



City and County of San Francisco

Committee on Information Technology

Budget and Performance Subcommittee

Regular Meeting

March 18, 2022

Agenda

- Call to Order by Chair
- Roll Call
- Approval of Meeting Minutes from March 2, 2022 (Action)
- Department Updates and Announcements
- FY 2022-23 & FY 2023-24 Budget Project Presentations: General Fund Departments
- Proposed Schedule to Review General Fund Project Requests
- Public Comment
- Adjournment

Item Number 3

Approval of Minutes

Action item

Item Number 4

Department Updates and Announcements

Discussion

Item Number 5

FY 2022-23 & FY 2023-24 Budget Project Presentations: General Fund Departments

Discussion

Department of Technology

- Increase City Data Center Resiliency
- Establish Cloud Center of Excellence
- Accelerate City Hall LAN Modernization
- Push JUSTIS Program to Phase 2

COIT Budget Subcommittee
Department of Technology
3/18/2022

Infrastructure Modernization for the Digital Transformation Journey

What is the Journey?

- Legacy modernization is a plan to replace outdated architecture, hardware and software applications with modern equivalents.
- A legacy application is an application that is based on outdated technologies yet remains critical to current operations. Examples include computer programming languages that are no longer in common use or commercial products that are at end of life.
- Accelerating legacy modernization is key to removing points of failure, building resiliency, and increasing agility. Modern tech minimizes manual pressure points via automation.
- Lack of support and limited expertise means legacy apps have greater failure risk and maintenance costs.

Why is Modernization Important?

Delivers Business Agility:

- Provides new capacity, performance, and security to support resilient City business systems
- Without the latest investments in upgrades the City has made, San Francisco would not have been able to telecommute, re-route phones, quickly build call centers, or support secure remote work (MFA).
- Support systems need to be stronger and more secure to support a hybrid work environment.
- Gartner: This focus on agility, resilience and responsiveness presents a challenge to every aspect of how government IT services are managed and delivered.

Why is Modernization Important?

Reduces Technology Debt:

- Gartner: Disruption caused by the pandemic has highlighted the risks to service delivery and ongoing operations coming from the high level of technical debt being carried by most governments. This has meant many governments have rethought their priorities and are tackling this issue with the benefits of modern architectures.
- Gartner: constraints imposed by a portfolio of legacy IT infrastructure and applications now threaten to slow the accelerated pace of pandemic-driven digital innovation.

Why is Modernization Important?

Achieves Cost Avoidance!

- Legacy modernization eliminates rising costs associated with legacy applications and drives future programs designed to deliver new or more-efficient services.
- Modernization reduces the risk of technical debt by rapidly investing in modern platforms and software. The City gains: Future resilience, agility, and responsiveness
- And, importantly, it will reduce the cost of:
 - Future initiatives and programs
 - Ongoing maintenance
 - Staff recruitment and retention

Why is Modernization Important?

Enables New Digital Services:

- Allows Departments to build new services or business processes (video, remote, mobile, voice, RPA)
- Gartner: As governments at all levels and tiers become more familiar with making evidenced-based decisions — with reliance on technology to operate and develop new contactless services — the risk of technical debt is more widely recognized.
- Gartner: Organizations must service that debt quickly before the next disruption.

What is the Progress?

- Legacy Modernization started in 2018 with COIT investments.
- Replaced PBX based voice system with Voice Over IP: Savings \$2M/yr
- Expanded Cloud services: Moved Data Center: Savings \$2M/yr Choice of Cloud
- Replaced legacy applications: IBM decommissioning \$2.5M/yr
- Upgrading the Network
 - Efficient network design that increases security
 - Higher capacity has increased productivity
 - New hardware/software defined network reduces support costs
 - Maintenance funding model established to avoid creating new technical debt

FY22/23 Investments for Infrastructure Modernization

- Increase City Data Center Resiliency
- Accelerate City Hall LAN Modernization
- Establish Cloud Center of Excellence
- Drive City VoIP & Department LANs Modernization
- Push JUSTIS Program to Phase 2



Increase City Data Center Resiliency

Increase City Data Center Resiliency

Project Objective



- Accelerate modernizing City data centers to provide:
 - › Service resiliency (Internet, Authentication)
 - › Network remote access
 - › Rapid recovery of CCSF business applications
- Reduce “points of failure” that currently exist from managing 2 networks with incompatible technology
- Consolidate and reduce support and licensing costs
- Decommission legacy infrastructure from all 3 data centers, all City campus’ and migrate them to the new Network 2.0
- Achieves **High Availability** with double devices for aggregation points

Increase City Data Center Resiliency Performance Measures



- 40% - Aggregation points upgraded and connected to 2.0
- 80% - Primary Data Center upgraded to 2.0
- 20% - Secondary Data Center upgraded to 2.0
- 5% - Ability to failover key infrastructure from primary to secondary data center so that business applications remain accessible in the event of an outage
- Complete Business Impact Analysis for 23 critical business applications in the Data Center
- Assist 20 departments in building “Twin” Systems

Increase City Data Center Resiliency Funding Request



Project Request		FY2022-23	FY2023-24
Total Project Costs	High	\$1,000,000	\$900,000
	Low	\$950,000	\$800,000
Funding requested from COIT		\$950,000	\$800,000

Increase City Data Center Resiliency Equity & Accessibility



- High-capacity internet for all City operations & services
- In the event of a disaster:
 - › 311 will need to continue operations
 - › Permitting will need to continue
 - › Payroll and emergency payments need to be available
 - › Other key services must be maintained
- City network provides connectivity to public housing

Increase City Data Center Resiliency

Business Benefits and Impact



- Immediate benefits from investing in resiliency:
 - › Improves continuity of City services
 - › Enhances and simplifies Disaster Recovery (DR) readiness
 - › Reduces maintenance and licensing cost by going to one network
- Gain cost benefits by addressing the:
 - › Increased failure rate of older equipment
 - › Failures of "key" infrastructure causing costly widespread disruption
 - › Failures at primary data center which take a long time to recover
- Primary users & Major Stakeholders: Citywide



