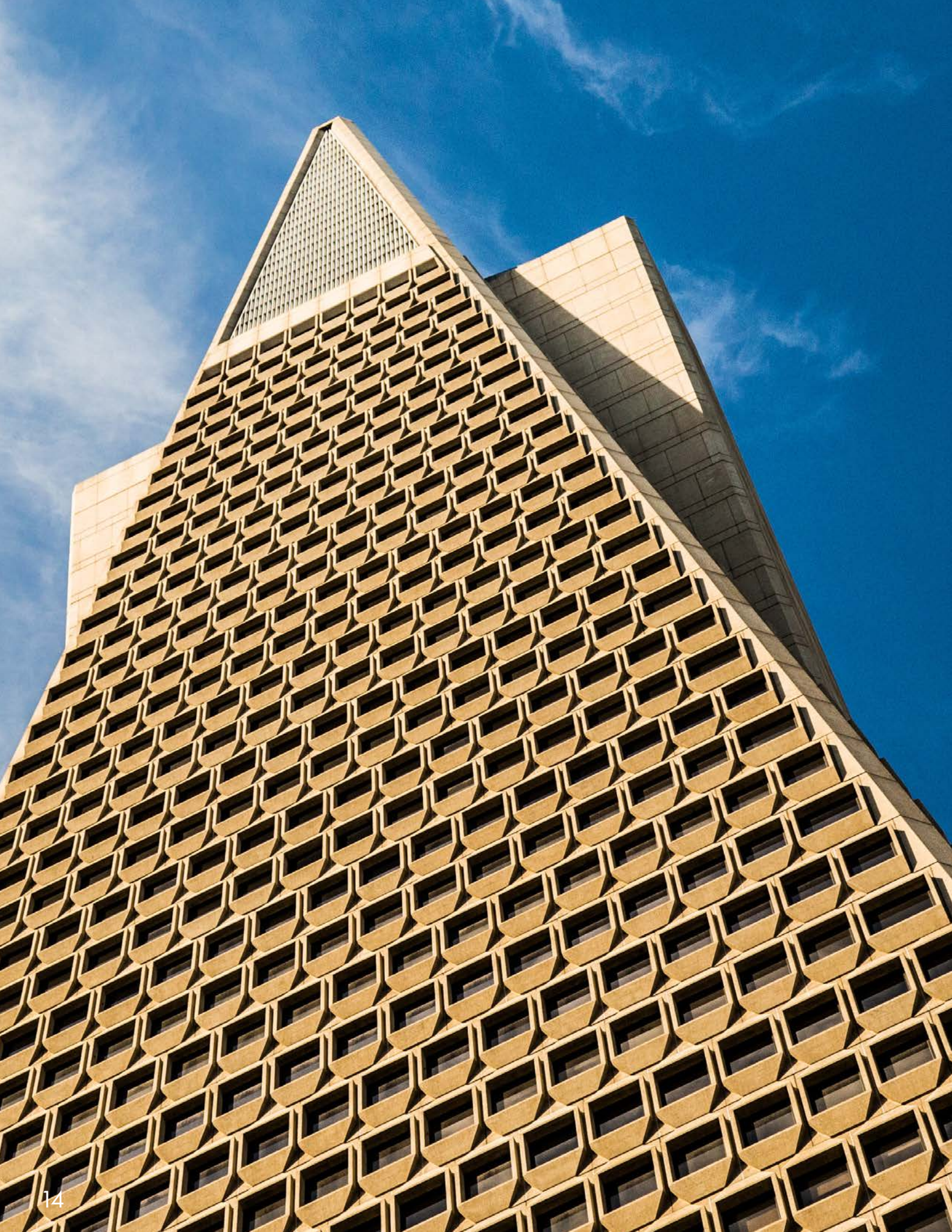
ICT VISION & VALUES

ICT PLAN VISION

San Francisco will deploy and support technology that improves City services

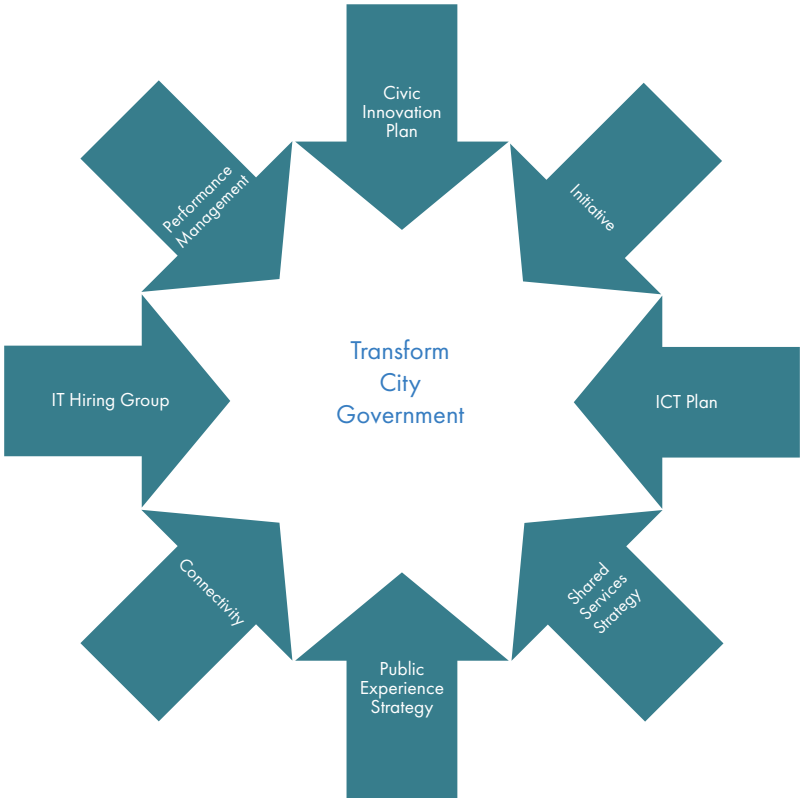
VALUES

- Business and Customer Needs Will Drive Decisions
- ICT Investments are Based on Greatest Impact and Benefit
- Common Solutions Should Be Evaluated First
- Maintenance and Support Must be Adequately Planned and Budgeted
- Sensitive Information Must Be Secured Appropriately
- Standards Must Be Developed
- Technical Diversity Must Be Controlled
- Technology Should Be Easy to Use
- Critical Business Functions Must Be Protected from Major Disruptions



CITY INITIATIVES

To achieve the City's vision to deploy and support technology that improves City services, the City is engaged in several efforts to make ICT more impactful. Overall, the FY 2016-20 ICT Plan is one component to a much larger strategy to transform City government.



OPEN DATA INITIATIVE

A major element to the City's strategy to transform government is the Open Data Initiative. The City's open data portal, SF Open Data, enables a wide range of data-driven work by creating a shared platform where users can readily access and use government data, whether developing applications, conducting research, or engaging as a resident. It even eases access to data within the City itself. Ultimately, this data-driven ecosystem should support a range of positive outcomes - from increased quality of life, more efficient city services, better decisions, as well as the business models it has already fostered.

The City's multi-year strategic plan focuses on six goal areas that go beyond simply publishing the City's data to enabling and empowering effective use of the data.

CIVIC INNOVATION PLAN

The City is also actively promoting strategic innovation throughout government. The Mayor's Office of Civic Innovation (MOCI) works as a catalyst to transform government by bringing new ideas, tools, and processes into the City. By championing innovations already happening throughout San Francisco, MOCI helps incubate new programs that advance City priorities.

MOCI fosters external partnerships and helps build prototypes of new and innovative ideas to test throughout the City. Working with a wide range of departments, MOCI helps tackle problems such as creating an entrepreneurial workforce and streamlining the permitting process for innovative projects in public spaces. MOCI also helps pilot innovative programs by building public-private partnerships to address City challenges. Over the next five years, MOCI plans to continue bringing new innovative solutions to the City and help scale projects that improve the lives of citizens and San Francisco residents.

CONNECTIVITY PLAN

The City is also initiating a major effort to increase the infrastructure capacity of the City's fiber-optic network. The City's fiber network is essential to the needs of departments and their employees. Over the next five years, the Department of Technology will expand the City's fiber network to connect every City building. Written by the City's Chief Information Officer and the Chief Innovation Officer, the Connectivity Plan is the City's roadmap on how to enhance connectivity over the next five years.

In addition to the fiber network, the Connectivity Plan addresses Dig Once Legislation and the build-out of the City's free wireless Internet service, #SFWiFi. Dig Once Legislation in particular will help fiber expansion by laying conduit in public streets whenever other construction projects are in progress and assist in achieving connectivity goals. Through conduit, fiber-optic cables can be installed, increasing the network's coverage. With a broader network, the City will also be able to offer #SFWiFi in more places. The Connectivity Plan outlines where conduit and #SFWiFi will expand in the next five years, and other ways the City may leverage the fiber network to increase broadband connectivity Citywide.

IT HIRING GROUP

The City is also developing new ways to attract and retain Information Technology (IT) professionals. The increased use of ICT demands greater in-house capacity to support and maintain City systems. However, due to extremely high competition and also the prolonged amount of time taken to hire new employees, meeting City staffing needs has become a challenge.

In response, the Department of Human Resources (DHR) has formed the City IT Hiring Group to gain a better understanding of the current challenges and to create forward solutions. With assistance from the Mayor's Office, the Controller's Office, the Department of Technology, representatives from larger departments, and union representatives, DHR is testing new practices to hire IT professionals. For instance, the City IT Hiring Group is piloting online testing for specific IT job classes as well as building a social media recruitment plan. Efforts like this are aimed at making it easier to hire IT professionals and increasing the City's ICT capacity.

The Open Data Plan, the Strategic Innovation Plan, the Connectivity Plan are also referenced in the Appendix. Together, each initiative along with the FY 2016-20 ICT Plan represent the City's collective strategy to transform government.

COIT'S KEY INITIATIVES

Alongside the aforementioned initiatives, COIT has also engaged in new efforts to better use technology throughout the City. Over the next five years, COIT will support two key strategies to improve the delivery of City services: improving the public's experience using City services and developing a shared services strategy to help government become more efficient. In addition, COIT will continue to develop performance measures to better understand ICT's impact in City government. To do this, COIT plans to leverage department expertise to create centralized, coordinated strategies.

PUBLIC EXPERIENCE STRATEGY

The core mission of the City & County of San Francisco is to serve the people of San Francisco. City services are available through a number of channels including face-to-face communications, mail, telephone, and online. As technology evolves, the City's digital presence has developed over the years at an uneven rate. While some departments are providing online services, other smaller departments are limited in their capacity to build an online presence. As a result, the City's digital services are fragmented and lacking common standards. To be a premier service provider, the City must be more responsive to consumer needs.

Towards this end, COIT is initiating the creation of a unified Public Experience Strategy. A major component of this strategy will be developing a digital strategy for City websites. As the public expects more services to be available online, the City must respond and create a digital presence that is easy-to-use and focused to public needs. Ultimately, the City's approach to public services should be consumer-focused and fully integrated into department service strategies.

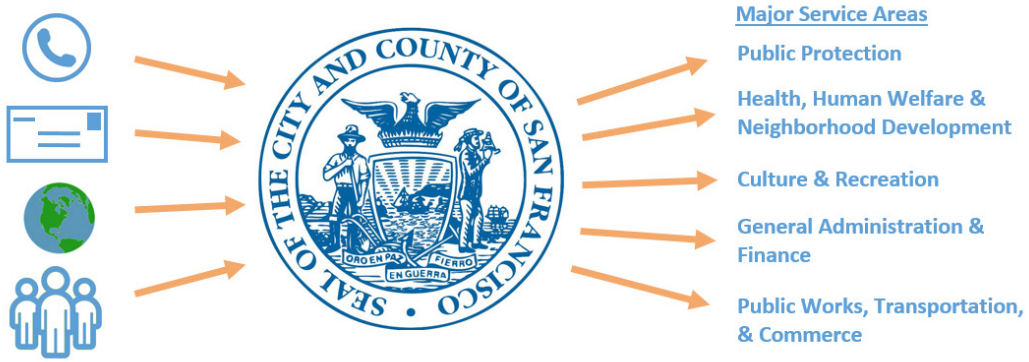


Figure 3: The public should be able to retrieve City services from any form of communication.

Over the next year, COIT, the Mayor's Office, and the Department of Technology will begin to build a comprehensive public services strategy. Identifying the needs of the public and of City departments will be the first step to designing the strategy. In the spring of 2016, COIT will present a Public Services Strategy that will define the City's objectives and articulate a clear plan to create a unified, seamless user experience.

SHARED SERVICES STRATEGY

To support the core mission of San Francisco, the City must provide services efficiently and sustainably. Leveraging new technologies, there is an opportunity for the City to better collaborate in the procurement, implementation, and support of many of the City's ICT systems. Through enhanced coordination, the City will be able to provide better services while using the same or fewer resources.

Over the next several years, COIT will work with the City's Chief Information Officer (CIO) and City departments to develop strategic shared services. COIT's goal is to help the City transition to a model of collaboration, especially around ICT infrastructure. In particular, COIT will focus efforts around Foundational ICT which is core infrastructure, applications, and services that are common to all departments and do not require customization. Some of the most prominent examples include:

- E-mail
- Phone
- Enterprise Software Agreements
- The City's Fiber Network
- Microsoft Office

These examples represent a growing effort to centralize core ICT in the City towards shared services.

To do this, COIT is helping to institutionalize strong communication and process transparency for Foundational ICT systems. Specifically, the City CIO will help establish a framework to clearly identify leadership and major stakeholders, define goals, and create transparency of processes. The City CIO will also help create steering committees for Foundational ICT systems, composed of various stakeholders that can provide guidance and support.

CITYWIDE PROJECT PERFORMANCE

Alongside COIT's major initiatives around the Public Experience and Shared Services Strategies is an increased emphasis on performance reporting for City ICT projects. Since FY 2013-14, departments have provided quarterly performance reports on each COIT approved and funded ICT project. COIT plans to expand on this effort to create greater transparency around project performance. Through regular reporting, COIT can better identify citywide trends and continually refine successful project management practices.

COIT's quarterly performance reviews include updates on the following components:

- **Scope:** Departments must provide an update on whether the project scope has changed during the implementation phase. If there has been a change in the scope, departments must describe the reason(s) for the change and the impact on project implementation.
- **Schedule:** Departments must provide an update on the project's schedule. The update should also include a description of any unexpected obstacles, the solutions considered, and the next steps to fully implement the project. Departments must also estimate what percent complete their projects are completed.
- **Resources:** Each department must provide details on how allocated funds are being spent including an explanation of resource status.
- **Key Performance Indicators:** Due to the wide variety of ICT projects the City implements every year, departments must develop their own measurements to more accurately track performance. COIT provides guidance to help create meaningful indicators that describe how a project's implementation is progressing. Departments are required to report on these key performance indicators until a project is completed.

In addition, COIT has identified several projects as Major IT Projects to replace large, legacy systems and require significant financial investment. For all Major IT Projects, COIT requires additional performance reporting generally through multi-department steering committees. Through these steering committees, sponsoring departments must report to COIT on the project's performance at least once a quarter.

While a great deal has been accomplished with project performance reporting, there remain opportunities to improve the evaluation process to include completed COIT projects. COIT is most interested in measuring a project's impact on service delivery. By identifying the most successful projects, COIT can more effectively guide others.

FISCAL STRATEGIES

A major component of the City's ICT Plan is to provide recommendations to strategically allocate funding for projects over the next five years. In order to make the City more responsive and more effective, major investments are needed. The following section reviews how much the City currently spends on ICT systems and a description on how COIT provides funding recommendations.

CITYWIDE ICT SPENDING

Overall, COIT's annual funding recommendations make up only a small portion of the City's total ICT expenditures.

In FY 2013-14, the City & County of San Francisco spent approximately $287.6 million on ICT related expenditures. As shown in Figure 4 below, 35.4 percent of the City's ICT spending were on salaries and benefits for IT professionals. The City's second largest expenditure was on Other ICT spending which included the cost for software licenses and other infrastructure costs. Overall, the City spent $287.6 million on ICT out of an available budget of $9.1 billion in FY 2013-14, a proportion of 3.16 percent. [1]

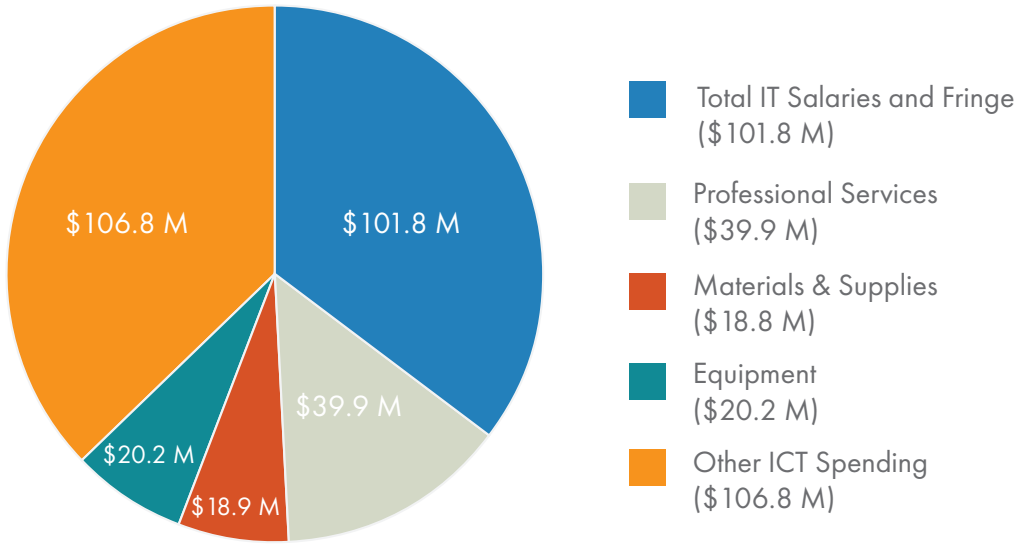


Figure 4: The City & County of San Francisco's ICT Spending in FY 2013-14

[1] FY13-14 available budget includes Board adopted budget and IT projects' carryforward/transfer/supplemental budgets net of reserved uses budget uses. This estimate excludes ongoing or requested non-IT or capital projects' carryforward, transfers, supplemental budgets.

COIT ALLOCATIONS

Within this framework, COIT will provide $150.0 million in funding recommendations to the Mayor and the Board of Supervisors over the next five years. COIT provides funding recommendations through the following sources:

- **COIT's Annual Projects Allocation (GF):** In addition to their annual operating budgets, General Fund departments may request General Fund support from COIT's Annual Projects Allocation. The ICT Plan recommends that the City continue to increase the Annual Projects Allocation by 10 percent every year.

- **Major IT Projects Allocation (GF):** In FY 2013-14, the Mayor and the Board of Supervisors created a new fund for the replacement of major legacy systems that impact multiple departments and pose a significant financial investment. The ICT Plan recommends the City increase the Major IT Projects Allocation by 10 percent every year.

- **Sponsoring Department Project Funding:** The Department of Technology implements a number of Citywide ICT projects through its operating budget that is recovered through chargeback rates. In FY 2014-15 these chargeback rates were allocated 25 percent to Enterprise departments and 75 percent to General Fund departments. Recently funded projects include: E-mail Migration, Fiber to City Buildings, Disaster Recovery, and Server Virtualization.

- **Non-General Fund Sources:** Some departments (including General Fund departments) have identified funding for projects within their existing operating budgets through grant support or other non-General Fund sources. These self-supported projects are reviewed using the same vetting process as the General Fund requests.

Among these four funding sources, COIT provides specific recommendations for use of General Funds from COIT's Annual Projects Allocation and the Major IT Projects Allocation.

Importantly, the addition of the Major IT Projects Allocation in the FY 2016-20 ICT Plan has greatly expanded COIT's capacity to support City ICT projects compared with previous years. In the FY 2014-18 ICT Plan, COIT's Annual Projects Allocation was only $49.1 million, leaving a funding gap of $205.4 million. In contrast, the addition of the Major IT Projects Allocation in the FY 2016-20 ICT Plan has led to an increase of approximately 200 percent in funding for General Fund supported projects.

Another benefit of the Major IT Projects Allocation is COIT can now support Major IT Projects and help secure funding for the duration of the project's implementation. The additional funds also allow COIT to more freely evaluate and support ICT projects through the General Fund. Overall, the addition of the Major IT Projects Allocation is a positive step to address the City's ICT needs.

In the FY 2016-20 ICT Plan, COIT will provide recommendations for use of $150.0 million in General Fund sources, as shown in Table 3 below. For both allocations, COIT recommends all $59.0 million of the Annual Projects Allocation and all $91.0 million in Major IT Projects Allocation be invested in City ICT projects over the next five years.

$ in millions		FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	TOTAL
Annual Projects Allocation		9.7	10.7	11.7	12.8	14.1	59.0
Major IT Projects Allocation		12.5	16.9	18.6	20.5	22.5	91.0
	TOTAL	**22.2**	**27.6**	**30.3**	**33.3**	**36.6**	**150.0**
Allocation Growth		10%	10%	10%	10%	10%	-

Table 3: Projected COIT Funding Levels from FY 2015-16 through FY 2019-20

Reviewing COIT's allocations over the next five years, both General Fund allocations are expected to grow at a rate of 10 percent per year. However, in FY 2014-15, COIT recommended the advance of $5.4 million of Major IT Projects Allocation towards the Controller's Financial Systems Replacement Project. To meet the needs of the Major IT Projects, COIT now recommends increasing the FY 2015-16 amount to $12.5 million. Further, COIT recommends in all subsequent years, the Major IT Project fund will resume its original projected funding levels and continue to grow at 10 percent a year.

With approximately $150.0 million of General Fund sources available, COIT will develop funding recommendations for the next five years that support the ICT Plan's Strategic ICT Goals.

ICT PROJECT REQUESTS

At the beginning of every budget cycle, COIT requests every department to submit all ICT project proposals with an estimated cost of $100,000 or greater. COIT then reviews every request to develop funding recommendations.

In the current five year cycle, COIT has received more ICT requests than ever before. As shown in Table 4 below, funding requests have increased every year since FY 2011-12. In the current ICT Plan from FY 2015-16 through FY 2019-20, departments have submitted $211.8 million in General Fund requests. However, due to the City's two-year budget allocation, COIT expects the total amount requested to increase in the next few years. Departments have historically requested more funding for the two years included in the budget cycle rather than the three years beyond it. As a consequence, COIT expects the funding requests for FY 2017-18 through FY 2019-20 to increase when budget allocations are made.

$ in millions	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	TOTAL
General Fund Requests	$13.2	$46.3	$45.7	$46.2	$52.6	$61.2	$41.4	$32.0	$24.6	$363.2
							FY 16-20 TOTAL		$211.8	
					Current ICT Plan Years					

Table 4: Historical ICT Project General Fund Requests from FY 2011-12 through FY 2019-20.

Further, ICT funding requests between Major IT Projects and the Annual Projects allocations vary throughout the years. As shown in Figure 5 below, other ICT projects not identified as a Major IT Project represent a majority of the funding requests in FY 2015-16. However, in the next two fiscal years, Major IT Projects represent the majority of funding requests. Overall, Major IT Projects comprise 47.7 percent of all funding requests from FY 2015-16 through FY 2019-20.

