



# **Information & Communication Technology Plan**

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City and County of San Francisco  
FY 2022-26

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## **Message from the City Administrator**

Mayor Breed and Members of the Board of Supervisors:

Times of crisis have a way of revealing the true character of a community. It is no surprise then that the COVID-19 pandemic has shown to the world what San Francisco is made of. Faced with unprecedented challenges, our local government proved to be resilient and our services continued to support our community uninterrupted. These accomplishments reflect the incredible dedication of our staff and the investments we have made in the past.

In a year where technology has been more important than ever, I am pleased to submit the proposed City and County of San Francisco Information and Communication Technology (ICT) Plan. The FY 2022-26 ICT Plan builds on the lessons we have learned and describes the City's technology strategy on where we need to go.

The sixth iteration of the ICT Plan places renewed emphasis the importance technology plays in business continuity. But more than ever, we chart a future to leverage technology to meet needs of our most vulnerable residents. COVID-19 has shown how important technology is to reach our residents, especially when meeting in person is not an option. With the clarity of learned experience, our mission is now to provide universally accessible services for every resident, business, and visitor.

Since the last ICT Plan, we have made substantial investments in technology to reach this goal. Our investments in the City fiber network and cybersecurity allow us to make modern digital services. The continued development of our financial system and other applications are providing an unprecedented level of transparency and efficiency in the administration of local government.

I am proud of our many accomplishments and look forward to a future that is even brighter.

Although we face a difficult financial picture over the next five years, the decisions we make now will determine our ability to continue to keep our government services available and accessible. As we plan for the future, I hope the FY 2022-26 ICT Plan will help provide guidance on where investments in technology are needed most. Although the demand for technology investment continues to outpace available resources, our future lies in our ability to continue to meet the needs of residents where they are at.

I look forward to building our future together.

Sincerely,

Carmen Chu

City Administrator

## Executive Summary

The Fiscal Year (FY) 2022-26 Information and Communication Technology (ICT) Plan is the City & County of San Francisco’s guiding document for technology. Over the next five years, we must continue to balance the need to replace legacy technologies, support critical Information Technology (IT) infrastructure, and modernize our services.

*San Francisco’s Guiding Technology Vision:*

*Government services that are available and universally accessible in times of crisis and beyond.*

The FY 2022-26 ICT Plan vision reflects the increased importance technology has played in a pandemic that restricts in-person interactions. COVID-19 brings a new urgency to deliver City services safely and remotely.

To make our vision of universal accessible services a reality, many of City services will need to be re-designed to meet the needs of every resident, especially our most vulnerable. Even in a technology-centric city like San Francisco, the digital divide is significant. Over 100,000 residents lack internet access at home and many rely on a single mobile device like a cell phone to access the internet.<sup>1</sup> In order to serve our most vulnerable, our services must be available to those with and without digital means.

Going forward, we seek to achieve the following service standards:

- Designed alongside our most vulnerable community members
- Built to be used on a mobile device and exceed federal accessibility standards
- Unified across departments to provide a simple, citywide service experience

Looking forward, our highest priorities are to redesign job, housing, and permitting services to be universally accessible.

*Figure 1: City Services by Service Area*

Service Area	Total Number of Services	Number ADA and Mobile Accessible
+ Administration & Records	244	57
+ Arts, Culture, and Community Building	130	31
+ Business	164	40
+ Neighborhoods & Public Infrastructure	75	29
+ Permitting	52	10
+ Public Safety & Justice	131	11
+ Social & Health Services	171	16
<b>Total</b>	<b>967</b>	<b>194</b>

<sup>1</sup> <https://sfmohcd.org/digital-equity>

## San Francisco Technology Goals

To transform local government services, we need to leverage modern technologies. Through the adoption of user-centered design, city services will be on course to adapt to the needs of every resident.

### Goal 1 - Online and Accessible City Services Residents Can Use

Transforming government means making services more accessible and easier to use. Redesigning our operations and innovating with new services is key to modernization.

### Goal 2 - City Operations that are Efficient and Cost-Effective

The onset of an economic recession has changed the financial picture for the coming years. Our technology solutions must continue to find ways to improve efficiency so that we can improve the quality of our services without increasing costs.

### Goal 3 - IT Infrastructure You Can Trust

Much like capital projects, technology infrastructure requires continual maintenance and investment to ensure critical systems are available at all times.

## Financial Forecast

From FY 2021-22 through FY 2025-26, City departments anticipate initiating 89 projects for a total of projected cost of \$216.7 million. Projects are reflective of submissions from all 51 City departments with a projected cost over \$100,000.

Figure 2: Five-Year Forecast of Technology Projects

	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Number of Projects	74	69	56	42	36
Projected Cost	51,057,422	58,067,617	55,713,032	32,865,402	18,995,248
General Fund Request	36,902,908	43,520,666	50,068,614	30,004,162	17,319,298

To support the upcoming technology requests, COIT recommends funding from two General Fund sources: the Major IT Project Allocation and the Annual Allocation. COIT prioritizes funding towards projects that align with City priorities and have the highest impact over the next five years.

Figure 3: COIT Allocations Five-Year Forecast

	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Annual Allocation	2,290,372	2,519,409	2,771,350	4,231,325	4,654,458
Major IT Allocation	15,544,212	25,048,633	25,703,497	26,227,521	28,800,273
<b>Total</b>	17,834,584	27,568,042	28,474,847	30,458,847	33,454,731

In order to maintain business continuity and accessible services, COIT recommends the following:

**Recommendation 1 – COIT allocation levels should return to pre-COVID levels by FY 2025-26.**

Demand for technology investments continue to outpace available funding levels. The need to replace legacy technologies, support critical Information Technology (IT) infrastructure, and modernize our services has never been greater. As the City’s finances begins to recover, investments in one-time technology investments should be a top priority.

**Recommendation 2 – Dedicated Funding for Universally Accessible Services.**

The competing needs of an aging technologies and demand for modern services has reached a breaking point. Under current trends, all existing COIT funding will be consumed by replacement of legacy systems. A dedicated funding source is needed to support modernization efforts and to ensure all City services are universally accessible. By FY 2022-23, the COIT Annual Allocation should be boosted by 5% to support service redesign projects.

**Recommendation 3 – City departments to submit Digital Transformation roadmap alongside FY 2022-23 budget proposals.**

Currently only about 1/5 of City services are designed to meet the needs of our most vulnerable residents. To achieve the ICT Plan vision of universally accessible services, Department budgets must prioritize the development of services that are online, mobile accessible, and designed to meet the City’s web accessibility standards.

Starting in FY 2022-23, Departments should submit a roadmap for digital transformation to COIT. COIT should regularly report on the City’s progress in redesigning services to be universally accessible. The Citywide Service Inventory should be regularly updated every other year, and regular updates should be provided to COIT on the status of digital transformation efforts.

## **Introduction**

The COVID-19 pandemic has changed the course of San Francisco and local government. Both in terms of finances and operations, the direction of our city has had to re-adjust to a new reality. Through this crisis and into the years to come, our highest priority must be the safety and well-being of our residents. As we make our way through both a global pandemic and an economic recession, the role of technology has become even more important in ensuring the continuity of local government services.

The Fiscal Year (FY) 2022-26 Information and Communication Technology (ICT) Plan is the City & County of San Francisco's guiding document for technology. Over the next five years, we must continue to balance the need to replace legacy technologies, support critical Information Technology (IT) infrastructure, and modernize our services. COVID-19 brings a new urgency to deliver City services safely and remotely.

The FY 2022-26 ICT Plan presents a vision for making San Francisco stronger and more unified. Through the innovative use of technology and efficient use of our existing resources, San Francisco seeks to transform government services.

## **A Call to Action: Universally Accessible Services**

San Francisco's response to the COVID-19 pandemic is a national model of effective local action. Through the course of this crisis, our leaders were willing to make the tough decisions to keep our community safe and government services up and running. Looking forward, we seek to continue this legacy of bold leadership especially as it relates to using technology to improve government services.

### *San Francisco's Guiding Technology Vision:*

*Government services that are available and universally accessible in times of crisis and beyond.*

The FY 2022-26 ICT Plan vision reflects the increased importance technology has played in a pandemic that restricts in-person interactions. In order to continue to support our community, our services must be available and remotely accessible, wherever possible.

To better understand our current state in reaching this vision, the Committee on Information Technology (COIT) conducted the first citywide inventory of resident facing services in 2020. In total, City agencies identified 967 individual services that residents, businesses, and visitors use in local government.<sup>2</sup> These services include everything from borrowing a library book, to filing a police report, to paying taxes.

However, the service inventory revealed only a fraction of City services are designed to be fully accessible online. Only approximately 20% of City services are available online in a format that is mobile-friendly and accessible to those with disabilities.

To make our vision of universal accessible services a reality, many of City services will need to be re-designed to meet the needs of every resident, especially our most vulnerable. Even in a technology-centric city like San Francisco, the digital divide is significant. Over 100,000 residents lack internet access at home and many rely on a single mobile device like a cell phone to access the internet.<sup>3</sup> In order to serve our most vulnerable, our services must be available to those with and without digital means.

Going forward, we seek to achieve the following service standards:

- Designed alongside our most vulnerable community members
- Built to be used on a mobile device and exceed federal accessibility standards
- Unified across departments to provide a simple, citywide service experience

Transforming how local government delivers services is one that will take years to accomplish. Looking forward, our highest priorities are to focus on providing universal access to job, housing, and permitting services.

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<sup>2</sup> The Citywide Service Inventory was conducted in September 2019. Departments were asked to self-identify all resident facing services. Full details on the inventory are available in Appendix D.

<sup>3</sup> <https://sfmohcd.org/digital-equity>

## Jobs, Workforce Development, and Small Business

San Francisco seeks to help all our residents benefit equitably from the prosperity of our city. Ongoing investments strengthen the vitality of our diverse neighborhoods and small businesses and help to deepen workforce opportunities.

The Citywide Services Inventory shows that San Francisco offers 88 distinct job and business development services in 23 departments. These services are intended to strengthen workers and small businesses.

Figure 4: Services that Support Jobs, Workforce Development, and Small Business

Subcategory	Number of Services	Number of Departments	Number of Digitally Available Services
Business Development	9	2	
City Jobs & Internships	18	10	5
City Opportunities	10	8	3
Legal & Administration	7	4	1
Volunteers	24	11	5
Workforce Development	20	7	3
<b>Total</b>	<b>88</b>	<b>23</b>	<b>17</b>

However, as we plan for the future, only a minority of them are designed to be accessible by mobile device or for disabled communities.

### Looking Forward: Transforming Workforce Development

Led by the Office of Economic and Workforce Development (OEWD), the City provides a one point of contact for a variety of essential City programs and services. OEWD's goal is to ensure that San Francisco will always be what it is today: one of the best places on the planet to live, work, and play.

To further opportunities for all San Franciscans, we will create more equitable pathways to good paying jobs, addressing challenges to diversity and inclusion in the local job market. We continue to invest in the retention and stabilization of small businesses, nonprofits, and community organizations, addressing the displacement that challenges the civic vitality of San Francisco's diverse and vibrant neighborhoods. All of these efforts support broader social and economic goals that improve the quality of life for our residents

Read OEWD's strategic plan at <https://oewd.org/reports-and-plans>

## Housing

San Francisco is dedicated towards the singular vision of an equitable and diverse City where all residents can afford a place to live in safe and livable communities. The Citywide service inventory shows that overall San Francisco offers 104 different housing support services, spread across 12 different departments.

Figure 5: Services that Support Housing Assistance

Subcategory	Number of Services	Number of Departments	Number of Digitally Available Services
Homeowner Taxes & Assessment	27	6	2
Housing Assistance	37	4	5
Landlord & Rent Services	32	4	
Legal & Administration	8	3	
<b>Total</b>	<b>104</b>	<b>12</b>	<b>7</b>

### Looking Forward: Affordable Housing

Since its creation under Mayor Feinstein, the Mayor's Office of Housing and Community Development (MOHCD) has led the way in addressing the needs of low-income and marginalized San Franciscans. One of the main objectives in the [City's 2020-2024 Consolidated Plan](#) for community planning and development is to ensure families and individuals are stably housed. To achieve this, MOHCD and other City departments are working across four priority areas, each with their own goals and activities. We have strategies to:

- 1) develop and maintain accessible and affordable housing,
- 2) make housing more affordable,
- 3) prevent and reduce homelessness, and
- 4) provide services to maintain housing stability.

While in-person programs and services will always be needed when serving low-income and vulnerable populations, many of these efforts can benefit from more incorporation of technology. However, digital equity must accompany any digital transformation effort.

MOHCD as a department has committed to a multitiered approach with regards to Digital Equity to ensure that San Francisco's lowest income residents have access to the value of the internet. High quality, free or low-cost Internet connectivity is now included as part of work scope on both new affordable housing construction and rehabilitation projects, and supplemental services like digital literacy classes and device distribution is offered at many locations.

MOHCD is also working with Community Development Division Grantees to use technology to compliment in-person program delivery. In particular, grantees have needed to adapt program delivery to online platforms in response to emergencies like COVID-19, while also mitigating barriers to digital access, including cultural, language, online safety, and resource barriers.

## Permitting in San Francisco

The vision for the future of permitting is to advance San Francisco as a safe, vibrant, and beautiful city through friendly, streamlined, and efficient services available for all residents and businesses.

The City has over 500 permit and license types, that aggregate into 127 permitting services. The pandemic accelerated the digital roadmap for many departments. Initiatives to digitize permitting for customers have increased for single services. The City continues to work on initiatives that aggregate services enabling more streamlined permitting experience.

Figure 6: Overview of Permitting Services.