Cloud Center of Excellence

Cloud Center of Excellence

Project Objective

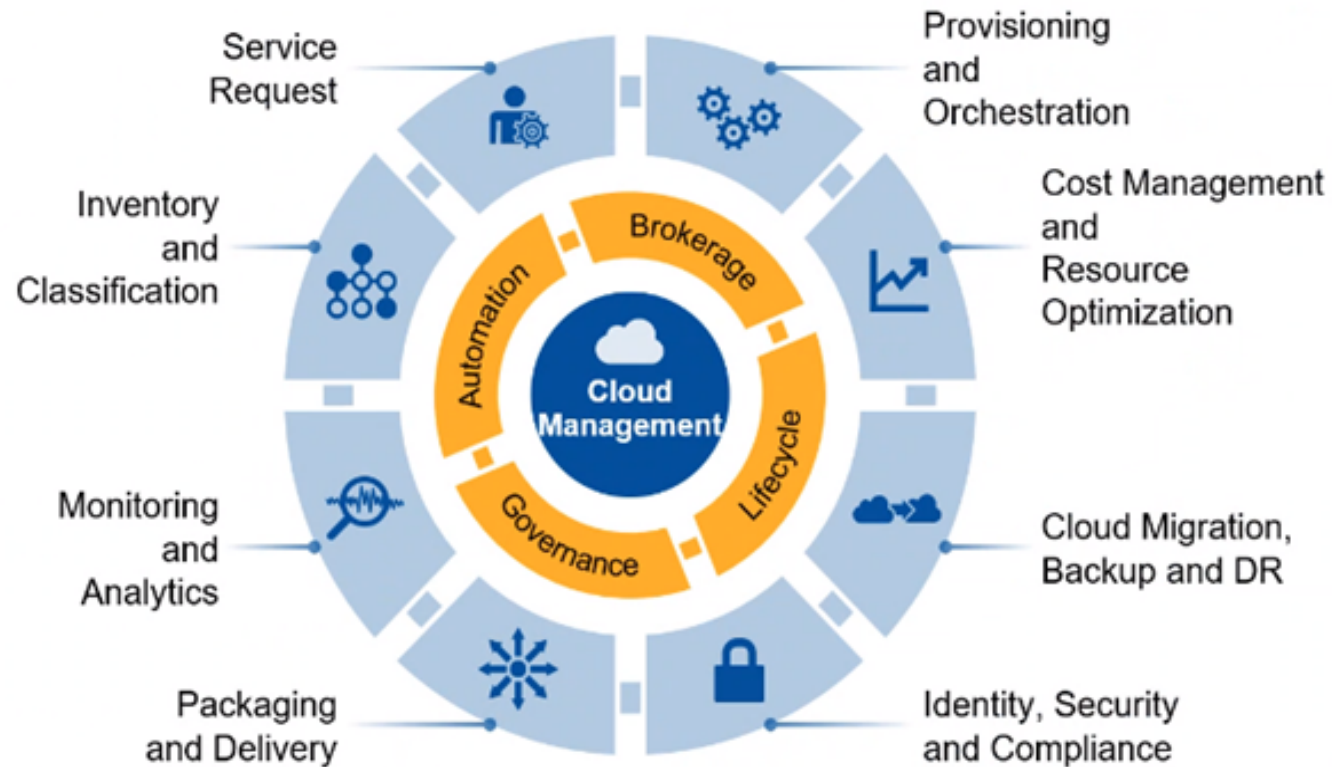
- Support connectivity and integration with multiple cloud endpoints
 - › The City has expanded compute and storage into commercial clouds (Amazon, Microsoft Azure, Google and Oracle)
- Deliver cloud services (management, tools, platform, integrations) that can scale to meet business needs
- Provide advice and configuration for cloud platforms and products for city use cases
 - › The City procured over 300+ SAAS cloud based business systems in FY21/22
- Deliver easy-to-procure cloud services as a consultant or “cloud broker”

Cloud Center of Excellence

Project Objective

Cloud Services introduce new complexities for IT

Adoption of Cloud Services has implications for IT in many domains
What services/capabilities are required? How will they be provided and managed?