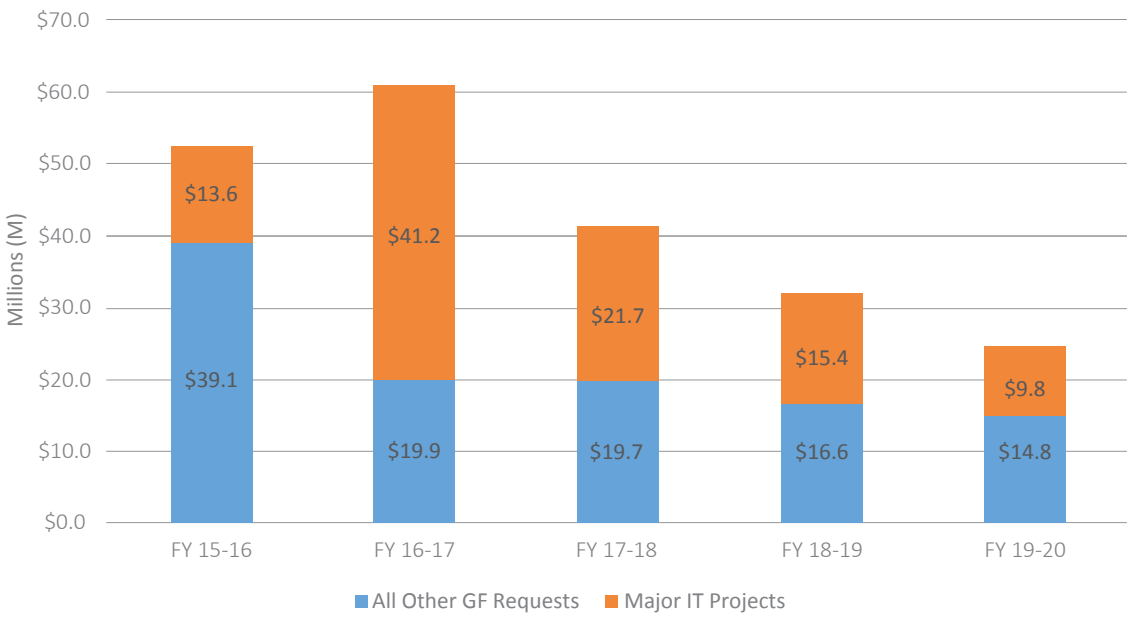


Figure 5: Division of department General Fund requests from the Major IT Projects and Annual Projects allocations.

Over the next five years, COIT has received a total of 158 ICT project proposals with a total projected cost of $613.3 million. Out of all requests, 97 have requested General Fund support, representing 61.4 percent of all proposed projects. In total, departments have requested $211.8 million in General Fund support. With the current funding level of $150.0 million, COIT faces a funding gap of $61.8 million, shown in Table 5 below.

$ in millions	Number of Projects	Initial Project Request	Proposed Funding Source	Difference
Non-General Fund Projects	61 (38.6%)	$401.5	$401.5	-
General Fund Projects	97 (61.4%)	$211.8	$150.0	$61.8
Subtotal: IT Project Requests	**158**	**$613.3**	**$551.5**	**$61.8**

Table 5: Total ICT Project Requests from Departments FY 2016-20

Although the addition of the Major IT Projects Allocation has greatly enhanced COIT's ability to fund ICT projects throughout the City, COIT continues to receive more funding requests than resources allow. The FY 2016-20 funding deficit of $61.8 million will require COIT to prioritize projects that have the greatest impact.

Towards this end, COIT will strategically invest in ICT Projects throughout the City. In particular, COIT will recommend supporting three major IT projects throughout their implementation.

Combined, these three Major IT Projects have requested $101.7 million in General Fund support over the five year period of this Plan. In the FY 2016-20 ICT Plan, the Major IT Projects are:

- Financial Systems Replacement Project (Total Cost $58.6 M – GF Request $27.1 M);
- Public Safety & Public Service Radio Replacement Project (Total Cost $73.0 M - GF Request $73.0 M);
- Property Tax Database Replacement Project (Total Cost $2.0 M - GF Request $1.6 M);

Additionally, COIT is also tracking the Department of Public Health's (DPH) Unified Electronic Medical Records (EMR) project that has an estimated total cost of $223.4 million. While DPH is not currently requesting additional General Fund support, COIT is categorizing this project as a potential emerging need.

Table 6 below shows the projected funding support available for Major IT Projects against General Fund requests.

$ in millions	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	TOTAL
Total COIT Major IT Project GF Support	$12.5	$16.9	$18.6	$20.5	$22.5	$91.0
Major IT Projects General Fund Requests						
Financial Systems Replacement	$9.3	$15.9	$1.9			$27.1
Public Safety & Public Service Radio Replacement	$3.9	$24.1	$19.8	$15.4	$9.8	$73.0
Property Tax Database Replacement	$0.4	$1.2				$1.6
Subtotal	$13.6	$41.2	$21.7	$15.4	$9.8	$101.7
DIFFERENCE	($1.1)	($24.3)	($3.1)	($5.1)	($12.7)	($10.7)

Table 6: Major IT Project Requests from Departments FY 2016-20

Over the next five years, departments are requesting $10.7 million more than currently is available in COIT's Major IT Projects Allocation. As shown in Table 7 above, the three identified Major IT Projects will request a total of $101.7 million in General Fund Support. With $91.0 million of funding available through the Major IT Projects Allocation, the City must consider a number of strategies to fund these critical replacement projects over the next five years.

Similarly, General Fund project requests outweigh COIT's Annual Projects Allocation. Over the term of this Plan, COIT received approximately $110.1 million in General Fund project requests, or $51.1 million more than the COIT's total Annual Projects Allocation of $59.0 million, as shown in Table 7 below.

$ in millions	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	TOTAL
COIT Annual Projects Allocation (GF)	$9.7	$10.7	$11.7	$12.8	$14.1	$59.0
Total Annual Project Requests	$39.1	$19.9	$19.7	$16.6	$14.8	$110.1
DIFFERENCE	($29.4)	($9.2)	($8.0)	($3.8)	($0.7)	($51.1)

Table 6: Major IT Project Requests from Departments FY 2016-20

Faced with more requests for funding than available resources, COIT must evaluate each project in order to make funding recommendations that support the City's Strategic ICT Goals.

BUDGET PROCESS

With finite resources, the Committee on Information Technology (COIT) must invest in projects that support City goals and have the greatest impact.

The project evaluation process is led by the Budget & Performance Subcommittee which annually reviews ICT project proposals during the Citywide budget process. The annual review process for General Fund and non-General Fund ICT project proposals will rank each proposed project based on the project's range of impact and their support of the Strategic ICT Goals identified in this Plan. As part of the subcommittee's review process, department's current and previous project performance is also evaluated.

All ICT projects submitted to COIT must have a total projected cost of at least $100,000 for implementation. Further, project requests to COIT must have a beginning and end date. COIT does not review ICT equipment or materials and supplies, which are not considered ICT projects on their own. Rather, COIT only provides funding recommendations for ICT projects that fulfill one of the following functions:

- New/Enhancements: Investments that increase an asset's value or useful life and/or change its use.
- Renewals/Replacements: Investments to preserve or extend the useful life of existing IT infrastructure.
- Routine Maintenance: Projects that provide for the day-to-day maintenance of existing IT infrastructure, including labor costs. Unlike renewals and enhancements, these costs are often funded within departments' operating budgets.
- Critical Project Development: Funding for pre-project development and planning. Established through the Capital Planning Program, the City encourages thorough predevelopment planning to better predict project costs and potential impacts. Towards this end, the City may fund planning efforts before a decision is made to approve and fund Major IT Projects. COIT began funding Critical Project Development of Major IT Projects in FY 2013-14.

Through these functional categories, COIT can build a better understanding of department ICT needs.

Through the budget review process, COIT also evaluates each project according to their contribution towards the Plan's Strategic ICT Goals. As part of the funding recommendations to the Mayor and the Board of Supervisors, COIT has identified three Strategic ICT Goals to measure their relative importance to the City. The Strategic ICT Goals are:

GOAL 1: Support, Maintain, and Secure Critical Infrastructure,
GOAL 2: Increase Efficiency and Effectiveness, and
GOAL 3: Improve Access and Transparency.

COIT organizes ICT projects by the primary strategic goal that they support. The following section provides a more detailed overview of each strategic goal, specific objectives, and the types of projects included in each.

STRATEGIC ICT GOALS

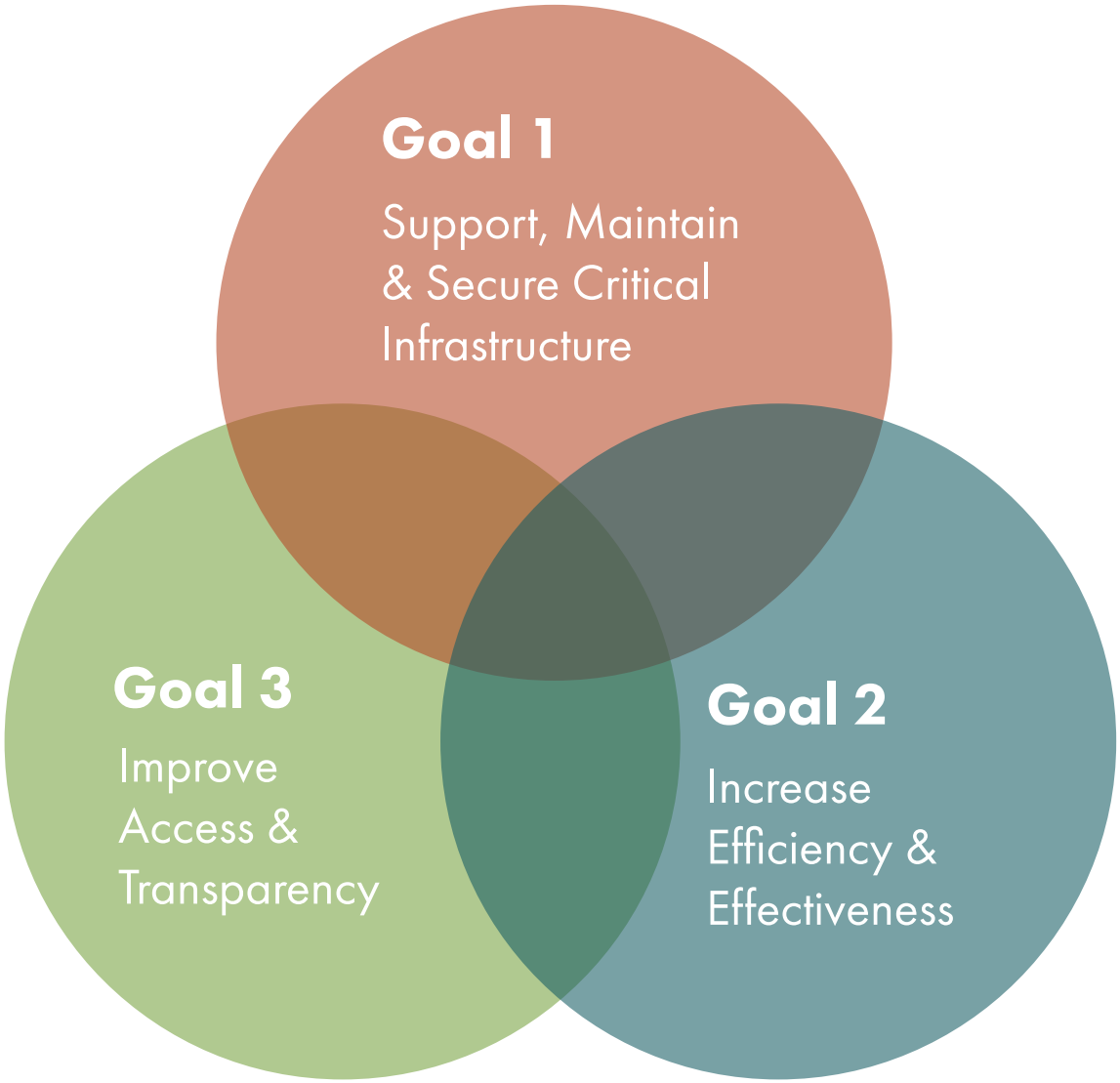


FIGURE 6: The City's ICT goals

GOAL 1: SUPPORT, MAINTAIN, AND SECURE CRITICAL INFRASTRUCTURE

The City's ICT infrastructure is the basic set of systems which support essential operations. Similar to capital infrastructure and the construction costs associated with maintenance of roads and buildings, ICT infrastructure requires continual investment to support servers and ensure continuity of mission critical systems. In recognition of the critical importance to support ICT infrastructure, COIT recommends funding ICT infrastructure projects that impact multiple departments and are critical to the delivery of City services.

Over the next five years, departments have proposed a total of $309.8 million in ICT projects that support critical IT infrastructure. In total, these projects comprise 75 (or 47.5 percent) of the 158 requests COIT has received from 25 departments.

In addition, the City has also developed several key objectives to measure the City's progress in accomplishing its goals. These objectives also help structure COIT's evaluations and prioritize proposed projects.

Objective 1: Keep downtime for critical systems to less than 0.1 percent.
Performance metrics:
- Percent of downtime
- Average bandwidth

Objective 2: Protect critical ICT system from major disruptive elements.
Performance metric:
- Percent of critical systems that are redundant

Objective 3: Prevent and defend City systems with strong cyber-security practices.
Performance metrics:
- Number of departments with security policies
- Percent of staff with security training

Currently, the City has a number of completed and ongoing projects that support critical ICT systems. The following section highlights a few projects that are representative of the investments the City has recently made, and those it is poised to make in the years ahead.

RECENT ACCOMPLISHMENTS & ONGOING PROJECTS

- **Disaster Recovery:** The City became further protected from disasters through the mirroring of the City's financial and human resources and payroll systems at the State of California's data center in Rancho Cordova. This effort led by the Controller and the Department of Technology ensures that should there be a disruptive event, the City has secured continuity of these critical systems. (Complete)

- **Computer Aided Dispatch (CAD) Upgrade:** The Department of Emergency Management completed an upgrade the City's CAD system in 2014. The new system better supports all public safety departments, most especially the Police, Fire, and Sheriff Departments through greater data retrieval and communication with other City departments and agencies. (Complete)

- **Gross Receipts Tax:** The Treasurer-Tax Collector upgraded the City's business tax system to integrate Gross Receipts Tax legislation in 2012. This new system reflects changes to the way San Francisco collects business taxes, which are now based on the amount of money businesses earn rather than on their payroll. The system went live in January 2015 and was on time and under budget. (Complete)

- **E-mail Migration:** The Department of Technology continues the migration of the City's 28,000 e-mail accounts from Lotus Notes and Microsoft Exchange to Microsoft Office 365. Through this consolidation effort, City departments can better communicate, schedule meetings, and collaborate on a single platform. This migration is scheduled to be complete in FY 2014-15. (Ongoing)

- **PC Refresh:** The City recently completed the third cycle of this program, which replaced PCs and laptops Citywide. This coordinated effort led by the Office of Contract Administration, Department of Technology, General Services Agency, and COIT provides assistance to departments which may not have internal funding for this equipment. Additionally, through a coordinated effort, PC Refresh leverages economies of scale for these common purchases. In FY 2014-15, 735 computers and laptops were purchased through the program, serving 24 City departments. (Ongoing)

- **Security Local Area Network (SLAN) Project:** The San Francisco International Airport's (the Airport) SLAN project includes building a new SLAN, moving systems to a supported and reliable server and desktop hardware, and insuring cyber security compliance. The Airport anticipates more efficient, secure, stable and cost-effective monitoring, maintenance, upgrades, and growth with a secure network and server environment in compliance with cyber security standards and practices. Furthermore, a new SLAN will provide better integration with other current and future Aviation Security systems and applications notification for troubleshooting problems. The Airport projects a 99.9 percent uptime post system replacement. (Ongoing)

- **San Francisco General Hospital Technical Infrastructure Re-Build:** This technical infrastructure re-build project is a critical component of the construction of the new San Francisco General Hospital (SFGH), scheduled to open its doors in December of 2015. This infrastructure will provide a strong technology foundation for the Department of Public Health's (DPH) wide medical grade infrastructure, supporting biomedical, communication, safety, and electronic health information systems required to operate modern and more effective healthcare services. Additionally, in collaboration with the Department of Technology, DPH is in the process of procuring a modern voice communication solution that will provide a communication technology foundation that will be expanded beyond SFGH in the future, allowing for a more cost effective and seamless voice communication solution across DPH and the City. (Ongoing)

- **Server Virtualization & Relocation:** The Department of Technology, in conjunction with various City departments, has been working to relocate and virtualize servers that are currently located in various data closets and data centers to approved Tier 2 facilities. Currently, the City has three main datacenters located at 200 Paul Street, 1011 Turk St, and the San Francisco International Airport. (Ongoing)

- **Fix the Network:** Beginning in FY 2014-15, the Department of Technology began a comprehensive project to fix the City's core network. By the end of this fiscal year, the Department of Technology is scheduled to upgrade hardware and software, simplify the network configuration, eliminate single points of failure, and optimize the routing and security of the network. (Ongoing)

- **VoIP:** After 12 months of beta testing, the Municipal Transportation Agency (MTA) will be migrating to a Lync based Voice over IP (VoIP) solution. VoIP will reduce operating costs and increase functionality, allowing integration with Microsoft Lync and Exchange. In addition to telephony, Lync will enable video calls, online meetings, rapid communications via instant messaging, and eventually Skype. (Ongoing)

PROJECT HIGHLIGHTS

Project Title: Fix the Network
Sponsoring Department: Department of Technology
Timeline: FY 2015-16 through FY 2018-19
Project Budget: $8,001,000

Description: At its core, the Department of Technology is a service provider with four distributed data centers across the City and California. A reliable and high capacity network is essential to the Department's core business function. The network must also be designed with automated redundancy. The Fix the Network project will help achieve these goals by simplifying the City's fiber network configuration, updating software and hardware, and eliminating single points of failure.

Project Title: Fiber to City Buildings
Sponsoring Department: Department of Technology
Timeline: FY 2015-16 through FY 2019-20
Project Budget: $2,400,000

Description: The Department of Technology currently manages a 170 mile fiber-optic cable to provide communication services to departments and City partners. This project will support a reliable network backbone for existing and future needs for applications. City fiber will also be used to provide public services such as free Wi-Fi. In the next five years, the Department of Technology will extend City fiber in order to connect all remaining City buildings.

Project Title: IT Asset Management
Sponsoring Department: Department of Technology
Timeline: FY 2015-16 through FY 2019-20
Project Budget: $1,650,000

Description: An IT Asset Management system will enable the Department of Technology to align the delivery of IT services with the needs of client departments. The new system will track all City IT assets, manage contracts and procurement, and support the Department of Technology's service desk.

Project Title: Mobile Data Terminal (MDT) Replacement
Sponsoring Department: Fire Department
Timeline: FY 2015-16 through FY 2017-18
Project Budget: $750,000

Description: This project is for the replacement and upgrade of out-of-date mobile data terminals (MDTs) on all Fire Department apparatus. Existing MDTs are being used beyond the end-of-service support cycle. In many cases, parts are not available for these units. There are multiple applications (including videos, online training, and interactive mapping applications) now available to field personnel that the department is not able to provide because the existing MDTs do not support the additional hardware requirements. As outdated MDTs are replaced, access to these additional applications may be invaluable during emergency operations.

Project Title: Wastewater Distributed Control System
Sponsoring Department: Public Utilities Commission
Timeline: FY 2015-16 through FY 2018-19
Project Budget: $52,000,000

Description: This is a wastewater control system for the treatment plants and remote facilities. The new system will tentatively include features that enable integration with the Public Utilities Commission's existing Work and Asset Management System (Maximo) for further automated asset management, and connection to the Laboratory Information Management System for automated water quality analysis.

MAJOR IT PROJECT

Project Title: Public Safety & Public Service Radio Replacement
Sponsoring Department: Department of Emergency Management
Timeline: FY 2015-16 through FY 2018-19
Project Budget: $73,020,103

Description: This project will upgrade the Citywide 800 MHz Radio Communications System used primarily by the City's public safety agencies. The current system was installed in 2000 and is nearing the end of its service life. The new technology will support over 7,000 mobile and handheld radios, with 10 City departments and four outside agencies operating daily on the system. In addition, the Public Service Radio Replacement Project is being considered as part of the Public Safety Radio Replacement Project.

GOAL 2: INCREASE EFFICIENCY & EFFECTIVENESS

COIT's second Strategic ICT Goal is to more efficiently use City resources and make services more effective. When deployed properly, ICT can help the City do more with less. Ultimately, projects that support this goal should lower costs, save time, and improve the delivery of City services.

To be efficient in the modern workforce, departments must be able to organize and manage their data digitally. Several departments have requested ICT projects to digitize paper documents and create digital workflows. Moreover, to create a system of performance management, digital record keeping and data keeping are needed. For this reason, COIT is promoting the transition to digital work processes over the next five years.

Departments have also requested several projects to update internal databases and to automate processes. In many cases, new databases are needed to support modern operations such as data sharing, a feature older systems do not always offer. Further, many departments are requesting systems that will help automate workflows. Upgrading existing ICT systems that lack these features promises to greatly increase the efficiency across the City.

Over the next five years, departments have submitted a total of $289.6 million in project requests that promise to increase the City's efficiency and effectiveness. In total, these projects comprise 67 (or 42.4 percent) of the 158 requests from 28 City departments.

Under the overarching goal of increasing efficiency, the City has also developed several key objectives. These objectives help structure COIT's project evaluations and measures the City's progress as it aims higher and strives toward achieving this goal.

Objective 1: Simplify and reduce IT procurement

Performance metrics:

- Number of days to complete the CIO Review
- Number of days for Office of Contract Administration to review purchases
- Number of Citywide enterprise agreements available

Objective 2: Enable and support a mobile workforce

Performance metrics:

- Percent of key applications that are mobile supported
- Number of legacy applications that are available on mobile

Objective 3: Deploy technology that supports green initiatives

Performance metrics:

- Annual expenditures on paper
- Percent of virtual versus physical servers

The City currently has a number of completed and ongoing projects that are helping increase efficiency and effectiveness. The following section highlights a few projects that are representative of recent City investments that will help support this goal.

RECENT ACCOMPLISHMENTS & ONGOING PROJECTS

- **Computerized Maintenance Management System (CMMS):** The Department of Public Works (DPW) is tasked with providing operational maintenance and management of City assets such as: streets, curb ramps, medians, plazas, trees, sewers, buildings, bridges, tunnels and staircases. The Department successfully implemented a CMMS, which consolidated several outdated systems and processes into one centrally managed system. DPW has also implemented CMMS for the City's Real Estate Division and the Public Library. (Complete)

- **Microsoft Enterprise Agreement:** In 2014, the Department of Technology, Office of Contract Administration, and the City Attorney successfully negotiated a Citywide Microsoft Enterprise Agreement. This effort consolidated several individual procurement efforts to a central contract that leveraged the purchasing power of the City and its 30,000+ employees, which provides standard predictable pricing and access to the appropriate tools for departments and their users to do their jobs well. (Complete)

- **SF Photomap IPad:** During the Rim Fire in 2013, the Public Utilities Commission developed the SF Photomap IPad application to document and assess City assets which may be eligible for Federal, State, or Local agency cost recovery grants. The geo-tagged photos, their condition, documentation, and the ability to work offline in the field allows for the rapid collection of data, presentation of documented photos on a GIS map, storage of photos in a database, viewing of photos from a browser, and enables updates to be made in the Department's Asset Management system. A generic version of this application is available and free for sharing. (Complete)

- **Airfield Inspection Reporting System (AIRS):** AIRS is a San Francisco International Airport (SFO) system used to manage and track airfield activity, incidents and safety and inspection information. It assures that SFO is in compliance with the Federal Aviation Regulation Part 139 Certification that mandates the reporting of safety inspections and significant events. AIRS is also used to notify internal and external airport constituents of airfield anomalies. As a mission critical business system, AIRS is used 24/7 by 50+ Airfield Operations Support personnel both in the field and in the office on mobile devices, laptops and desktops. AIRS version 3.0 was implemented in June 2014. (Complete)

- **Permit and Project Tracking System:** The City Planning Department and Department of Building Inspection are currently implementing a new Permit and Project Tracking System (PPTS). This new system will consolidate multiple database systems into a single Citywide permitting system. Additionally, the Departments will be creating an online website for submitting and processing permits and applications. (Ongoing)

- **eMerge Upgrades:** The Controller's Office recently completed upgrades to the Citywide human resources and payroll system. Significant progress has been made on a number of key initiatives, including build-out of increased functionality within the PeopleSoft system, relocation of the system to a top-tier data center at 200 Paul, replacement of aging IT infrastructure, and commencement a pilot deployment of Employee Self-Service, which allows employees to access, view, and modify their personal and payroll information in PeopleSoft. (Ongoing)

- **Gideon Upgrades:** This system is the Public Defender's component of the City's Justice Tracking Information System, JUSTIS initiative, currently managed by the City Administrator's Office. Gideon was the first program to receive data from the Sheriff's Department through the JUSTIS hub at the end of 2013. For over a year, the department has obtained client and case data obtained through the JUSTIS hub, demonstrating the promise and fulfilling one of the goals of the JUSTIS project. (Ongoing)

PROJECT HIGHLIGHTS

Project Title: eSignatures
Sponsoring Department: Office of Contract Administration
Timeline: FY 2015-16 through FY 2019-20
Project Budget: $405,000

Description: Enabling electronic signatures within the Office of Contract Administration's workflow will decrease the time for document approval, expedite the transfer of documents to and from various parties, reduce costs Citywide, and aid electronic filing of all documents used in the process. This will not only significantly streamline existing processes, but will allow the Citywide purchasing workflow to eventually be paperless.