Subcategory	Number of Services	Number of Departments	Number of Digitally Available Services
Building & Construction	26	9	4
Do Business in SF	24	6	1
Events	20	8	2
Legal & Administration	29	10	7
Public Benefit & Safety	28	6	4
<b>Total</b>	<b>127</b>	<b>17</b>	<b>18</b>

### A Digital Experience: Permits Made Easier

Underpinning the new Permit Center will be a variety of technologies transforming the service experience. Using the principle of putting the customer first, technology is helping redesign the permitting process to be friendly, streamlined, and efficient.

Some of the major way's technology will be used include:

- **Online, Self-Service Permits:** The future of permitting interweaves a digital experience with the in-person service experience. Customers will be able to check minimum requirements, calculate fees, and book appointments online, as well as easily apply online for many permits.

- **Data Unification:** A unified data layer is needed to bring cohesion to the permitting ecosystem without requiring mass system replacement.

- **Electronic Plan Review:** The City launched a multi-department electronic plan review (EPR) process that eliminates hard copy construction plans for certain permit types. This enables more efficient management of documents across departments and review teams as well as provides more transparency and accessible to the review process for customers

- **Digital Queuing:** A state of the art queuing system with artificial intelligence features enables us to learn about customer behavior and examine the time spent with departments. From this information we can set real expectations for customers about wait times and prioritize initiatives for service enhancements with the Permitting Departments.

## San Francisco Technology Goals

To transform local government services, we need to leverage modern technologies. Through the adoption of user-centered design, city services will be on course to adapt to the needs of every resident.

The delivery of “shared services,” or internal services like budgeting, human resources, procurement, and Information Technology (IT), are critical factors in the City’s ability to deliver universal accessible services.

The following strategic goals describe how we plan to align our technology investments and internal operations to achieve our vision.

**Goal 1 - Online and Accessible City Services Residents Can Use**

**Goal 2 - City Operations that are Efficient and Cost-Effective**

**Goal 3 - IT Infrastructure You Can Trust**

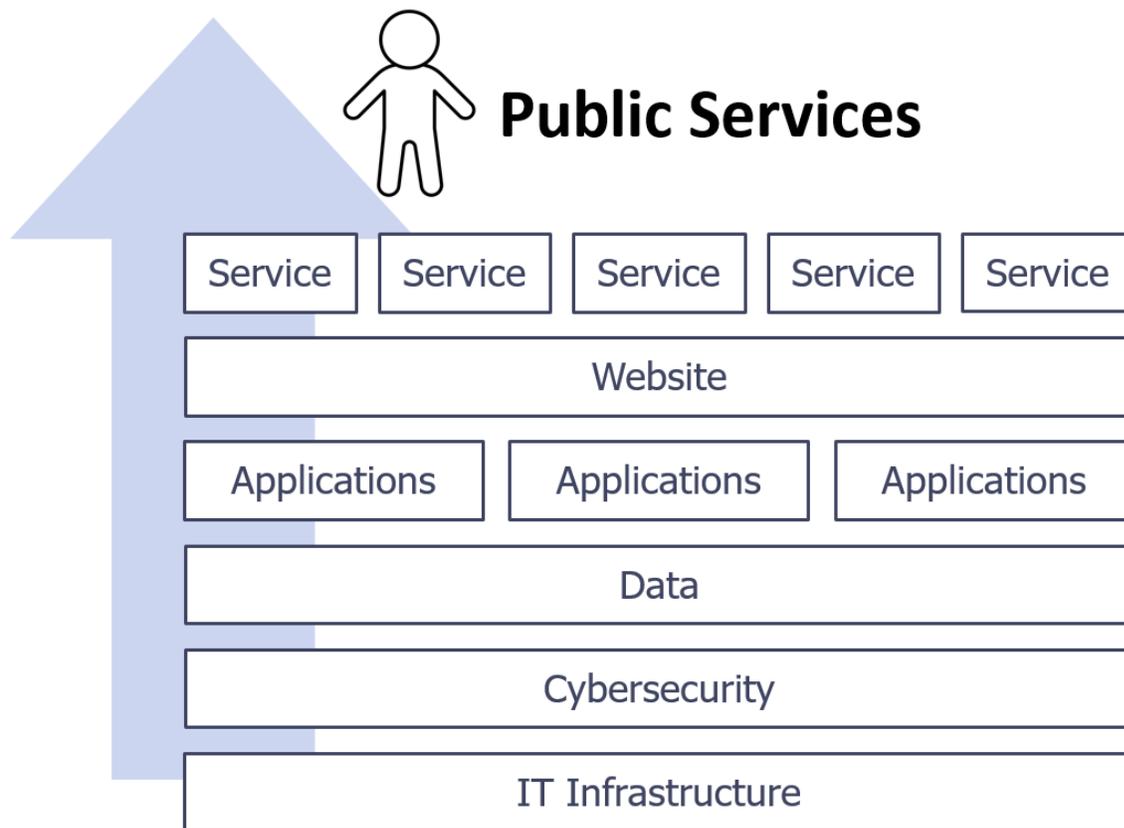


Figure 7: Each of San Francisco’s IT Shared Services need to work together to support the delivery of public services.

## Goal 1: Online and Accessible City Services Residents Can Use

Transforming government means making services more accessible and easier to use. Redesigning our operations and innovating with new services is key to our modernization efforts.

Over the next five years, departments have proposed 18 technology projects in support of technologies that improve the service experience. The combined projected cost for all projects is \$13.2 million.

The following agencies are leading the way to achieve this goal.

### Digital Services

Imagine a city where a family in the Mission could apply for affordable housing from a computer at their local library. Or an aspiring café owner could apply for and track every permit for her business online on a City website.

The City is committed to achieving this vision through transformative service redesign. The mission of the Digital Services Office is to do more than just build websites, but to rethink how the City delivers services. The primary responsibility of the Chief Digital Services Officer will be to help departments redesign existing services from the ground up and build services to be digital by default.

Over the next five years, the Digital Services team will continue to build sf.gov as a platform to support online and accessible services. Ultimately, we want every resident, visitor, and business to feel confident that whenever they need something from the City, they can get it quickly and easily.

Read San Francisco's Digital Services Strategy in Appendix C.

### DataSF

DataSF data teams are engaged in citywide efforts to capture the full potential of data and achieve high-quality information for data sharing and analytics. Effective use of data is key to understanding City service delivery and improving it.

The City's Open Data Portal is a one-stop shop for employees and residents to access city data for reporting, business analytics, decision making, visualizations and predictive analytics. In partnership with the Controller's Office, programs like Data Academy also build internal capacity to leverage data and analytics more effectively.

## Office of Civic Innovation

To achieve the vision of unified services that are responsive to resident needs, the City will need to think creatively. The Office of Civic Innovation (OCI) helps to make government more collaborative, inventive, and responsive through its nationally recognized partnership programs.

The OCI team empowers City staff through public-private partnerships that introduce new approaches, expand resources and develop digital solutions for Citywide priorities.

- **Startup in Residence (STIR)** is a modified procurement program that connects government agencies with startups to develop technology products that address civic challenges.
- **Civic Bridge** is a program that connects City Departments with pro bono private industry teams to solve civic challenges.

Over the next five years, OCI will help create new public-private partnership models in the City, introduce new skills and tools that increase the responsiveness of government, and pilot new technologies citywide.

Read the Office of Civic Innovation strategic plan in Appendix C.

## Digital Equity

San Francisco is committed to building a supportive and inclusive digital society. As more City services become digital, the City has a responsibility to make sure all residents have access to all services. Our vision is that all residents have full and equitable access to digital technology and its benefits so all communities can thrive, regardless of demographic.

Through the Public Library, the SFConnected program, and TechSF, the City is training and exposing thousands of residents to digital tools. In particular, San Francisco's efforts target:

- Low-income households
- People with disabilities
- Residents with limited English proficiency
- And seniors

Connecting residents to the Internet also increases their exposure to new risks from criminals and scammers attempting to steal private information. In response, San Francisco is developing new programs to address these threats head on. The City's Digital Equity program, in partnership with the Department of Technology's cybersecurity team, has created digital literacy and security trainings to help our most vulnerable residents.

Read San Francisco's Digital Equity Strategy in Appendix C.

## Spotlight: Upcoming Project Highlights

Over the next five years, City departments plan to engage in the following projects to make City services more accessible and easy to use.

### **WorkforceLinkSF**

*Office of Economic and Workforce Development*

*Go-Live Target: FY 2022-23*

*Total Projected Cost: \$1,453,627*

The WorkforceLinkSF is a one-stop job-matching tool developed by OEWD to connect businesses with local talent. WorkforceLinkSF provides job seekers access to San Francisco's latest job postings so they can build their career and even apply for jobs before they go public through the First Source Hiring Program. A user-friendly platform allows for job searching based on an applicant's skill set and interest, and job seekers may apply for positions through the WorkforceLink and track the progress of their applications.

The WorkforceLinkSF makes it easy for employers to post their jobs on the site and search through a list of potential candidates based on our job matching software. Employers can view resumes and hire candidates directly through the WorkforceLinkSF while tracking an applicant's progress through the website.

### **Client Digital Services Program**

*Human Services Agency*

*Go-Live Target: FY 2021-22*

*Total Projected Cost: \$330,000*

The digital divide is a barrier confronting the low-income populations. While our service delivery providers have moved to online service delivery in response to COVID, a significant percentage of our clients are unable to benefit from these services due to a lack of access to technology and the internet, and a lack of knowledge and skills to utilize the technology. HSA is expanding its availability of employment and training services to virtual methods in order to provide additional options for clients to remotely engage in services.

### **DAHLIA Affordable Housing Portal**

*Mayor's Office of Housing and Community Development (MOHCD)*

*Ongoing Project*

The Housing Portal's multi-language online applications have made it easier for more people from diverse groups to become involved with MOHCD's inclusionary housing programs. The Housing Portal has turned a difficult, time-consuming, inconvenient and tough-to-navigate application set of procedures into a much simpler and quicker process. In addition, it made the process much more accessible by improving language access, increasing ease of use for residents with disabilities, and simplified reading levels. in many forms (language, physical, reading levels, etc.)

**Human Resources Modernization**

*Department of Human Resources*

*Go-Live Target: FY 2021-22*

*Total Projected Cost: \$5,489,000*

Our goal is to provide an exceptional applicant and employee experience where individuals understand the hiring timeline and are appropriately supported throughout their employment with the City. We also want to be able to measure and increase HR productivity by allowing analysts to focus less on manual data entry and more on providing effective consultation services to hiring managers. Hiring managers should understand what hiring options are available to them within the constraints of the complex merit-based system and receive the right level of support to be able to hire the best possible candidate in the shortest amount of time.

## Goal 2: City Operations that are Efficient and Cost-Effective

The onset of an economic recession has changed the financial picture for the coming years. Our technology solutions must continue to find ways to improve efficiency so that we can improve the quality of our services without increasing costs.

Over the next five years, departments have proposed 27 technology projects to improve operational efficiencies. The combined projected cost for all projects is approximately \$52.5 million.

The following efforts are leading the way to achieve this goal.

### Shared Services

An important technology initiative to improve City business operations is technology shared services. With 52 City Departments it can be difficult to deploy technologies that are supportive of the variety of business uses and yet, the goal of shared services is to optimize and economize technology investment and ongoing maintenance and support. Shared service delivery can be accomplished in a variety of ways such as:

- Purchasing from enterprise vendor agreements that reduce cost with volume discounts
- Using city infrastructure platforms – network, cloud and data – to avoid new investment and simplify maintenance costs
- Leverage technology support teams for Service Desk support to increase capacity
- Utilizing technology project managers to reduce project risk and maintain project schedules and deliverables

These shared services enable a consolidation and focus for resources that underpin all technologies. Delivering these common and standard services increases the resiliency and predictability of system performance and reduce operational costs.

### Enterprise Technologies

Citywide or enterprise technologies enable City programs and services to achieve efficiencies at scale. Supported by policy and procedures, shared, enterprise systems benefit the City by:

- Reducing duplication of business technology assets, data and solutions
- Achieving greater return on business technology investment
- Efficient use of resources through simplified and streamlined business systems
- Effectively and easily sharing data with seamless integrations
- Centralizing user support and administration functions
- Enabling Departments to be agile and quickly adapt
- Sharing the reports, dashboards and new services among the City-wide user community

Collectively, the Controller's Office, the Department of Technology, Human Resources, Health Service System, and Office of Contract Administration support citywide systems for shared services.

Over the next five years, the City will increase the use of shared, enterprise applications to reduce cost and speed the modernization of business technologies.

## Office of Contract Administration

Local government technology procurement is complex because, unlike standard commodity goods, technology requires licensing and a sustained relationship with vendors to maintain goods and products. With technology rapidly evolving every day, local government must have the ability to be responsive to new service demands and purchase the tools it needs quickly.

At the same time, local government is also committed to supporting fair and open competition in all strategic sourcing. Over the years, the City has built an extensive set of rules to ensure all procurement is upholding our highest ideals. Although the City must seek opportunities to acquire goods and services quickly, we must also account for these policies.

Over the next five years, the Office of Contract Administration and Department of Technology seek to create efficiencies and maximize our purchasing power to the greatest extent possible. Via enterprise agreements, guidance documents, and enhanced trainings on modern procurement methods, the City seeks to uphold ethical and streamlined purchasing citywide.

Read San Francisco's Technology Procurement Strategy in Appendix C.

## Spotlight: Upcoming Project Highlights

Over the next five years, City departments plan to engage in the following projects to improve the efficiency of our operations.

### **JUSTIS Program**

*Department of Technology*

*Total Projected Cost: \$1,300,00*

*Ongoing Project*

The JUSTIS Data Hub enables the secure exchange of criminal justice data (e.g. arrests, bookings, incarcerations, charges, court proceedings ...) between the Police, Sheriff, District Attorney, Superior Court, Public Defender, and Adult Probation agencies. These agencies rely on the JUSTIS Data Hub to conduct their daily operations. In 2019 the JUSTIS Executive Council adopted a 5-year roadmap to modernize the JUSTIS Data Hub's 20+ year old design and architecture. The modernization is required to support the justice agencies critical need for data analytics, dashboards, predictive analytics, and data driven decisions. During FY19/20 the JUSTIS Program has:

### **SF Budget, Performance Measurement, Projections & Reporting Project**

*Controller's Office*

*Total Projected Cost: \$6,442,587*

*Go-Live Target: FY 2021-22*

The objective of the Budget System & Performance Measurement Replacement Project is to replace the City's current budget systems. The current system is at the end of useful life with no continuous product support from vendor, which put both systems at risk due to lack of compatibility to the 1) ever changing world of technology, and 2) required security patches to correct systems' vulnerability to hacking or viral infection.