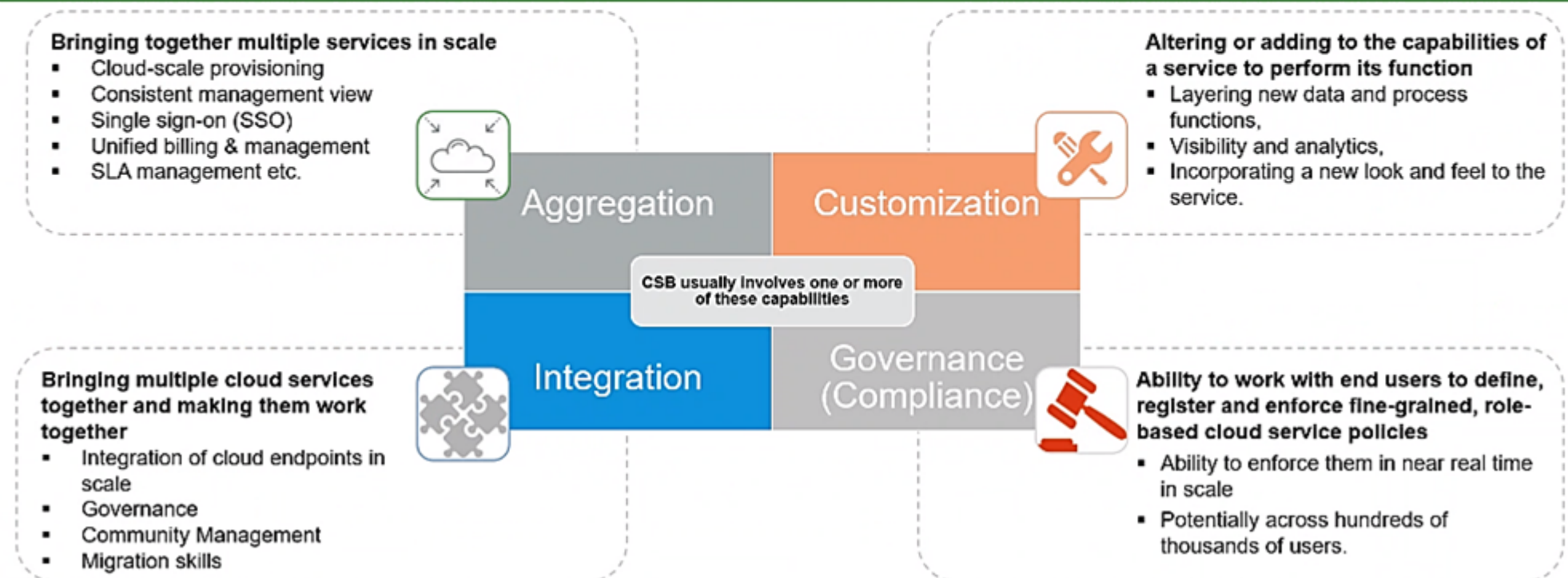
Cloud Center of Excellence

Project Objective

Cloud Service Broker Attributes

In Simple Words

A CSB provides technology to take on activities of the brokerage function, and offers combined technology, people, managed services and methodologies to implement and manage CSB-related projects and requirements



Cloud Center of Excellence

Performance Measures

Completed FY21/22:

- Simplification of security for user access to cloud resources (IAM move to the cloud)
- Service Level Agreements include cloud services
- High-speed connections to cloud services

Planned FY22/23:

- Building redundant connections for resiliency to cloud services
- Cloud provisioning system for managing cloud services with use by multiple vendors
- Create a unified billing management system
- Develop cloud delivery expertise to advise Departments on optimal cloud services for their business applications



Cloud Center of Excellence

Funding Request

Gartner has advised to organize resources and restructure service delivery for the Hybrid Multi-Cloud Architecture that the City is building. Gartner has stated that:

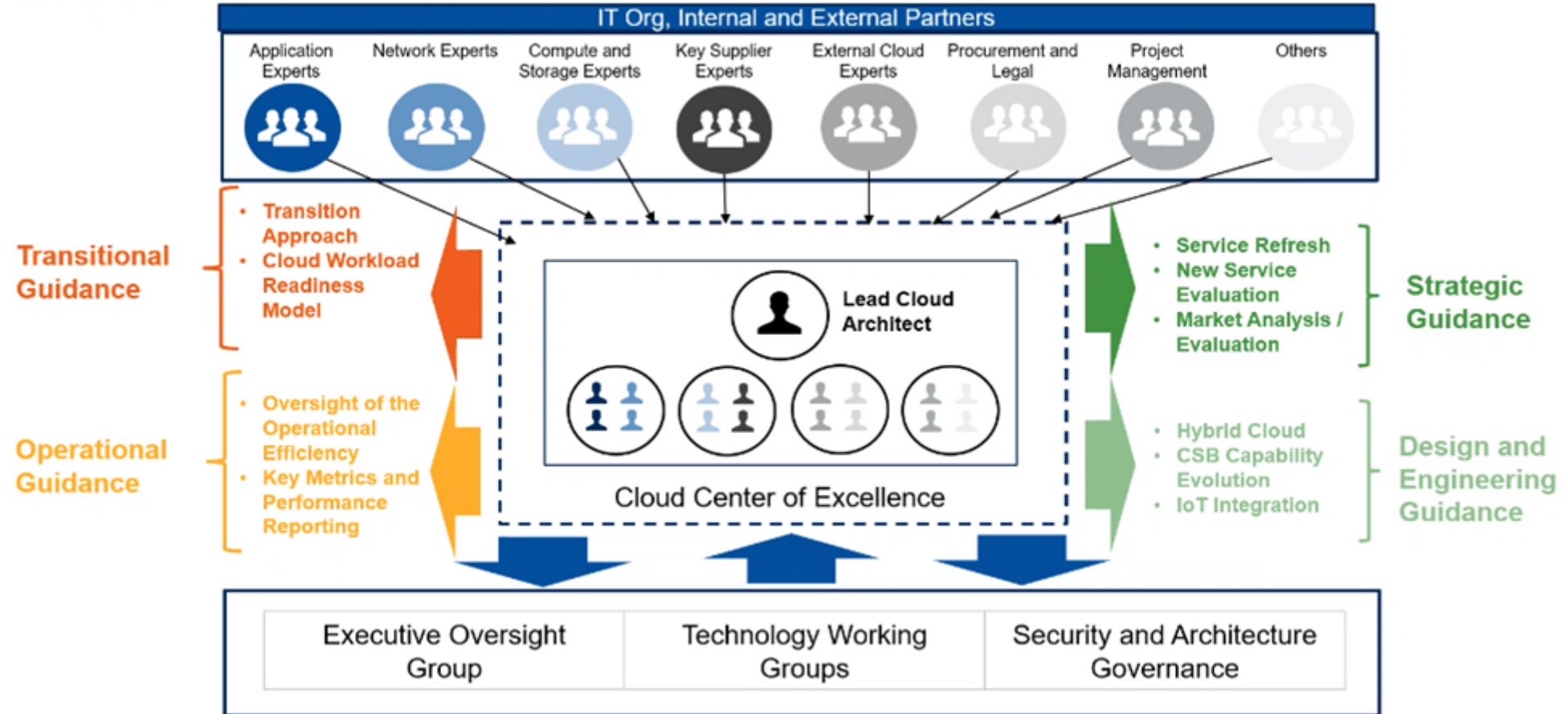
- By 2025, more than 50% of enterprises will adopt a centralized platform approach to facilitate business system deployment via self-service and scaling which is a significant increase from less than 20% in 2020.
- By 2025, more than 85% of global organizations will be running containerized applications in production which is a significant increase from fewer than 35% in 2019.
- By 2025, more than 80% of Internet Service Vendors will offer their applications software in container format, up from less than 10% today.