Project Title: Expansion of PeopleSoft Enterprise Learning Management (ELM)
Sponsoring Department: Controller's Office
Timeline: FY 2015-16
Project Budget: $177,600

Description: The Enterprise Learning Management (ELM) platform is an enterprise-level learning management solution that provides a central application to store learning management data Citywide and allows departments to transition off local solutions. Anticipated benefits stemming from future adoption and expansion include: further human capital management capabilities for departments, increase effectiveness, reduce costs, and consistency in reporting and monitoring across the City.

Project Title: Transit Safe Replacement
Sponsoring Department: Municipal Transportation Agency
Timeline: FY 2015-16
Project Budget: $1,000,000

Description: The Transit Safe Replacement Project will replace an existing application for the Municipal Transportation Agency's (MTA) Systems Safety Division. It is anticipated to expand to filing and management of Worker's Compensation claims and serve as a repository for all MTA internal safety and security Incidents.

Project Title: Paperless Office
Sponsoring Department: Health Service System
Timeline: FY 2015-16 through FY 2017-18
Project Budget: $515,000

Description: The Health Service System (HSS) currently has over 250,000 member records on paper. To integrate their data with the City's enterprise human capital management system eMerge, a digitization effort is necessary. Creating digital copies will allow HSS to index and search records, audit records, and reduce the physical storage requirements.

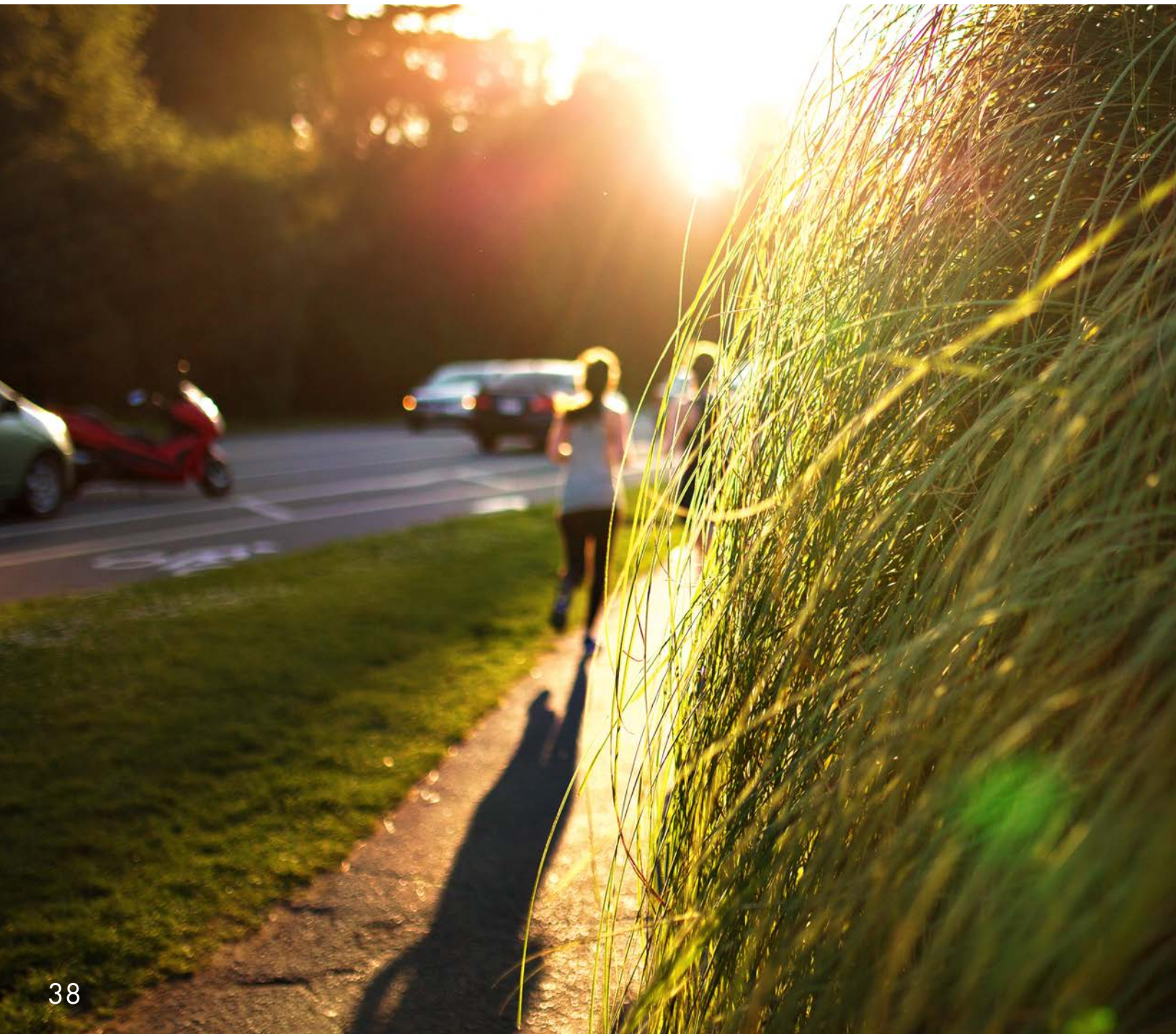
MAJOR IT PROJECTS

Project Title: Financial Systems Replacement
Sponsoring Department: Controller's Office
Timeline: FY 2012-13 through FY 2017-18
Project Budget: $58,578,196

Description: The City's mainframe-based central financial and accounting information system (FAMIS), which is used by all departments, is more than twenty-five years old and will need to be replaced. FAMIS is the City's official system of record for accounting, budget control, purchasing, and financial reporting. The major Citywide systems that interface to FAMIS include the City's Payroll System (eMerge), the Budget System, and the Executive Information System (EIS) – a central data warehouse with reporting and analysis functionality, plus numerous departments interfaces to financial applications. This system will reduce or eliminate some departmental based systems currently used to supplement FAMIS, which could eliminate duplicative entries, reconciliation between systems, and maintenance of multiple systems. The Department is currently funded to plan and scope the size, cost, and functionality of the replacement of the City's financial system. The result of the planning will provide better cost and time estimates, and will prioritize modules for replacement.

Project Title: Property Tax Database
Sponsoring Department: Office of the Assessor-Recorder
Timeline: FY 2016-17 through FY 2019-20
Project Budget: $2,000,000 (Critical Project Development)

Description: The Assessor-Recorder has used a COBOL-based AS/400 system since 2000 to track $170.0 billion in assessed value. The current system has an outdated, non-relational database platform, which lacks the capability to access maps, deeds and work papers to streamline the assessment process. The system is incompatible with other department systems containing data for the assessment process, and does not allow for agile decision criteria queries and reporting. The Department seeks an updated property tax database system capable of handling all assessment functions in a fully integrated manner, including: document capture, reporting, storage maintenance, conversion migration services and management.



GOAL 3: IMPROVE ACCESS & TRANSPARENCY

COIT also highly prioritizes ICT projects that improve access to City services and promote government transparency. This goal is especially important since the City uses public money and is accountable to taxpayers. Towards this end, ICT has the potential to make government services more inclusive and accessible. A transparent government can transform the way in which the City makes decisions.

An increasingly important avenue to access City services is through department's websites. San Francisco residents expect the Internet to be a resource on City information. Residents also increasingly expect online services such as filling out forms or receiving notifications. Towards this end, COIT emphasizes ICT investments that improve the City's websites.

Additionally, COIT has also received requests to improve data sharing and data analysis capabilities. In conjunction with the City's ongoing Open Data initiative, COIT highly encourages the development of data sharing practices.

Over the next five years, departments have requested a total of $13.9 million in project requests with the primary goal of improving access and transparency. In total, these projects comprise 16 (or 10.1 percent) of the 158 requests from 11 departments.

Access and transparency efforts are structured by several key objectives, including:

Objective 1: Make City data readily available

Performance metrics:

- Percent of completed department inventories
- Number of datasets that are "natively" hosted
- Percent of users that visited the DataSF.org website more than once

Objective 2: Increase Internet access to underserved communities

Performance metrics:

- Number of digital literacy training hours provided by the City
- Number of public housing sites with operable free wireless Internet

Objective 3: Increase Internet connectivity

Performance metrics:

- Number of City buildings on City fiber network
- Number of departments paying for private Internet service

The City currently has a number of completed and ongoing projects that also support improved access and transparency. The following section highlights investments made in the past and other potential projects being considered that support this goal.

RECENT ACCOMPLISHMENTS & ONGOING PROJECTS

- **Airport's Indoors Navigation System Pilot:** As part of the City's "Entrepreneurship-in-Residence" program the San Francisco International Airport (SFO) partnered with an indoor technology navigation company, indoo.rs, to pilot an indoor navigation system in SFO's Terminal 2. For this effort, SFO also partnered with LightHouse for the Blind to pilot the iBeacon technology that interfaces with a mobile application to inform visually impaired guests and passengers of points of interest within a specific proximity and assist in guiding them through the Terminal. (Complete)

- **FlySFO.com:** The San Francisco International Airport (SFO) re-launched its website in August 2013 using a responsive design to offer a better user experience across multiple platforms. Reflecting on SFO's innovative and customer focused approach, the new site delivers more intuitive navigation and flight search. New features include Flight Tracker, additional information in eight languages, and enhancements to ground transportation information. FlySFO.com has garnered recognition and numerous awards, including the prestigious "Peggy G. Hereford Award," the Airports Council International - North America's highest honor for SFO's marketing and communications efforts. (Complete)

- **SF Streetlight Mobile App:** The Public Utilities Commission developed the SF Streetlight mobile application which allows constituents to report faulty street lights through an interactive "drag-and-drop" mapping feature. This application expedites the resolution process by routing repair requests directly to the individual streetlights owners and allows users to track the progress of repair in real-time. (Complete)

- **Business License Portal:** The Business License Portal website was released in 2014 to help guide San Francisco entrepreneurs through the regulatory requirements to start a business. In the next phase, current and potential business owners will see a dramatic improvement regarding access to information and will significantly reduce the amount of time required to obtain a permit. City departments will be able to effectively track permits, push relevant information to business owners, and operate more efficiently. (Ongoing)

- **Mobile Ticketing:** The Municipal Transportation Agency's (MTA) mobile ticketing project will provide customers with an anytime, on-the-go solution for ticket purchase and transit fare payment on personal mobile devices via credit card or PayPal. The Department is currently piloting this solution and anticipates a system wide launch in summer 2015. Customers will be able to purchase bus, rail and cable car tickets as well as one, three, and seven day passports. (Ongoing)

- **SF Connected:** The Department of Aging and Adult Services (DAAS) runs the SF Connected program which provides free computing education and support for seniors and adults with disabilities. DAAS works with 26 different community based organizations to help underserved seniors gain Internet access, support, and training. Through these partnerships, DAAS has over 250 computers in over 55 computing centers to help educate San Francisco seniors. In 2013, DAAS helped educate 1,541 seniors. (Ongoing)

- **Techmobile:** The Public Library System (SFPL) is piloting a mobile technology lab (or Techmobile) to bring technological resources to resident homes. The Techmobile will be a dynamic learning space, equipped to support community archiving, digital media learning, workforce development, as well as educational and recreational activities. (Ongoing)

- **Public Library Digital Literacy Program:** The San Francisco Public Library (SFPL) is leading San Francisco's digital literacy program. Currently, SFPL offers a range of basic literacy courses throughout its branches which teach patrons elementary computer skills. Beyond the basics, content-specific and advanced courses are also offered to patrons (for example, resume-building and computer programming). Throughout FY 2013-14, SFPL hosted 979 technology related courses using library computer facilities, instructing 9,464 individuals over the course of the year. (Ongoing)

- **#SFWiFi:** The Department of Technology has continued to unify and expand the City's free, public wireless network under #SFWiFi. Currently, the City offers #SFWiFi to 3.0 miles of Market Street and 30 public parks. (Ongoing)

PROJECT HIGHLIGHTS

Project Title: ePerformance Implementation
Sponsoring Department: Controller's Office
Timeline: FY 2015-16 through FY 2019-20
Project Budget: $997,516

Description: As a component of the City's human resources management system PeopleSoft, the Controller's Office will implement the ePerformance module to provide a centralized online system to document and store employee performance information. The module will also help standardize Citywide performance appraisal processes.

Project Title: Business License Portal Technology Enhancements
Sponsoring Department: Office of Economic & Workforce Development
Timeline: FY 2015-16 through FY 2017-18
Project Budget: $1,893,326

Description: In the next phase of the Business License Portal project, current and potential business owners will see dramatic improvements in access to information, automated/ streamlined processes, transparency of permitting workflow, and expediency. This will significantly reduce the amount of time required to obtain a permit and the associated costs of not being able to do business. City departments will be able to effectively track permits, push relevant information to business owners, and operate more efficiently. The Office of Economic and Workforce Development, Department of Technology, and Office of Small Business will have access to accurate and complete data, allowing them to better serve the business community.

Project Title: New Business Registration
Sponsoring Department: Treasurer-Tax Collector's Office
Timeline: FY 2015-16
Project Budget: $896,960

Description: At present, current and prospective business owners must complete and submit hard copy applications via mail or in person. As the City strives to improve customer service to the business community, the Treasurer-Tax Collector envisions moving business registration to an online process as a crucial next step. Due to various legal and end-user considerations, the solution will deploy features such as automated responses, digital signatures and certification, and the ability to make online payments immediately after application review or at a later date. Additionally, due to Gross Receipts legislation, the City has moved from two rate schedules for new businesses to four rate schedules. As a result, a more efficient system will be central to continuing Gross Receipts implementation.

Project Title: Citywide Wi-Fi Implementation
Sponsoring Department: Department of Technology
Timeline: FY 2015-16
Project Budget: $1,317,500

Description: The objective of the City's Wi-Fi project is to expand #SFWiFi's presence. The locations under consideration are 3rd Street, the Embarcadero and its Piers, Golden Gate Park, San Francisco Zoo, residential neighborhoods, Treasure Island, BART/Muni stations, and beyond. Citywide free Wi-Fi will provide significant benefits from social, economic, educational, informational, and tourism perspectives.

Together, these three goals shape how COIT evaluates ICT project proposals. Over the next five years, COIT will use these goals to develop funding recommendations.

MAJOR IT PROJECT RECOMMENDATIONS

Under current budget projections, COIT will recommend the distribution of $91.0 million of Major IT Project funding to assist with the replacement of the City's critical legacy ICT systems. The addition of the Major IT Projects Allocation in FY 2014-15 has significantly increased COIT's ability to make funding recommendations. However, the three identified Major IT Projects have requested approximately $101.7 million, leaving a projected funding deficit of $10.7 million and forcing COIT to prioritize project funding levels.

COIT evaluates each Major IT Project on the basis of each project's impact, the current and future risk of deferring funding, as well as the department's readiness to implement.

In the creation of a funding schedule, COIT uses the following strategies:

- Better Project Planning of Major IT Projects: Major IT Projects must be sufficiently scoped and planned before they are approved for implementation and funding. Since FY 2013-14, COIT has provided funding recommendations to support projects in the Critical Development phase.
- Alternative Funding Sources: For large-scale ICT projects, COIT encourages departments to identify alternative funding sources and share costs between Enterprise Departments and the General Fund when possible.
- Breakdown Large Projects to Access Diverse Funding Sources: In some cases, departments may be able to create smaller expenditure categories in order to provide funding through multiple sources.
- One-Time Funding Sources and Budget Reallocation: When possible, the City should identify one-time funding sources and explore the reallocation of existing ICT dollars to be used to fund Major IT Projects.
- Project Sequencing: COIT funding recommendations for Major IT Projects should be sequenced so that as project implementations are ending new project funding is phased in.
- Deferral: COIT may defer funding recommendations until comprehensive planning is complete or when sufficient resources become available.

Based on the funding strategy described above, COIT recommends the following Major IT Projects for funding:

1) Financial Systems Replacement Project

The City's current mainframe-based central financial and accounting information system (FAMIS) is used by all departments. However, FAMIS is more than twenty-five years old and needs to be replaced. The City's new Financial System will be the system of record for accounting, budget control, purchasing, and financial reporting for all City departments.

Funding Recommendation:

As a Citywide IT system, the costs of this project will be split between the General Fund and Enterprise Departments. The General Fund portion will be funded through the Major IT Projects Allocation for years FY 2015-16 through FY 2017-18. Should additional resources be available, COIT recommends fully funding this project.

2) Public Safety & Public Service Radio Replacement:

The Public Safety & Public Service Radio Replacement Project will upgrade the Citywide 800 MHz Radio Communications System used primarily by the City's public safety agencies. The current system was installed in 2000 and is nearing the end of its service life. The new technology will support over 7,000 mobile and handheld radios, with 10 City departments and four outside agencies operating daily on the system. In addition, the Public Service Radio Replacement Project is being considered as part of the Public Safety Radio Replacement Project.

Funding Recommendation:

Critical Project Development was funded through the COIT Annual Projects Allocation. Funding from the Major IT Projects Allocation will increase for this project as the Financial Systems Replacement project implementation closes out. This project will be funded through a number of sources including, Capital Planning, the City's equipment budget, COIT's Annual Projects Allocation, and user department support. Should additional resources become available, COIT recommends fully funding this project. Funding for Public Service Radios are also a high priority to be considered.

3) Property Tax Database:

The Assessor-Recorder has used a COBOL-based AS/400 system since 2000 to track $170.0 billion in assessed value. The current system has an outdated, non-relational database platform, which lacks the capability to access maps, deeds and work papers to streamline the assessment process. The Assessor seeks an updated property tax database system capable of handling all assessment functions in a fully integrated manner, including: document capture, reporting, storage maintenance, conversion migration services and management.

Funding Recommendation:

This project received Critical Project Development funding in FY 2014-15. Project planning is anticipated to be completed in FY 2015-16. Once completed, this project is the next priority for Major IT Project funding. Should additional resources become available, COIT recommends fully funding this project.

EMERGING MAJOR IT PROJECT RECOMMENDATION

In addition, the Department of Public Health (DPH) is initiating a project to replace its electronic medical records systems. While this replacement project is not currently requesting additional General Fund support, COIT has identified it as a potential emerging need, due to significant General Fund investment of this critical project.

Electronic Medical Records (EMR):

The Department of Public Health's (DPH) current EMR vendor is end-of-life and will likely no longer be supported by the vendor within three to five years. DPH must transition to a new EMR system that unifies all hospitals and clinics under a single system. A unified EMR system will allow DPH to transition to performance based medicine, tracking patients and service delivery outcomes throughout the system.

Funding Consideration:

The Department of Public Health anticipates funding this project within their operating budget and through outside sources. Should there be any additional General Fund costs, the Electronic Medical Records project should be considered a Major IT Project and provided a defined funding schedule.

As described above, each Major IT Project will require several strategies to fund these priority projects over the five year period of this Plan. COIT recommends allocating funding to each of the Major IT Projects based on resources available and on a funding schedule to be determined annually during the budget review process. However, the funding recommendations shown in Table 8 below do not reflect the total amount needed to fund each project. COIT's General Fund recommendations only represent a component of the full-funding necessary for each Major IT Project.

Coit Funding Reccomendation (millions)	FY 16-20 TOTAL
Major IT Projects	
Financial Systems Replacement	$27.1
Public Safety & Public Service Radio Replacement	$30.0
Property Tax Database Replacement	$13.0
Emerging ICT Needs	$20.9
TOTAL	**$91.0**

Table 8: COIT Funding Recommendations for Major IT Projects.

Based on the funding of the Major IT Projects Allocation, the City must sequence projects in a way that the City can afford. To accomplish this, project funding must necessarily be spread out over the five year period of this Plan. COIT recognizes the inherent risks of extending a project's timeline. These risks may include an increase to project costs and assuming funding will continue to be available throughout all five years of the Plan.

To address current and future needs, COIT recommends the following for Major IT Projects:

RECOMMENDATION 1: COIT recommends that the City continue to grow the Major IT Projects Allocation by 10 percent annually.

RECOMMENDATION 2: To the extent possible, COIT recommends allocating one-time funds to Major IT Projects if they become available during the budget cycle.

RECOMMENDATION 3: To the extent possible, COIT recommends full funding of projects to support an optimal project implementation timeline.

ANNUAL PROJECTS RECOMMENDATIONS

In addition to the Major IT Projects Allocation recommendations, COIT makes annual funding recommendations towards other ICT projects that range from Citywide projects to department specific.

In the FY 2016-20 timeframe, departments requested a total of $110.1 million in General Fund support. Over the same time period, COIT will make recommendations on the approval and funding of over $59.0 million in General Fund dollars, leaving a projected funding deficit of $51.1 million.

Due to these finite resources, COIT evaluates all ICT Projects to determine the need, anticipated impact, and the department's readiness to implement. Much like Major IT Projects, COIT has developed a funding strategy for projects to be funded by the Annual Projects Allocation.

Using the ICT goals described above, COIT uses the following strategies to prioritize funding:

- Better Coordination / Consolidation of Departmental Needs: A majority of General Fund requests are scoped to impact only the requesting department. Several of these individual requests have been identified as having overlapping needs. In the future, COIT will be working with departments to support ICT project requests that support multi-departmental and Citywide initiatives that have a greater overall impact.
- Performance Management: For all ongoing projects, COIT evaluates current project performance as part of the determination for future funding. In some cases, COIT may re-allocate funding towards projects that are better managed or are being implemented more successfully.
- One-Time Funding Sources and Budget Reallocation: The City should identify one-time funding sources and explore the reallocation of existing IT dollars to fund priority projects.
- Project Deferrals: COIT may defer funding recommendations until comprehensive planning is complete or when sufficient resources become available.

The strategies outlined above coupled with the annual budget process will enable COIT to identify the highest priority ICT investments. Yet even with funding strategies in place, many of the City's critical ICT infrastructure systems require immediate investment that may not be totally met with these strategies. Faced with growing General Fund requests for infrastructure projects, COIT recommends revisiting the Annual Projects Allocation over the next year to determine if the funding levels are sufficient to support the improvement of the City's critical ICT infrastructure as well as priority department requests.

Further, COIT recommends fully funding the Department of Technology's Fix the Network project over the next five years. As a Foundational ICT system, all City departments rely on the network to support their critical systems and applications.

Fix the Network

Improving the City's fiber network is one of the highest priorities for the City. A reliable, redundant and high capacity network is essential to core business function. The Fix the Network project will help achieve these goals by simplifying network configuration, updating software and hardware, eliminating single points of failure for Internet and the core network, and establishing redundant fiber channels between the four datacenters.

Table 9 below shows the projected funding schedule for the Fix the Network Project.

Fix the Network (M)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	TOTAL
COIT Recommendations	$2.9	$1.9	$2.0	$1.2	--	$8.0

Table 9: COIT's Recommended Funding Schedule for the Fix the Network Project.