### **Police Officer Shift Scheduling System**

*Police Department*

*Total Projected Cost: \$610,000*

*Go-Live Target: FY 2021-22*

The objective of the Police Scheduling System project is to transition from the existing HRMS PeopleSoft system that is used to store employee HR related department data, employee training records and the assignment, scheduling and payroll of police department employees.

The existing HRMS PeopleSoft system is an older version and SFPD lacks the in-house expertise to modify or enhance the functionality to meet the department's scheduling and citywide payroll needs. Because of these limitations, SFPD must employ manual processes outside of the HRMS system and submit files to the Controller's Office that is also manually processed into the City's PeopleSoft system.

### Goal 3: IT Infrastructure You Can Trust

City operations rely on our underlying technology infrastructure. Much like capital projects, technology infrastructure requires continual maintenance and investment to ensure critical systems are available at all times.

Over the next five years, departments have proposed 44 technology projects to support technology infrastructure. The combined projected cost for all infrastructure projects is projected to be \$150.9 million over the next five years.

The Department of Technology is supporting this goal through the following activities.

#### Network, Data Centers, and Telephony

The City's technology infrastructure is aging and requires a focused effort towards modernization. In particular, our three priority infrastructure areas are: the City's network, telephony, and movement to affordable cloud environments.

**Network:** The Department of Technology manages 280 miles of fiber-optic cable to support 400 City facilities and operations throughout San Francisco. With the ultimate goal of connecting all City buildings by 2025, the City's fiber network is a critical piece of infrastructure enabling the next generation of City services.

Over the next five years, the Department of Technology will install a Software Defined Network (SDN). The City's SDN will provide a future proof, high-availability network that can accommodate the demands of data from future applications, voice, video, cloud providers, and mobility. The modernized network also delivers continuity of operations with a secondary data center in the event of a disaster.

- **Telephony:** Investment in the City's network also provides an opportunity to modernize the City's voice communications. A unified communication tool is critical to support 35,000 employees and 60 City Departments in a highly mobile and decentralized work environment. By replacing the decades old analog phone system with a citywide Voice-over-Internet Protocol (VoIP) system, the City seeks to lower overall maintenance and support costs.
- **Cloud Environment:** The Department of Technology is also investing in the build of a hybrid cloud environment. Named SFCloud, City cloud services are housed in-house with high speed connections to several third party cloud providers. The City network extends to these environments to allow scalability, redundancy, and a managed security environment that is compliant with specialized data requirements.

Read San Francisco's Technology Infrastructure Strategy in Appendix C.

## Cybersecurity

The Department of Technology is taking steps to secure City infrastructure by establishing strong policies and practices while integrating superior cybersecurity tools. Protecting our systems and data from outside intrusion or disruption is the mission of the City's Cybersecurity Program.

The City deploys a range of cybersecurity measures to keep business operations safe online. In addition to implementing consistent vulnerability management practices and continuing to refine identity and access management, the Chief Information Security Officer will build a robust risk mitigation program over the course of the coming years.

Read San Francisco's Cybersecurity Strategy in Appendix C.

## Disaster Preparedness

Whether from a natural or man-made emergency, the City's information systems and communications must be operational and restored quickly if interrupted. From public safety radio communications to network and internet service, disaster preparedness and cyber security protections require constant vigilance.

Several offices are charged with actively preparing San Francisco including:

- City Administrator's Office
- Department of Emergency Management
- City's Chief Resiliency Officer
- Controller's Office
- City's Chief Information Security Officer

Redundancy and failover of the City's critical system ensure that the City can quickly stabilize and begin to operate during a crisis. Regular stress-testing and building resiliency by expanding our regional partnerships remains a priority for City departments.

The coming years will see a robust regional exercise program, which will include simulated cyberattacks, tightening our collaboration with our neighboring counties and cities, and entrenching our partnerships with federal and local cyber professionals.

## Upcoming Project Highlights

### **Network Maintenance**

*Department of Technology*

*5-Year Projected Cost: \$18,554,091*

*Ongoing Project*

The City's network is critical infrastructure for all city business systems. Maintaining our networks is the first step to guaranteeing citizens reap the benefits of more effective digital services, for everything from getting a new passport to filling out paperwork when starting a small business.

The existing City network equipment is under capacity, obsolete, and in some cases unsupported, and is not "right sized" to handle the current and future needs of the City for data, video, and voice. In addition, nearly every department being brought onto VoIP lacks capable network switches which support VoIP which is needed to modernize the City phone system.

### **SFCLLOUD Efficiencies**

*Department of Technology*

*5-Year Projected Cost: \$7,320,000*

*Ongoing Project*

SFCLLOUD reduces risk and cost across the total cost of ownership of City business systems. SFCloud continues to expand and replace legacy infrastructure for City departments among a few: CON, 311, DBI, DPW, TTX, IAM, REC as well as other smaller departments. DT has added 700+ Terabytes of storage, provided 1576 primary servers, 459 Disaster Recovery (DR) servers as well as connection to 3 different 3rd party hosted cloud environments.

Many City department servers are located in substandard equipment closets that lack physical security, equipment redundancy and modern patch management tools rendering them vulnerable to cyber threats, earthquakes, electrical failures, fire, theft, and overheating. Moving these devices into a modern Data Center with a physical security, environmental controls, a fully redundant network, multi-layer security, disaster recovery (DR), fire suppression, earthquake safety features, armed guards, electrical generators, and monitoring tools greatly minimizes risks.

**Citywide Cyber Attack Protection and Response**

*Department of Technology*

*5-Year Projected Cost: \$ 776,737*

*Ongoing Project*

Departments are delivering more services digitally and staff with cyber expertise is needed to ensure services are safe and trusted by San Franciscans. Engineers with cyber expertise are in high demand and departments have experienced challenges finding candidates . Further smaller and medium sized department carry significant risk of financial loss from a cyber-attack because these departments often have large amounts of sensitive data and are connected with critical City systems.

To support Departments' digital efforts and restricted budgets, we are bringing forward COIT request for small and medium department cyber shared service team. The team will help support risk remediation, conduct vendor risk assessment, respond to alerts and clean malware, and fix vulnerabilities among other duties.

**Public Safety Network Modernization**

*Police Department*

*5-Year Projected Cost: \$500,000*

*Go-Live Target: FY 2024-25*

The objective of this project is to update the police network infrastructure to be able to provide capacity, reliability and 24/7 operational availability to ensure public safety goals are achieved.

## **Financial Forecast**

The following section previews the City's upcoming financial picture and describes the framework for future funding decisions.

## Technology Project Forecast

From FY 2021-22 through FY 2025-26, City departments anticipate initiating 89 projects for a total of projected cost of \$216.7 million. Projects are reflective of submissions from all 51 City departments with a projected cost over \$100,000.

*Figure 8: Five-Year Forecast of Technology Projects*

	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Number of Projects	74	69	56	42	36
Projected Cost	51,057,422	58,067,617	55,713,032	32,865,402	18,995,248

Note: Cost figures are in \$ millions.

Upcoming technology projects address a variety of business needs throughout the City. Below is a table detailing the number of technology projects in each primary theme.

*Figure 9: Forecast of Technology Projects by Theme*

	Number of Projects	Projected Cost
Business Specific	4	11,295,000
Case Management	9	37,784,000
Customer Service Experience	10	3,992,217
Digitization & Document/Records Management	4	3,273,000
Infrastructure: Network & Data Centers	20	45,324,329
Major IT Project	4	81,212,193
Resource Management	10	17,062,575
Risk Management: Cybersecurity & Business Continuity	16	9,909,407
Staff Collaborative Tools: Data Analysis/Data Sharing	12	6,846,000

Note: Cost figures are in \$ millions.

A full list of projects is available in Appendix E.

## Funding Structure

Within the City & County of San Francisco, the funding required to support and maintain existing technologies is separated from investments in new technologies. Overall, the vast majority of the City's technology budget is dedicated towards the ongoing support of operations and services. However, a growing portion goes towards new projects.

Every new technology project with a projected cost over \$100,000 is required to go through a centralized review and approval process conducted by the Committee on Information Technology (COIT).

At the end of the budget process, COIT provides funding recommendations to the Mayor and the Board of Supervisors for consideration in the final budget. Funding for all technology projects come from the following sources:

**COIT's Annual Projects Allocation** is a portion of the General Fund dedicated towards a range of technology projects throughout the City. Structured as a pay-as-you-go fund, General Fund Departments may request funding to supplement their annual operating budgets.

**COIT's Major IT Projects Allocation** was created in FY 2014-15 by the Mayor and the Board of Supervisors to support technology projects that impact multiple departments.

**Department Operational Budgets** support all projects less than \$100,000 and the continued licensing and maintenance cost for other technologies. The vast majority of the City's spending on technology is in operational budgets.

**The Department of Technology's Rate Model** supports the implementation of a number of Citywide ICT projects through the use of chargeback rates. In FY 2015-16, these chargeback rates were allocated 30 percent to Enterprise departments and 70 percent to General Fund departments.

**Non-General Fund Sources** are a critical source of support for technology projects throughout the City. Technology projects from the City's Enterprise Departments (San Francisco International Airport, Municipal Transportation Administration, the Port, and Public Utilities Commission) are wholly support by non-general fund sources. In addition, grants from Federal, State, and private sources are critical sources of funding for departments throughout the City.

## Evaluation Criteria for Technology Proposals

The COIT budget process is designed to support City priorities and to promote coordination and collaboration between departments. Projects requesting support from COIT's General Fund allocation receive an additional level of review to ensure City investments are impactful.

Every technology project is evaluated based on a set of standard scoring criteria to help identify investment priorities. The criteria help to analyze the variety of projects with diverse business purposes and contexts.

The scoring criteria includes the following measures:

- **Problem Definition:** Understanding the needs of residents should be well defined and thoroughly researched. User research with vulnerable members of the community should define why a technology investment is needed.
- **Strategic Alignment & Benefits:** Preference is given to projects that support Mayoral priorities and citywide challenges. Projects should clearly be able to define benefits with specific quantitative measures.
- **Development Plan & Change Management:** Departments should have a comprehensive plan to implement the technology and redesign existing operations. Special consideration should be evident on how users and staff will transition to a new way of doing business.
- **Architecture Review:** Technologies should support citywide cybersecurity and disaster preparedness standards and align with existing citywide investments. The City prefers technologies that are configurable off-the-shelf products with open application programming interface (API) standards.
- **Department Capacity:** With so many projects and ongoing activities in each department, consideration is given to the department's capacity to adequately deliver a new technology. Priority is given towards departments who have prioritized staff resources and have clear change management strategy in place.

All information on the COIT budget process is made available through monthly meetings at the Budget & Performance Subcommittee, and through the COIT website at <https://sfcoit.org/>.

### Annual Allocation Projection

Through the Annual Project Allocation, COIT makes funding recommendations towards ICT projects that range from citywide projects to department specific. The Annual Project Allocation is structured as a pay-as-you-go fund and intended to support new technology projects.

Over the next five years, the Annual Allocation is projected to continue to grow at 10% a year for a total of \$16.5 M. However, the General Fund Request for the 84 upcoming projects is \$99.7 million, leaving an overall projected shortfall of \$83.3 million.

Figure 10: Forecast of Annual Project Allocation

	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Number of General Fund Requests	52	51	41	33	30
General Fund Request Amount	25,063,696	26,721,171	20,232,409	14,224,946	13,491,719
Annual Allocation	2,290,372	2,519,409	2,771,350	4,231,325	4,654,458
Difference	(22,773,324)	(24,201,762)	(17,461,059)	(9,993,621)	(8,837,261)

Note: Fund figures are in \$ millions.

## Major IT Allocation

The Major IT Allocation is a dedicated funding source to large technology projects that impact multiple departments. These projects typically last multiple years and require intensive coordination to successfully develop and deploy. The replacement of the City's financial system is a recent example of a major IT project.

The addition of the Major IT Projects Allocation in FY 2014-15 has significantly increased COIT's ability to make funding recommendations. However, over the next five years, the current Major IT Projects require funding beyond resources available,

*Figure 11: General Fund Requests on the Major IT Allocation*

Major IT Projects	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Computer Aided Dispatch Replacement	2,500,000	8,875,642	25,398,626	11,401,637	-
City Telecom Modernization	795,000	730,000	630,000	570,000	20,000
Public Radio Replacement Project	3,807,579	3,807,579	3,807,579	3,807,579	3,807,579
Property Assessment & Tax System	4,736,633	3,386,274	-	-	-
Projected Major IT Allocation	15,544,212	25,048,633	25,703,497	26,227,521	28,800,273
Difference	3,705,000	8,249,138	(4,132,708)	10,448,305	24,972,694

Note: All figures are in \$ millions.

In addition, several other projects are potential Major IT Projects, including:

- JUSTIS Program (Department of Technology)
- NIBRS-Compliant Record Management System (Police)
- Citywide Customer Relationship Management (City Administrator)

With multiple projects on the horizon, the City is forced to sequence projects to support City priorities. Although the City recognizes the inherent risks of extending a project's timeline, which can include an increase to project costs, project funding must be spread over the five-year period of this plan.

Read the details on the City's Major IT Projects in Appendix F.

## Recommendations

San Francisco is proud to be global leader in the delivery of government services and is eager to incorporate the next generation of technologies. Working together to tackle our greatest problems, technology will play a pivotal role in helping to make our City a better place to live.