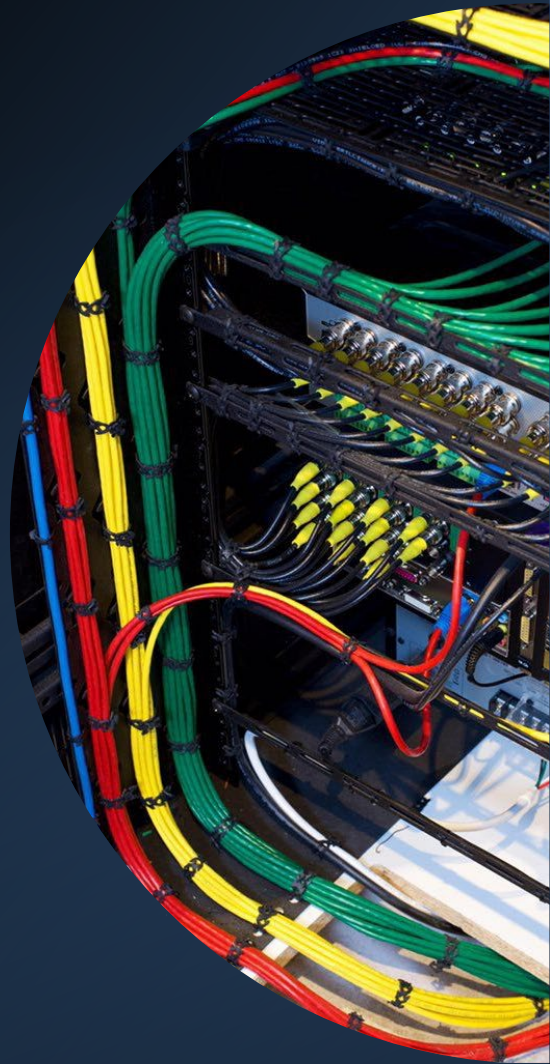
		FY 2022-23	FY2023-24
Total Project Costs	High	\$1,500,000	\$1,200,000
	Low	\$1,200,000	\$900,000
Funding requested from COIT		\$1,314,000	\$1,014,000

Cloud Center of Excellence

Business Benefit and Impact

Cloud Center of Excellence Model





Accelerate City Hall LAN Modernization

City Hall LAN Modernization

Problem Statement	Project Objectives
Network maintenance requires manual admin of each switch, router, and firewall.	Replace legacy network equipment in 16 network rooms and implement software defined network for consolidated management.
Security controls and monitoring are decentralized which increases vulnerability.	Protect the CH core with redundant fiber and “twin” devices and protect customer edge with redundant switches.
A varied mix of switches throughout the network prevents consistent capacities and Quality of Service (QoS) required for VoIP.	Replace unmanaged switches throughout the building for compatibility and Power over Ethernet (PoE) capability.
Performance will not meet future needs for data, voice, and video	Increase network capacity, redundancy, connectivity and enable scalability.

City Hall LAN Modernization Performance Measures

Completed in FY21/22:

- New network cores installed and operational
- Redundant fiber to CH completed
- Each Dept's traffic now traverses the individual Dept's Next Generation Firewall
- 1st and 2nd floor WiFi completed increasing speed and coverage
- 70% of the equipment for CH was procured in FY21/22

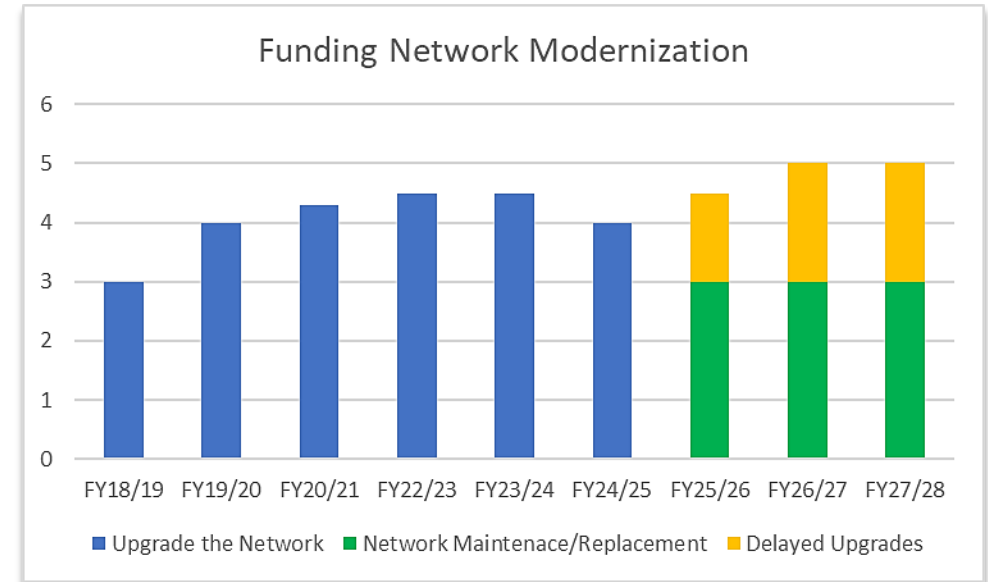
FY 22/23 Effort:

- 16 IDF closets remediated with 18 switches and operating on Network 2.0
- Migrate all CH servers/business applications to City Data centers or public clouds
- Move City Hall to Fabric (2.1): Central Console for mgt. of network & increased traffic monitoring
- Complete WiFi upgrade for CH floors 3 and 4



City Hall LAN Modernization Funding Request

COIT Request is to accelerate CH LAN project to avoid funding upgrade and replacement costs in same year.