To address the City's current and future needs, COIT recommends the following for the Annual Projects Allocation:

RECOMMENDATION 1: COIT recommends that the City continue to grow the Annual Projects Allocation by 10 percent annually.

RECOMMENDATION 2: COIT recommends re-evaluation of the Annual Projects Allocation to determine if the funding levels are sufficient to support the City's critical ICT infrastructure and priority requests.

RECOMMENDATION 3: COIT recommends identifying one-time sources of funding to support high priority projects when possible.

CONCLUSION

The FY 2016-20 ICT Plan is the City's guide to deploy and support technology Citywide. Ultimately, ICT should help transform government to become more responsive and efficient in meeting public needs. To accomplish this goal, the City must implement solutions that are innovative, sustainable, and resilient.

Over the next five years, COIT will take a proactive role in helping govern the City's ICT systems and coordinating investment towards areas of value. In particular, COIT will actively work towards building a Public Experience Strategy and a Shared Services Strategy for the City to become more efficient and consumer-oriented. Working in conjunction with the other ICT initiatives throughout the City, COIT is working to transform government.

A major component to creating change with the City & County of San Francisco will be to continue investing in ICT projects that have the greatest impact. In the FY 2016-20 Plan, City departments have proposed 158 new ICT projects over the next five years, and have requested $211.8 million in General Fund support. Indeed, the identification of the Major IT Projects Allocation in FY 2013-14 has tremendously increased COIT's ability to address these General Fund needs. However, even with the additional allocation, COIT continues to face a funding gap of $61.8 million over the next five years.

To continue to meet the growing ICT needs that the City has identified, COIT recommends continued growth of the COIT's Annual Projects Allocation and Major IT Projects Allocation. Additionally, the FY 2016-20 Plan recommends that COIT review the Annual Projects Allocation to ensure that sufficient resources are available to address both the deferred maintenance of the City's critical ICT infrastructure and departmental needs.

Through all of these efforts, COIT will continue to support the transformation of the City towards better delivery of services to the people that live, work, and visit San Francisco.

APPENDIX

A. Administrative Section Code 22A

B. Major IT Project Descriptions

C. Annual Project Requests

D. Open Data in San Francisco: Institutionalizing an Initiative

E. Civic Innovation Plan

F. City & County of San Francisco Connectivity Plan

APPENDIX A: ADMINISTRATIVE SECTION CODE 22A

SEC. 22A.3. COMMITTEE ON INFORMATION TECHNOLOGY.

Establishment and Composition. There is hereby created a Committee on Information Technology (COIT).

(a) COIT shall be composed of five (5) permanent members consisting of the Mayor, the President of the Board of Supervisors, the Controller, the City Administrator, and the CIO, or their designees. The Mayor, the President of the Board of Supervisors, the Controller, the City Administrator and the CIO, shall elect a Chair, who shall serve for a 2-year term. All of the permanent members of COIT shall be eligible to serve as Chair. Five additional Department Heads shall be recommended by the Chair and approved by the permanent members for two year terms, one representing each of the major service areas: (a) Public Protection, (b) Human Welfare and Neighborhood Development, (c) Community Health, (d) Culture and Recreation, and (e) General Administration and Finance; and three representing the major service area of Public Works, Transportation, and Commerce. The five permanent members and eight non-permanent members will be voting members of COIT.

(b) COIT shall organize into subcommittees. The Chair shall appoint subcommittee members based on participants' technical, financial, management, and policy-making capabilities and responsibilities. The Chair shall consult with and consider the recommendations of the CIO regarding the number, type and make-up of subcommittees, Subcommittee members shall represent major service areas of the City.

(c) Purpose and Duties. COIT shall review and approve the recommendations of the City CIO for (i) the five-year City ICT plan, including budget, projects and staffing for all City departments, boards, commissions and agencies (City Departments), (ii) ICT plans, budgets, projects and staffing plans for City Departments; and (iii) ICT standards, policies and procedures to enable successful development, operation, maintenance, and support of the City's ICT.

(d) COIT shall monitor compliance of all City Departments with adopted ICT plans, budgets, projects, standards, policies and procedures.

(e) COIT shall ensure the most cost-effective and useful retrieval and exchange of information both within and among City Departments and from the City to the people of San Francisco.

(f) There will be two additional non-voting members of COIT selected by the voting members of COIT. These individuals cannot be employees of the City and County of San Francisco and shall have expertise in fields of ICT innovation and advances, emerging ICT applications, and public policy issues related to ICT.

(g) COIT shall incorporate performance and financial reporting on the Department of Technology and all other City Departments' ICT planning and purchases in the ICT Capital and Operating Plan and the annual reviews of the plan. The factors to be evaluated in determining the performance of all departments shall include, but are not limited

to: quality of service level agreements, adherence to budgeted costs, and cost recovery methodology for all ICT products and services provided by City Departments, including the Department of Technology.

(h) COIT shall work to ensure adequate City ICT workforce development, including training and certification in order to maintain the competitiveness of City ICT staff.

(i) COIT will review and approve procedures, developed by the Office of Contract Administration and the Department of Technology, for the development and administration of ICT enterprise agreements. The factors addressed by the procedures will include, but not be limited to; (1) Whether the purchase is consistent with the City's current ICT Capital and Operating Plan; (2) Whether the purchase is the most economical method of obtaining the highest-quality products and services; (3) The best interests of the City.

(j) The Department of Technology shall provide support to the COIT. COIT shall review and approve the Department's annual plan, budget, and staffing required to support the Committee.

APPENDIX B: MAJOR IT PROJECT DESCRIPTIONS

Financial Systems Replacement Project

Public Safety & Public Service Radio Replacement Project

Replacement of the City's Property Tax Database

Unified Electronic Medical Records

FINANCIAL SYSTEM REPLACEMENT PROJECT

Sponsoring Department: Controller's Office

Timeline: FY 2012-13 through FY 2017-18

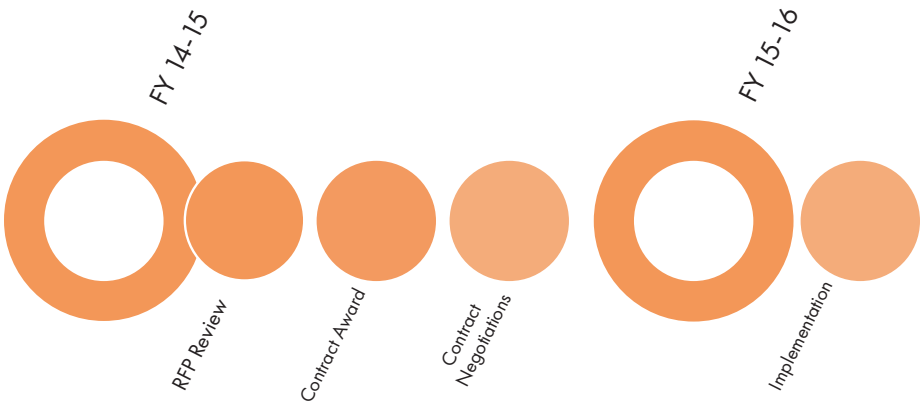
Project Budget: $58,578,196

Project Summary: The City's mainframe-based central financial and accounting information system (FAMIS), which is used by all departments, is more than twenty-five years old and will need to be replaced. FAMIS is the City's official system of record for accounting, budget control, purchasing, and financial reporting. The major Citywide systems that interface to FAMIS include the City's Payroll System (eMerge), the Budget System, and the Executive Information System (EIS) – a central data warehouse with reporting and analysis functionality, plus numerous departments interfaces to financial applications. This system will reduce or eliminate some departmental based systems currently used to supplement FAMIS, which could eliminate duplicative entries, reconciliation between systems, and maintenance of multiple systems. The Department is currently funded to plan and scope the size, cost, and functionality of the replacement of the City's financial system. The result of the planning will provide better cost and time estimates, and will prioritize modules for replacement.

Anticipated Outcomes:

- A system that more effectively integrates with key departmental and Citywide applications, such as eMerge;
- A system that increases efficiency by eliminating the need to maintain multiple systems;
- A system that has expanded functionality for accounting, budget control, purchasing, contracting, labor distribution, and other central financial processes;
- A system that meets growing data, security, and control requirements;
- A system that has good disaster recovery alternatives.

Timeline and Key Milestones:



Project Budget Detail:

SOURCES ($M)	FY 13-14 (Actuals)	FY 14-15 (Actuals)	FY 15-16 (Projected)	FY 16-17 (Projected)	FY 17-18 (Projected)	TOTAL
Total GF Allocation	$1.2	$5.4	$9.3	$15.9	$1.9	$32.5
Total Non-GF Allocation	$1.4	$2.9	$6.0	$10.3	$1.2	$21.9
Savings as a Source		$3.0				$3.0
Total Sources	**$2.7**	**$11.3**	**$15.2**	**$26.2**	**$3.2**	**$58.6**

Expenditures ($M)	FY 13-14 (Actuals)	FY 14-15 (Actuals)	FY 15-16 (Projected)	FY 16-17 (Projected)	FY 17-18 (Projected)	TOTAL
Salary & Fringe	$0.2	$1.6	$5.4	$5.8	$1.9	**$12.8**
Professional Services	$0.3	$0.4	$8.9	$12.7	$3.2	**$25.2**
Hardware			$0.6	$0.6		**$1.2**
Software & Maintenance			$5.3	$1.9	$2.0	**$9.2**
Operating Expenses	$0.03	$3.2	$1.3	$1.7		**$6.2**
Contingency				$3.5		**$3.5**
Total Expenditures	**$0.5**	**$5.2**	**$21.5**	**$26.2**	**$5.2**	**$58.6**

PUBLIC SAFETY & PUBLIC SERVICE RADIO REPLACEMENT PROJECT

Sponsoring Department: Department of Emergency Management

Timeline: FY 2015-16 through FY 2019-20

Project Budget: $73,020,103

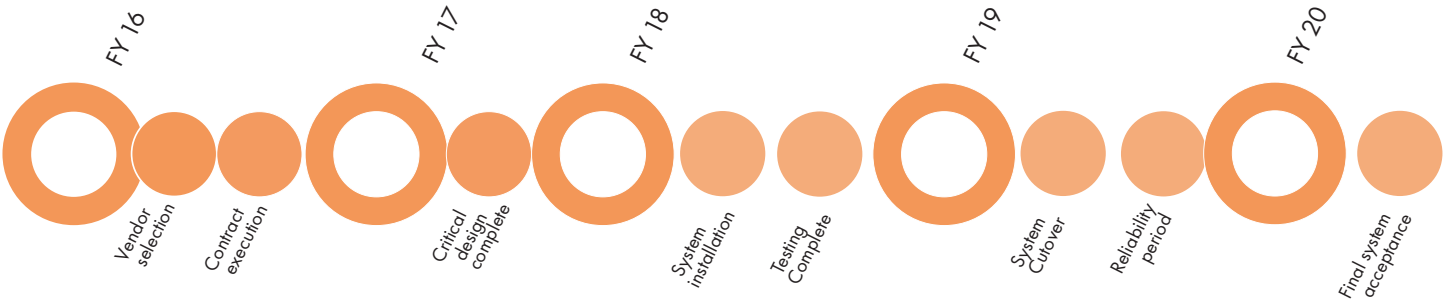
Project Summary: This project will upgrade the Citywide 800 MHz Radio Communications System used primarily by the City's public safety agencies. The current system was installed in 2000 and is nearing the end of its service life. The new technology will support over 7,000 mobile and handheld radios, with 10 City departments and four outside agencies operating daily on the system.

The City is also planning to invest in the public service radio system that supports non-public safety departments including the Department of Public Works, Public Utilities Commission, Building Inspection and the Port, to ensure all field users can communicate day-to-day as well as interoperate during emergencies. A consolidated effort will lower project costs and ensure all City departments are operating on a reliable, integrated system.

Anticipated Outcomes:

- A new system will allow the City to maintain a high level of system reliability for the next 10-15 years;
- The new system can be expanded to add more channels for better interoperability between public service and public safety agencies and will allow mutual aid agencies like BART, Oakland, San Mateo, and California Highway Patrol to operate within the City;A system that has expanded functionality for accounting, budget control, purchasing, contracting, labor distribution, and other central financial processes;
- The project will purchase new handheld radios for all public safety users, which will have a longer battery life to improve officer safety and reduce maintenance costs;A system that has good disaster recovery alternatives.
- The new system will operate on a standards-based platform, which will allow for flexibility with new devices that are purchased; and
- The new system will be designed for digital operations, and will have higher capacity for users on the system and clearer audio transmissions.

Timeline and Key Milestones:



Public Safety Radio Project Budget Details

Expenditures ($M)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	TOTAL
Infrastructure/Vendor Contract	$1.6	$9.5	$9.5	$7.5	$3.0	**$31.1**
Project Staff/Workorder Depts/Consultant	$0.8	$1.9	$2.0	$2.0	$2.0	**$8.7**
Capital Plan/Fiber		$2.0				**$2.0**
Portables/Mobiles/ Consolettes	$1.5	$10.7	$8.3	$1.8	$1.8	**$24.1**
Total Expenditures*	**$3.9**	**$24.1**	**$19.8**	**$11.3**	**$6.8**	**$65.9**

** Project total does not include $5.2 million in support from Capital Planning in FY 15-16 and FY 16-17.*

Should COIT recommend to build the Public Service Radio Replacement Project in addition to the Public Safety Project, budget details are listed below.

Public Service Radio Project Budget Details

Expenditures ($M)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	TOTAL
Public Service Infrastructure				$2.0		**$2.0**
Public Service Radios				$2.1	$3.0	**$5.1**
Total Expenditures*				**$4.1**	**$3.0**	**$7.1**

REPLACEMENT OF THE CITY'S PROPERTY TAX DATABASE

Sponsoring Department: Office of the Assessor-Recorder

Timeline: This project is currently in its critical development phase. The department intends to define the scope and budget by the end of 2015 and will submit a request for funding during the FY 2015-16 budget cycle.

Project Budget: Initial estimate is $13 million; however, the actual cost depends on the results of project scoping slated to occur in FY 2014-15.

Primary Goal Supported: Increase Efficiency and Effectiveness

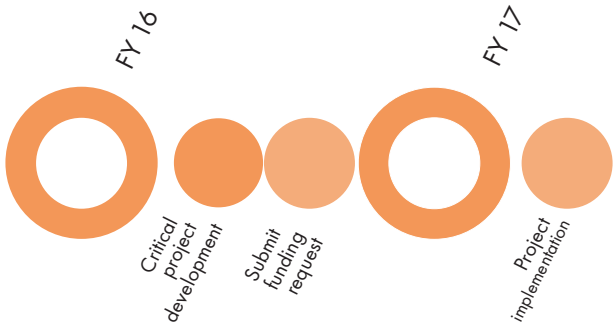
Project Summary: The Assessor-Recorder uses a legacy system to track $200 billion in assessed real and personal property value and manage data on more than 200,000 parcels. The current COBOL-based system is expected to reach the end of its useful life within the next four years and lacks adequate programming support and system redundancy. Moreover, the system has become functionally obsolete in meeting the department's core business needs as well as changes in state and local law. Its outdated, non-relational database platform lacks the capability to access maps, deeds and work papers to streamline the assessment process.
Additionally, the system is incompatible with other department systems containing data for the assessment process and does not allow for agile decision criteria queries and reporting.

The Assessor-Recorder seeks an updated property tax database system capable of handling all assessment functions in a fully integrated manner, including: document capture, reporting, storage maintenance, conversion migration services and management.

Anticipated Outcomes:

- Faster, more efficient processing of assessments and capture of assessment information;
- More cohesive management, analysis and reporting of assessment information via interfaces with other department systems;The project will purchase new handheld radios for all public safety users, which will have a longer battery life to improve officer safety and reduce maintenance costs;A system that has good disaster recovery alternatives.
- Increased cost-effectiveness and control of application and integration development/ maintenance; and
- More efficient, secure, and ecological workload management through conversion from a paper-based to a digital system.

Timeline and Key Milestones:



Project Budget Detail:

Expenditures ($M)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	TOTAL
Total Expenditures	$0.8	$1.2	-	-	-	**$2.0**

UNIFIED ELECTRONIC MEDICAL RECORDS

Sponsoring Department: Department of Public Health

Timeline: FY 2015-16 through FY 2019-20

Project Budget: : $223,398,014

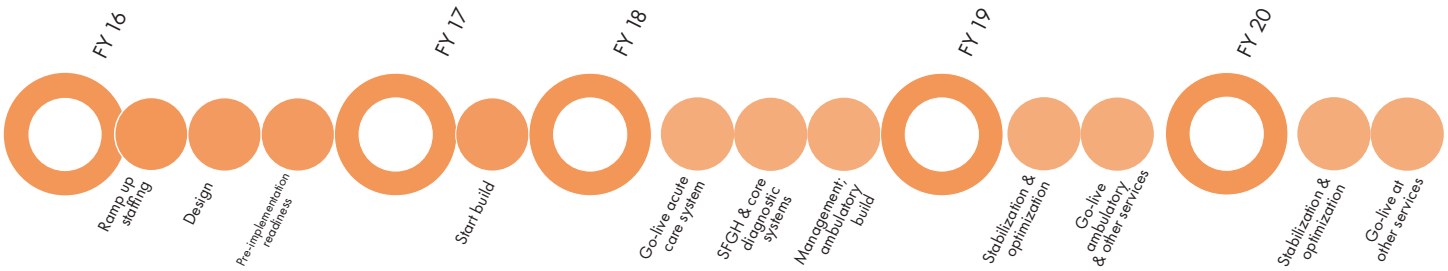
Primary Goal Supported: : Support, Maintain, and Secure Critical Infrastructure

Project Summary: The Department of Public Health (DPH) must replace its current Electronic Medical Records (EMR) system within the next three years. DPH's current EMR vendor is end-of-life and will no longer be supported by the vendor beyond FY 2019. DPH must transition to a new EMR system that unifies all hospitals and clinics under a single system. A unified EMR system will allow DPH to transition to evidence based medicine, tracking patients and service delivery outcomes throughout the system. The implementation of a new EMR system is projected to take five years, with estimated ongoing operational cost of $20.0 million per year.

Anticipated Outcomes:

- A single, unified EMR system for two major hospitals and over 40 clinics
- Evidence-based medicine
- Performance based service delivery
- Non-redundant systems
- Operational efficiencies
- Enhanced business and clinical intelligence through advanced analytics
- Enhanced communication and data sharing with regional partners

Timeline and Key Milestones:



Project Budget Detail:

Expenditures ($M)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	TOTAL
Total Expenditures	$18.6	$29.2	$71.1	$65.2	$39.2	**$223.4**

ANNUAL PROJECT REQUESTS

Dept	Project Name	Primary Goal			Total Project Cost						General Fund Request					
		Goal 1	Goal 2	Goal 3	FY16	FY17	FY18	FY19	FY20	Project TOTAL	FY 16	FY 17	FY 18	FY 19	FY 20	Total GF Request
AAM	Ticketing System Replacement		x		$0.3					$0.3	$0.3					$0.3
AAM	Security System Upgrades	x			$0.5	$0.1				$0.6	$0.5	$0.1				$0.6
AAM	Digital Asset Management System			x	$0.3					$0.3	$0.3					$0.3
AAM	Workforce Mobility		x		$0.1	$0.1		$0.1	$0.1	$0.3	$0.1	$0.1		$0.1	$0.1	$0.3
AAM	Collection Data API/Web Services Layer			x	$0.1					$0.1	$0.1					$0.1
								AAM	TOTAL	$1.6					TOTAL	$1.6
ADM	GSA - DR	x				$0.2				$0.2		$0.2				$0.2
ADM	SF311 City Worker Mobile App		x		$0.1					$0.1						
ADM	Mobile CMMS		x		$0.2					$0.2	$0.2					$0.2
ADM	GSA - New Medex Buildout	x			$0.1	$0.4				$0.5	$0.1	$0.4				$0.5
ADM	Citywide Electronic Signature Project		x		$0.4					$0.4	$0.4					$0.4
								ADM	TOTAL	$1.3					TOTAL	$1.2
ADP	APD's Relocation to the New Building	x						$0.3		$0.3						
ADP	Sharepoint		x				$0.2			$0.2			$0.2			$0.2
								ADP	TOTAL	$0.5					TOTAL	$0.2
AIR	Distributive Antenna System (DAS)	x			$2.0					$2.0						
AIR	Metro-Ethernet Service Implementation	x			$1.8					$1.8						
AIR	Operational Wi-Fi Improvements		x		$0.7	$2.4				$3.0						
AIR	Information Technology Enterprise Information Architecture (ITEIA)			x		$2.5				$2.5						
								AIR	TOTAL	$9.3					TOTAL	$0
ART	San Francisco Arts Commission Website		x		$0.2					$0.2	$0.2					$0.2
ART	Database		x		$0.1					$0.1	$0.1					$0.1
ART	Infrastructure Cost for Veteran's Move	x			$0.2					$0.2	$0.2					$0.2
								ART	TOTAL	$0.5					TOTAL	$0.5

Dept	Project Name	Primary Goal			Total Project Cost						General Fund Request					
		Goal 1	Goal 2	Goal 3	FY16	FY17	FY18	FY19	FY20	Project TOTAL	FY 16	FY 17	FY 18	FY 19	FY 20	Total GF Request
ASR	Social Security Number Truncation and Imaging of Recorded Documents		x		$1.2	$1.8				$3.0						
ASR	Digitization of Real Property Files		x		$0.7					$0.7						
ASR	Recorder Management System Replacement		x		$0.2	$1.5	$1.5			$3.2						
								ASR	TOTAL	$6.8					TOTAL	$0
BOS	AAB System: Back Office Application Re-Engineering		x		$0.2					$0.2	$0.2					$0.2
BOS	Legislation Drafting		x		$0.4					$0.4	$0.4					$0.4
BOS	Records Repository		x		$0.4					$0.4	$0.4					$0.4
								BOS	TOTAL	$0.9					TOTAL	$0.9
CFC	Contract Management System		x		$0.1	$0.1				$0.1						
CFC	All data Maintenance System (Cocoa)		x		$0.2					$0.2						
								CFC	TOTAL	$0.3					TOTAL	$0
CON	Increase Exadata/Exalogic Infrastructure Capacity	x			$0.3	$0.3	$0.3	$2.7	$0.3	$4.0	$2.4					$2.4
CON	Expansion of PeopleSoft Enterprise Learning Management		x		$0.2					$0.2	$0.1					$0.1
CON	Implement PeopleSoft Performance Management			x	$0.3	$0.2	$0.2	$0.2	$0.2	$1.0	$0.2	$0.2	$0.2	$0.2	$0.2	$0.9
CON	PeopleSoft Human Capital Management (HCM) Upgrade to Version 9.2	x			$1.7					$1.7						
CON	Employee/Retiree Access Upgrade to PeopleSoft		x		$0.3					$0.3	$0.3					$0.3
CON	Citywide Automated Forms		x		$0.3	$0.1	$0.1	$0.1	$0.1	$0.7	$0.3	$0.1	$0.1	$0.1	$0.1	$0.7
								CON	TOTAL	$7.8					TOTAL	$4.4
CPC	Network Core Infrastructure Refresh	x			$0.2					$0.2						
CPC	Historical Records Digitization		x		$0.5					$0.5						
CPC	Electronic Document Review	x			$0.3					$0.3						
								CPC	TOTAL	$1.0					TOTAL	$0