To address current and future needs, COIT recommends the following:

**Recommendation 1 – COIT allocation levels should return to pre-COVID levels by FY 2025-26.**

Demand for technology investments continue to outpace available funding levels. The need to replace legacy technologies, support critical Information Technology (IT) infrastructure, and modernize our services has never been greater. As the City's finances begins to recover, investments in one-time technology investments should be a top priority.

**Recommendation 2 – Dedicated Funding for Universally Accessible Services.**

The competing needs of an aging technologies and demand for modern services has reached a breaking point. Under current trends, all existing COIT funding will be consumed by replacement of legacy systems. A dedicated funding source is needed to support modernization efforts and to ensure all City services are universally accessible. By FY 2022-23, the COIT Annual Allocation should be boosted by 5% to support service redesign projects.

**Recommendation 3 – City departments to submit Digital Transformation roadmap alongside FY 2022-23 budget proposals.**

Currently only about 1/5 of City services are designed to meet the needs of our most vulnerable residents. To achieve the ICT Plan vision of universally accessible services, Department budgets must prioritize the development of services that are online, mobile accessible, and designed to meet the City's web accessibility standards.

Starting in FY 2022-23, Departments should submit a roadmap for digital transformation to COIT. COIT should regularly report on the City's progress in redesigning services to be universally accessible. The Citywide Service Inventory should be regularly updated every other year, and regular updates should be provided to COIT on the status of digital transformation efforts.

## **Appendix A: Legislation**

[Five-Year Information and Communication Technology Plan – FY 2021-2022 through 2025-2026]

Resolution adopting the City's Five-Year Information and Communication Technology Plan for FYs 2021-2022 through 2025-26 pursuant to San Francisco Administrative Code Section 22A.6.

WHEREAS, San Francisco Administrative Code Section 22A.6 requires the Committee on Information and Communication Technology (COIT) to submit and the Mayor and the Board of Supervisors to review, amend and adopt in odd-numbered years a five-year ICT plan; and

WHEREAS, COIT reviewed and unanimously approved the City's fifth five-year ICT plan at its meeting held on February 18, 2021; and

WHEREAS, COIT-approved ICT plan outlines guiding priorities the City will focus on in the next five years, outlines a financial strategy to fund these technology needs and lists the currently planned technology projects for each department over the next five years; and

WHEREAS, The plan details three strategic IT goals in order to align available resources and the identified department and citywide IT project requests over the next five years; now therefore be it

RESOLVED, That the Board of Supervisors adopts COIT's proposed information and communication technology plan, with such amendments and revisions as the Board deems appropriate, as the City's five-year ICT plan for Fiscal Years 2021-2022 through 2025-26, as provided in San Francisco Administrative Code Section 22A.6.

## **Appendix B: Administrative Code 22A – Information and Communication Technology**

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

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.

(k) When a City Department submits to COIT a Surveillance Impact Report under subsection 19B.2(b)(1) of Chapter 19B of the Administrative Code, COIT shall develop a Surveillance Technology Policy for the Department. For purposes of this subsection (k), "City Department," "Surveillance Technology Policy," and "Surveillance Impact Report" shall have the meanings set forth in Section 19B.1 of Chapter 19B of the Administrative Code.

#### SEC. 22A.6. INFORMATION AND COMMUNICATION TECHNOLOGY OPERATING PLAN.

(1) By March 1 of each odd-numbered year, COIT shall submit to the Mayor and Board of Supervisors a five-year Information and Communication Technology ("ICT") plan which shall 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.

(2) By May 1 of each odd-numbered year, the Mayor and Board of Supervisors shall review, update, amend, and adopt by resolution the five-year information technology plan and its corresponding budget request. The Mayor and Board of Supervisors may update the plan as necessary and appropriate to reflect the City's priorities, resources, and requirements as reviewed and approved by the COIT.

## **Appendix C: Shared Services Strategies**

- a. Digital Equity
- b. Digital & Data Services
- c. Innovation
- d. Cybersecurity
- e. Network, Data Centers, and Disaster Recovery
- f. Technology Procurement



## Update to San Francisco's Digital Equity Strategy

Mayor's Office of Housing and Community Development

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### **Citywide Vision:**

Full and equitable access to digital technology and its benefits so all San Francisco residents and communities can thrive, regardless of demographics.

San Francisco Digital Equity is a citywide initiative to ensure all residents have the tools and ability to participate in digital society. Through programs and partnerships, our team is focused on helping the city's vulnerable populations bridge the digital divide and leverage technology to improve outcomes in education, employment, and health.

To view the comprehensive FY 2019-24 Digital Equity Strategy, please visit:  
<https://sfmohcd.org/digital-equity>

The COVID-19 pandemic has dramatically shifted the way society views and relies on technology. Schools have replaced classrooms with online distance learning. Clinics and hospitals have replaced in-person visits with virtual doctor's visits and online messaging. Employers have replaced offices with widespread telecommuting for non-essential workers, and job centers are providing training and employment services to job-seekers now mostly online. People rely on the internet to order food and supplies, apply for public benefits, stay in contact with family and friends, and to receive up-to-date news and emergency alerts.

The digital divide has never been more evident than during the pandemic, and low-income residents, seniors, people with disabilities, and people with limited English proficiency in San Francisco are most at-risk. Only 59% of low-income San Franciscans have high-speed home internet connections and only 53% have basic digital skills, compared to 87% of all residents. There are also significant disparities by race, with 25% of Black and 22% of Latino residents lacking home Internet, compared to only 8% of White residents. Prior to the pandemic, this digital inequity prevented already disadvantaged populations from accessing the opportunities that technology provides, and the current pandemic has only amplified these challenges. Having quality devices, robust Internet connectivity, and digital skills are now urgent necessities to participate in society, and these trends will continue throughout COVID-19 recovery.

## **Accomplishments**

The City has long been engaged on advancing digital equity. Through its Fiber to Housing program, the Department of Technology has led the way on Internet connectivity by providing free, high-speed Internet to over 5,000 households across 36 low-income housing communities. In terms of digital literacy, thousands of residents participate in technology trainings each year to learn basic and advanced digital skills through programs from Department of Aging & Adult Services, San Francisco Public Library, Office of Economic and Workforce Development, and others.

Since 2017, the SF Digital Equity initiative has worked to coordinate the City's efforts on digital equity by addressing gaps in services and piloting new approaches to technology training, access, and support. It has funded organizations to expand digital skills training to hundreds of residents, including youth, job-seekers, newcomer immigrants, seniors, people with disabilities, and public housing residents. Based on its own research identifying cybersecurity as a high need in underserved communities, it has developed and led new cybersafety workshops for residents and community-based organizations (CBOs) across the city. Its pilot computer refurbishment program last year distributed over 200 computers to high-need residents. Finally, it has supported the efforts of City agencies and CBOs to bridge the digital divide through annual convenings like the Digital Equity Conference and documenting best practices and resources through the Digital Equity Playbook.

During COVID-19, the City has accelerated and expanded on these efforts by bringing free Wi-Fi to family housing sites and shelters to support SFUSD distance learning, ensuring DCYF's Community Hubs have adequate Internet access and computers for youth, distributing hotspots and devices, and providing remote digital literacy trainings. The result has been over 1,800

students attending Community Hub learning, over 500 students in 7 public housing units with in-home free broadband, and 41 community rooms equipped with Wi-Fi.

Strategic Goal #1: Access: All San Franciscans have affordable, reliable, and high-quality Internet access.

- **Objective 1: Connect residents to high-speed home Internet**

- 5-year target: 15,000 residents connected. 95% are satisfied or very satisfied with speed and quality of connection

- **Objective 2: Provide digital devices (including computers and tablets) to residents**

- 5-year target: 5,000 residents receive a device. 95% are satisfied or very satisfied with quality of device.

Strategic Goal #2: Digital skills and usage: All San Francisco residents have the necessary digital literacy to use technology in the most beneficial ways.

- **Objective 1: Train residents in basic digital skills, cybersecurity/online safety, privacy, information literacy, and advanced digital skills**

- 5-year target: 5,000 residents complete training. 90% report increase in technology proficiency after training.

## Digital and Data Services Strategy

Our vision: All San Franciscans can access high quality, seamless City services online with a mobile device.

The San Francisco Digital Services Team is transforming how residents interact with the City by building services designed around the people that use them. Our mission is to make it easy for San Franciscans to get things done with the City, online. We're committed to equity, inclusion, honesty, and involving our residents in everything we do.

Formed in 2017, Digital Services is a team of 40 consisting of product managers, designers, developers, researchers, service designers, and content strategists. DataSF has recently combined with Digital Services in a new step for data efforts in San Francisco. Data standards and service standards are two critical pieces that ensure joined up services and accurate data for decision-making. Bringing these two teams together creates a strong end-to-end digital offer that puts San Francisco at the forefront of civic data and digital services.

We work alongside city departments like Treasurer Tax Collector, 311, Assessor Recorder, Department of Technology, and Controller's Office. Together, we are engaged in citywide efforts to design services that meet the needs of residents. The goal is a virtuous circle that ensures that services are thoughtfully designed, data is open, and analytics drive service improvements.

### Values

- Simple services. San Franciscans do not need to understand the organizational structure of the City to navigate access to services
- Taking a human-first approach instead of a technology-first approach
- Equity is built into services at every level - Language translation, economic access, and other traditional barriers to services are all considered up front
- Using Agile approaches to design around specific use cases before scaling
- Data is used ethically and informs how we can dismantle structural discrimination in all forms
- Privacy considerations are designed in to all services

## How we will achieve this

Covid-19 has pushed departments to move further toward digital services and data-driven decision making. Our approach builds on this momentum with adjustments to work within San Francisco's highly federated organizational structure.

We aim to incorporate the following practices as citywide design standards in all our work.

### Designed for Accessibility

- ADA and W3C accessibility standards are the minimum acceptable standards for website accessibility, and we go beyond these minimums.
- Services are translated into Chinese, Spanish and Filipino by human translators before they are launched in English
- English content is written at 5th grade reading level
- Services have light page load times and few images that consume data plans

### Always Online and mobile first

- Move all City websites to sf.gov as the City's single web platform
- The service can be completed without the need for in-person visits or the use of physical mail.
- Services work on older mobile devices and multiple mobile browsers
- We will eliminate services that rely on PDF forms
- Services and online forms are mobile-responsive

### Seamless City Services

- Transactional data is shared across systems to support primary business processes; handoffs between departments are automated through data sharing
- Internal systems are inter-operable and data can move between them
- Services that span more than one department (more than 40% of all our services) are designed as a whole service from beginning to end
- Service analytics should show the whole service and be used to improve the service across departments

## Data-Driven

- Departments use high quality data to analyze service performance and drive improvements
- Data is used to understand and address equity issues in service delivery
- Data is easy to share internally and we have enterprise tools that support internal data sharing and analytics.
- The City is a model for the ethical use of data and algorithmic decisions
- When we buy new systems we will make sure they are 'interoperable' - they can join up with other existing systems to exchange data.
- The City is transparent about what data it collects and for what purpose, and it is collected in a way that allows for tracking of disparities and inequities across systems
- There are common sources of truth for data underlying decision-making, and those sources are transparently surfaced to the public via the open data portal
- Staff capability is built so that departments can use data and apply analytics to have tangible impact on service delivery

## Standards

- Build on existing work to expand shared standards for data collection and reporting
- Develop shared standards for customer experience, including accessibility and equity
- Lead the way in developing principles for the ethical use of data
- Balance service delivery with the need to protect residents' privacy by developing standards and approaches to privacy at every stage.
- Develop meaningful data governance and standards



Our mission is to empower City departments by introducing new approaches, resources and inclusive technologies to address Mayoral priorities. We work with City departments, community partners and residents to drive impact on some of the City's biggest challenges. OCI brings a set of tools, methodologies, and resources to help teams collaborate and come up with new ways of solving difficult problems:

- **Partnerships & Facilitation.** Build partnerships between public and private sectors to achieve common goals. Private partners are collaborating with city government in ways that push new boundaries and allow government to reap the benefits of an entrepreneurial spirit.
- **Human-centered design.** Bring together multiple parties with shared interests and an attention to the human experience to design and test new ideas and producing timely, relevant, and ethical solutions. Using a human-centered design approach makes products and services more impactful.
- **Rapid prototyping.** Make a point with prototypes. Prototypes create results quickly, enable teams to show momentum, and gain buy-in, making a bigger difference to both City stakeholders and residents. With agility and passion, prototyping can build recognition, garner trust and encourage learning.

### Vision for Innovation

We imagine Innovation flourishing in the following avenues:

1. **Foundations:** OCI programs improve something the City already does to deepen the impact on people's lives. For example, a team might simplify a core business process, redesign a customer service systems, or make information and programs more accessible to residents through online services.
2. **Research:** OCI teams adapt a tried and true idea to a new context. As part of a system with tremendous breadth and scale, program teams are uniquely positioned to borrow great ideas or catalyze the adoption of proven ideas City-wide.
3. **Experimentation:** Teams develop something entirely new to achieve Mayoral or departmental goals. This may be a new service, process, policy or tool — the possibilities are endless.

## Background

The Office of Civic Innovation works to improve City services and solve issues with clever solutions that mobilize public and private resources, relying on creativity and collaboration. This effort is reflected in the following programs:

**Civic Bridge (Probono Consulting):** Civic Bridge recruits private sector professionals to volunteer their time to work alongside government employees on critical City issues. Pro bono volunteers increase the City's capacity to identify and analyze pain points and provide agile and iterative solutions.

**Startup-in-Residence (STIR) (Innovative Technology Piloting & Procurement):** The STIR program is a collaborative process that connects city agencies with innovative tech companies to solve challenges together. STIR empowers City departments to streamline technology acquisition and reduce risk through a try-before-you buy methodology.