Project Request		FY 2022-23	FY 2023-24
Total Project Costs	High	\$1,291,000	\$1,291,000
	Low	\$1,291,000	\$1,291,000
Funding requested from COIT		\$1,291,000	\$1,291,000

City Hall LAN Modernization

Equity & Accessibility

- City systems need to be accessible by City Hall users to provide services to residents
- In the event of a disaster:
 - › City Hall needs to have continuity of business in order to serve the residents. This means a more resilient network (Network 2.0 all the way down to the LAN) and connectivity
 - › 311 will use City Hall as a backup
- Improving WiFi in City Hall will enable residents to access the internet while attending meetings, hearings, and conducting business in the building

City Hall LAN Modernization

Business Benefits & Impact

- **Increased Resiliency:**
 - › Reduces risk of equipment failures that would disrupt business operations
 - › Delivers high availability
- **Prerequisite for VoIP:**
 - › Provides Power Over Ethernet (POE) support for VoIP and upgraded Wi-Fi
- **Future proofing and scalability:**
 - › Increases wired network capacity
 - › Provides Quality of Service (QoS) for VoIP, video, and collaboration
- **Cost savings:**
 - › Maintenance reduced with SDN
- **Enhanced Security:**
 - › Increased security visibility
 - › Web app. security, DDOS protection, filtering and content management app.
 - › Segmentation of users, devices and applications at a department level
 - › Ability to upgrade to “Zero Trust” enhanced security model



JUSTIS Program

Decommission the Mainframe

JUSTIS Program

Problem Statement

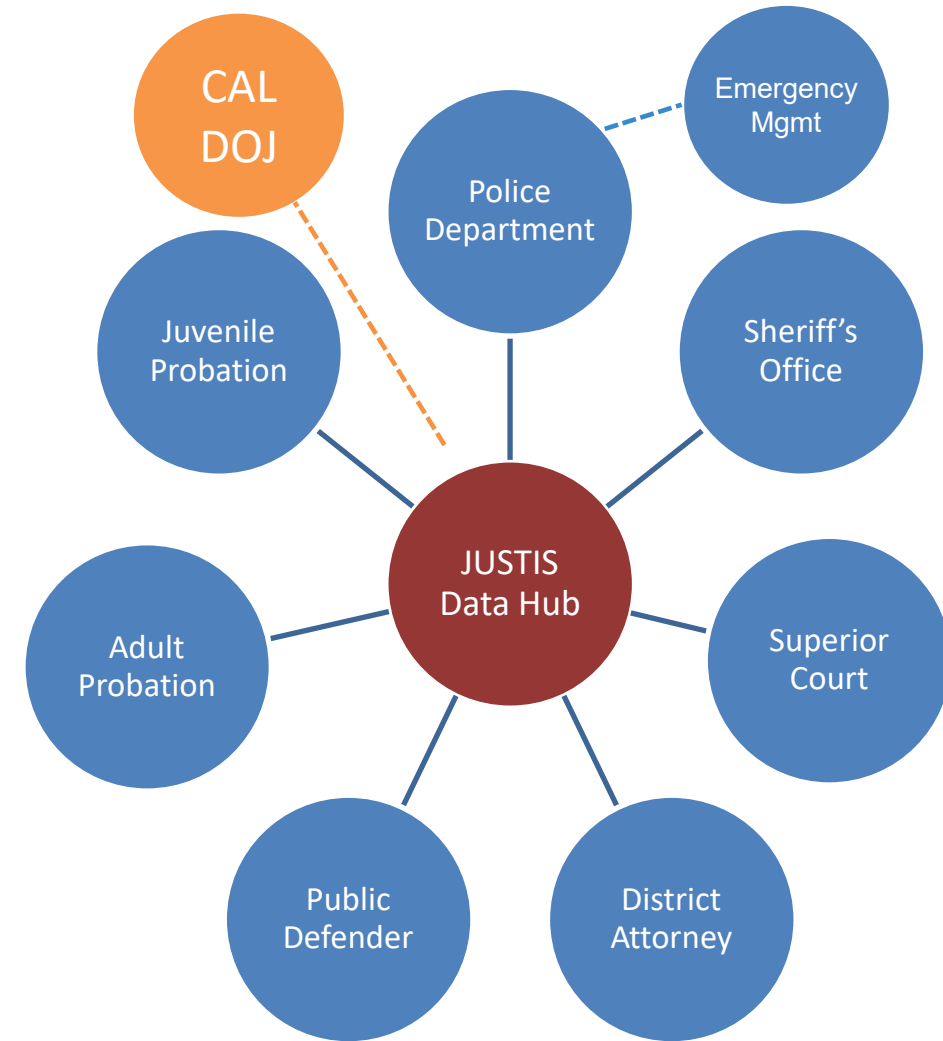
- Criminal Justice System has been running on a mainframe platform for over 40 years. There are increasingly less people who can support the platform.
- Superior Court will be exiting the platform shortly and with it ~70% of criminal justice data will no longer be updated in the mainframe
- There is duplication of data entry and an inability to report data across the agencies due to lack of a common data taxonomy.
- With a modern JUSTIS Hub, individual point-to-point system integrations are not needed between the department systems to share data.
- Lack of central criminal justice data makes it difficult to properly manage recidivism cases, e.g., having a real-time 360 view of the case



JUSTIS Program

Project Objective

- Mainframe retirement
- Become the central data aggregator to enhance analysis and decision making across the criminal justice agencies
 - › Secure exchange of criminal justice data (arrests, bookings, incarcerations, charges, court proceedings, and other)
 - › Connect eight justice case management systems
 - › Data analytics, dashboards, predictive analytics and data driven decisions



JUSTIS Program

Recent Accomplishments

- Successful round-trip testing and finetuning between C-Track and JUSTIS
- Redeveloped and finetuning mainframe transactions
- Redeveloped and finetuning mainframe reports
- Redeveloped and finetuning Level II queries
- Testing is ongoing
- Go Live Planning
- Enabling decommission of mainframe
- Building JUSTIS API for new application integrations and interactive developer documentation

JUSTIS Program

Performance Measures

- Redeveloped and testing 35 mainframe transactions
- Redeveloped and testing 15 Level II transactions
- Redeveloped and testing 64 reports
- Built C-Track API with 19 inbound, 19 ETL, and 12 outbound processes to integrate JUSTIS data hub to C-Track (Court system)
- 400 case type combinations to program!