Dept	Project Name	Primary Goal			Total Project Cost						General Fund Request					
		Goal 1	Goal 2	Goal 3	FY16	FY17	FY18	FY19	FY20	Project TOTAL	FY 16	FY 17	FY 18	FY 19	FY 20	Total GF Request
DAT	Paperless Environment / DMS Implementation		x		$0.1	$0.1				$0.3	$0.1	$0.1				$0.3
DAT	CLETS/Level II	x			$0.1					$0.1	$0.1					$0.1
DAT	Virtual Desktop	x			$0.1					$0.1	$0.1					$0.1
								DAT	TOTAL	$0.5					TOTAL	$0.5
DBI	Permit and Project Tracking System - Phase 2		x		$3.5	$0.5	$0.5	$0.5	$0.5	$5.5						
DBI	Document Management System		x		$1.1	$0.1	$0.1	$0.1	$0.1	$1.7						
DBI	Cloud-Based Disaster Recovery	x			$0.5	$0.1	$0.1	$0.1	$0.1	$0.7						
DBI	Network Management and Monitoring System	x			$0.2					$0.3						
DBI	Mobile Device Management	x			$0.2					$0.3						
DBI	Cloud-based File Sharing and Content Collaboration		x			$0.2				$0.3						
DBI	IT Infrastructure Refresh	x				$2.1	$0.3	$0.3	$0.3	$3.0						
DBI	IT Security	x						$0.6		$0.6						
DBI	IT Infrastructure for the Data Center in the Proposed DBI Building	x						$4.6	$0.6	$5.2						
DBI	Voice over IP	x						$2.0	$0.3	$2.2						
DBI	WiFi Infrastructure for the Proposed DBI Building	x							$0.3	$0.3						
DBI	Digital Signage and Audio/Video Equipment for the Proposed DBI Building	x							$0.4	$0.4						
DBI	DOC, POS and Kiosk Equipment Upgrades		x						$0.2	$0.2						
								DBI	TOTAL	$20.5					TOTAL	$0

Dept	Project Name	Primary Goal			Total Project Cost						General Fund Request					
		Goal 1	Goal 2	Goal 3	FY16	FY17	FY18	FY19	FY20	Project TOTAL	FY 16	FY 17	FY 18	FY 19	FY 20	Total GF Request
DCYF	DCYF Contracts Management		x		$0.3	$0.6	$0.9	$0.5	$0.5	$2.8						
								DCYF	**TOTAL**	**$2.8**					**TOTAL**	**$0**
DEM	Logging Recorder Replacement	x			$0.4	$0.4				$0.8	$0.4	$0.4				$0.8
DEM	Active Directory Migration		x		$0.2					$0.2	$0.2					$0.2
DEM	CCSF Public Emergency Notification	x			$0.2					$0.2	$0.2					$0.2
DEM	Workforce Scheduling System		x			$0.2				$0.2		$0.2				$0.2
								DEM	**TOTAL**	**$1.3**					**TOTAL**	**$1.3**
DPH	Identity Governance & Admin	x			$1.4	$1.6	$1.5	$1.5		$6.0						
DPH	Enterprise Mobility Management		x		$0.5					$0.5						
DPH	Data Loss Protection	x				$1.5	$0.8	$0.8		$3.1						
DPH	IT Service Management and Automation Improvement		x		$0.6	$0.6	$0.6			$1.9						
DPH	Infrastructure Improvements	x			$1.3	$1.4	$1.4			$4.0						
DPH	Laguna Honda Hospital Building Reuse Infrastructure	x			$1.5	$1.5				$3.0						
DPH	PBX Telephone Life Cycle Replacement	x			$0.6	$3.1	$3.1			$6.7						
DPH	Enterprise Master Patient Index		x		$3.1	$1.0				$4.1						
DPH	Web Presence Initiative			x	$0.9	$0.6				$1.5						
								DPH	**TOTAL**	**$30.8**					**TOTAL**	**$0**
DSS	CalFresh Employment & Training		x		$0.2		$0.1			$0.4	$0.2		$0.1			$0.4
DSS	Mobile Application Development		x		$0.1	$0.1				$0.1						
DSS	Database Activity Monitoring	x			$0.1					$0.1						
DSS	Centralized Logging and Event Management	x			$0.1					$0.1						
DSS	Web Solution Content Management		x		$0.7					$0.7						
								DSS	**TOTAL**	**$1.4**					**TOTAL**	**$0.4**
ECN	San Francisco Business Portal Technology Enhancements			x	$0.6	$0.6	$0.6			$1.9	$0.6	$0.6	$0.6			$1.9
								ECN	**TOTAL**	**$1.9**					**TOTAL**	**$1.9**

Dept	Project Name	Primary Goal			Total Project Cost						General Fund Request					
		Goal 1	Goal 2	Goal 3	FY16	FY17	FY18	FY19	FY20	Project TOTAL	FY 16	FY 17	FY 18	FY 19	FY 20	Total GF Request
ETH	Form 700 Statement of Economic Interests City-Wide Filing		x		$0.3					$0.3	$0.1					$0.1
ETH	Electronic Filing of Permit Consultant & Major Developer Forms			x	$0.2					$0.2	$0.1					$0.1
ETH	Electronic Filing of Campaign Consultant Forms			x	$0.2					$0.2						
								ETH	TOTAL	$0.7					TOTAL	$0.2
FAM	Security System Redesign/Upgrade	x			$0.3	$0.3				$0.6	$0.2	$0.2				$0.5
								FAM	TOTAL	$0.6					TOTAL	$0.5
FIR	Mobile Data Terminal Replacement	x			$0.5	$0.3				$0.8	$0.5	$0.3				$0.8
FIR	Vehicle Modem Project	x			$0.5					$0.5	$0.1					$0.1
FIR	Business Intelligence Upgrade		x		$0.2					$0.2	$0.2					$0.2
FIR	Electronic Patient Care Reporting Upgrade		x		$0.3					$0.3	$0.3					$0.3
FIR	Fire Apparatus Tablets		x				$0.2			$0.2			$0.2			$0.2
FIR	Incident Display Boards	x			$0.2	$0.2	$0.2	$0.2		$0.7	$0.2	$0.2	$0.2	$0.2		$0.7
FIR	Desktop Virtualization		x		$0.3		$0.3			$0.6	$0.3		$0.3			$0.6
FIR	Computer Aided Dispatch Improvements	x			$0.3					$0.3	$0.3					$0.3
								FIR	TOTAL	$3.5					TOTAL	$3.1
HSS	Records Management		x		$0.5		$0.2			$0.7	$0.5		$0.2			$0.7
HSS	Member Services CRM		x		$0.2					$0.2	$0.2					$0.2
HSS	Avaya PBX Replacement	x			$0.2					$0.2	$0.2					$0.2
								HSS	TOTAL	$1.0					TOTAL	$1.0
MTA	Mobile Device Management	x			$0.2					$0.2						
MTA	Enterprise Asset Management System		x		$10.0					$10.0						
MTA	Transit Safe Replacement		x		$1.0					$1.0						
								MTA	TOTAL	$11.2					TOTAL	$0

Dept	Project Name	Primary Goal			Total Project Cost						General Fund Request					
		Goal 1	Goal 2	Goal 3	FY16	FY17	FY18	FY19	FY20	Project TOTAL	FY 16	FY 17	FY 18	FY 19	FY 20	Total GF Request
PDR	Gideon Application Maintenance Agreement		x		$0.1	$0.1	$0.1	$0.1	$0.1	$0.6	$0.1	$0.1	$0.1	$0.1	$0.1	$0.6
PDR	WiFi Network at Court	x			$0.1					$0.1	$0.1					$0.1
PDR	Investigation Fieldwork		x		$0.1					$0.1	$0.1					$0.1
PDR	Scan Physical Files and Integrate into Case Management System		x		$0.1					$0.1	$0.1					$0.1
								PDR	TOTAL	$0.9					TOTAL	$0.9
POL	Crime Data Warehouse - Re-design incident report, Case Tracking, N-DEX		x		$0.8	$0.5	$0.5	$0.5	$0.5	$2.8	$0.8	$0.5	$0.5	$0.5	$0.5	$2.8
POL	e-Citations		x		$0.6	$0.3				$0.9	$0.6	$0.3				$0.9
POL	Police Vehicle Upgrades	x			$0.4	**$0.2**				$0.6	$0.4	$0.2				$0.6
POL	Single Sign On for Officers	x					$0.2	$0.2		$0.3			$0.2	$0.2		$0.3
POL	Body Cameras for some officers			x					$1.0	$1.0					$1.0	$1.0
POL	Arrest System for Police		x					$0.4		$0.4				$0.4		$0.4
POL	Property and Evidence Management System		x					$0.6	$0.3	$0.9				$0.6	$0.3	$0.9
POL	Good Samaritan Social Media System			x					$0.2	$0.2					$0.2	$0.2
								POL	TOTAL	$7.0					TOTAL	$7.0
PRT	Oracle R12 Application Upgrade Assessment		x		$0.6	$0.3				$0.9						
PRT	City Financial System Replacement--Dept Support		x		$0.2	$0.4	$0.2	$0.6	$0.6	$1.9						
PRT	eMerge Project Support		x		$0.1	$0.1	$0.4	$0.6	$0.4	$1.6						
PRT	Geographic Information Systems		x				$0.5	$0.5	$0.5	$1.4						
PRT	Voice over IP	x			$0.1	$0.1	$0.1			$0.2						
								PRT	TOTAL	$6.0					TOTAL	$0
PUC	Replace Hetch Hetchy Water and Power Supervisory Control And Data Acquisition System	x			$1.2					$1.2						
PUC	Wastewater Distributed Control System (DCS)	x			$25.0	$15.0	$7.0	$5.0		$52.0						

Dept	Project Name	Primary Goal			Total Project Cost						General Fund Request					
		Goal 1	Goal 2	Goal 3	FY16	FY17	FY18	FY19	FY20	Project TOTAL	FY 16	FY 17	FY 18	FY 19	FY 20	Total GF Request
PUC	North American Reliability Corporation Critical Infrastructure Cybersecurity compliance	x			$0.4	$0.3	$0.7	$0.7	$0.7	$2.7						
PUC	Meter Data Management for Water	x			$0.4	$0.3				$0.7						
PUC	Mobile Hardware for Local Water	x			$0.2					$0.2						
PUC	Auxilliary Water Supply System (for fire fighting) SCADA Replacement	x			$0.5					$0.5						
PUC	Customer Care & Billing enhancements		x		$0.4	$0.4	$0.4	$0.4	$0.4	$2.1						
PUC	Continuity Of Operations (COO)	x			$1.6	$0.2				$1.8						
PUC	Water Systems Monitoring and Control - SCADA	x			$1.5					$1.5						
								PUC	TOTAL	$62.8					TOTAL	$0
REC	High Speed Connectivity	x			$0.2	$0.2	$0.1	$0.1	$0.1	$0.7	$0.2	$0.2	$0.1	$0.1	$0.1	$0.7
REC	VoIP Integration	x			$0.1	$0.1	$0.2	$0.2	$0.2	$0.8		$0.1	$0.2	$0.2	$0.2	$0.6
REC	sfrecpark.org redesign			x	$0.1					$0.1						
REC	Constituent Relationship Management		x		$0.1					$0.1	$0.1					$0.1
REC	CLASS upgrade to ActiveNet		x		$0.1	$0.1				$0.1	$0.1	$0.1				$0.1
								REC	TOTAL	$1.9					TOTAL	$1.6
REG	Electronic Poll Books Pilot Program			x	$0.1	$0.4				$0.4	$0.1	$0.4				$0.4
REG	Expansion to Radio Frequency Identification (RFID) system		x		$0.1					$0.1	$0.1					$0.1
								REG	TOTAL	$0.5					TOTAL	$0.5
SHF	Paperless Records Storage / Imaging		x		$0.1	$0.1				$0.2	$0.1					$0.1
SHF	Computer Assisted Dispatch	x			$0.3					$0.3	$0.1					$0.1
SHF	Business Intelligence		x		$0.1					$0.1	$0.1					$0.1
SHF	Case Management Replacement		x			$0.1	$0.1			$0.2		$0.1	$0.1			$0.1
								SHF	TOTAL	$0.8					TOTAL	$0.4

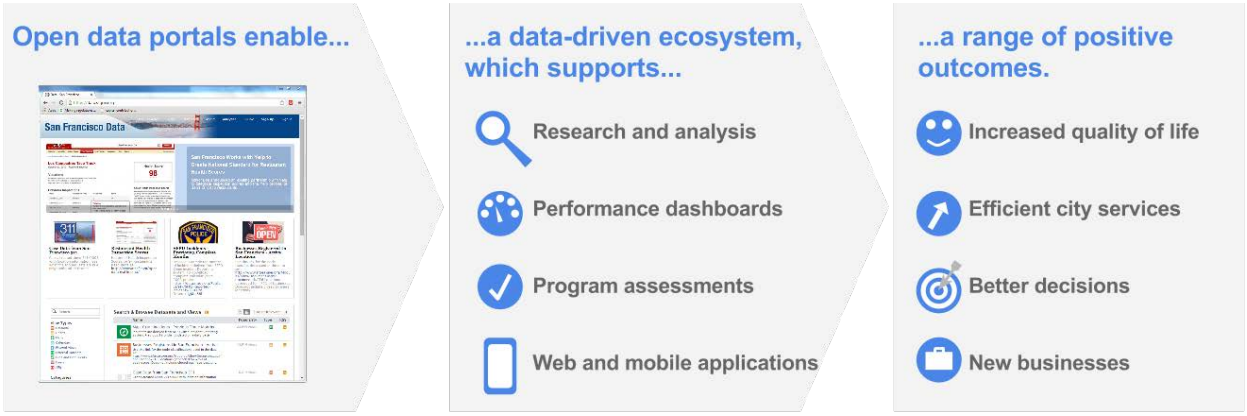
Dept	Project Name	Primary Goal			Total Project Cost						General Fund Request					
		Goal 1	Goal 2	Goal 3	FY16	FY17	FY18	FY19	FY20	Project TOTAL	FY 16	FY 17	FY 18	FY 19	FY 20	Total GF Request
TIS	Fiber Connectivity	x				$0.6	$1.3	$0.6		$2.4		$0.6	$1.3	$0.6		$2.4
TIS	Radio Site Security enhancement	x			$0.3	$0.7	$0.7			$1.7	$0.3	$0.7	$0.7			$1.7
TIS	IBM SCCM Smart Cloud Cost Management Services (CIMS Billing Upgrade)	x			$0.2					$0.2	$0.2					$0.2
TIS	City AD/Authentication Consolidation	x			$0.4	$0.4	$0.8	$0.8	$0.8	$3.2	$0.4	$0.4	$0.8	$0.8	$0.8	$3.2
TIS	Security	x			$2.2	$0.8	$1.0	$1.0	$1.0	$6.0	$2.2	$0.8	$1.0	$1.0	$1.0	$6.0
TIS	Fix the Network	x			$2.9	$1.9	$2.0	$1.2		$8.0	$2.9	$1.9	$2.0	$1.2		$8.0
TIS	Wi-Fi Project			x	$1.3					$1.3	$1.3					$1.3
TIS	System Center Configuration Manager	x			$0.1					$0.1	$0.1					$0.1
TIS	Configuration Management Database	x			$0.2	$0.2	$0.2			$0.5	$0.2	$0.2	$0.2			$0.5
TIS	Mobile Device Management	x			$1.4	$0.4	$0.4	$0.4	$0.4	$2.8	$1.4	$0.4	$0.4	$0.4	$0.4	$2.8
TIS	Telecom - VoIP Project	x			$1.5	$1.4	$2.0	$2.0	$2.0	$8.8	$1.5	$1.4	$2.0	$2.0	$2.0	$8.8
TIS	Identity and Access Management	x			$0.4	$0.4	$0.5	$0.5	$0.5	$2.3	$0.4	$0.4	$0.5	$0.5	$0.5	$2.3
TIS	Contract Management System		x		$0.3					$0.3	$0.3					$0.3
TIS	O365 Upgrades		x		$0.2	$0.2	$0.2			$0.5	$0.2	$0.2	$0.2			$0.5
TIS	IT Asset Management (ITAM)	x			$0.5	$0.3	$0.3	$0.3	$0.3	$1.7	$0.5	$0.3	$0.3	$0.3	$0.3	$1.7
TIS	Data Center and DR Migration to Cloud	x			$1.5	$2.0	$2.0	$2.0	$2.0	$9.5	$1.5	$2.0	$2.0	$2.0	$2.0	$9.5
TIS	ServiceNow Service Management		x		$1.0	$0.5	$0.4	$0.4	$0.2	$2.5	$1.0	$0.5	$0.4	$0.4	$0.2	$2.5
TIS	Social Media Initiative			x	$0.9					$0.9	$0.9					$0.9
TIS	Fiber Monitoring Solution	x			$0.4					$0.4	$0.4					$0.4
TIS	VA Radio Site Relocation	x			$0.6					$0.6	$0.6					$0.6
TIS	Dig Once and Communications Asset Management	x			$5.3	$4.3	$3.9	$3.8	$3.8	$21.1	$5.3	$4.3	$3.9	$3.8	$3.8	$21.1
TIS	IT Service Management Implementation	x			$1.5	$0.8	$0.8	$0.8	$0.8	$4.5	$1.5	$0.8	$0.8	$0.8	$0.8	$4.5
TIS	Digital Inclusion			x	$0.2	$0.3	$0.3	$0.3	$0.4	$1.4	$0.2	$0.3	$0.3	$0.3	$0.4	$1.4
								TIS	TOTAL	$80.8					TOTAL	$80.8

Dept	Project Name	Primary Goal			Total Project Cost					Project TOTAL	General Fund Request					Total GF Request
		Goal 1	Goal 2	Goal 3	FY16	FY17	FY18	FY19	FY20		FY 16	FY 17	FY 18	FY 19	FY 20	
TTX	Self Service and security enhancement for online filing	x			$0.4					$0.4	$0.3					$0.3
TTX	New Business Registration - License 1, 2, 3			x	$0.9					$0.9	$0.2					$0.2
TTX	Replacement Delinquent Collections Application	x			$1.8					$1.8	$0.6					$0.6
								TTX	TOTAL	$3.1					TOTAL	$1.1
WAR	War Memorial Dept Veterans Building Phone and Data	x			$0.3					$0.3	$0.3					$0.3
								WAR	TOTAL	$0.3					TOTAL	$0.3

OPEN DATA IN SAN FRANCISCO

Executive Summary

San Francisco has been a leader in open data. As one of the first cities with an open data policy, we helped fuel a movement that has spread across the country and the world. Open data can serve as a platform to 1) change how we use, share and consume government data - externally and internally; 2) transform data into services, and 3) foster continuous improvement in decision-making and the business of government.



Need to Evolve. But this plan demonstrates the need to evolve and mature our approach. Not only do we need to reinvigorate our program and release more data, we need to evolve our work to support the use of data in decision-making. To transform our initiative into a program, our strategic plan is designed to build the elements of an institutional approach to open data and data use more generally. The goals and strategies for year 1 lay out a framework for how we can grow, mature, and sustain our program to align our activities and resources with the expectations of the open data policy. In achieving these goals and strategies, we can fulfill our mission of enabling use of the City's data thereby fostering an ecosystem of data-enabled management, services, and decisions.

Timing and Resources. Our strategic plan is ambitious and reflects a vision of what we hope to accomplish over time. We do not expect to be able to deliver on all aspects of our strategic vision in year 1. However, by fully articulating our vision, we are better able to prioritize and allocate our resources and identify where we need key partners to help execute on our goals. Moreover, this plan recognizes that each of our goals are multi-year goals and that a great deal of work is already happening throughout the City. This plan helps us stitch together an overarching vision of how these efforts align, where the role of open data fits in, and how we can move forward to enable use of data.

While we expect our strategic goals to change over time, we believe the goals in this plan will be in place for the next three years. The Office of the Chief Data Officer (OCDO) will be focused on Goals 1, 2 and 6 in year 1, in conjunction with key partners and the departments themselves. In year 1, OCDO work on goals 3, 4, and 5 is focused on leveraging key partnerships or pursuing

strategies that will inform future work. Section 6 and Appendix D include more details.

Goals	Supporting Strategies
Goal 1. Increase number and timeliness of datasets on DataSF	**Why this matters.** To enable the use of data we must first make it available. We need to ensure that we are publishing the City's data when allowed and in a timely way. We will: 1. Establish the role of data coordinators and support development of data catalogs—this will provide the basis of data governance and allow us to understand the scope of the City's data.* 2. Develop methods to inform the prioritization of datasets for publication—this will allow us to stagger publication based on resource availability. 3. Develop metrics to track and measure progress in publishing open data—this will provide the basic reporting for our data publication plans. 4. Develop our program to automate publication of data—this will increase efficiency and decrease department effort in publishing datasets.* 5. Develop an outreach and support program for data coordinators and data publishers—this will help departments be successful in publishing data. 6. Establish methods to ensure SF licensing and publication of data for new information systems—this will stem future open data costs by building open data into new system requirements.*
Goal 2. Improve the usability of DataSF	**Why this matters.** To ensure that our open data is readily accessible and used, we need to make sure that our data website and the means of accessing the data support the needs of users. We will: 1. Better leverage existing services and features from our data portal vendor, Socrata—this will help optimize our investment in our vendor.* 2. Partner closely with Socrata to inform the development of the portal—this will help ensure that the data platform evolves to meet our needs. 3. Redesign our web presence and supporting processes and materials to better meet the needs of our users—this will increase the impact of open data by easing access to more users.
Goal 3. Improve the usability, quality and consistency of our data	**Why this matters.** While Goals 1 and 2 help provide access to the City's data, the ultimate value of the data depends on its usability, quality, and consistency. We will: 1. Establish metadata standards for published data—this is key to increasing understanding and usability of our data.* 2. Establish mechanisms to elicit and track feedback and learnings from data users—this will help us flag data quality problems. 3. Explore the creation of data quality processes and measures—this will help inform how to support improved data quality over time.
Goal 4. Enable use of confidential data, while appropriately protecting it	**Why this matters.** While the City needs to appropriately protect confidential data, we also need to enable better access to and use of this data for cross-department data sharing. We will: 1. Create a data classification and sharing standard—this will help improve efficiency and consistency in sharing and protecting data.* 2. Create a process for accessing your individual data—this will help support data quality and privacy.*
Goal 5. Support increased use of data in decision-making	**Why this matters.** Once data is available, we need to use it. We need to match the availability of data with the capacity to use data, both in terms of people and technology. We will: 1. Establish a training curriculum to support increased use of data in

	decision-making—this will increase the capacity of City staff to use, analyze, and manage with data.* 2. Help establish department stat programs based on department readiness; codify lessons learned and materials for broader use—this will help increase effectiveness in using and leveraging "stat" programs.* 3. Continue to develop our portfolio of transparency tools and websites—this will help leverage open data to inform broader decision-making.*
Goal 6. Identify and foster innovations in open data and data use	**Why this matters.** The pace of change in the open data, analytics, and visualization spaces is breathtaking. We need to identify and nurture innovation in order to ensure that the City benefits. We will: 1. Develop and maintain a communications and engagement strategy—this will help ensure that we stay in touch with evolving stakeholder needs. 2. Conduct ongoing reviews of best practices and the changing technology landscape—this will help us stay ahead of the innovation curve. 3. Identify and enable targeted data-centric initiatives—this will help us uncover and foster new uses of data, internally and externally.* 4. Establish a data licensing framework and standard—this will help ensure that our data users can use our data in any way they see fit.*

*Indicates need for resources or activities beyond the OCDO (e.g. key partnerships, department effort, volunteers etc).