## Accomplishments

### Civic Bridge

- Since Civic Bridge's launch in 2015, the program has seen 37,000 total volunteer hours and an estimated \$5.48 million in pro bono services. The program has successfully executed 55 projects, working with over 20 departments and 26 private sector partners. Projects have ranged from helping residents find affordable housing to improving access to eviction support services and much more.
- In 2019, Civic Bridge expanded to include the Day of Service model. Similar to Civic Bridge's traditional 16-week program, Day of Service matched private sector volunteer teams with City departments to tackle a civic challenge. This program was among three other municipalities recognized by Bloomberg's by the prestigious Engaged Cities award in 2019.
- In 2020, Civic Bridge secured the City's first project with Google.org, engaging a team of Google.org fellows full-time for six months to work with a multi-departmental team analyzing City housing pipeline data, generating \$750,000 in pro-bono employee time. During this time, Civic Bridge expanded to a multi-cohort model, doubling the number of collaborations per year.

### STIR

- OCI created the Startup in Residence program (STIR) to bridge the gap between startups and government. The 2014 pilot was called Entrepreneurship in Residence. The following year, the U.S. Department of Commerce awarded a three-year grant to scale Startup in Residence in four Bay Area cities: Oakland, San Francisco, San Leandro and West Sacramento.
- STIR partnered with the [City Innovate Foundation](#) to expand to 11 cities across the United States in 2018. To date, the program has worked with nearly 30 startups. Since the program's inception, 26 solutions have been developed through STIR for over 18 San Francisco City departments. These have ranged from improving the foster parent application process to making the planning code more accessible to small businesses using machine learning.

- STIR piloted the City’s first challenge-based procurement model, which was revised in 2019 in partnership with the Office of Contracting Administration and the City Attorney’s Office, creating the first city-wide template for challenge-based procurement.

**Strategic Goals**

**Goal 1: Innovative City - Create partnerships between the City and County of San Francisco, the private sector and academia.**

OCI brings the best and brightest to City Hall to tackle issues. Connecting these groups brings collaborative gains to government and society.

#	Objectives	Supporting Strategies
1	<b>Build relationships with reliable partners to contribute expertise</b>	<ul style="list-style-type: none"> <li>• Host annual pro bono convening</li> <li>• Identify and scope partnership opportunities of different scales</li> <li>• Support partners with internal recruiting</li> </ul>
2	<b>Develop greater understanding and trust between City departments and the private sector</b>	<ul style="list-style-type: none"> <li>• Develop and deploy trust-building playbook for successful and collaboration</li> <li>• Host informal public-private networking events around shared interests and communities of practice</li> </ul>
3	<b>Create visibility for private organizations into new opportunities for government engagement</b>	<ul style="list-style-type: none"> <li>• Encourage new types of companies with new business models</li> <li>• Inspire cases for business expansion</li> </ul>

**Goal 2: Responsive City - Empower staff with accelerated models of problem solving.**

San Francisco’s commitment to its citizens and business partners often means allocating staff time and resources can be challenging. Partnership programs bring in additional capacity and generate powerful ways of meeting deadlines and ensuring city excellence and uninterrupted service.

#	Objectives	Supporting Strategies
1	<b>Develop project opportunity pipeline</b>	<ul style="list-style-type: none"> <li>• Develop ongoing pipeline of civic problems and opportunities</li> <li>• Modularize and create menu for different levels of partner engagement</li> </ul>
2	<b>Operate world-leading local government pro bono partnership program</b>	<ul style="list-style-type: none"> <li>• Create Civic Bridge Partnership Playbook</li> <li>• Refine matching strategies to maximize impact</li> <li>• Demonstrate value of engaging with pro bono partners</li> <li>• Cultivate institutionalization and scaling partner</li> </ul>
3	<b>Formalize model for accelerated technology pilots and procurement</b>	<ul style="list-style-type: none"> <li>• Via STIR, partner with</li> <li>• Office of Contract Administration and City Attorney’s Office to streamline pilot procurements and opportunities for piggybacking and scaling</li> <li>• Carve out and define roles for individual cities to inform national STIR model</li> </ul>
4	<b>Prototype new partnership models leveraging partner networks to fill capacity gaps.</b>	<ul style="list-style-type: none"> <li>• Continuously evaluate program models to build on learnings and value proposition</li> <li>• Apply partnership model to policymaking around emerging technology.</li> <li>• Test, refine and design complementary partnership models</li> </ul>

**Goal 3: Agile City - Introduce skills and tools that increase responsiveness of government.**

OCI encourages highly collaborative projects that allow public sector employees to engage with private sector professionals with a range of expertise. Motivated government entrepreneurs are rewarded with additional resources and growth opportunities, while government staff gain new skills and tools in their roles beyond the duration of the program.

#	Objectives	Supporting Strategies
1	<b>Identify skills gaps for modern service delivery and policymaking</b>	<ul style="list-style-type: none"><li>• Survey city staff for skills gaps and professional development aspirations</li><li>• Recruit partners responding to needs and interests</li></ul>
2	<b>Bolster collaboration and partnership skills to lead effective, meaningful engagements</b>	<ul style="list-style-type: none"><li>• Develop curriculum to increase individual skills and capacity to lead effective public-private partnerships through our partnership programs</li><li>• Demonstrate value of partnerships</li></ul>
3	<b>Increase use of prototyping and structured experimentation by City staff</b>	<ul style="list-style-type: none"><li>• Provide training on structured approaches to identifying, prototyping, and implementing new ideas</li><li>• Demonstrate value of piloting or testing a new approach to an existing problem</li></ul>

**Goal 4: Creative City - Nurture a culture of creativity, experimentation, and innovation.**

Our team engages with senior City leadership to gain executive buy-in and resourcing for changemakers in Departments. We also connect government intrapreneurs with each other, building a community of support and encouragement for public service professionals across agencies.

#	Objectives	Supporting Strategies
1	<b>Provide supportive environment for innovation</b>	<ul style="list-style-type: none"><li>• Create outlets for experimentation with senior executive buy-in</li><li>• Establish clear processes and protocols for those interested in developing new ideas</li><li>• Provide moral support and barrier breaking as partners navigate complex City processes</li></ul>

2	<b>Build a network of innovators</b>	<ul style="list-style-type: none"> <li>• Provide forums for innovative employees to advocate for new approaches and share best practices</li> <li>• When employees pilot new ideas, connect them with mentors who can provide leadership and guidance through the innovation process</li> <li>• Launch innovation office hours for City staff to get advice on projects, learn about different tools and tactics or explore a partnership</li> </ul>
3	<b>Celebrate and promote innovative projects and people</b>	<ul style="list-style-type: none"> <li>• Recognize and celebrate new ways of problem solving via the Data and Innovation Awards</li> <li>• Share stories of innovative work on a blog and across media platforms</li> </ul>

### 5 Year Roadmap

FY 2021-22	<ul style="list-style-type: none"> <li>- Execute two cycles of Civic Bridge projects focused on high-priority projects and digital maturity areas for programs and services</li> <li>- Pilot academic track to bring academics into collaborations</li> </ul>
FY 2022-23	<ul style="list-style-type: none"> <li>- Expand Civic Bridge by enrolling more City departments</li> <li>- Evaluate how to expand the STIR program</li> <li>- Develop a robust case-study repository to share best-practices, effective approaches new methodologies to address civic challenges.</li> <li>- Support and expand the SFGov Innovators Network</li> </ul>
FY 2023-24	<ul style="list-style-type: none"> <li>- Continue to execute impactful projects through Civic Bridge</li> <li>- Continue to execute impactful technology projects through STIR Network</li> <li>- Identify new models for collaborations with external partners</li> </ul>



## Cybersecurity Strategic Plan

### Department of Technology

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The City Cybersecurity team's mission is to empower departments with knowledge and a robust suite of cybersecurity tools to protect San Francisco. The Cybersecurity team, is focused on the following avenues of growth:

- **Cyber-aware San Francisco.** Build staff knowledge and cyber risk awareness: protecting the City depends not only on the successful use of security software, but experience and familiarity with potential threats. The CCSF staff's vigilance to cyber risk is the first line of defense alongside myriad cybersecurity tools.
- **Digital San Francisco.** Secure tools for effective collaboration: cybersecurity not only protects data and privacy but facilitates effective digital service delivery and inter-organizational collaboration. Tools and infrastructure provided by the Cybersecurity team guarantee innovation and growth without sacrificing digital safety.
- **Secure San Francisco.** Protect systems and alert users for business continuity: cybersecurity is an essential for San Francisco to remain resilient across City business — from radio and telecommunications, servers and networks, to computers and mobile devices — in the face of potential cyber disruptions.

#### Vision for Cybersecurity

We envision being a trusted leader and global example in providing innovative technology services and solutions to all CCSF agencies, the people of San Francisco and worldwide. The Cybersecurity team imagines City cyber protections growing in the following directions:

1. **Foundations.** Building on existing systems, City teams will train and innovate new ways of keeping the City cybersecure.
2. **Research.** The City Cybersecurity team will implement solutions demonstrated in other areas or municipalities to catalyze development and accelerate the ability to deal with ongoing challenges.
3. **Experimentation.** The City Cybersecurity team is committed to innovation, creativity and deploying genuinely novel and exciting ideas to achieve Mayoral or departmental goals.

#### Strategic Goals

- Goal 1: People** – Inform and educate City staff and officers on cyber risks and strong cyber practices, support secure engagement with vendors and partners, and promote cyber safety for San Franciscans
- Goal 2: Tools** – Enable innovation, collaboration, and digital transformation of City services through secure development and access to City data, email and collaboration tools, as well as websites and applications.
- Goal 3: Tech** – Build resiliency against cyber disruptions of City radios and telecommunication technology, servers and networks, and computers and mobile devices

## **Background**

City Cybersecurity team develops and implements City cybersecurity policy, monitors and mitigates cyber risk, protects City IT infrastructure, and defends information resources by responding to active threats. As we progress towards a greater connected and digital City, the cybersecurity of our digital infrastructure is vital to for uninterrupted access by San Franciscans to digital City services.

## **Accomplishments**

### **Cybersecurity Stewardship and Best Practices Initiative:**

- With support from COIT, the City Cybersecurity team developed new cybersecurity policy requirements, shared methodology, and approaches for department cybersecurity risk assessment. Twenty departments have completed the full assessment and developed strong mitigation plans to manage their cyber risk.
- The City Cybersecurity team has strengthened cyber training for City staff with a focus on use of the City learning platform. Training enrollment increased by more than three times from the year before, reflecting the growing use of technology and remote work by City staff.
- The City Cybersecurity team also focused on engagement with the community of department Information Security Officers and Emergency Managers to develop the City's first cyber emergency plan.

### **CCSF Identity Management:**

- The City recently implemented a flexible, modern platform for management identity and access to City and department applications and tools. The platform strengthens access safeguards and improves staff experiences. Forty-four City applications have already been connected to the platform.
- The City Cybersecurity team enhanced protections for email and collaboration tools with a specific focus on sensitive data shared with external parties. The new file sharing platform also safeguards sensitive data sharing between departments and with external partners.

### **24/7/365 System Monitoring and Alerting:**

- The City Cybersecurity team continues to observe an increase of cyberattacks on City services and government organizations around the country. As such the Cybersecurity team has committed to protecting City technology infrastructure against ransomware and data theft through a City cyber alarm system.
- Virtually every department has participated in the roll-out of City cyber alarms for 24/7/365 attack detection and response. Additional security software has been deployed to 30 departments, allowing their systems to preemptively detect and mitigate vulnerabilities before attackers exploit them.

## Strategic Goals

### **Goal 1: People – Train City staff and officers on cyber risks and strong cyber practices, facilitate secure engagement with vendors and partners and maintain cyber safety for San Francisco and its residents.**

Alongside a robust suite of security software and infrastructure, staff training and knowledge of potential cyber threats form an essential first line of defense.

#	Objectives	Supporting Strategies
1	Cultivate cybersecurity and best practices knowledge	<ul style="list-style-type: none"> <li>• Develop mitigation plans for department leaders</li> <li>• Provide staff with general cybersecurity training</li> <li>• Achieve more than 90 percent training completion and over 50 percent reduction of click rates during phishing simulations</li> </ul>
2	Develop cybersecurity emergency readiness and business continuity	<ul style="list-style-type: none"> <li>• Train staff on cyberthreat response and emergencies</li> <li>• Achieve over 90 percent training completion rate</li> </ul>
3	Maintain cybersecure relationships with existing or potential vendors and partners	<ul style="list-style-type: none"> <li>• Perform cyber risk assessments on outside vendors and partners</li> <li>• Train at-risk vendors and partners on how to reduce and minimize potential cyber risks</li> </ul>

### **Goal 2: Tools – Enable innovation, collaboration and digital transformation of City services through secure development and access to City data and email and collaboration tools, as well as websites and applications.**

A secure and digital platform guarantees the City’s diverse organizations can successfully and safely collaborate with each other and external partners, minimizing potential losses and interruptions to City business services.

#	Objectives	Supporting Strategies
1	Protect City against cyber attacks and unauthorized data access	<ul style="list-style-type: none"> <li>• Continue using and increase use of City Identity and Access Platform</li> <li>• Move more than 90 percent of applications to said platform</li> </ul>
2	Develop and maintain secure collaboration tools	<ul style="list-style-type: none"> <li>• Ensure more than 90 percent of departments are using safeguards for email and collaboration software</li> </ul>
3	Support secure transfer of data between City organizations and outside vendors and partners	<ul style="list-style-type: none"> <li>• Ensure more than 90 percent of data transfers are done through the secure sharing platform</li> </ul>

**Goal 3: Tech – Build resiliency against cyber disruptions for City radios and telecommunication technology, servers and networks and computers and mobile devices.**

In the event of an actual cyberattack, quickly recognizing the source, informing affected parties and initiating an emergency response are critical to minimizing damage and interruption to services. Thorough implementation of security software and collaboration with department IT teams will ensure the City and County of San Francisco is poised and ready.

