CITY OF
SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: SMART CITIES AND SERVICE IMPROVEMENTS COMMITTEE

FROM: Rob Lloyd

SUBJECT: SEE BELOW

DATE: February 24, 2020

Approved _KH_____ Date _27 FEBRUARY 2020_

SUBJECT: **2017-2019 INNOVATION & TECHNOLOGY STRATEGIC PLAN CONCLUSION**

RECOMMENDATION

Review and accept report on the City of San José 2017-2019 Innovation and Technology Strategic Plan Conclusion and extension through 2020. Refer the report to City Council for final acceptance and direction.

BACKGROUND

City Council adopted the San José Smart City Vision[1] in 2016, along with requests for progress on a small number of priority projects[2]. The City Manager's Office established the Office of Civic Innovation and Digital Strategy as part of the 2016-2017 Adopted Operating Budget, in order to achieve that vision and direction.

With the ambition to make "San José the most innovative city in the United States by 2020," Mayor and Council directed the City to elevate information technology from "primarily a support function" to one that serves as a strategic business enabler for the whole organization. Council requested a "city-wide digital strategy to build on those efforts and help to move many pilot efforts to scaled impact."[2]

Beginning in August 2016 with the arrival of a Deputy City Manager for Innovation and a new Chief Information Officer (CIO), staff began the process of assessing the current state of the City's technology environment and its ability to execute priority initiatives. The City's CIO met with every City department director, department executive staffs, and all department IT managers to document current and emerging needs. Information Technology Department (ITD) staff and the CIO completed a catalog of technology infrastructure and business systems to

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[1] San Jose Smart City Vision, 3.8: http://sanjose.granicus.com/MetaViewer.php?view_id=&clip_id=9035&meta_id=565616
[2] Smart City Memo: http://sanjose.granicus.com/MetaViewer.php?view_id=&clip_id=9035&meta_id=565617

assess essential information and communications technology assets; assembled audit findings requiring resolutions; worked with the Human Resources Department and Office of Employee Relations on workforce needs; and began to address anticipated cybersecurity risks.

The strategic planning process identified significant operating liabilities at all levels of City services. Termed "Tech Debt", the patterns of disinvestment were themes in findings from multiple internal and external audit reports; contributed to the City's inability to hire and retain top technology professionals; factored in IT project issues across departments; and were causative in reliability issues the City was experiencing in its network and application systems at the time. Most of the City's Tech Debt stemmed from an extended period of budget shortfalls lasting almost a decade. Funding was not available to invest in technology. With Council's Smart City Vision approved, those historic deficiencies became visible and were clearly holding San Jose back from its aspirations.

Resources were not available for massive reinvestment in 2017, due to the City's budget forecasts and commitments. To refine the proposed Innovation and Technology Strategic Plan in balance with the City's resource picture, ITD convened an Innovation and Technology Advisory Board[3] (ITAB) consisting of top professionals from the private, public, and non-profit sectors. The advisory group served for one year and counseled the City on the following:

- San Jose's technology spend was exceptionally low for a modern organization in the order of magnitude of 5 to 10 times at its Fiscal year 2016-2017 resource level.
- Forced prioritization to an "essential few" goals was thus necessary.
- Focus on investments that have leveraged impact across multiple City needs to maximize resources available.
- Plan that the transition to a modern IT organization will be difficult for technology personnel and managers. Managing the challenging process would be important.
- Engage employees, groups, and industry leaders throughout the execution of the IT Strategic Plan.

From the IT Advisory Board's input, ITD identified the City's ability to partner with companies and non-profits in innovation demonstrations and technology pilots as a critical strategic tool for the City. Barring large increases in funding, no other mechanism would do more to help the City learn, adopt, and scale transformative tools and processes into the organization with speed.

City Council direction to rebuild ITD encompassed an Information and Communications Technology (ICT) Master Plan; organizational redesign; included projects for customer relationship management and a master addressing system; and sought technology procurement improvements. The City of San José 2017-2019 Innovation and Technology Strategic Plan was the culmination of staff research, feedback, and planning efforts. It provided the near- and long-term direction to achieve those outcomes. The plan was reviewed with Mayor and City Council at the January 27, 2017, Study Session on Civic Innovation and Digital Strategy[4].