CITY AND COUNTY OF SAN FRANCISCO'S INNOVATION MODEL

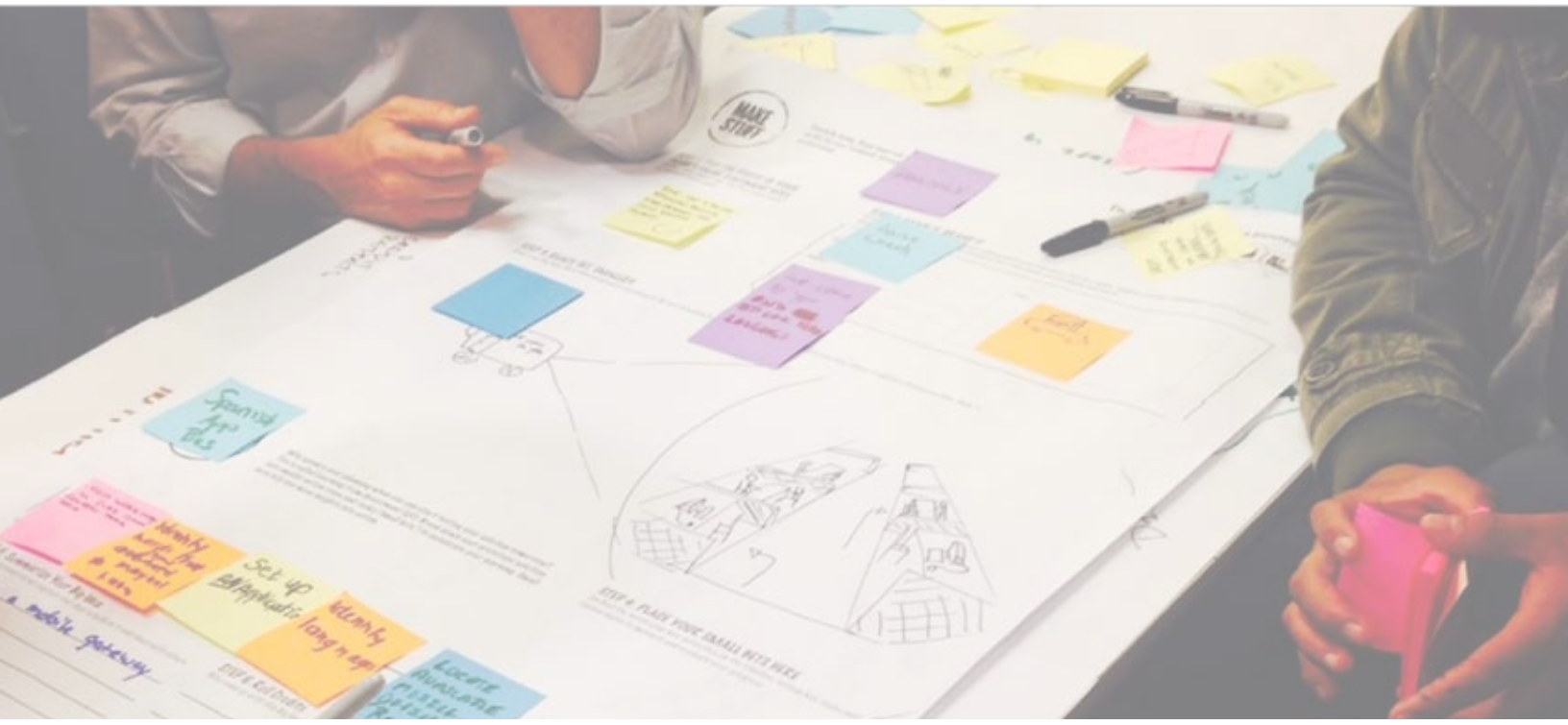
TABLE OF CONTENTS

ACKNOWLEDGMENTS

Committee on Information Technology (COIT) Naomi Kelly, Miguel Gamino, Charles Belle, London Breed, Micki Callahan, Barbara Garcia, Luis Herrera, Kate Howard, Harlan Kelly Jr., Anne Kronenberg, John Martin, Ed Reiskin, Trent Rhorer, Ben Rosenfield

COIT Staff Chanda Ikeda, Matthias Jaime

Mayor's Office Jay Nath, Joy Bonaguro, Krista Canellakis, Rayna Gordon-Hellman, Denise Cheng, Ashley Meyers



INTRODUCTION

"We must work with our greatest resource - our human capital - to find new solutions to our City's challenges."

"When we come together in the public and private sectors, creativity can be reflected in everything we do to bring out people and open their minds to new ideas."

- Mayor Edwin M. Lee

San Francisco is a city that fosters the exchange of ideas, creating significant value for our residents and businesses. As the Innovation Capital of the World, this city's rich network and exploratory landscape provides a unique opportunity to improve the lives of residents by thinking outside the box about civic initiatives and bringing innovative ideas and resources into government.

The City and County of San Francisco fosters innovation to transform how government works with bold ideas, creative strategies, and new tools. Prioritizing civic innovation ensures that the City and County of San Francisco keeps pace with modern business practices, technologies, and provides high quality public services for our constituents.

According to the Bay Area Council Economic Institute: "The key to how the region innovates is a culture that encourages risk-taking and accepts failure—an environment that supports entrepreneurial activity. Perhaps the most important binding factor, however, is the region's openness to new ideas and new participants. Multiple disciplines collide and interact, creating novel ideas and unanticipated applications. This is enabled by a culture that is highly permeable, with few institutional barriers to the movement and combining of people and ideas."

The Mayor's Office of Civic Innovation (MOCI) cultivates this valuable space for creativity and entrepreneurship within government and creates paths for collaboration and new ideas. MOCI helps City Departments apply innovative strategies to their work by building organizational capacity and acting as a hub to align common objectives and resources. Creating an innovation ecosystem in government that supports experimentation, creativity, and risk-taking is critical to create meaningful impacts and turn bold ideas into real outcomes.

INNOVATION MISSION & VISION

"We believe in making the walls of government more permeable and inviting citizens to become a part of the ecosystem that will transform how we run City Hall. We need a government that is willing to take smart risks and celebrate both successes and failures.
Most importantly, we need a government that not only serves the public but invites them to co-create new solutions"

- Jay Nath
Chief Innovation Officer

Innovation has come to mean many things—for the Mayor's Office of Civic Innovation (MOCI)—and it isn't always about technology. It is really about how the government can solve old problems in new ways and how we can foster a culture of innovation across City government. MOCI's mission is to support San Francisco initiatives through creative problem-solving, prototyping, and scaling, while strengthening Departmental ownership of programs. MOCI champions initiatives that improve affordability, foster economic development, and build a more responsive and collaborative government.
MOCI also reinforces the overarching goals of increasing government accountability, accessibility, and responsiveness.

Some of MOCI's projects cover the areas of supporting an entrepreneurial workforce, streamlining permitting for innovative projects in public spaces, and data-oriented decision making tools. Our goal is to help build prototypes, take small risks, scale successes and provide a pathway for growth and experimentation in our City.

INSIDE GOVERNMENT

The City and County of San Francisco has an incredible resource in our City employees. Government employees are deep experts in their fields filled with creative ideas for making government work better. MOCI partners with Departments ranging from the Office of Economic and Workforce Development and SF Planning to SFO Airport and SF Municipal Transportation Agency, facilitating innovative approaches and providing resources to tackle civic challenges.

OUTSIDE GOVERNMENT

We also know that the best ideas may not come from within City Hall. Fostering strategic external partnerships allows the City and County to bring innovative approaches from other sectors into government. MOCI creates engagement platforms that bring together the public and private sectors to engage in collaborative problem-solving. MOCI also funnels private-sector talent and solutions into the City through Fellowship programs and challenges.

INNOVATION PLAYBOOK & CASE STUDIES

"Amazing things happen when creative people work together. The Mayor's Office of Civic Innovation truly serves as the connective tissue between San Francisco's ecosystem of innovation and its government, bringing the most current and innovative thinking and new approaches to urban communities"

- Peter Hirshberg, Gray Area Foundation for the Arts

The Innovation Playbook highlights innovative methodologies that the MOCI team brings to challenges to test hypotheses, pilot programs, and multiply impact. There are a variety of conditions and methodologies that recur in our innovation success stories. The case studies highlight proven strategies where MOCI has built capacity, added strategic value, and buffered the risk of failure by providing a safe space in government for experimentation with resources, support, and guidance.

CONDITIONS FOR INNOVATION

Accessibility
Experimentation and Risk-Taking
Collaboration and Capacity Building
Appropriate Technology
Real Resources

INNOVATION METHODOLOGIES

Incubation
The Lean Startup
Challenge-Based Problem Solving
Rapid Prototyping
Human/User Centered Design
Citizen Engagement

"Innovation, at its core, is not only about technology. It is about people being empowered to take risks."

- Mayor Edwin M. Lee

CONDITIONS FOR INNOVATION

ACCESSIBILITY

Accessibility is an essential building block of an innovation ecosystem - bringing diverse partners and perspectives together. Access to civic problem-solving and program building encourages citizen engagement around important issues. In addition, accessible public data can illuminate challenges, indicate solutions, and bring new ideas into government. Opening up government and data leverages existing networks and resources in San Francisco in novel ways to create better services and solutions.

APPROPRIATE TECHNOLOGY

Choosing the right technology and strategy to fit goals, constraints, and resources is an important component of success. Dropping in a new technology product does not necessarily ensure the best or most innovative outcome. New technologies may be unnecessarily complex, costly, or bulky instead of adapting to a functional program framework, human-centered process or specific citizen problem. Combining available resources in new ways is often the most efficient method of innovating with limited capital.

EXPERIMENTATION & RISK-TAKING

Experimentation and calculated risk-taking allow new ideas to be tested and evaluated. Small bets and short-term risks have the power to drive long-term gains, but must be applied in a strategic and thoughtful manner. Testing hypotheses to identify winners and losers is an essential part of the innovation process, and accepting that risk-taking will produce some failures is essential. There are several ways to buffer the losses from failing strategies such as building a prototype with low financial or resource investment and efficiently testing ideas until proven frameworks can be scaled.

COLLABORATION & CAPACITY BUILDING

Encouraging collaboration and leveraging shared resources increases the impact of government initiatives. Accessibility, flexibility, and interconnected networks are important building blocks for an open exchange of ideas. Breaking down barriers and eliminating organizational silos highlights common needs and goals across City Departments. Creating partnerships between Departments is a cost-effective way to build capacity for projects and align common objectives. Effective collaborations start with an outcome-oriented plan that has the ability to unite stakeholders around larger policy goals. Capacity building is also achieved by building external partnerships with businesses, nonprofits, universities, and other sectors – expanding the reach of civic programs.

REAL RESOURCES

The biggest challenge for innovators is bringing great ideas from conception to execution. A lack of resources or capacity for a given program requires project teams to be creative and entrepreneurial with what is available, but can limit growth and return on investment as successes are ready to be scaled. Resources are not just financial - time, expertise, and appropriate technologies are essential to achieve significant improvements in efficiency, value, and service. When real resources are committed to support program development, communications, and skill building; innovative outcomes can multiply.

INNOVATION METHODOLOGIES

As a bridge to the technology and innovation sectors in San Francisco, MOCI brings creative methodologies into government from startups, artists, designers and communities of civic technologists. MOCI utilizes the following proven strategies and methodologies to spark efficient and transformative solutions across the City giving Departments new tools to apply to their work to reframe and reinvigorate problem-solving.

INCUBATION

MOCI brings talented innovators to work on civic projects for a limited time to help roll out new ideas, build momentum, gather resources, and create sustainable outcomes. This incubation strategy allows us to build capacity for City programs and hand-off ownership through workforce support and resource-sharing with other Departments.

INCUBATE IDEAS

BUILD RESOURCES

SUPPORT DEPARTMENTS

HAND-OFF OWNERSHIP

CASE STUDY

INCUBATING TALENT WITH FELLOWSHIPS [MOCI + Mayor's Budget Office + MTA+ SFPL]

Highlights

2012 Pilot in partnership with the White House
2012-2014 Graduated 3 Cohorts of MOCI Fellows
2014 Scaled program to Mayor's Senior Fellowship

Fellowship programs can be incubators for talent in government. Inspired by the White House Presidential Innovation Fellowship program, MOCI launched the Mayor's Innovation Fellowship program in 2013 as a way to bring in leaders from a variety of backgrounds to spend a year working in government. Fellows act as entrepreneurs and share their expertise and knowledge with other City staff. Individuals are chosen who exhibit a propensity for leadership in innovative fields and have a belief in the power of technology to enhance the public's experience. Even after their fellowships have come to a close, many of the fellows continue to lead high impact civic innovation efforts from within the government and within our community.

Building on the success of the MOCI Fellowship, the Mayor's Senior Fellowship program, in partnership with non-profit Fuse Corps, expands on the model to bring senior-level professionals from private industry to the City government. Senior Fellows undertake a meaningful, one-year project prioritizing initiatives that address shared prosperity; government responsiveness; affordability, equity, and in the City's programs and services.

"We need teams in government that create products and services like a startup: scrappy, hungry, lean, and full of world-changing ideas."

- Jay Nath, Chief Innovation Officer

THE LEAN STARTUP

Great ideas can transform communities with few resources. The Lean Startup method is a cost-effective approach that uses quick program development and continuous, adaptive deployment to drive the creation of new solutions. Hypothesis testing-driven experimentation, small bets, and customer feedback loops allow programs and services to evolve based on successful strategies.

CHALLENGE-BASED PROBLEM SOLVING

Challenge-based problem-solving is a different approach to framing problems versus being prescriptive about needs so that outside partners can respond in new, creative ways. Challenge-based problem solving sources new ideas from different sectors and communities through an incentive-based structure. Creating challenges to solve problems can attract new perspectives from unlikely partners and bootstrap multiple viable solutions on a budget.

RAPID PROTOTYPING

Prototyping is a low risk way of experimenting with new approaches, technologies, or program elements to make sure they will work and achieve their intended outcomes before investing heavily or scaling. This approach jumpstarts innovation through collaborative problem-solving to rapidly conceive, apply, evaluate, and redesign products and services.

CASE STUDY

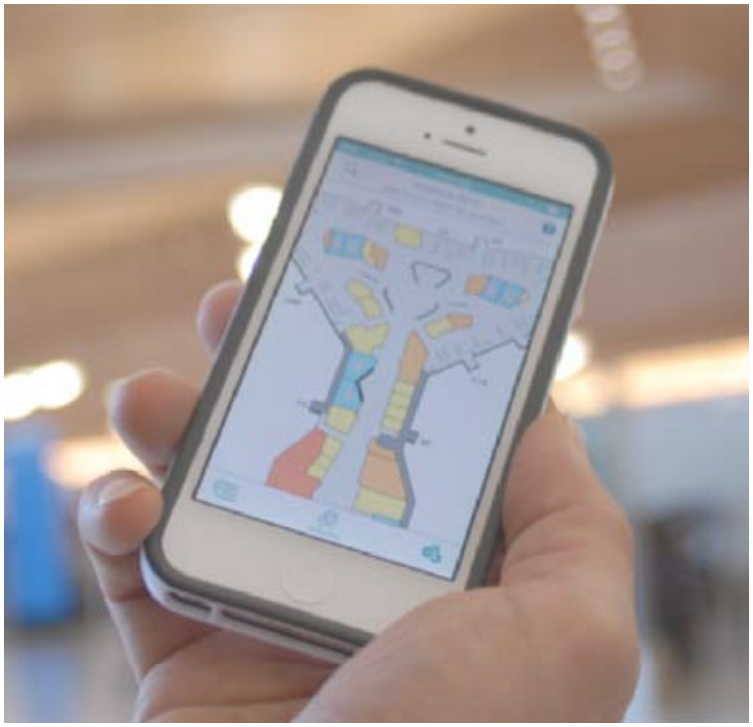
ENTREPRENEURSHIP-IN-RESIDENCE [MOCI + DPH + DEM + SFO + SFPD + MTA + Planning]

180 Ideas from Around the World
$142 Billion Market
6 City Departments
6 Startups
16 Weeks

The San Francisco Entrepreneurship-in-Residence (EIR) is a voluntary, sixteen-week program catalyzes public-private sector collaborations to solve civic challenges. The overarching goal of the EIR program is to create a model to accelerate the integration and commercialization of cutting edge innovations that enhance public services and deepen entrepreneurial opportunities to serve government. The EIR program proactively connects early-stage companies to specific problems facing government, bringing the benefits of innovations in technology and services to the public sector. The program brings together the private sector and City departments to explore innovative solutions to civic challenges that can lower costs, increase revenue, and enhance productivity. Six startups were selected for the first cohort.

The 2014 EIR program also transformed the internal culture amongst government staff who participated, creating an exploratory space to experiment and tackle problems in new ways. Both startups and City employees were entrepreneurial in producing the program outcomes in San Francisco. The EIR program tested a formal structure for City Hall to learn how to make opportunities to work with the City broadly available to entrepreneurs, and created a government platform for technology innovation.

There is a shortage of sector-specific solutions and fluid pathways for governments to work with smaller companies to prototype in an accelerated and exploratory setting. This has typically left government with two primary options: (1) utilize technology intended for Fortune 500 companies and large enterprises, or (2) develop made-to-order solutions that require significant investment of time and resources.



ENHANCED AIRPORT NAVIGATION FOR THE VISUALLY IMPAIRED

Indoo.rs, a startup that provides location-based services, indoor navigation and advanced sensors, worked with SFO Airport and Lighthouse for the Blind to develop a phone app to guide blind and visually impaired airport customers to their airport gate with audio prompts about surrounding shops and services. During the program, SFO installed nearly 500 iBeacons (location sensors), mapped airport points of interest, and demonstrated indoo.rs technology at Terminal 2. SFO intends to scale the technology across the Airport and translate it into multiple languages to accommodate international travellers. After building the initial prototype, Indoo.rs and SFO worked with Lighthouse for the Blind members to test out the product on real end users and, as a result, adapted their product to respond to user needs. Since finishing the EIR program, Indoo.rs has opened an office in the Bay Area and is now working to identify and apply their technology in other major indoor spaces in San Francisco to support visually impaired visitors.

EIR OUTCOMES

The EIR program outcomes illustrate the impact of rapid prototyping and its ability to solve challenges, build value for government, improve services on a tight budget, and reimagine how we solve problems.

ONLINE VISUALIZATION TOOLS FOR PLANNING

Synthicity, a software startup that builds simulation tools and solutions for urban development and planning, and SF Planning Department built a web platform prototype that helps planners visualize options for housing developments based on City zoning laws. Analysis and collaboration tools allow policymakers and planners to consider different policy and development options to address affordability in San Francisco.

CONSTRUCTION PROJECT NOTIFICATION & MAPPING

Buildingeye, a startup that makes permit and noticing information easier to discover through a mapping interface, worked with the SFMTA to build an online mapping and data platform that highlights SFMTA capital projects under construction. Many departments face similar challenges around reporting to the public and internal City decision makers on the timing and location of construction projects.

EMERGENCY MESSAGING & EARTHQUAKE ALERTS

Regroup, a software startup that provides multi-channel emergency notifications, helped the Department of Emergency Management (DEM) prototype technology that increases the speed at which staff can message the public in an emergency in multiple languages. Within sixteen weeks, Regroup and DEM developed a method to connect to an early warning earthquake alert system created by the State of California and the USGS.

"Both indoo.rs and SFO care about things that matter, and what matters is the freedom to move about one's environment independently with confidence and grace. With this solution, indoo.rs and SFO will change the way blind and low vision people travel."

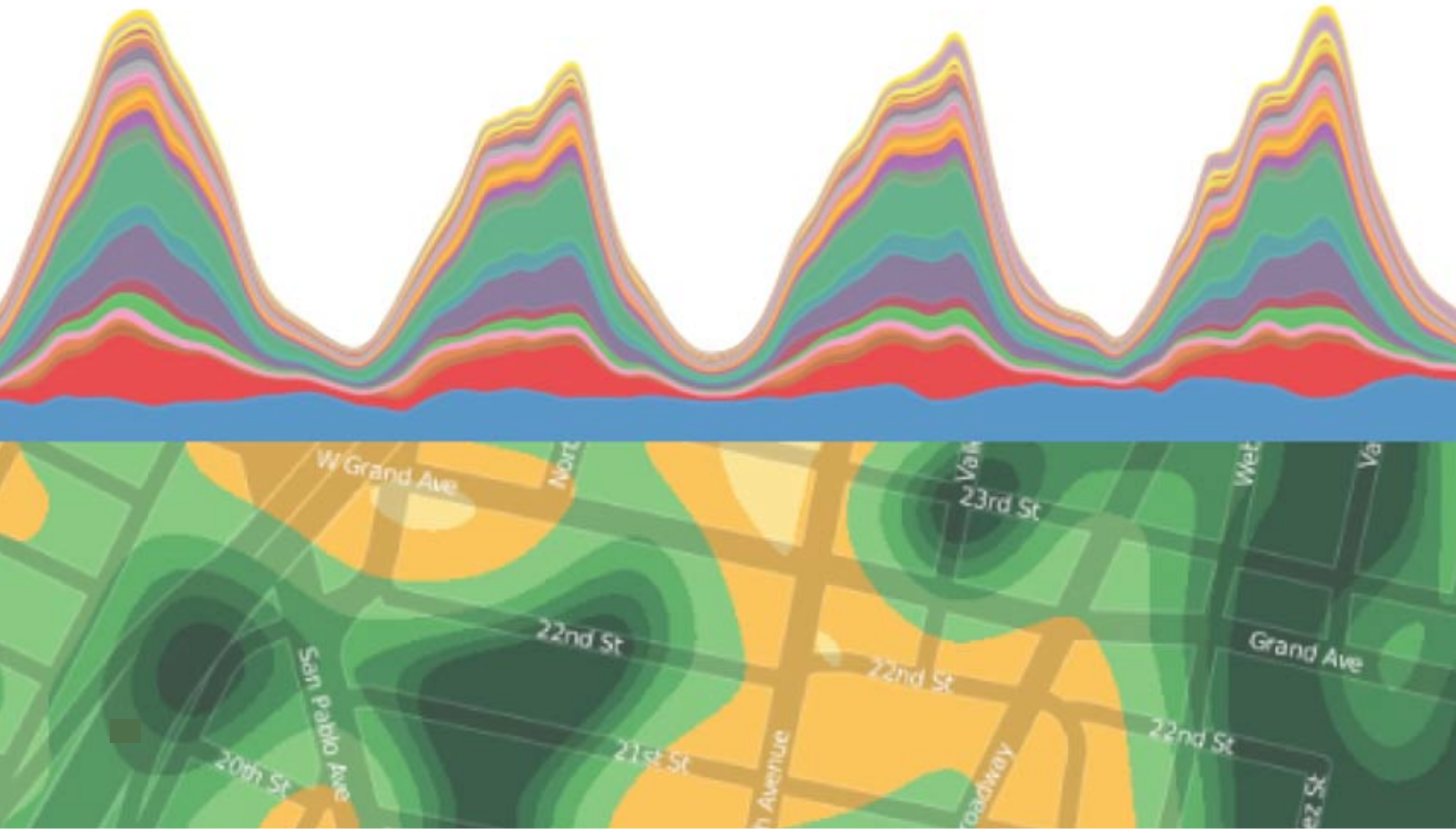
- Lisa Martinez, LightHouse for the Blind

SMARTPHONE APP FOR POLICE INTERVIEWS

MobilePD, a mobile technology startup that enhances social engagement with the community to reduce crime, and the San Francisco Police Department built a smartphone app for police officers to catalogue field interviews with notes, photos and voice recordings with the ability to sync information with police databases. The MobilePD app reduces Officers' paperwork processing time and increases the time officers can spend protecting the public. MobilePD utilized the EIR opportunity to gain deep insights into the full spectrum of Police Department technology and data, participating in "ride-alongs" with police officers to undergo active Research and Development to innovate a completely novel standalone prototype.

AIR QUALITY MONITORING

Birdi, a "smart" indoor air sensor device company, and DPH crafted a research study on whether "smart" devices can help improve the health of residents with simple prompts and information about their indoor air quality. Study results can be used to influence how the City deploys "smart" consumer devices to improve public health. This particular partnership is about alignment of a consumer-facing hardware product with broader public health goals. During the course of the EIR program, Birdi relocated their headquarters to San Francisco, closed a funding seed round and often references their participation in the EIR Program as a key milestone in their growth narrative.



HUMAN/USER CENTERED-DESIGN

By putting people first and embracing a user-centeric approach, the City can make programs and services more useful, desirable, functional, and credible for the City's 'users': San Francisco residents, businesses, and communities.

CASE STUDY
SF BUSINESS PORTAL [OEWD + MOCI + DT]

Highlights

2013 Prototype - License 123

2014 SF Business Portal

2015 Online Permit Application

Launched by the Mayor, Office of Economic and Workforce Development, and the Department of Technology, the SF Business Portal is a new resource for entrepreneurs to navigate the often confusing permits, licenses and requirements for starting and growing a business in San Francisco. The Business Portal reduces red tape and prioritizes the user-experience to design a functional, efficient, and easy to use framework to encourage business growth and economic development in San Francisco.