#	Objectives	Supporting Strategies
1	Detect and stop cyberattacks on City systems and networks	<ul style="list-style-type: none"> <li>• Ensure more than 90 percent of City computers and networks are protected with alarms and monitored for cyber attacks</li> </ul>
2	Enable Department IT teams to fix vulnerable systems and increase cybersecurity	<ul style="list-style-type: none"> <li>• Ensure more than 90 percent of City computers are equipped with security software to detect and combat cyber vulnerabilities</li> <li>• Ensure more than 90 percent of City software is updated to mitigate cyber vulnerabilities according to industry standards</li> </ul>

**5 Year Roadmap**

FY 2021-22	<ul style="list-style-type: none"> <li>- Assist departments with risk mitigation planning and execution</li> <li>- Enhance cyber training and increase completion rate</li> <li>- Conduct citywide cyber emergency preparedness exercise</li> <li>- Implement enhanced vendor risk assessment process and supporting platform</li> <li>- Promote adoption of City identity and access solution and security sharing platform</li> <li>- Increase resilience of cyber shared platforms</li> <li>- Complete deployment of cyber alarms and security agents to city computers</li> </ul>
FY 2022-23	<ul style="list-style-type: none"> <li>- Implement cyber training customized to staff roles and responsibilities</li> <li>- Enhance quantitative cyber risk model for Citywide cyber risk portfolio analysis</li> <li>- Pilot Bay Area regional initiative for common vendor cyber risk analysis</li> <li>- Pilot digital identity for San Franciscans to enhance usability of City services and protect privacy</li> <li>- Implement advanced data analysis for early detection of cyber threats</li> <li>- Automate cyberattack and vulnerabilities remediation</li> </ul>

FY 2023-24	<ul style="list-style-type: none"> <li>- Provide holistic understanding to City leaders of the cyber risk portfolio and potential impact of cyber risk on San Francisco communities</li> <li>- Streamline regional approach to assist with clear understanding of vendor cyber risk across the region</li> <li>- Implement digital identify that guarantees privacy protection and puts access in the hands of San Franciscans</li> <li>- Leverage advanced machine learning in collaboration with industry partners to protect against cyberattacks</li> </ul>
FY 2024-25	<ul style="list-style-type: none"> <li>- Continue to partner with Bay Area government teams and national organization for collective defense of government services against cyber attackers</li> <li>- Leverage world-class solutions to deliver digital City services with safety and privacy to San Franciscans</li> <li>- Educate vulnerable communities on strong cybersecurity practices to protect and promote use of digital City services</li> </ul>



## IT Infrastructure Strategic Plan

Department of Technology

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The Department of Technology delivers technology infrastructure and services for voice, data and video networks. These fiber and wireless networks provide services such as radio communications and internet connectivity. City's Infrastructure and Operations team is dedicated to delivering high-availability connectivity and performance for telecommunications, data processing, file storage and disaster recovery in a hybrid cloud environment. Based on a software-defined network and state-of-the-art security tools, this infrastructure is underpinned by efficient and low-cost equipment and operations to achieve the lowest cost of ownership and risk.

### **Vision for Infrastructure and Operations**

The City's Infrastructure and Operations teams (radio, fiber, network) strive to be a trusted leaders and partners delivering state-of-the-art, low-cost solutions to all CCSF agencies and the people of San Francisco.

#### Digital City Infrastructure

Investing in smart, sustainable technology to provide Internet service delivery to residents, government agencies, and businesses is an important rising opportunity. Digital Cities technologies includes several technologies—such as wireless connectivity, sensors, safety alarms, and sustainable solar lighting for outdoor public spaces. These modern technologies hold promise in improving efficiency, cost savings, speed, and functionality for a variety of public and commercial uses. Most importantly, this Digital Cities infrastructure would bring much needed broadband capacity to underserved neighborhoods. During the COVID pandemic, the City found that neighborhoods in the South East and Center of the City currently lack the underling fiber optic infrastructure to allow residents to reach educational, health care and employment on an equal basis. A ubiquitous digital cities network infrastructure would allow the City to quickly ensure that all members, especially those struggling with homelessness or housing costs to access to critical services. While it would not provide broadband to every home and business, it will provide the underlying platform to provide these services to the public in an emergency. public fiber backbone would allow the City to deliver

#### City Internal Business Infrastructure

The City teams drive digital transformation with cloud-enabling technologies that align next generation infrastructure with the changing needs of the City. These services will expand in the following ways:

*Infrastructure Foundations:* Plan, engineer, build, support and manage infrastructure that enables flexibility to support legacy City business systems as well as new technology investments and deliver the agility and capacity to handle emergencies. This smart intelligence infrastructure includes hybrid cloud data centers and networks, automated and tiered data protection platforms and multi-layered security and access control. CCSF's IaaS offers processing, storage and memory resource pools that can be used to build custom workload configurations suited to customers' business needs that can be managed independently by customers.

*Managed Operational Services:* Ensure service level agreements are managed effectively and proactive so that timely maintenance is completed to secure City data centers and network infrastructure. This ensures disaster recovery protocols for mission critical systems and are regularly monitored and maintained, creating resiliency which increases system availability and eliminates maintenance windows. Managed services include a robust VMware environment for compute and processing workloads, 800 Mhz radio infrastructure, high-speed network connectivity internally and to cloud providers and voice and telephone services such as soft phones, VoIP and call centers, as well as automated attendants.

*Capacity:* Deliver a hybrid cloud environment that optimizes application performance and maintenance while reducing costs. A hybrid model provides the benefits of cloud systems while maintaining flexibility to support applications that are less suited to the cloud. For newer business systems and Software-as-a-Service (SaaS) subscriptions, City infrastructure is extended to these third-party environments to integrate with CCSF's network and provide high speed and secure access. Easy access to public clouds is provided via the CCSF Cloud Exchange connection and highly resilient, highspeed interconnections with the CCSF Network, which clients can move into with established administration structures and onboard new cloud providers without the need to provision additional transport services. The City network's extension to these environments reduces latency and enables constant monitoring for cyber threats, in addition to easier access to public cloud providers.

## **Strategic Goals**

Goal 1: Highly Available Infrastructure – Engineer and deliver secure and resilient wireless and fiber networks and data centers (both City-owned and third party provided) infrastructure for current and future business system workloads.

Goal 2: Cost Efficient Capacity – Deliver server processing and storage capacity, connectivity and data transport at the lowest cost and with the most efficient system utilization possible to maximize real-time usage and reduce the demand for new capacity.

Goal 3: Excellent Customer Service – Ensure City departments receive excellent customer service when building, deploying and maintaining business systems.

## **Background**

The Infrastructure and Operations teams design, implement and manage the City's infrastructure (on premise and through third-party cloud environments), wireless and fiber networks and telecommunications systems. This infrastructure is the backbone of City technology and digital business systems. Maintaining a high-performing, reliable and large-distribution environment supporting 52 different department business units is complex. Systems must be flexible enough to meet business needs with low maintenance costs and zero trust security. As an example, the SFCloud ecosystem delivers IaaS (Infrastructure-as-a-Service), PaaS (Platform-as-a-Service) and full SaaS (Software-as-a-Service) environments to accommodate departments' ranging needs. Each virtualized environment can be viewed and managed from departments' customized, self-service consoles, providing SFCloud services greater versatility and agility while systems remain secure and efficient to maintain.

## Accomplishments

### Internet Service to Public Housing

The Fiber to Housing (FTH) project will build a fiber broadband network to support free Internet access to tenants in public and affordable housing sites, navigation centers and homeless shelters and sponsored by the City. (For the purposes of this summary, all of these are considered “affordable housing”.) City investment to deliver fiber-based internet service to affordable housing an “equity equalizer” and the services is not throttled or less than commercial broadband service. At its core FTH seeks to provide very low income residents grappling with housing costs and those struggling with homelessness with state-of-the art Internet access that will open educational, health care and work resources.

Through the Fiber for Housing Project, FTH, over the last 2.5 years, the Department of Technology has connected over 6,000 units in 35 affordable housing sites to provide residents with free broadband internet access. As part of this effort and in response to the Covid-19 pandemic, in the Spring of 2020, DT accelerated the expansion of FTH to and 1,500 units in affordable housing buildings with high concentrations of students to accommodate distance learning. Also 32 community rooms were equipped with wifi for residents to access the Internet.

### Network Modernization:

The City's network remains critical to the five-year Network Modernization project underway to modernize business systems with updated infrastructure and VoIP communications. Existing City network equipment does not provide enough capacity and is obsolete. In some cases, the equipment is no longer supported or is not sufficient to handle current or future data, video and voice processing needs. Moreover, as nearly all City departments are migrating to VoIP, updated network switches are critical to maintaining communication with the City's older phone systems.

The last three-years of the City's Network Modernization Project have seen existing network infrastructure successfully upgraded to improve performance, resiliency and security. The upgraded infrastructure accommodates current and future data demands for VoIP, digital business systems, video, document management, SaaS applications and mobility. Completed work includes:

- the design and engineering of a modern, software-defined network that will secure and support the City's digital future;

- implementation of the network core at the City's primary data center;

- and implementation of the new City Permit Center which houses 12 departments and 1,800 employees.

This concentrated work has created millions of dollars in savings and enables San Francisco's future. Telecommuting during the COVID-19 pandemic would also not have happened without this new network core. The improved network provides Power-over-Ethernet (POE), can support

existing City systems and provides increased capacity for VoIP and video applications. It is also 15 times faster than the old network and takes six times less space in City data centers.

#### Telephony Modernization:

VoIP uses Internet Protocol (IP) to transmit telephony voice signals as digitized data packets over an IP network. One of the City's motivations for converting to VoIP is that a significant portion of the current Avaya PBX systems are no longer supported by the vendor. These PBX systems are obsolete and suffer regular failures. Voicemail systems are also an essential service and Avaya maintenance costs for them are skyrocketing. When these patchwork and unstable PBX systems are replaced with the VoIP telephone system and retired, the City will save \$2 million per year.

Additional savings will be created by efficiencies from centralization and the decreased need for real estate space in City data centers. The new VOIP infrastructure requires 1/1000th of the space required by the legacy system and space is at a premium. The system is centralized into 4 "pizza box" sized devices. It's quadruple-redundant, situated in a highly-survivable data center, has encrypted communications for additional safety, it is very easy to support because it is centralized (as opposed to being separated between 100's of racks throughout the entire city) and is collocated with the network, thereby removing the need to have miles of telephone wiring inside each of our City buildings. Moreover, an overall reduction in complexity brings operational savings and the benefits of modernized telephony system. With VoIP, modern and cutting-edge infrastructure can accomplish much more with much less.

The Telephony Modernization project started in FY19/20, and to date DT has successfully migrated 30 plus departments to VoIP. This includes the state-of-the-art City Permit Center at 49 South Van Ness, which houses 12 departments and 1,800 employees serving the public.

#### Digital City Initiative

The Digital Cities Initiative would leverage the fiber and internet infrastructure to the City housing units and provide additional benefit to surrounding city facilities such as navigation centers, parks, emergency shelters, community centers, and medical sites. The City fiber Internet service would decrease operational costs to these City funded public/private facilities.

The Department of Technology completed the first phase of the Digital City initiative which was a feasibility study. The study recommends an initial two-year pilot program at a cost of \$2 million. If successful, the City could consider a citywide implementation. This program would replace the aging Emergency Call Box system and Outdoor Public Warning System with newer, more secure robust alternatives that would enhance public safety and deliver wifi services. The initiative could be funded with grants or public-private partnerships.

## Strategic Goals

**Goal 1: Highly Available Infrastructure – Engineer and deliver secure and resilient network and data center (both City-owned and third party provided) infrastructure for current and future business system workloads.**

Highly available infrastructure and communications enable City departments to provide efficient and cost-effective services and look forward to new digital services for the City.

#	Objectives	Supporting Strategies
1	<b>Extend the City network to third party cloud providers and enable monitoring of the remote workloads.</b>	<ul style="list-style-type: none"> <li>• Complete the connectivity to AWS</li> <li>• Build connectivity to Google Cloud</li> <li>• Build and implement the redundant backhaul</li> </ul>
2	<b>Develop automated processes to remotely monitor, secure and support all cloud environments.</b>	<ul style="list-style-type: none"> <li>• Provide new self-service tools for users to manage their system environments</li> <li>• Leverage new SDN to provide security alerting and edge awareness</li> </ul>
3	<b>Exercise disaster recovery and prove recovery point times for City mission critical systems.</b>	<ul style="list-style-type: none"> <li>• Test failover and operational readiness for mission critical systems and document findings</li> <li>• Implement needed improvements to improve resiliency and reduce time to recover.</li> </ul>

**Goal 2: Cost Efficient Capacity – Deliver server processing and storage capacity, connectivity and data transport at the lowest cost and with the most efficient system utilization possible to maximize real-time usage and reduce the demand for new capacity.**

Infrastructure operations must deliver cost-efficient service. Holding operational cost increases to three to five percent per year ensures funding for new investments in City business systems such as modernizing legacy systems or implementing new technologies.

#	Objectives	Supporting Strategies
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1	<b>Utilize the new Data Transport Contracts to achieve cost savings for ISP and fiber connectivity</b>	<ul style="list-style-type: none"> <li>Competitively quote data transport services and lower costs</li> <li>Assist Departments in correctly using these contracts to lower ISP and data transport costs</li> </ul>
2	<b>Enable Departments to have “choice” of platform type, e.g. IaaS, PaaS, SaaS, and providers to optimize their application environment and cost.</b>	<ul style="list-style-type: none"> <li>Present options to Departments that are modernizing systems or building new applications.</li> <li>Engineer efficient short term and long term data storage strategies.</li> <li>Ensure Departments are protected and have access to backups of data in SaaS</li> </ul>
3	<b>Leverage VM technology and management to extend processing from the City core to 3<sup>rd</sup> party cloud to provide Departments with a seamless and single console for managing workloads.</b>	<ul style="list-style-type: none"> <li>Build the VMware infrastructure to centrally manage environments across multiple providers.</li> <li>Build new console technology to provide more control and troubleshooting capabilities to department system admin teams</li> </ul>

**Goal 3: Excellent Customer Service – Ensure City departments and internal Department of Technology divisions receive excellent customer service when building, deploying and maintaining business systems.**

Building and supporting city technology infrastructure requires excellent customer service. The Infrastructure team works to ensure department system administration staff are well trained and have tools and resources available. When a problem is identified, the Team and customers work together to quickly find a solution. Services encompass regular new system builds (servers and storage), maintenance (patches and upgrades) and problem resolution (application issues or infrastructure connectivity).