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[3] IT Advisory Board Members: https://www.sanjoseca.gov/your-government/departments/information-technology/innovation-and-technology-advisory-board/itab-members
[4] Civic Innovation Agenda: http://sanjose.granicus.com/GeneratedAgendaViewer.php?view_id=51&clip_id=9493

City Council unanimously approved the 2017-2019 Innovation and Technology Strategic Plan at its March 28, 2017, meeting[5] City staff descri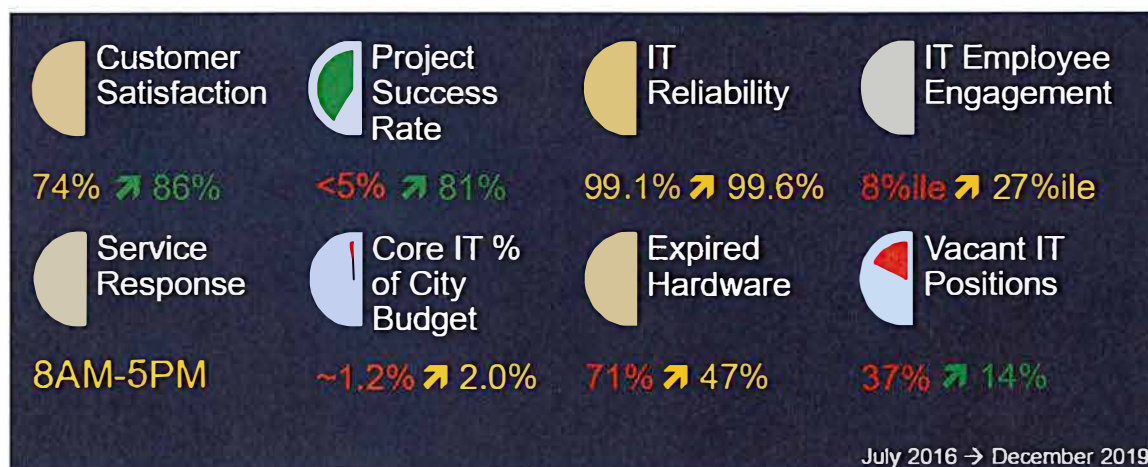bed the plan as a three-year "Brilliant at the Basics" journey and period of reinvestment in the City's use of information and communication technologies. The IT Strategic Plan has subsequently served as the compass for the large body of work guided by the San José Smart City Vision and the plan's strategic areas:

- Engage an Exceptional IT Team
- Build a Secure City
- Re-Platform the City onto Modern Business Platforms
- Create Capabilities to Execute and Sustain IT Change

ANALYSIS

The process of forming an Innovation and Technology Strategic Plan is an educational one. Input from departments, performance metrics, asset data, and audits all painted a consistent picture of a City technology environment that was stretched beyond its limits. Meeting the emerging needs of City operations was also shaped by predictions of high cybersecurity risk; exponential growth in number of devices and volume of data; the span of integrations used by the organization; and continued constraints in City funding and staffing that would require technology-based tools to overcome structural limits. Indeed, every City department gave input how the City's investments in technology were essential to their service delivery goals when the IT Strategic Plan was in development. Since then, the City Manager's Enterprise Priorities[6] defined key challenges that all have matching demands of data and technology tools.

Evaluated on the performance metrics defined at the onset, the 2017-2019 IT Strategic Plan has achieved success. From 2016 through December 2019, scores and ratings changed as follows:

Customer Satisfaction	Project Success Rate	IT Reliability	IT Employee Engagement
74% ↗ 86%	<5% ↗ 81%	99.1% ↗ 99.6%	8%ile ↗ 27%ile
Service Response	Core IT % of City Budget	Expired Hardware	Vacant IT Positions
8AM-5PM	~1.2% ↗ 2.0%	71% ↗ 47%	37% ↗ 14%

July 2016 → December 2019

From the metrics, review of performance data, and project outcomes over the IT Strategic Plan period, important trends emerge.

1. **The City Made Significant Progress in Re-Platforming**— City departments partnered to successfully complete many large initiatives during the IT Strategic Plan period, including:

   - Migration to Human Resources, Payroll, and Talent Management systems
   - Migration to a new Budget Management system
   - Migration to a new Utility Billing system
   - Migration to a new Revenue Management system
   - Migration to a new Treasury Management system
   - Migration to a new City Data Portal
   - Migration to a new City Website
   - Major Upgrade of the City's Financials Management System
   - Major Upgrade of the City's Integrated Permitting System for the Development Services Transformation project
   - Major Upgrades of the City's Master Address Database
   - Major Upgrade of the City's Firewall and Perimeter Security
   - Major Upgrade of City Hall WiFi
   - Implemented My San Jose as the City's Customer Relationship Management (CRM) system, service request coordination hub, omni-channel app/web/chat service portal, and service requests data lake for analysis
   - Implemented Access East Side providing free high-speed WiFi to students and households in the James Lick attendance area
   - Implemented Pay and Benefits changes to support new union agreements
   - Implemented Electronic Time Clocks to automate and improve time entry
   - Implemented new Workers' Compensation Management System, migration to third-party administrator, and completion of State audit
   - Stand-up of the City's Cybersecurity Office, including hygiene, advanced protections, compliance management, incident response, and cybersecurity awareness and habituation
   - Stand-up of new San Jose Clean Energy Department's customer contact handling services, website, and completion of state audit
   - Completion of Community Engagement through Data projects for emergency vehicle pre-emption, youth violence prevention, and transportation planning
   - Resolution of three City Auditor Reports and substantial completion of the remaining two

   Coupled with the City's innovation and management efforts, the progress earned the City of San José multiple honors over the past three years:

   - <u>Digital Cities Award</u> for the nation's top ten cities that engage citizens, innovate, employ shared services, and yield demonstrable cost efficiencies through technology. The City placed 8th in 2017, 6th in 2018, and 2nd in 2019. (Center for Digital Government)
   - <u>Top 25 Doers, Dreamers, and Drivers</u> for implementing a leading model for sustainable innovation and impact in government. (Government Technology Magazine)

- <u>APA Award of Merit</u> for transportation data analytics and management. (American Planning Association)
- <u>Smart 50 Award</u> for geo-aware emergency vehicle pre-emption. (IDC)
- <u>Smart 50 Award</u> for the smart Business Tax Amnesty system and program. (IDC)
- <u>Smart Cities North America Award for Transportation</u> for accelerating first-responders through smart emergency vehicle pre-emption for safer communities. (IDC)
- <u>LocalSmart Awards</u> for leadership in government technology and cybersecurity. (StateScoop)

2. **Work Remains in Reducing Tech Debt**— Celebrating the substantial progress made, the City's accumulation of technology deficits from unmaintained, end-of-life, and siloed assets will take longer to resolve. Lack of staffing and expertise in areas consistently arise as problems in executing updates, upgrades, and projects across most departments.

   Projects remain for the following:
   - Upgrade City Servers and Computers to current and secure operating systems (in-progress)
   - Implement Secure Compute-Storage-Cloud Infrastructure Modernization (in-progress)
   - Implement Cybersecurity Advanced Services Cooperative (in-progress)
   - Implement FirstNet communications and capabilities for the City's first responders (in-progress)
   - Implement 911-311 Call Handling Improvements to address 2019 City Audit and Civic Grand Jury Report (in-progress)
   - Implement of Access East Side for Overfelt and Yerba Buena attendance areas
   - Plan for new Business Tax System
   - Plan for new Enterprise Resource Planning direction with integrated financials, human resources, payroll, and budget management

3. **Acquisition of Technology Solutions and Services Must Accelerate**— As noted in the 2019 IT Technology Deployments Audit, accelerated procurement and contracting speed remain a goal for the City. Requests for Proposals consistently take one to two years to complete from publication of opportunity to receipt of a signed contract, not including implementation. Three-year procurement-to-implementation cycles are inadequate in the context of the needs and fast product cycles in information technology and cybersecurity. The Finance Department and Office of Civic Innovation are currently leading a Procurement Innovation effort to improve these processes for the City.

4. **Project Execution and Product Management Need Improvements**— The City Auditor's November 2019 report title "Technology Deployments: Processes Can be Improved to Ensure Long-Term Success of the City's Technology Vision"[7] detailed the organization's requirement to improve project and product management if it is to be successful with large investments in increasingly multi-departmental technology initiatives.

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[7] IT Tech Deployment Audit: http://sanjose.legistar.com/gateway.aspx?M=F&ID=0e1c6fcc-0cab-4eae-b033-3b394401c9e1.pdf

The primary conclusions of the audit report summarized into three areas:

Finding 1: Improved Planning Can Increase the Likelihood of Project Success
Finding 2: A Formalized Governance Structure and Appropriate Staffing Is Critical for Complex, Interdepartmental Projects
Finding 3: Reporting on Project Status Can Be Improved

Based on the Audit findings, recommendations, and input received from City Council at its January 28, 2020, session[8], staff will complete an Information Technology Management Policy, practices, and reporting to mature the City's processes. These efforts aim to resolve consistent issues identified in the City's current decentralized model, as well as prepare the City to successfully manage the increasing number of complicated, multi-stakeholder projects that have emerged as the new mode.