In 2013, the first prototype of this tool was built with leadership and support from MOCI using an alternative software called License 123. This illustrates how the Mayor's innovation team can act as an early-stage technical advisor and incubator for testing a new concept with little risk and support its scaling to understand what the City should invest in to build out the end product: http://businessportal.sfgov.org.

CASE STUDY
WORKFORCE INNOVATION [OEWD + MOCI]

$3M Joint grant acquisition **Txt2Wrk** Text message job matching for those with low-digital literacy **TRAIL** Online training for entrepreneurship and micro-work for the self-employed **LearnUp** Online accelerated job training/placement for youth and entry-level retail **The Learning Shelter** Digital and small-scale manufacturing training for the homeless

As a collaborative effort between MOCI and the Office of Economic and Workforce Development, as part of a Department of Labor Workforce Innovation Fund grant, SFGov is applying innovative approaches to workforce development challenges in order to achieve better outcomes, create efficiencies in the delivery of quality services, and create a more seamless service delivery experience for participants. More specifically, our work explores how new forces, from automation to online labor markets, are changing the way workforce development is accomplished. This investigation will shape new paths forward by designing, developing, and deploying innovative workforce tools and services. The goal is to build a workforce infrastructure that better responds to the needs of our workforce, encourages collaboration and experimentation grounded in customer-centered design, real-time data and user feedback.

An inspiring outcome of this collaboration is The Learning Shelter, a job skills training program for homeless individuals in San Francisco. Marc Roth, the founder of the program, was himself homeless living in a shelter and bootstrapped his way out his situation by learning digital manufacturing skills, like laser cutting and 3D printing. which he then leveraged to start a business based on these skills.

Seeing the potential to translate these skills into business and income earning "gigs", Marc created The Learning Shelter, a 90 day program designed to take people out of homeless shelters and provide intensive training on cutting edge technology and placement into jobs at local small manufacturing startups. Seeing the great potential of this untested model for workforce training, OEWD and MOCI supported the pilot phase of The Learning Shelter with through seed funding and by establishing connections with our workforce system. The first cohort of six students was a huge success with the majority of participants now working and using their new skills for supporting themselves.

"San Francisco is home to the world's greatest talent, and together we can make government more accountable, accessible, and responsive"

- Mayor Edwin M. Lee

CITIZEN ENGAGEMENT

Channeling the passion and skills of San Francisco residents is a powerful tool for addressing persistent civic challenges. As great ideas often come from outside of City Hall, each citizen, organization, and government employee is an essential component in our City's innovation ecosystem.

CASE STUDY

LIVING INNOVATION ZONE [MOCI + Planning + DPW]

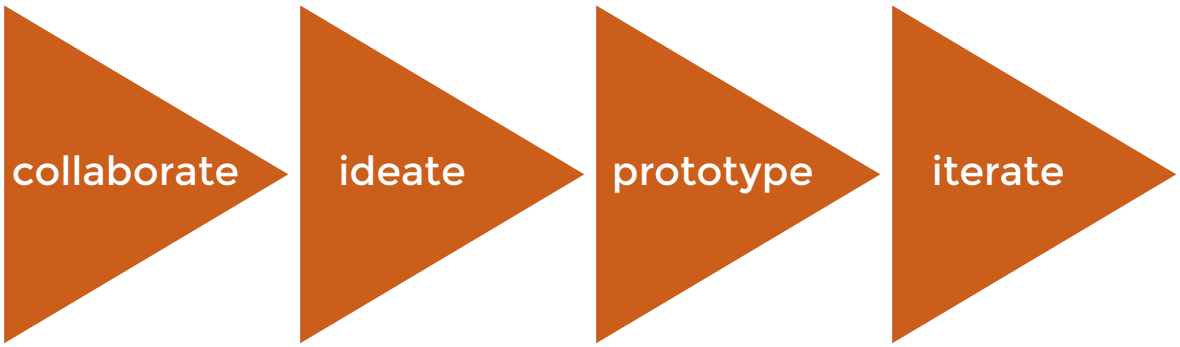
Whispering Dishes built in partnership with the Exploratorium are seen by **20,000** pedestrians daily and receive **7 Million** visitors per year. **More LIZ locations** have been identified along Market Street as well as **new processes** for partnerships in these zones.

The Living Innovation Zone (LIZ) Program seeks to enliven our streets by creating venues for innovation, connection and play in places that are public, outside and central to where people live their everyday lives. The LIZ Program creates a flexible framework to reflect our city's creativity and catalyze partnerships between diverse individuals and organizations that call San Francisco home.

The program aims to activate and enhance the public realm, simplify the permitting process for projects in public spaces, and support innovators by providing real-world demonstration opportunities.

The spirit behind the program is to allow for the creativity of partners outside of the City government to develop new and insightful ways of addressing community needs and aspirations. Each LIZ is a collaboration between the City, and creative and cultural organizations and the communities in which the LIZ is sited. From the City side, LIZ is managed by an interagency team: co-led by the Mayor's Office of Civic Innovation, the Planning Department, San Francisco Public Works and The San Francisco Arts Commission (SFAC).

CONCLUSION
PLUGGING-IN WITH MOCI



Civic innovation can take San Francisco initiatives to the next level by reimagining processes with methodologies to be lean, creative, and adaptive like a startup. Collaboration and citizen engagement are key components in building a resilient and responsive City and County of San Francisco. San Francisco is taking bold steps to create a culture of innovation inside government and build a foundation for efficient and impactful growth that improves the lives of residents.

The Mayor's Office of Civic Innovation continuously looks for innovative individuals to collaborate with inside and outside of government. In 2015, MOCI is focusing on building internal innovation networks and multiplying the impact of great ideas. We will be sharing the stories of innovations happening in City Departments through a Civic Innovation Spotlight blog at http://innovatesf.com/. Our goal is to strengthen the network of innovators inside government and to tell the public about our successes.

JOIN US:
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RIGHT LANE
MUST

CONNECTIVITY PLAN

ACKNOWLEDGEMENTS

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INTRODUCTION

In today's world, Internet connectivity is a basic building block towards the creation of a responsive and supportive community. San Francisco's municipal and county government relies heavily on the Internet to communicate with residents and to provide modern services.

Government's role in this space is to expand Internet connectivity to all public employees and to provide sustainable services. First and foremost, the City & County of San Francisco must create a secure and reliable communication network for first responders and emergency services. The structural capacity of the City Fiber Network can support modern communications to City departments. Modern communications includes correspondence such as video conferencing, voice calls, and processing large volumes of multimedia content simultaneously. With modern communications, City departments can more efficiently provide services to residents.

As a public entity, the City & County of San Francisco must also help residents and visitors obtain Internet access without obstacle, especially as more public services develop online portals. Through the City wireless network (#SFWiFi) and the Community Broadband Network, more visitors and residents can access the Internet free of charge. Additionally, San Francisco International Airport (SFO) offers free wireless Internet (#SFO FREE WIFI) in the airport. However, broadband in public spaces does not replace broadband to the home, and the City must evaluate its role in helping San Franciscans out of the Digital Divide as well as improving San Francisco's standing among world-class cities. This version of the Plan does not address the City's role in broadband choice for residents and businesses due to insufficient time based on the publishing deadline of February 2015.

The Connectivity Plan is the roadmap for how the City will enhance connectivity over the next five years. The Plan is primarily focused on developing a five year plan for connecting City buildings, Dig Once, and #SFWiFi.

CONNECTING CITY BUILDINGS

Background and Current State

In 2002, the Department of Emergency Management issued a bond which, among other things, funded the construction of a fiber network to connect core public safety facilities. The fiber network was originally designed to ensure that emergency communications between these sites function even in an emergency. However, because of the structural capacity of fiber-optic cables, the City invested in expanding the City Fiber Network to offer additional services, and the Department of Technology (DT) became its governing authority.

Currently, the City Fiber Network extends approximately 170 miles across San Francisco, connecting 231 City buildings. The City buildings not connected to the Fiber Network use private Internet Service Providers (ISPs) for their connectivity needs.

Goals and Objectives

Following are the goals and objectives for connecting City buildings:

ICT GOAL	PLAN OBJECTIVES
Support, Maintain and Secure Critical IT Infrastructure	Connect all eligible* City buildings to the City's Fiber Network
Improve Access and Transparency	Establish a secure, reliable, and high-performing Internet service among City buildings

*Eligible buildings must demonstrate need (ie currently paying for internet services) and meet payback requirements.

The Case for a Municipal Owned and Managed Fiber Network

Although City buildings can receive Internet access through private providers, access to the City Fiber Network fulfills several strategic goals.

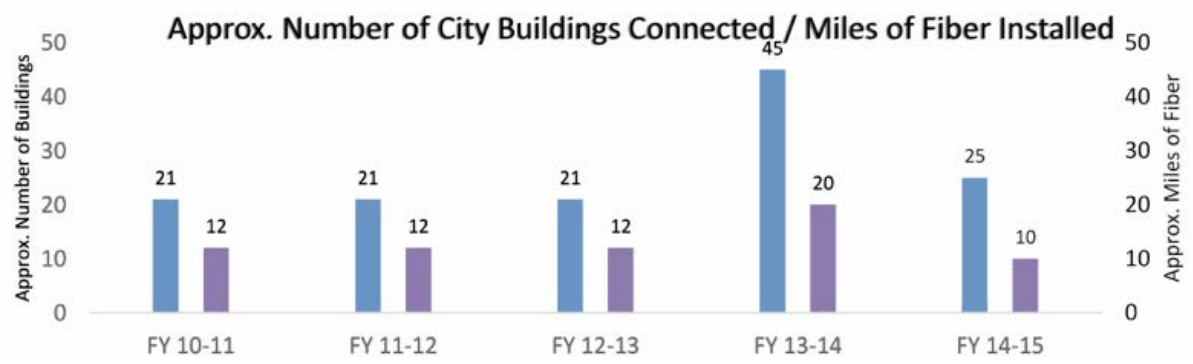
1. Improve access, collaboration and efficiency A comprehensive Fiber network will improve access to internal digital resources (Intranet, internal applications, network drives, servers), enhance collaboration through shared internal services, and increase efficiency by reducing workarounds.
2. A secure and reliable public safety network During a disaster, stable and reliable communication is critical for first responders and emergency management to respond effectively. Any communication system used by public officials must be resilient in an emergency. This also includes having sufficient redundancies in case other systems fail.
3. Strengthen Cyber-Security An internally managed network would ensure extra safeguards for secure communications. The added control of a city-owned and managed network makes it possible for DT to tailor the system to government needs, a characteristic that is not always available through private providers.
4. Scalable performance The City can provide much higher capacity through its Fiber Network than private providers. If the needs of a City agency change, there are minimal costs to increase or decrease capacity

City Fiber Network Plan

Schedule

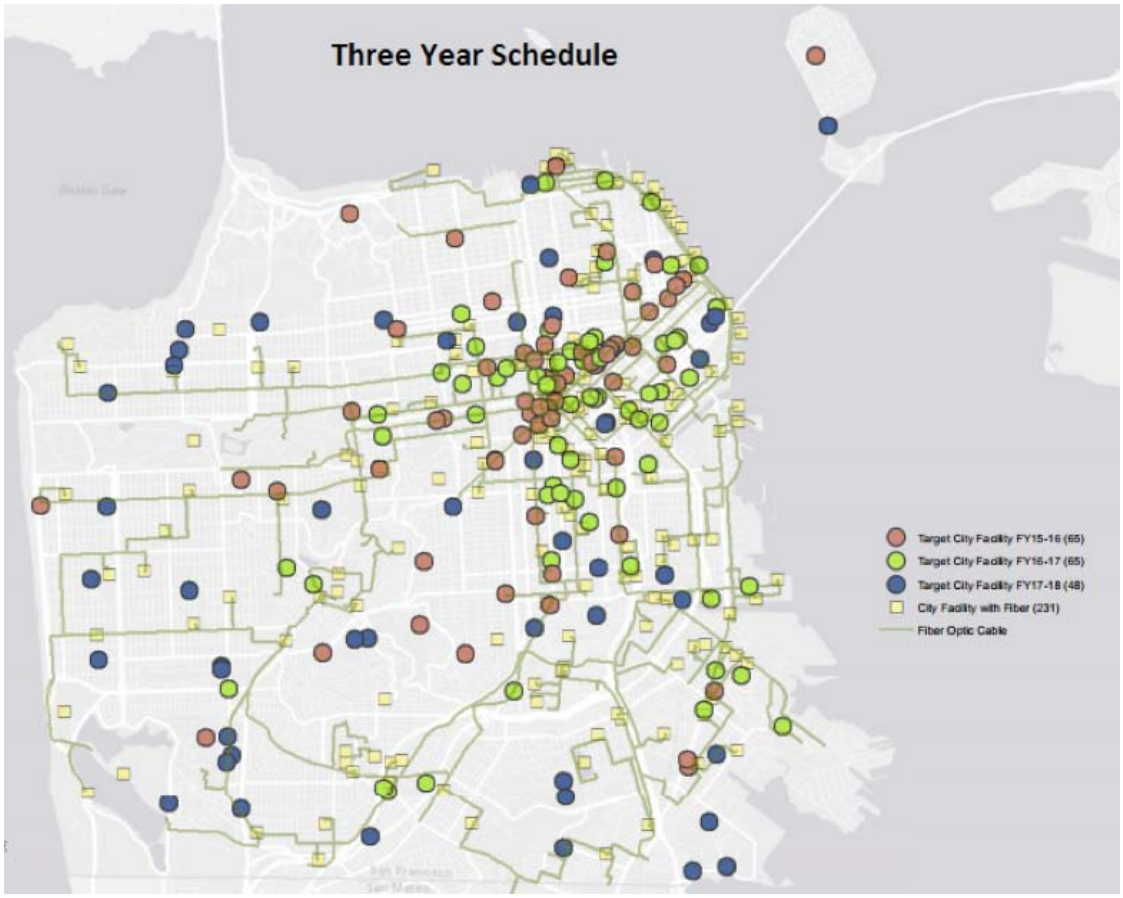
The goal of the Plan is to have every eligible City Building connected to the Fiber Network. Currently, 231 City buildings are connected to the Fiber network with approximately 178 that are left remaining. The 178 buildings were selected based on the following criteria: (1) any City facility currently not on the City Fiber Network and are (2) paying for Internet services which is tracked centrally by DT. Of the 178 buildings remaining some may not be eligible for connection to the City Fiber Network due to lack of need or lease termination in the near term.

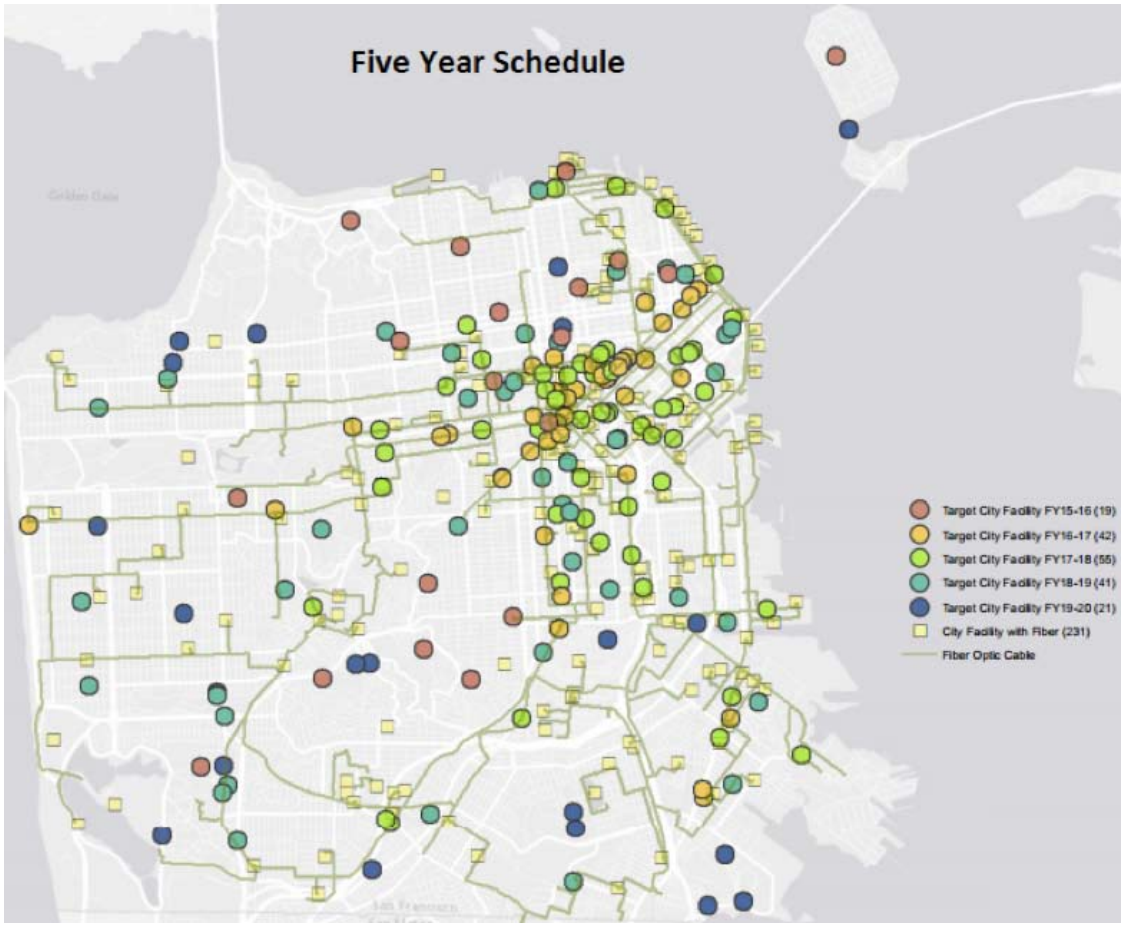
In order to connect all City buildings in five years, the City must connect on average 35 buildings annually. If the City chooses a more aggressive schedule of three years, the City must connect on average of 59 buildings annually. The City's estimated operational capacity is approximately 30 buildings connected annually. This is a more conservative estimate than what FY14 and projected FY15 data would indicate as it accounts for staffing changes that support a more responsive and sustainable delivery of services.



The Digital Steering Committee has developed a set of criteria to define eligibility and prioritize which buildings should be connected next.

1. Connectivity Need. When determining which buildings to connect, the City must consider a department's need based upon existing private Internet services. In determining the order of building connectivity, the City must prioritize public safety. Departments that also connect a large number of the general public to the Internet are a high priority.
2. Proximity to Existing Fiber Lines. A major factor in the cost of constructing new fiber lines is the distance from existing resources. The closer a building is to existing fiber lines, the lower the initial construction costs will be for the City.
3. Payback Period. Evaluating the benefits from the City Fiber Network is a critical component to evaluating City fiber extension projects. The City will analyze what a building candidate would gain from joining the network against what is presently uses, based on both performance and costs.


Three Year Schedule
Target City Facility FY15-16 (65)
Target City Facility FY16-17 (65)
Target City Facility FY17-18 (48)
City Facility with Fiber (231)
Fiber Optic Cable


Five Year Schedule
Target City Facility FY15-16 (19)
Target City Facility FY16-17 (42)
Target City Facility FY17-18 (55)
Target City Facility FY18-19 (41)
Target City Facility FY19-20 (21)
City Facility with Fiber (231)
Fiber Optic Cable

Budget

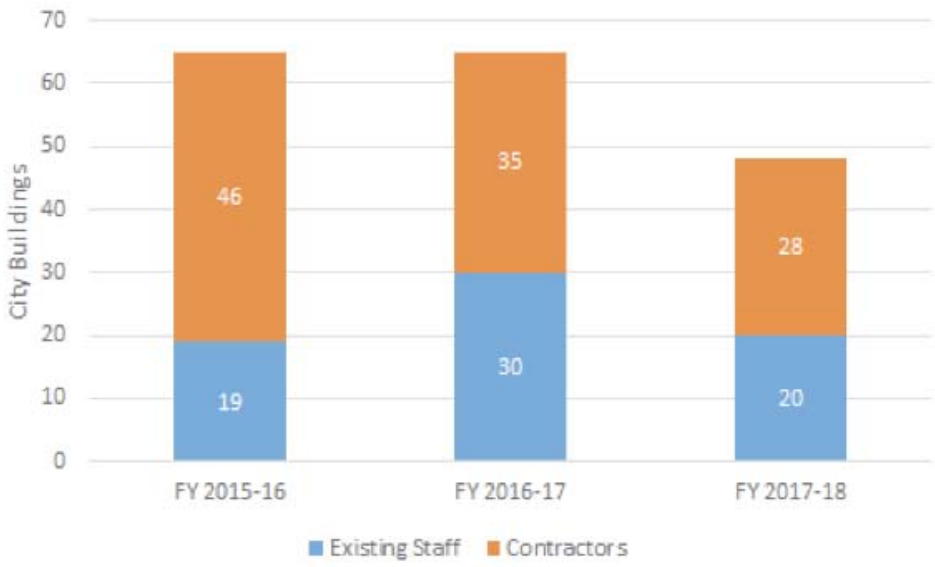
The budget estimate below is based on the assumption that DT will continue to receive the same level of annual General Fund allocation and the same level of project-based funds which have supported its estimated annual capacity of connecting 30 buildings a year. In the first year, the Steering Committee may refine these estimates to reflect more recent data and further analysis.

Based on historical costs, the estimated average construction cost per building is $40,000 including labor and materials. No costs were attributed to ongoing maintenance as this would be managed by existing staff and budget. In deriving the cost to connect a building, the Digital Steering Committee agreed that a cost estimation using a large sample of historical data was preferred over estimates derived from site surveys due to the cost and time required for the latter. A conservative reserve of 25% was added to the construction cost which reflects the lower end of infrastructure reserves varying from 25-50% of construction costs. Reserves are added to large infrastructure projects recognizing that there are unforeseen complexities and challenges such as blocked paths, lack of usable conduit, and construction projects.

Over a three-year period, the Plan estimates additional costs of $5.45M for connecting all eligible City buildings to the Fiber Network which does not reflect the City's existing operational capacity costs. FY17-18 has fewer buildings connected than previous years which reflects the fact that additional fiber deployment is required due to their increasing distance from the existing Fiber Network.

Three Year Budget

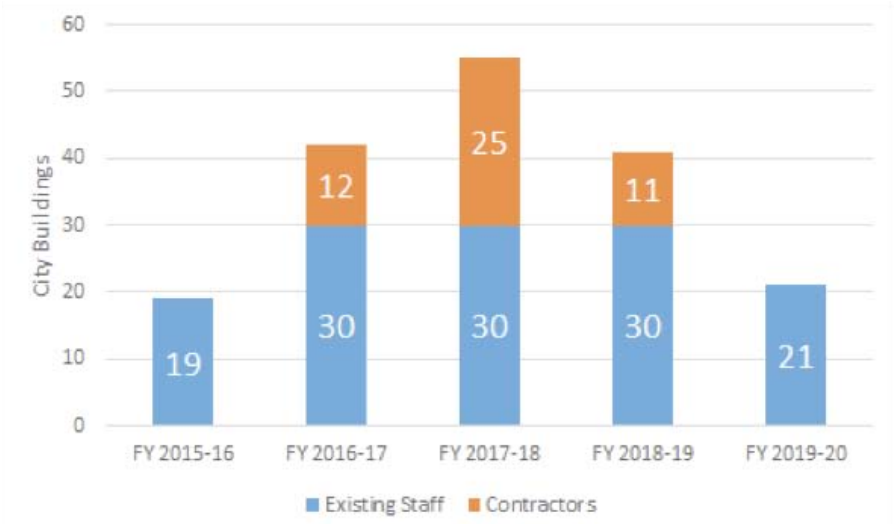
	FY 2015-16	FY 2016-17	FY 2017-18
Construction Cost (Contractors)	$1,840,000	$1,400,000	$1,120,000
25% Reserve (based on Construction Cost)	$460,000	$350,000	$280,000
Ongoing Maintenance	0	0	0
Total Cost	**$2,300,000**	**$1,750,000**	**$1,400,000**



Over a five-year period, the Plan estimates $2.4M for connecting all eligible City buildings to the Fiber Network which does not reflect the City's existing operational capacity costs. FY15-16 prioritizes 19 public safety buildings which is less than future years in terms of buildings connected. The smaller number of facilities reflects the fact that additional fiber deployment is required due to their distance from the existing Fiber Network. Also of note is FY19-20 where the number of connected buildings drops to 20. This occurs for the same reason as the drop in productivity as FY15-16.