#	Objectives	Supporting Strategies
1	<b>Ensure users are aware and trained on all available infrastructure tools and resources</b>	<ul style="list-style-type: none"> <li>Create online help guide from the DT Service environment for department system admins</li> <li>Expand the management console for VMware to deliver new metrics and capabilities</li> </ul>
2	<b>Measure customer satisfaction</b>	<ul style="list-style-type: none"> <li>Conduct a customer satisfaction survey to understand where the I/O team can improve service</li> </ul>

		<ul style="list-style-type: none"> <li>• Compare City customer satisfaction score with industry</li> </ul>
3	<b>Work proactively with vendors to reduce the recovery time when problems occur</b>	<ul style="list-style-type: none"> <li>• Ensure after-action reports with vendors are completed</li> <li>• Escalate recurring problems to management for contractual remedy</li> </ul>

**5 Year Roadmap**

FY 2021-22	<ul style="list-style-type: none"> <li>- Continue the modernization of the City data centers, network, connectivity, and VoIP</li> <li>- Migrate additional CCSF departments and agencies to SDN/SDA (30 Library facilities, Cesar Chavez (DPW), and Sheriff)</li> <li>- Full deployment of SDN technologies at the Rancho and SFO Data Centers</li> <li>- Integration of network edges</li> <li>- Pilot Digital City technology in a low income neighborhood</li> </ul>
FY 2022-23	<ul style="list-style-type: none"> <li>- Continue the modernization of the City data centers, network, connectivity, and VoIP</li> <li>- Achieve cost avoidance by eliminating old PBXs that are outdated, failing, and unsupported.</li> <li>- Fully implement the new VoIP call manager with geographical high availability in mind.</li> <li>- Continue to reduce the number of wires for communications (data and voice), especially in new constructions or remodels</li> <li>- Expand Digital City technology to new communities</li> </ul>
FY 2023-24	<ul style="list-style-type: none"> <li>- Continue the modernization of the City data centers, network, connectivity, and VoIP</li> <li>- Test migration of workloads between 3<sup>rd</sup> party providers to validate data and system transportability.</li> <li>- Create industry partnership to fully deploy Digital City technology and service in the City</li> </ul>

FY 2024-25	<ul style="list-style-type: none"><li>- Finalize and complete any remaining modernization projects and tasks for the City's data centers, network, connectivity, and VoIP</li><li>- Test the high availability and DR for essential systems</li><li>- Continue deployment of Digital City infrastructure and network</li></ul>
FY 2025-26	<ul style="list-style-type: none"><li>- Build asset inventory and maintenance plan for the infrastructure environment. Estimate capacity growth and upgrade costs to determine the Total Cost of Ownership and optimize environments to achieve a normalized and predictable operational cost model.</li><li>- Continue deployment of Digital City infrastructure and network</li></ul>

## Technology Procurement Challenges and Roadmap

### Program Mission

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Establish an overarching technology procurement strategy that creates a procurement environment which will better enable the City to provide unified services across all City Departments and greater accessibility to its services for all San Francisco residents. To do this, the Office of Contract Administration (OCA) will strive to:

- Provide tools to improve and standardize the ways in which the City procures technology;
- Establish a unified set of processes for purchasing IT products/services that is easily shared and understood by all City Departments;
- Encourage the free-flowing exchange of ideas and innovation among all City departments;
- Leverage the City's purchasing power for certain purchases rather than negotiate piecemeal by Department; and
- Foster greater equity in technology procurement.

### The Challenge of Technology Procurement

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When it comes to Technology procurement, City Departments face a number of challenges to the equitable and resilient provision of public services. Some of these challenge areas include:

- Equitable access to services when available by online or digital means only;
- Siloed digitization efforts that result in inconsistent service experiences and lack of data-sharing across departments;
- Lost opportunities to maximize City's leverage as a singular entity in terms of pricing and cybersecurity/privacy needs.

Due to the rapidly evolving nature of the technology industry and complexity of technology solutions, technology procurement is currently one of the most complex, riskiest, and problematic areas of City procurement. We have identified the following challenges in the City's technology procurement processes:

#### 1. Lengthy Process

- Standard public procurement process is too long for technology procurement.
- Because of the rapidly changing nature of Technology industry, certain Technology may become obsolete by the time an award is made.

#### 2. Lack of Technical/Subject Matter Expertise

- Department end users are relied upon to be the subject matter technical experts in the procurement process. When Department end users do not have sufficient technical knowledge of the technology being procured (e.g. minimum essential technical specifications and operational features and network security requirements), it can result in delays in the procurement process and ultimately, performance issues once the technology is delivered.

- These Departments lack staff with the requisite combined experience in procurement processes and procedures and technical expertise, which is especially an issue for small or new Departments engaging in the purchase of Technology Professional Services, a responsibility delegated to Departments.
- These solicitations often have mistakes and omissions.

### **3. Data Security, Ownership Rights, Licensing**

- Technology procurements are often high-risk purchases because of concerns over data security, ownership rights, and violations of license rules. All too often, City interests are not appropriately protected.
- Departments should use the correct contract template, correct terms, and correct purchasing vehicle. Often times, the incorrect contract templates are used or Prop Q is used to make the purchase.

### **4. City Contract Terms Do Not Address Business Needs**

- City's contract terms are necessarily exhaustive with the purpose to protect the City's rights and information, but they can be complicated and contrary to those typically used in the Technology industry which can lead to issues during the negotiation process and sometimes prevents the City from contracting with firms.

### **5. Technology Pervades Nearly Everything (the Internet of Things)**

- Because technology is now in everything, purchases for non-technology commodities often include technology and thus merit special handling and documentation which slows down the purchasing process. In some cases, it is not known early enough that a non-technology commodity includes technology, and the purchase is made without vital technology-specific protections for the City.
- It is not always immediately evident if a procurement is a Technology procurement or non-Technology procurement.
- A Technology item can be purchased as a non-Technology item, and as a result specific Technology terms or documentation that should have been included is omitted.
- "Internet of Things": P-220 is insufficient to address terms/conditions for commodities involving software licensing/maintenance. Need additional, standardized terms.

### **6. Lack of Diversity Among Technology Partners**

- There is a lack of diversity among technology partners which leads to inequality.
- It is difficult to encourage Departments to use Micro LBE set asides because of the low dollar thresholds that are associated with Micro LBE Set Asides
- A lot of the business in City Technology procurement is concentrated in a few companies. This is especially so in the City's Technology Marketplace.

## **Strategic Goals to Address These Issues**

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The identification of challenge areas presents an equal opportunity to address these shortcomings. The following five strategic goals can be achieved through a number of actionable objectives, some of which can be executed and implemented in a matter of months, while others may require a longer time horizon. That a number of these objectives span multiple strategic goals indicates that there is a multiplier effect to be gained from each incremental improvement we make to technology procurement in the City.

*Table 1* provides a snapshot of five strategic goals, the actionable objectives, and the time horizon needed to achieve each objective. Additional detail on each strategic goal and actionable objective is provided further below.

**Table 1. Technology Procurement Matrix: Objectives to Achieve Strategic Goals**

		Goal 1	Goal 2	Goal 3	Goal 4	Goal 5
Time Horizon	Objectives	Development of innovative procurement practices	Unified Enterprise Agreement Strategy	Standardization of Procurement Practices/Tools	Legal Reform	Equity/Inclusion in Technology Procurement
<b>&lt; 1 year</b>	Tech RFP Template			X		
	Tech RFI Template	X		X		
	Tech RFP Database	X	X			
	Early OCA & CAT engagement	X		X		
	Tech Implementation Checklist	X				
	More Piggybacking	X				
	Dept CIO/CISO Review			X		
	CAT Re-think Tech Contracts			X	X	
	Dept Inventory of all IT Purchases	X		X		
	StIR Program Review	X				X
<b>1-3 years</b>	IT Procurement "Best Practices" Guidelines	X		X		
	Tech Resource Database	X				
	Develop "Proof of Concept" Exit Clause	X			X	
	Update Chapter 21 and Rules & Regs				X	
	Increase Micro LBE Set Aside Thresholds				X	X
	Increased MBE and WBE participation				X	X
	Host "Demo Days"	X				X
	Modular approach	X				
<b>3-5 years</b>	More Tech EAs		X			
	More pre-qualified supplier pools	X	X	X		
	Unified City Tech Policy	X		X		

**In Detail: Strategic Goals and the Actionable Objectives needed to achieve each Goal**

<b>Goal 1: Development of innovative Procurement Practices</b>	<b>Objective #1 - Create a Technology-specific RFI Template.</b>	<ul style="list-style-type: none"> <li>• This will provide an RFI template that Departments can readily use and issue.</li> <li>• Provides efficient method to conduct current market research in a systematic, transparent, and impartial manner.</li> </ul>
	<b>Objective #2 - Create an IT Procurement “Best Practices” guide.</b>	<ul style="list-style-type: none"> <li>• Encourages Departments to engage in pre-solicitation RFI’s, research, and/or product demonstrations.</li> <li>• Promotes procurement best practices and avoid any conflict of interest, i.e. understand that if a Department works closely w/supplier to draft/develop specs, that supplier is prohibited from responding to resulting solicitation.</li> </ul>
	<b>Objective #3 - Create a Technology RFP Database with past technology RFPs.</b>	<ul style="list-style-type: none"> <li>• Departments can draw on this resource library when they develop their own RFP.</li> <li>• Encourages knowledge-sharing and communication between Departments.</li> </ul>
	<b>Objective #4 - Encourage Departments to engage OCA and City Attorney very early in the process.</b>	<ul style="list-style-type: none"> <li>• Ensures that Departments use the appropriate documents and have the correct contract terms in place.</li> <li>• Promotes identification of potential problem areas and helps to address at an early stage, thus speeding up the procurement process.</li> </ul>
	<b>Objective #5 - Create a Technology Implementation checklist.</b>	<ul style="list-style-type: none"> <li>• Departments can use this checklist to consider the potential impacts on staff and business operations as they prepare to engage in a project to implement a new Technology.</li> <li>• Identifies business and process requirements to incorporate into the RFP.</li> </ul>
	<b>Objective #6 - Create a Technical Resource Database that contains specs and other product information.</b>	<ul style="list-style-type: none"> <li>• Departments can use this database as reference material when they prepare to develop their own specs for a solicitation.</li> </ul>
	<b>Objective #7 - Make “Piggybacking” off of other</b>	<ul style="list-style-type: none"> <li>• Leverages competitive processes and contracts already undertaken by other public</li> </ul>

	<p><b>public procurements easier/more acceptable.</b></p>	<p>entities/municipalities and thus skip a redundant competitive solicitation process.</p> <ul style="list-style-type: none"> <li>Identify other government entities with potentially similar social legislation (e.g. State of CA, State of WA)</li> </ul>
	<p><b>Objective #8 - Create pre-qualified pools for Technology items/services.</b></p>	<ul style="list-style-type: none"> <li>Utilizes RFQ and/or RTOP process to obtain pools of pre-qualified and/or contract-holding vendors for specific technologies. This would speed up purchases of items covered by these pools.</li> <li>Use of city-wide surveys may help to identify collective areas of need for specific technologies.</li> </ul>
	<p><b>Objective #9 - Create an overarching Technology policy that includes input from all Departments, not just dictated by DT.</b></p>	<ul style="list-style-type: none"> <li>Schedule quarterly meetings with DT and all IT departmental decision makers to increase collaborative decision making. These meetings can serve as an opportunity to discuss upcoming policy updates regarding IT purchases and for all departments to opine on these decisions.</li> <li>Where consensus between user departments and DT cannot be reached on a specific IT solution, but where DT-identified essential criteria are met, develop guidelines by which departments acknowledge responsibility for their own business decisions.</li> </ul>
	<p><b>Objective #10 - Develop a standard "Proof of Concept" contract clause that allows City to back out of longer agreements if performance/product is not up to expectations.</b></p>	<ul style="list-style-type: none"> <li>The first phase is a proof-of-concept where City will evaluate selected proposer's small-scale implementation based on pre-defined set of criteria/expectations. City can choose to advance to next phase based on criteria being met. If not, City is able to move on to next-highest ranked proposer's proof-of-concept implementation.</li> <li>Phased approach gives City flexibility should the initial award not meet City's needs because all proposers are provided criteria/expectations upfront.</li> </ul>