JUSTIS Program Funding Request

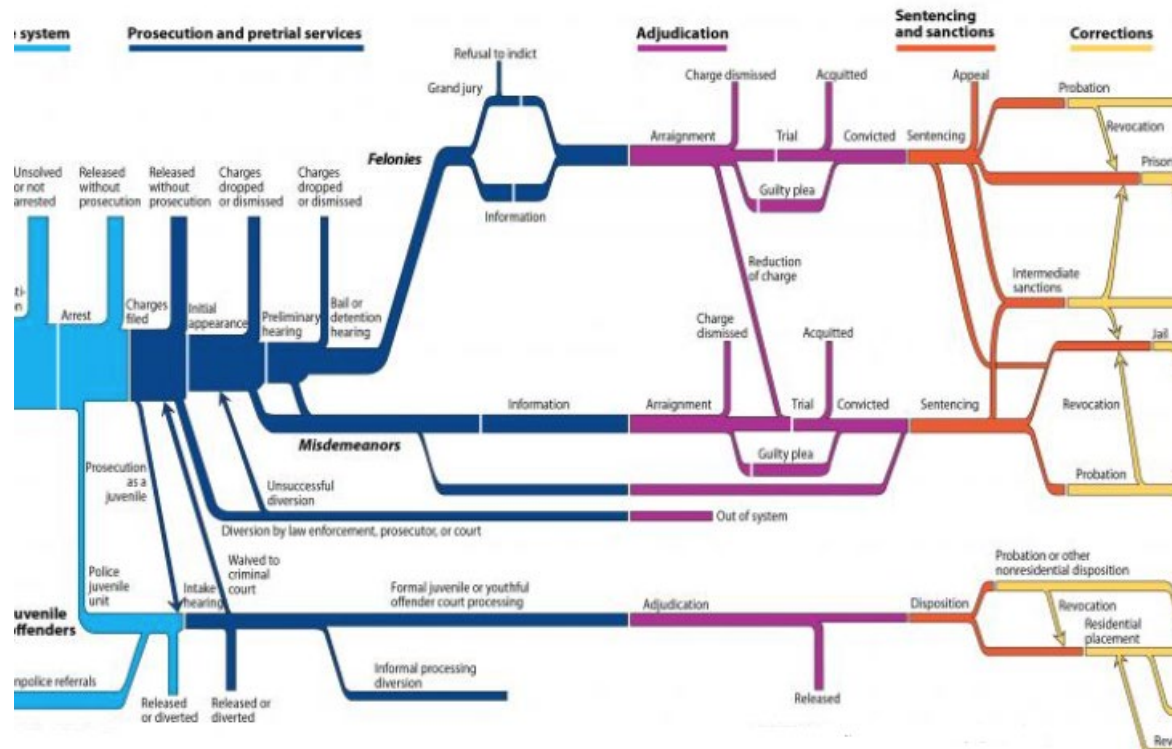
Project Key Milestones:

- Go Live with Court's C-Track
- Phase 2 requested changes from Departments
- Data Center of Excellence start-up

Project Request		FY2022-23	FY2023-24
Total Project Costs	High	\$1,900,000	\$2,300,000
	Low	\$1,240,000	\$1,960,000
Funding requested		\$1,742,000	\$2,210,000

JUSTIS Program Equity & Accessibility

Sequence of events in the criminal justice system?



- Using modern technology to improve case and person management
- Access to better and more mature real-time data and updates
- Standardizing data definitions and classifications across agencies to improve reporting and statistical analysis, e.g. race and ethnicity
- Tracking by person for 360 view in addition to case, i.e., data on recidivism

JUSTIS Program

Business Benefits & Impact



- Business Benefits:
 - › Support Mainframe Retirement
 - › Data Center of Excellence: implement relational data model, taxonomy, and data analysis tools which enable more robust data analysis and dashboards for the CCSF criminal justice agencies
 - › Governance: Continue maturing JUSTIS governance initiatives
 - › Data in the format that each agency needs
 - › Easier to maintain with fewer points of failures
- Major Stakeholders: Public safety & criminal justice
- Primary Users: Public safety and criminal justice

What are the Challenges and Risk on the Modernization Journey?

Risks today:

- Ongoing supply chain issues, costs of running two networks at the same time, system failures before replacement

Result of a failure to modernize quickly may:

- Reduce trust in government
- Damage government's ability to pivot to meet the next disruption
- Weaken systems and result in bottlenecks or system failures

The priority to lower risks to reasonable levels requires:

- Necessary associated funding
- Allocated staff resourcing
- Senior management commitment
- Recognition by the business units of the value of modernization

City Value of the Modernization Journey

1. Gartner: Accelerating legacy modernization as one of top technology trends likely to impact government strategic plans for 2022 and beyond.

Failure to modernize means a failure to provide quality services to residents and to deliver on mission values.

2. Gartner: Accelerated legacy modernization encompasses the recognition that government's operational risk levels are such that the modernization activity is to be prioritized and rapidly progressed.