Five-Year Budget

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
Construction Cost (Contractors)	0	$480,000	$1,000,000	$440,000	0
25% Reserve (based on Construction Cost)	0	$120,000	$250,000	$110,000	0
Ongoing Maintenance	0	0	0	0	0
Total Cost	**0**	**$600,000**	**$1,250,000**	**$550,000**	**0**



Cost Savings

The Department of Technology oversees all private telecom billing (voice and data services) for every department. Based on this data, our City currently spends approximately $1.3M annually on Internet services which amounts to $3.9M in potential cumulative savings over the five year plan. These are potential cost savings, as many departments have chosen to keep two connections in support of ICT goal #1 of supporting, maintaining, and securing critical infrastructure. If the policy decision is made to keep redundant services, the estimated cost savings would be eliminated. The Steering Committee recommends a policy that departments will be required to terminate all private Internet services unless an exemption is approved by COIT.

Potential Internet Service Savings

Fiscal Year	Annual Savings	Cumulative Savings
FY 2015-16	$260,000	$260,000
FY 2016-17	$520,000	$780,000
FY 2017-18	$780,000	$1,560,000
FY 2018-19	$1,040,000	$2,600,000
FY 2019-20	$1,300,000	$3,900,000

Revenue Opportunities

Currently the City leases use of the Fiber Network to third parties generating $279,000 annually in revenue. With the continued growth of our City's Fiber Network our leasing opportunity increases as well. As it's difficult to predict market demand, the table below reflects three scenarios: no increase in revenue, 10% YoY growth in revenue, and 50% YoY growth.

A significant challenge to leasing access to our Fiber Network is the lack of records indicating conduit utilized, ownership, and conditions. Without this information, there may be legal restrictions that prevent leasing access to our Fiber Network. However, this gap in recordkeeping does not impact our City's current Fiber Network from a management and planning perspective. When planning expansion of the City's Fiber Network site surveys are conducted to assess if conduit exists, ownership, and feasibility for usage.

Fiscal Year	0% YoY	10% YoY	50% YoY
FY 2015-16	$279,000	$306,000	$418,500
FY 2016-17	$279,000	$337,000	$627,750
FY 2017-18	$279,000	$371,000	$941,625
FY 2018-19	$279,000	$408,484	$1,400,000
FY 2019-20	$279,000	$449,332	$2,100,000
Total Revenue	$1,400,000	$1,900,000	$5,500,000

Staffing Requirements

No additional staff recommended. Construction will be conducted by a mix of existing City staff and private contractors. Ongoing maintenance of the network will utilize existing staff and funding.

Recommendations

Based on the findings of the Connectivity Steering Committee, the following recommendations are proposed:

1. Establish performance standards
2. Utilize best practices for managing construction and ongoing maintenance of fiber assets
3. Ensure that any conduit used or built is tracked properly including ownership and restrictions
4. Issue policy to eliminate redundant private ISP lines unless exemption approved by COIT
5. Develop and implement leasing program

DIG ONCE

Background and Current State

The Mayor approved "Dig Once" legislation in 2014 which requires the City to install conduit during construction projects involving public right of way, when both financially feasible and consistent with the City's long-term goals[1]. Dig Once is triggered for any street or sidewalk excavations that are 900 ft or longer. This limits the scope of potential Dig Once opportunities primarily to PUC's Sewer System Improvement Program (SSIP), the Water System Improvement Program (WSIP), MTA transit and traffic projects and PG&E Gas projects.

Currently, our City is working on the rulemaking process for Dig Once and conducting a thorough engineering analysis of trenching options based on various scenarios.

Goals and Objectives

Following are the goals and objectives for connecting City buildings:

ICT GOAL	PLAN OBJECTIVES
Support, Maintain and Secure Critical IT Infrastructure	Deploy conduit for all eligible* opportunities through Dig Once
Improve Access and Transparency	• Reduce cost and time associated with expanding the City's Fiber Network • Facilitate deployment of communications infrastructure • Generate revenue by leasing conduit

*Eligible opportunities must have clear market value or be consistent with ICT goals.

The Dig Once Opportunity

With Dig Once, the City is deploying critical infrastructure that can be used in numerous ways, some of which may not have been created yet. Our City will be able to utilize this conduit to further its goal of expanding the Fiber Network. Additionally, other organizations will be able to lease our conduit to lower their costs and time to market. The primary goal of the ordinance is to "create more efficient delivery of telecommunications services for the public"[2] as well as to reduce the need for future excavation[3]. Once a road has been repaved, there is a five-year moratorium on excavating a repaved street.

1 Ordinance 220-14, Public Works Code - Instal lation of Communications Infrastructure in Excavation Projects, http://tinyurl.com/oaz2qly.
2 Ord. 220-14, Public Works Code Section 2.4.95(a).
3 Ord. 220-14, Public Works Code Section 2.4.14(a).

Five-Year Dig Once Plan

Schedule

The goal of the five-year Plan is to deploy conduit for all eligible opportunities through Dig Once. The Digital Steering Committee has developed a set of criteria to define eligible Dig Once opportunities:

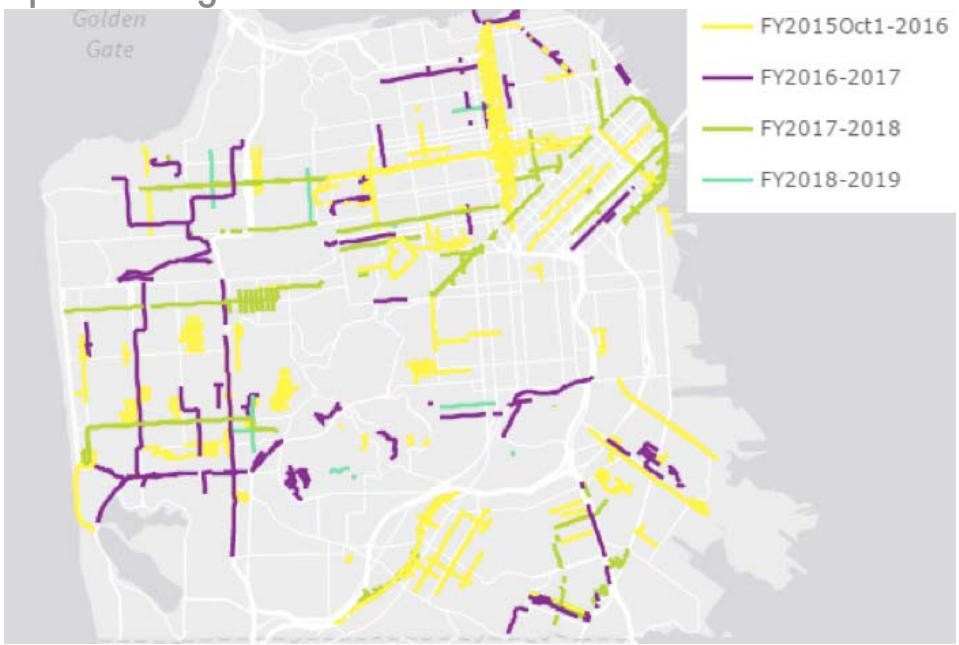
1. Supports ICT Goals. When determining which Dig Once opportunities to seek, the City must consider potential utilization for our City's Fiber Network. It will prioritize projects by taking into account existing fiber and conduit routes available to the City; the cost of constructing alternative fiber paths by attaching to utility poles or directional boring; and current and future needs of the City and public.
2. Market Demand. When determining which Dig Once opportunities to seek, the City must consider potential market demand that supports efficient delivery of telecommunications services for the public.

Below is an estimate of the miles of conduit possible based on scheduled excavations[1] and various funding scenarios. DT has hired a consultant to assist in evaluating projects according to the above criteria, as well as creating technical specifications for participating in trenches. DT expects this process to conclude by the end of April 2015.

Miles of Conduit

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Total Miles
100% of Digs	56	45	41	40	40	222
75% of Digs	42	34	31	30	30	167
50% of Digs	28	23	21	20	20	111
25% of Digs	14	11	10	10	10	56

Map of all Dig Once Excavations Over the Next Five Years*



*Start date is October 2015 reflecting budget and procurement time

4 Scheduled excavation data is derived from the Department of Public Works' Acela Right of Way Management System, formerly Envista

Budget

Currently, the Plan does not have a budget estimate as we have not determined all eligible Dig Once opportunities. DT expects to have identified eligible Dig Once opportunities based on the aforementioned criteria at the end of April 2015. However, various funding scenarios are noted in the table below.

An alternative approach would be to only fund digs that will be utilized to facilitate the expansion of our City's Fiber Network (which is not entirely consistent with the goals of the legislation). This scenario was not modeled as there is no practical means of forecasting the exact placement of the Fiber Network when connecting City buildings. Expansion of the Fiber Network to additional City buildings requires site surveys based on the fact that there are many reasons why the most direct path is not feasible (unknown barriers, lack of conduit).

Five Year Budget Scenarios

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Total Cost
100% of Digs	$5,322,240	$4,276,800	$3,896,640	$3,801,600	$3,801,600	$21,098,880
75% of Digs	$3,991,680	$3,207,600	$2,922,480	$2,851,200	$2,851,200	$15,824,160
50% of Digs	$2,661,120	$2,138,400	$1,948,320	$1,900,800	$1,900,800	$10,549,440
25% of Digs	$1,330,560	$1,069,200	$974,160	$950,400	$950,400	$5,274,720

The cost for one mile of conduit is approximately $95,000 ($18/ft* 5,280 ft/mile) for 2x4" conduit in a "dry" communications trench along with periodic pull boxes. This cost does not include excavations that require parallel trenches that would increase the cost. The City is in the process of a thorough engineering analysis of trenching options based on various scenarios.

Staffing Requirements

Administering the Dig Once program and managing telecommunications assets, such as conduit, innerduct, dark fiber and jointly owned utility poles will require additional staff. DT will need an additional $203,000 in FY15/16 and $270,000 in FY 16/17 and subsequent years. In addition, DT will need $30,000 in consulting help to configure conduit management software in the first year of the program.

Opportunity Costs

By pursuing alternative investments indicated above, there is an opportunity cost if the City decides to lay conduit after the excavation has occurred. The difference in cost for laying conduit per mile during an existing excavation ($95,040) is much lower than after ($554,400). The conduit costs per mile as noted in the table below were determined by the Department of Technology based on recent joint trench experience. In addition to the opportunity costs, there is a five year moratorium on future digs which may impact schedules and create other challenges.

Conduit Costs per Mile

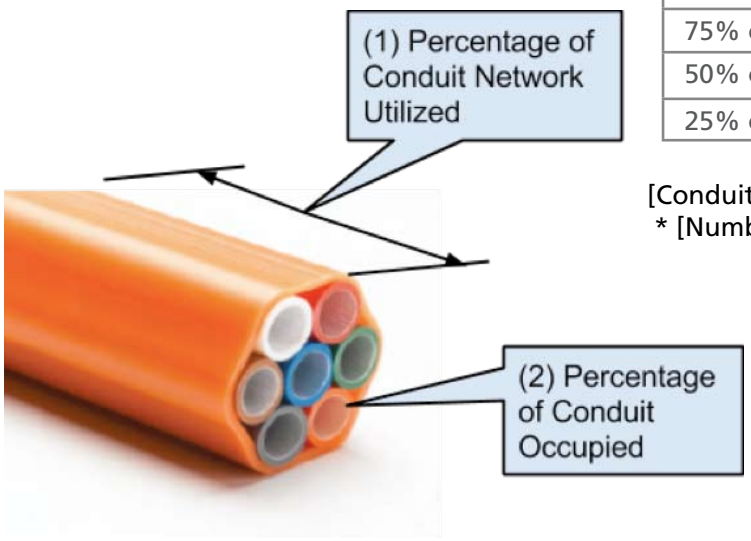
Component	Cost on Open Streets (No Trenching)	Cost including Trenching
Fiber Only	$79,200	$79,200
Conduit Only	$95,040	$554,400
Fiber + Conduit	$174,240	$633,600

The opportunity cost represents the cost to the City if it needed to re-open streets to place communications conduit.

Miles of Conduit

	Opportunity Cost/Mile	Miles without Conduit	Opportunity Cost
100% of Digs	$459,360	0	$0
75% of Digs	$459,360	56	$25,264,800
50% of Digs	$459,360	111	$50,988,960
25% of Digs	$459,360	167	$76,253,760

[Conduit cost including trenching - conduit cost no trenching] $459,360
* [Number of miles that conduit could have been installed but wasn't]



Revenue Opportunities

The annual revenue opportunity after year 5 is noted below at various leasing scenarios, assuming DT participates in all dig opportunities. Potential revenue is calculated along two dimensions: (1) percentage of conduit network leased and (2) percentage of conduit occupied.

Potential Annual Revenue

		Percentage of Conduit Utilized				
Percentage of Conduit Occupied		10%	25%	50%	75%	100%
	100%	$253,187	$632,966	$1,265,933	$1,898,899	$2,531,866
	75%	$189,890	$474,725	$949,450	$1,424,174	$1,898,899
	50%	$126,593	$316,483	$632,966	$949,450	$1,265,933
	25%	$63,297	$158,242	$316,483	$474,725	$632,966

Market rate for leasing conduit=$0.54 per foot per year for innerduct,
$1.08 per foot per year for conduit.

Recommendations

1. Establish performance standards
2. Utilize best practices for managing construction of conduit
3. Track conduit in asset management system
4. Develop and implement a performance based accounting model
5. Develop and publish conduit maps for leasing opportunities
6. Develop and implement leasing program

#SFWiFi

Goals and Objectives

Following are the goals and objectives for expanding #SFWiFi:

ICT GOAL	PLAN OBJECTIVES
Support, Maintain and Secure Critical IT Infrastructure	Provide #SFWifi to staff to help them work more efficiently and effectively
Improve Access and Transparency	• Deploy #SFWiFi in City buildings with public access • Deploy #SFWiFi in high-value public spaces within San Francisco City boundaries

Background and Current State

The City has prioritized free wireless Internet in major commercial areas and popular destinations. Major developments include:

2013

1. The City implemented free wireless Internet through #SFWiFi on three miles of Market Street.
2. Ruckus Wireless donated approximately $700,000 in networking equipment to support the expansion of #SFWiFi.

2014

1. The City received a $600,000 grant from Google, which expanded #SFWiFi to 32 public parks which were identified by Rec and Park staff and Supervisor Farrell's office.
2. SFO achieved its highest Airport Service Quality, an international airport service benchmark, rating in the WIFI category for its free wireless Internet service to passengers. High service quality ratings help SFO attract new airlines. For example, a recent new international service to Asia from SFO is estimated to have a $235 million positive economic impact to the region.

Although various departments also provide free wireless Internet service to their staff and the public under different brands, #SFWiFi is the standard name of the City's wireless service within San Francisco's City boundaries. In FY 2014-15 many of the existing wireless networks owned and maintained by City departments, like the San Francisco Public Libraries, will be transitioning from their individuals networks to use #SFWiFi.

At the Airport, the City will continue to provide #SFO FREE WIFI service. The service specifically targets the needs of air travel passengers at the Airport and contributes to supporting over $38M in yearly Airport Service Payments to the City.

The City will continue to work through various agencies to offer wireless Internet to expand coverage to more areas of San Francisco and to better capitalize on branding and services offered. DT will be working with SFO to together determine the strategy and feasibility of unifying the user experience to provide seamless connectivity between San Francisco and the Airport.

Two Year Plan to Expand #SFWifi

Schedule

The goal of the two year plan is to deploy #SFWiFi to City buildings that have been identified by our CIO in consultation with our City's leadership. The plan for #SFWiFi is limited to two years recognizing the limited data and experience our City has with this program as well as moving from a demand based model to a strategic approach in future years.

While all of the projects listed below are currently in progress or will be initiated in FY2015 they may not be completed by FY2016 due to unforeseen complexities and issues such as coverage challenges and capacity limitations. Some of the sites below encompass a wide and complex geography including buildings plus outdoor areas. Given the limited coverage of Wi-Fi Access Point (AP) of 100' to 200' radius, not only are many APs required to extend coverage ubiquitously but their placement must be determined - often through trial and error.

Once installed, APs must then be tested to ensure seamless coverage. Also, each AP must be connected to the City's Fiber Network to provide complete coverage. In some cases, it can be physically difficult to extend the Fiber Network into an area where coverage is desired. This may necessitate alternative backhaul approaches such as microwave. Additionally, ensuring that sufficient capacity exists is not trivial to achieve. Interference, legacy protocols, heterogenous equipment providers can all work against the goal of sufficient capacity.

Beyond expanding #SFWiFi to new sites, existing City wireless networks are currently undergoing a transition to be branded as #SFWiFi. In addition, public private partnerships are being pursued to adopt #SFWiFi for private wifi providers (eg small businesses, museums).

Budget

The two-year plan estimates a cost of $1.3M for initial build which includes labor and materials plus a reserve of 25%. Ongoing maintenance costs will utilize existing staff and funds. The cost estimates below were calculated based on FY13 and FY14 data using [total cost] / [total sites] to get a unit cost of $31,000 for each site which includes labor and materials. Operations and maintenance costs are currently not known as our City has not completed the anticipated useful life span of APs and other equipment. While material costs can be estimated based on anticipated lifespan, even this is difficult as the number of APs are not known in advance for a specific site. Additionally, labor costs for ongoing maintenance are difficult to estimate without any prior experience. In the first year, the Steering Committee may come back and refine these estimates which reflects the data and information available at the time of this plan.

PROJECT	ESTIMATED COST
City Hall	Corrently funded
HopeSF • Sunnydale • Potrero Hill Annex • Potrero Hill Terrace • Hunters View • Alice Griffith	$155,000
Dolores Park	Currently funded
West Sunset Park	Currently funded
1 South Van Ness	$31,000
28 Fire Stations	$868,000
TOTAL	$1,054,000
TOTAL + Reserve of 25%	$1,317,500

Staffing Requirements

No additional staff recommended. Installation will be conducted by a mix of existing City staff and private contractors. Any ongoing maintenance of #SFWiFi will utilize existing DT staff and operational budget.

Recommendations

1. Establish performance standards
2. Move from demand based model to strategic
3. Adopt industry standard usage measures
4. Utilize best practices for managing installation and maintenance
5. Track #SFWiFi assets in an asset management system
6. Standardize equipment provider to reduce management and maintenance complexity
7. Develop and implement an accounting model for initial and ongoing costs
8. Publish real-time map of #SFWiFi locations for staff and public

Public Connectivity

Background and Current State

Five years ago, San Francisco's Board of Supervisors resolved that by 2015, 90% of San Francisco households would have broadband connectivity at home (SF Board of Supervisors 2010). The City is only two percentage points shy of this goal (under the previous FCC definition of broadband), but the remainder of non-users skews toward low-income families, minorities, the unemployed, youth, the elderly, and those living with disabilities (GoConnectSF 2014). The lack of Internet access is also intergenerational; 16% of San Francisco Unified School District (SFUSD) students[1] do not have a computer with a home Internet connection.

The City's public access efforts include #SFWiFi, at commercial corridors, recreation centers, parks, public libraries, and other public areas. #SFO FREE WIFI will continue to provide service to the Airport and provide the critical link to our millions of visitors. Additionally, the City's Community Broadband Network (CBN) provides free Internet access to San Francisco Housing Authority buildings and their residents. The CBN also connects 22 different community centers, apartments, and senior centers which are part of the City's Department of Aging & Adult Services' (DAAS) digital literacy programs.

San Francisco's Public Library (SFPL) system and San Francisco Unified School District (SFUSD) are valuable access points to those without the Internet at home. In FY2013, SFPL provided residents with over 655,000 hours of public computer usage through its 1,017 connected devices, which are available for public use. SFUSD successfully piloted wifi access in two high schools and all 12 middle schools, and now plans to implement wifi in the remaining 89 SFUSD schools. Of the wired schools, SFUSD has a total of 7,191 computers for use among 52,989, or a ratio of one computer for every seven students.

However, successful broadband adoption requires more than affordability and ubiquity. In one 2009[1] study, the U.S. Department of Commerce reported that 47% of Internet non-users do not see the value in a home broadband connection. Subsequent studies by the Pew Research Center, including one in 2013[2], continue to validate lack of interest as a leading barrier.

It takes a combination of Internet access and digital literacy to achieve digital equity. In 2009, the U.S. Department of Commerce established the Broadband Technology Opportunities Program (BTOP), which distributed $4.7 billion across infrastructure, computer centers, and broadband adoption initiatives. DAAS received $7.9 million on behalf of the City to increase digital connectivity among the elderly and those living with disabilities. DAAS works with vulnerable populations that have historically low Internet adoption rates, and a successful BTOP initiative depended on demonstrating the value of the Internet. DAAS partnered with DT and 26 community-based organizations on SF Connected, a technological literacy initiative for seniors and people living with disabilities. There are computer labs in 54 sites, stocked with a total of 224 touchscreen computers and 24 laptops in six different language options. Partners also offer digital literacy classes in English, Spanish, Mandarin, Vietnamese, and Russian. SF Connected wants to demonstrate the value of Internet connectivity to seniors, so classes also couple skills with topics like family trees and genealogy software, connecting on Skype and using online maps, browsing Craigslist and YouTube, and more. SF Connected organizes events as well; in 2014, SFPL and SCAN Health Plan hosted the second annual Wii Bowling Tournament for seniors (DAAS 2014).

5 http://www.sfusd.edu/en/assets/sfusd-staff/about-SFUSD/files/2014-05-13_tech-survey-presentation.pdf

6 http://www.ntia.doc.gov/files/ntia/publications/esa_ntia_us_broadband_adoption_report_11082010_1.pdf

7 http://www.pewinternet.org/2013/09/25/whos-not-online-and-why/

Role of Government

A common barrier to connectivity is the availability of affordable broadband Internet service. At least six different Internet service providers (ISPs) currently offer plans in San Francisco. However, only two of the wired companies can offer Internet access across all of San Francisco. While local ISPs have increased consumer options, their reach is physically restricted. Currently, one ISP provider can only serve buildings built after 1995 with 10 units or more, and it cannot reach areas west of Sutro Tower. Similarly, wireless ISPs require a clear line of sight to deliver home Internet service through radios and microwaves. Point-to-point services are typical of smaller ISPs; they rely on the physical infrastructure leased from telecommunication companies like AT&T and Comcast that can afford infrastructure build-out.

While the lack of viable competition for residential service contributes to the digital divide, another factor is the cost of service. Even when consumers choose the most basic subscription packages, residential plans can be costly. The cost varies from one ISP to the next, so the availability of affordable plans are unevenly distributed across the City.

Private ISPs find it financially unfeasible to build infrastructure in places with poor financial projections or many geographic obstacles. Meanwhile, a municipal government serves all residents, and does not need to balance infrastructure cost against the number of subscriptions. There are cities that have built a fiber network to deliver faster speeds to all residents and also guide service growth in connectivity-starved areas. When looking at the role of government, there exists a spectrum, where governments play anywhere from no role to a primary role as noted in the diagram below.

In addition to infrastructure, there is a question of the role of government in improving digital literacy.

Recommendations

1. Collect neighborhood scale data as none currently exists
2. Conduct formal research and analysis of the various roles that government can play
3. Engage the public in a discussion on the role of government
4. Update report to include findings

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