	<b>Objective #11 - Require Departments to keep track of all their Technology contracts/purchases so they can track end dates, documentation, and inventory all Technology purchases City-wide.</b>	<ul style="list-style-type: none"> <li>Helps Departments to be more organized and informed about their Technology usage and needs. It may also help OCA identify which technologies are common across various Departments and can thus lead to Citywide agreements.</li> </ul>
	<b>Objective #12 - Host “Demo Days” for new Technology solutions in the market.</b>	<ul style="list-style-type: none"> <li>Alerts Departments to new technologies and to vendors they may not be familiar with.</li> </ul>
	<b>Objective #13 - Encourage modular approach to Technology procurements.</b>	<ul style="list-style-type: none"> <li>A modular approach tackles technology purchases and implementations piece by piece such that different pieces are treated as their own project. Under this approach a large project is broken down into many small projects and a Department is not tied down, all or nothing, to one vendor. Also, City can incorporate improvements in technology and/or its learnings into each successive module.</li> </ul>
	<b>Objective #14 - STIR Program Review.</b>	<ul style="list-style-type: none"> <li>Takes lessons from the successes and shortcomings of StIR and create a new similar program.</li> </ul>
<b>Goal 2: Unified Enterprise Agreement Strategy</b>	<b>Objective #1 - Create a Technology RFP database with past technology RFPs.</b>	<ul style="list-style-type: none"> <li>Departments can draw on this resource library when they develop their own RFP.</li> <li>Encourages knowledge-sharing and communication between Departments.</li> </ul>
	<b>Objective #2 – Identify Opportunities for and create more Technology EAs.</b>	<ul style="list-style-type: none"> <li>Provides Departments with a quicker purchasing process because the solicitation and contracts will have already been completed.</li> </ul>
	<b>Objective #3 - Create pre-qualified pools for Technology items/services.</b>	<ul style="list-style-type: none"> <li>Utilizes RFQ and/or RTOP process to obtain pools of pre-qualified and/or contract-holding vendors for specific technologies. This would speed up purchases of items covered by these pools.</li> </ul>

<b>Goal 3: Standardization of Procurement Practices/Tools</b>	<b>Objective #1 - Create a Technology-specific RFP template.</b>	<ul style="list-style-type: none"> <li>• Outlines all required steps in the competitive solicitation process and will provide technology specific terminology.</li> </ul>
	<b>Objective #2 - Create a Technology-specific RFI Template.</b>	<ul style="list-style-type: none"> <li>• This will provide an RFI template that Departments can readily use and issue.</li> <li>• Provides efficient method to conduct current market research in a systematic, transparent, and impartial manner.</li> </ul>
	<b>Objective #3 - Require a Department's CIO/CISO or Director to approve all Technology purchases.</b>	<ul style="list-style-type: none"> <li>• Provides an additional layer of review to a Technology purchase. This can be especially important in the higher risk purchases.</li> </ul>
	<b>Objective #4 - Create an overarching Technology policy that includes input from all Departments, not just dictated by DT.</b>	<ul style="list-style-type: none"> <li>• Schedule quarterly meetings with DT and all IT departmental decision makers to increase collaborative decision making. These meetings can serve as an opportunity to discuss upcoming policy updates regarding IT purchases and for all departments to opine on these decisions.</li> <li>• Where consensus between user departments and DT cannot be reached on a specific IT solution, but where DT-identified essential criteria are met, develop guidelines by which departments acknowledge responsibility for their own business decisions.</li> </ul>
	<b>Objective #5 - Engage City Attorney's Office in cooperative process re- envision Technology Contracts.</b>	<ul style="list-style-type: none"> <li>• Focus should be on the Technology being procured. Contract template should address technology-relevant issues, e.g. use rights, data protection, risk, and liability.</li> <li>• The document should be streamlined and flexible. Direct contractual relationships can reduce costs, improve administrative efficiency, and clarify legal obligations.</li> <li>• Regularly evaluate contract templates for effectiveness in meeting City's evolving technology contracting needs.</li> </ul>
	<b>Objective #6 - Require Departments to keep track of all their Technology contracts/purchases so they can track end dates,</b>	<ul style="list-style-type: none"> <li>• Helps Departments to be more organized and knowledgeable about their Technology usage and needs. It may also help OCA identify which technologies are common</li> </ul>

	<p><b>documentation, and inventory all Technology purchases City-wide.</b></p>	<p>across various Departments and can thus lead to Citywide agreements.</p>
	<p><b>Objective #7 - Encourage Departments to engage OCA and City Attorney very early in the process.</b></p>	<ul style="list-style-type: none"> <li>• Ensures that Departments use the appropriate documents and have the correct contract terms in place.</li> <li>• Identifies potential problem areas and helps to address at an early stage, thus speeding up the procurement process.</li> </ul>
	<p><b>Objective #8 - Create an IT Procurement "Best Practices" guide.</b></p>	<ul style="list-style-type: none"> <li>• Encourages Departments to engage in pre-solicitation RFI's, research, and/or product demonstrations.</li> <li>• Promote procurement best practices and avoid any conflict of interest, i.e. by understanding that if a Department works closely w/supplier to draft/develop specs, that supplier is prohibited from responding to resulting solicitation.</li> </ul>
<p><b>Goal 4: Legal Reform</b></p>	<p><b>Objective #1 - Engage City Attorney's Office in cooperative process to re-envision Technology Contracts.</b></p>	<ul style="list-style-type: none"> <li>• Focus should be on the Technology being procured. Contract template should address technology-relevant issues, e.g. use rights, data protection, risk, and liability.</li> <li>• The document should be streamlined and flexible. Direct contractual relationships can reduce costs, improve administrative efficiency, and clarify legal obligations.</li> <li>• Regularly evaluate contract templates for effectiveness in meeting City's evolving technology contracting needs.</li> </ul>
	<p><b>Objective #2 - Develop a standard "Proof of Concept" contract clause that allows City to back out of longer agreements if performance/product is not up to expectations.</b></p>	<ul style="list-style-type: none"> <li>• The first phase is a proof-of-concept where City will evaluate selected proposer's small-scale implementation based on pre-defined set of criteria/expectations. City can choose to advance to next phase based on criteria being met. If not, City is able to move on to next-highest ranked proposer's proof-of-concept implementation.</li> <li>• Phased approach gives City flexibility should the initial award not meet City's needs because all proposers are provided criteria/expectations upfront.</li> </ul>

	<b>Objective #3 - Add definitions for Technology purchasing terms in Chapter 21 and/or Rules &amp; Regulations.</b>	<ul style="list-style-type: none"> <li>Makes clear what is and what is not considered technology which will then allow a Department to take the appropriate purchasing approach.</li> </ul>
	<b>Objective #4 - Increase LBE Set-Aside thresholds for Technology Purchases.</b>	<ul style="list-style-type: none"> <li>Allows Department to make more and larger purchases through LBE Set-Aside contracts.</li> </ul>
<b>Goal 5: Equity/Inclusion in Technology Procurement</b>	<b>Objective #1 - Increase LBE Set-Aside thresholds for Technology Purchases.</b>	<ul style="list-style-type: none"> <li>Allows Departments to make more and larger purchases through LBE Set-Aside contracts.</li> <li>Provide greater opportunity for small, local technology businesses to thrive and grow.</li> </ul>
	<b>Objective #2 - Increase focus on MBEs and WBEs.</b>	<ul style="list-style-type: none"> <li>Highlights LBEs that are minority or women owned.</li> </ul>
	<b>Objective #3 - Host "Demo Days" for new Technology solutions in the market.</b>	<ul style="list-style-type: none"> <li>Alerts Departments to new technologies and to vendors they may not be familiar with.</li> </ul>
	<b>Objective #4 - STIR Program Review.</b>	<ul style="list-style-type: none"> <li>Takes lessons from the successes and problems of StIR and create a new similar program</li> </ul>

## **Appendix D: Citywide Service Inventory**

See attached excel file

## **Appendix E: Completed IT Projects**

See attached excel file

## **Appendix F: Major IT Project Descriptions**

- Computer Aided Dispatch (CAD) Replacement – Department of Emergency Management
- Replacement of the City's Property Assessment and Tax System - Assessor-Recorder (ASR), the Treasurer & Tax Collector (TTX), and Office of the Controller (CON)
- Radio Replacement Project – Department of Emergency Management
- Telecom Modernization – Department of Technology

## Computer Aided Dispatch Replacement

**Project Summary:** To plan for, to develop the budget and scope of work for, and to replace the City's Computer Aided Dispatch (CAD) System, including mobile CAD units for the City's first responders and SFMTA parking enforcement.

The CAD system is the City's core application for receiving, categorizing, and dispatching SFFD, SFPD, SFSO, and Emergency Medical 9-1-1 calls. The CAD system interfaces to over 20 other public safety and/or City enterprise systems. The CAD system is also leveraged by the SFMTA for parking enforcement dispatch. The City's CAD system is the emergency response system of record for the City's first responders, government, and all citizens, including the homeless.

The CAD Replacement Project is divided into five phases: (i) System Evaluation & Needs Analysis; (ii) System Design; (iii) RFP; (iv) Procurement & Negotiations; and (v) Implementation. Phases one and two are the planning phases include: hiring of project staff; market research; acquisition of an industry subject matter expert consulting firm; scope definition; requirements gathering; and budget for planning through implementation.

This major IT initiative includes: the CAD system and CAD Disaster Recovery replacement; CAD mobile software and hardware replacement for SFFD, SFPD, SFSO, and SFMTA; numerous system interfaces; system integration; and data conversion.

### **Anticipated Outcomes:**

- Vendor interviews and market survey to enhance City's future RFP process and ensure alignment with state-of-the-art CAD technologies.
- Consultant Subject Matter Expert (SME) hired to evaluate City's CAD dispatch technologies and operations to make recommendations for improvements based on industry best practices and national standards.
- A modern CAD system capable of integration with public safety, Next Generation 9-1-1 & i3 national standards.
- A long-term maintenance agreement that will allow the City to maintain a high level of system reliability and remain technology current for approximately 10 years after implementation.
- Improved dispatch center call taking and dispatch operations.
- Improved situational awareness for dispatchers, field personnel, and DEM.
- Improved 9-1-1 call center data, analytics and management reporting for the City's approximately 1.3 million calls received by the dispatch center.

### **Upcoming 5-Year Project Budget:** \$37.1 million

	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Projected Cost	2,500,000	8,875,642	25,398,626	11,401,637	2,500,000

Note: All figures are in \$ millions.

## Replacement of the City's Property Assessment and Tax System

**Project Summary:** The project is a multi-phase joint endeavor between the Office of the Assessor-Recorder (ASR), the Treasurer & Tax Collector (TTX), and Office of the Controller (CON) to secure and modernize the City's property tax functions by replacing legacy systems that enable the assessment and collection of approximately \$3.2 billion in annual tax revenues.

The departments maintained two separate legacy IT systems to perform these functions. The ASR's AS400 system tracks almost \$250 billion in assessed real and personal property value and manages data on approximately 212,000 parcels. TTX custom-developed mainframe application allows TTX to bill and collect property tax revenue and for CON to apportion revenue to taxing entities as required by law.

The new TTX system went live in July 2020. Phase 1 of the ASR system went live in January 2021.

### **Anticipated Outcomes:**

- **Increase Efficiency and Quality:** Re-engineer assessment and tax business processes based on best practices and eliminate manual processes and workarounds.
- **Improve Revenue Collection:** Increase turnaround time for assessments and provide timely tax billing, revenue collection and certification to reduce revenue at risk.
- **Build a Resilient IT Infrastructure:** Secure \$3.2 billion in revenue through modern technology platforms that are secure and resilient.
- **Increase Access to Data:** Improve information available to public and policymakers and enable better revenue forecasting and data analysis.
- **Improve Taxpayer Service and Transparency:** Integrate property tax and assessment functions among the three departments for better customer service.

### **Upcoming 5-Year Project Budget:** \$72.5 million

	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Projected Cost	4,736,633	3,386,274	-	-	-

Note: All figures are in \$ millions.

## Radio Replacement Project

**Project Summary:** This project is upgrading the Citywide 800 MHz Emergency Radio Communications System used throughout San Francisco by the City’s public safety and public service agencies. The City currently has several disparate radio systems, for public safety, public service, and the airport, that are at the end of their service life. The project will combine all users onto one shared network, with more capacity and better coverage throughout the City. The new technology will support over 9,000 mobile and handheld radios, with over 20 City departments and outside agencies operating daily on the system.

### **Anticipated Outcomes:**

- Improved system redundancy and consolidation of multiple radio networks onto one common platform.
- A new system with a long-term maintenance agreement will allow the City to maintain a high level of system reliability for the next 18 years.
- Better coverage throughout the City, including the Bayview/Hunters Point area and inside critical City facilities.
- Standards-based system and radios will provide 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.

### **Upcoming 5-Year Project Budget:** \$74.5 million

	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Projected Cost	3,807,579	3,807,579	3,807,579	3,807,579	3,807,579

Note: All figures are in \$ millions.

**Project Summary:** Most City departments rely upon outdated, legacy phone systems that are difficult to manage, costly to maintain, and lack many of the features of a modern communications platform. In fact, a significant portion of our current fleet of Avaya PBX systems are no longer supported by the vendor and are reaching the point of obsolescence!

VoIP (Voice over Internet Protocol) moves the technology for making and receiving telephone calls from a private telephone carrier to the Internet. This means that phone connections inside our buildings will run over the same network as your computers rather than the separate legacy network they currently rely on. Using data networking protocols instead adds speed and will make our citywide telephone system much more manageable. Over time as we sunset old PBXs, we will avoid a multitude of costly repairs, and this will prove to make us a more fiscally responsible City.

**Anticipated Outcomes:**

- **Cost avoidance:** Our old PBXs are outdated, failing, and many are unsupported. If we allow them to fail, we will waste a large amount of money to replace them.
- **Efficiency:** We're going from managing 100's of disparate PBX's in many geographies to just one VoIP call manager. This will reduce the support staff effort, maintenance contracts, hardware and software complexity, training cost, and highly expensive footprint (data center space) to house these PBX's.
- **High availability:** Unlike our PBXs, the new VoIP call manager is designed with geographical high availability in mind.
- **Simplicity:** Collocating data and voice on the network means that we will progressively reduce the number of wires, especially in new constructions or remodels. This translates to less wires, less types of technologies and parts, and this adds up when you consider we have 35,000+ users.
- **Flexibility:** We are paving the way for new applications that provide better flexibility, such as voicemail to email integration, fully enabled mobile functionality, video conferencing capabilities. Some of these capabilities will replace costly conference call numbers.

**Upcoming 5-Year Project Budget:** \$21.1 million

	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Projected Cost	795,000	730,000	630,000	570,000	20,000

Note: All figures are in \$ millions.

## **Appendix G: 5-Year Project Forecast**

See attached excel file