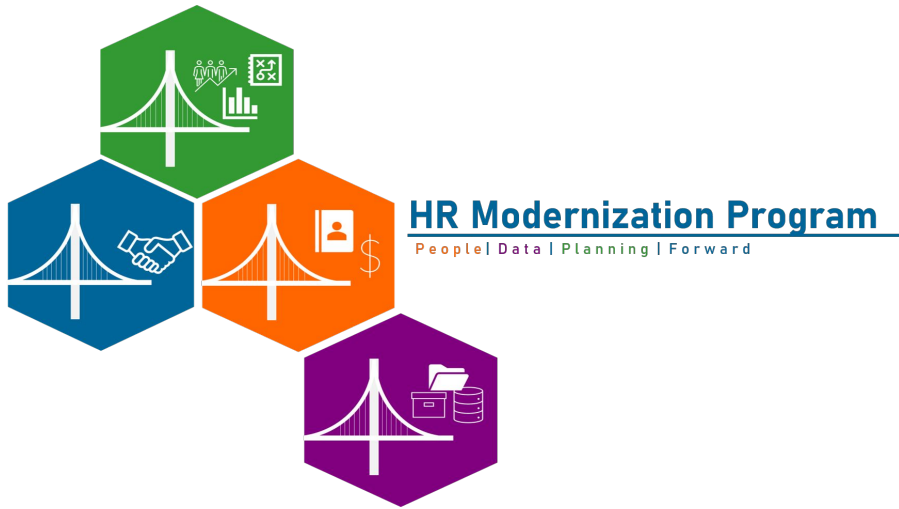


Any Questions, Thoughts or Comments to Share?



Department of Human Resources

- HR Modernization Program
 - Digital Exam Module
 - Digital Onboarding & Electronic Personnel Files



HR Modernization Program:

- Digital Exam Module
- Digital Onboarding & Electronic Personnel Files

DHR Presentation to
COIT Budget & Performance Subcommittee

March 18, 2022





Presentation Overview

1. HR Modernization Program
 - a. How we got here
 - b. Update on the Applicant Tracking System implementation
 - c. Looking forward
2. COIT Proposal: Digital Exam Module
3. COIT Proposal: Digital Onboarding & Electronic Personnel Files



How we got here and how we have approached this initiative

- The Human Resources Modernization Program (formerly known as the Hiring Modernization Project) is a City-wide initiative led by the Department of Human Resources to **research, identify, procure, and implement intuitive, user-friendly tools and processes to improve the City's human resources practices and procedures**
- To bring the Subcommittee up to speed, we will provide an update on the implementation of the new applicant tracking system (the Program's initial project) which has been the result of a multi-year effort including:
 - ◆ **Research with end users** (applicants, hiring managers, and HR analysts) to understand pain points and prototype solutions to address them
 - ◆ **Procurement of a modern applicant tracking system** that addresses key pain points identified in research while staying true to the merit system
 - ◆ **Phased implementation** collecting ongoing feedback from initial users that has allowed us to continuously improve our solution (and continues to inform the approach moving forward)
- This was done **in partnership with COIT and the project's Citywide Steering Committee providing ongoing support, guidance, and direction** as we have worked to approach an enterprise software implementation in a more modular and phased manner anchored in users' needs and informed by a data-driven mindset
- DHR will **fully recover the costs of the ATS** in the FY 2022-23 budget, through a Citywide workorder



Overview of where we are at with implementation of the new ATS

- In 2021, DHR rolled out SmartRecruiters City-wide:
 - ◆ Since end of September, all new recruitments have been carried out in the new system and all users have been out of JobAps since mid-November
- A few key numbers highlighting usage of the new system and what we are seeing activity-wise:

1,500+
hires made

*Averaging ~500 per month in 2022
with a third of those being internal
candidates*

50,000+
**new applications
received**






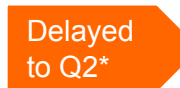








*Averaging ~10,000 per month
in 2022*

300+
**actively published
recruitments**

*Recruitments for which we are
currently collecting applications*



On track to hit most of our key Q1 goals which focus on solidifying our foundation

 CI/CD Pipeline Reconstruct the DevOps pipeline to support rapid iterative development and support 	 System Logging Reimagine internal logging functionalities to support rapid troubleshooting and incident response 	 Public Careers Portal Launch a refreshed and user focused careers portal and Classification search tool 	 Scoring Methodologies Revisit the statistical analysis behind score standardization and its defensibility 
 Analytics Dashboards Launch internal hiring management and analytics tracking dashboards for HR Leadership 	 Resources Develop and expand guidance resources for internal users and applicants. 	 Launch Close-out Complete data-migration tasks, and close-out the ATS Launch Phase. 	

* Delay due to cyber review. Demo version has been shared and is available in a staging environment.



Understanding and improving our hiring operation through data and user insights

→ We are remaining true to two core principles that have underpinned this program since the start:

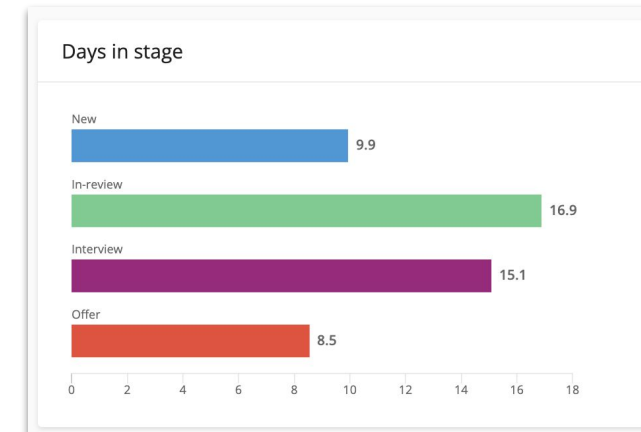
◆ Data-driven:

- Building out dashboards to understand hiring operations and reviewing those with HR leadership so we can **understand the health of our hiring, our current trajectory, and identify areas of opportunity and course-correct as needed**
- This data-driven approach has included building an infrastructure that will allow us to **measure and report on time-to-hire which has been the key metric we have indexed on throughout the lifetime of this project**—at present, we are starting to be able to report on this metric for the initial set of recruitments carried out through the system (non-civil service recruitments) and have the structure in place to report on all recruitments

◆ User-centered:

- Through the Civic Bridge program, **we kicked off our initial workstream to start collecting candidate information through surveys** so we can understand how candidates are experiencing the process; the feedback collected will inform our roadmap as we look to improve the candidate experience

→ We know we will only be able to deliver on these goals if we have the right team in place; we are currently **scaling out our team of technologists** so we can continue to **iterate on our solution based on what we are learning from the data and hearing from our users**



Sample report on number of days in stage for candidates applying to Exempt positions.



Looking to build on the infrastructure to improve key parts of the process

- In our procurement process, we sought out a solution that would be **extensible** and that would allow us to easily be able to plug into other systems (embracing the importance of a **modular approach to avoid vendor lock-in**)
- Two projects have stood out as we have discussed with our Steering Committee where we should focus next:
 - ◆ One of our initial priority areas (building off of this modularity) is to find exam vendor partners to improve the “assessing skills” module so we can **offer more online on-demand exams** since at every step of the process that has been pinpointed as a key bottleneck (and Covid only exacerbated the issue)
 - ◆ Looking to pursue an **onboarding solution** as we also plan to start doing **initial research to unpack scope involved with moving to electronic personnel files**

Digital Exam Module

Transforming how candidates take exams for permanent civil service (PCS) recruitments





HR Modernization: Digital Exam Module

Problems

- Exam constraints delay recruitment process (scoring paper exams; competition for limited exam computers)
- The Testing Center can present an accessibility hurdle

Objectives

- Speed up hiring by minimizing the time required for examination and scoring
- Move paper exams to computer-based tests
- Improve throughput of Testing Center by increasing the number of available terminals
- Support remote testing and on-demand examination

Business Benefits and Impact

- Enhance existing services, for a Citywide benefit



HR Modernization: Digital Exam Module

Equity & Accessibility

- Reducing time-to-hire is a DHR equity objective
- Making more exams remote and on-demand will remove barriers and disincentives to applicants

Performance Measures

- Count of paper exams converted to digital (by job class, recruitment, and total exams taken)
- Computer-based exams taken at Testing Center
- Remote and on-demand exams taken
- Reduced duration of applicant screening process

Key Project Milestones

- Increase Testing Center computer count from 26 to 210
- Complete conversion of paper exams to computer, where appropriate
- Convert site-based exams to remote, where appropriate



HR Modernization: Digital Exam Module

		FY22-23	FY23-24	FY24-25	FY25-26	FY26-27
Total Cost	High	\$817,000	\$1,283,000	\$534,000	\$450,000	\$450,000
	Low	767,000	1,233,000	534,000	450,000	450,000
GF Request to COIT		\$767,000	0	0	0	0

Investments:

- One new 1406 Senior Clerk to support existing 1042 and 1053
- Year 1: 69 new testing terminals, plus 26 replacement terminals (current technical capacity)
- Year 2: 110 new testing terminals, with physical infrastructure improvements
- Digital and remote exam services and network upgrades

Results:

- 8x existing Testing Center capacity = faster throughput and conversion of thousands of paper tests to computer
- Increased access to remote exams = equity improvements and reduced exam lag
- Recover costs within existing Citywide cost recovery framework, starting in year two

Digital Onboarding & Electronic Personnel Files

Ensuring a high-quality digital onboarding experience that will help establish a digital personnel record





HR Modernization: Digital Onboarding & e-Personnel Files

Problems

- Onboarding processes are inconsistent and often fail to position new hires for success
- Paper-based HR processes inhibit best practices, understanding, and improvement

Objectives

- Develop best practice onboarding processes for all new hires
- Digitize paper personnel files and file in a new Citywide personnel filing system
- Extend technological gains of Applicant Tracking System through applicants' careers

Business Benefits and Impact

- Development of a new service for a Citywide benefit



HR Modernization: Digital Onboarding & e-Personnel Files

Equity & Accessibility

- Improved, consistent onboarding experiences position all for workplace success
- Improved understanding regarding personnel evaluation and discipline trends

Performance Measures

- Percent of employees who report favorable onboarding experiences
- Reduced duration from the selection of a successful candidate to the new employee's first day
- Count of City employees receiving annual performance review
- Citywide aggregated discipline metrics

Key Project Milestones

- Implement a Citywide digital onboarding solution that integrates with SmartRecruiters and People & Pay
- Scan and file 37,000 paper-based employee files
- Establish baseline Citywide employee file metrics



HR Modernization: Digital Onboarding & e-Personnel Files

		FY22-23	FY23-24	FY24-25	FY25-26	FY26-27
Total Cost	High	\$474,000	\$552,000	TBD	TBD	TBD
	Low	474,000	552,000	TBD	TBD	TBD
GF Request to COIT		\$474,000	0	0	0	0

Investments:

- Seed funding to scope project, including:
 - ◆ Technical Consultant
 - ◆ One Technical Lead and one Administrative Analyst

Results:

- Clear project scope, developed in collaboration with HR Modernization Steering Committee
- Recover costs within existing Citywide cost recovery framework, starting in year two



Questions?

Item Number 6

Proposed Schedule to Review General Fund Project Requests

Discussion

Budget Schedule

Budget & Performance Sub-Committee

COIT

March 4
(10am-12pm)

Enterprise
Depts

Permit
Projects

March 18th
Expanded Hours
(9am-12pm)

Network &
Infrastructure

HR
Modernization

April 1st
Expanded Hours
(9am-12pm)

Public
Safety
Systems

Member
Selections

April 15th
Expanded Hours
(9am-12pm)

Draft
Funding
Recs

April 21st
(10am-12pm)

Final
Funding
Recs

April 1st Proposed Schedule

DEM	Computer Aided Dispatch
POL	National Incident-Based Reporting System (NIBRS)
SHF	New Jail Management System
ADM	Digital Services: Support for Digital Accessibility & Inclusion Policy
Subcommittee Discussion on Recommendations	

Item Number 7

Public Comment

Adjournment