5. **Prioritize IT Funding to Benchmark Levels Long-Term**— Technology funding in the City of San José remains at or near the bottom of large cities in the nation. The City Auditor's Annual Report on City Services, its 2012 Audit of Information Technology General Controls, and industry comparisons all reinforce this message. Analysts from Gartner and Info-Tech Research advocate 3% to 5% of revenues be allocated in most industries to support cybersecurity, telecommunications, productivity and collaboration applications, and operations technologies. ITD represents only ~2% of the City's total General Fund. This has improved from 1% at the inception of the 2017-2019 IT Strategic Plan and progress should continue.

6. **Hiring and Retaining IT Professionals Continues as a Priority**— In mid-2016, City Council requested the City's new CIO address the 36%+ vacancy rate in ITD, which had persisted for more than three years. Additionally, the HR Director surfaced challenges with retention, lack of in-migration from peer departments, and exceptionally low engagement as identified in the Gallup Q12 Engagement Survey. Along with the performance metrics detailed earlier, vacancy rates have stabilized in the 9%-16% range depending on quarter and assignment of new positions; ITD has begun receiving applications and hiring from decentral IT staff again; ITD attrition decreased every year since 2016; and ITD's Gallup Q12 Engagement score increased 19 points to 27th percentile from 8th percentile.

These improvements must be sustained and built on to achieve the innovation and technology culture the City aspires to have. Specifically, recent exiting employees and hiring candidates have reported higher salaries at peer governments of 10% to 30%; ITD partnered with a Berkeley team in late-2019 to identify additional improvements to increase ITD's Gallup Q12 Engagement score to the target 50th percentile; and ITD will work with OER/HR staff on broader adoption of flexible work options.

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[8] Tech Deployments Audit Presentation:
http://sanjose.granicus.com/MediaPlayer.php?view_id=&clip_id=11458&meta_id=1029049

7. **Cybersecurity Risks Continue to Grow**—City leaders and departments observe the increasing number and sophistication of cyberattacks. This trend is affecting all business and government organizations. Each week in 2019 on average, more than two cities/counties had major outages due to cyberattacks. Essential to the City of San José's ability to resist and be resilient to these crimes are three investments: (1) high IT hygiene in the form of current and patched systems and permissions; (2) vigilant staff are trained and practice secure habits; and (3) strong intervention and recovery solutions relying more on artificial intelligence for anomalous patterns. The importance of Cybersecurity cannot be overstated as it now factors into insurance rates, external audits, and bond ratings. ITD continues to advance San Jose's program beyond gains in 2018 and 2019. Expect a large body of work to begin once contracts are awarded mid-2020 from the Cybersecurity Request for Proposals, now nearing completion.

City Council's decisions to define the San Jose Smart City Vision and require a strategic "master plan" for technology served as a call to action in 2016. The results achieved by staff from that foundation are considerable across every measure.

Looking forward, priorities that emerged over the course of the 2017-2019 Innovation and Technology Strategic Plan period, procurement and contracting timelines, and research required to set the next IT Strategic Plan will take additional time in 2020. Supporting those timelines, ITD plans to extend the current IT Strategic Plan through to the end of 2020 and focus on the following:

- Complete a partnership with Harvard Business School Community Partners to research current City needs and set strategies for a new 2021-2023 IT Strategic Plan.
- Complete the IT Infrastructure Refresh Project.
- Complete substantial roll-out of FirstNet.
- Complete transition of 911 non-emergency calls to the City Contact Center as the City's new 311 Center.
- Complete upgrades and patches of end-of-life and end-of-support servers and computers.
- Complete the Technology Management Policy and address Tech Deployment Audit findings via a centrally managed, professional products-projects management office.
- Implement Business Process Automation to digitize a starting set of City administrative processes from which to scale across the organization.
- Return to the Smart Cities and Service Improvements Committee and then City Council in late-2020 with a new proposed IT Strategic Plan.

EVALUATION AND FOLLOW-UP

This memorandum will not require any follow-up from Staff.

PUBLIC OUTREACH

This item will be posted on the City's website for the March 5, 2020, Smart Cities and Service Improvement Committee agenda.

COORDINATION

The memorandum has been coordinated with the City Manager's Office, the Office of Civic Innovation and Digital Strategy, and the City Auditor's Office.

COMMISSION RECOMMENDATION/INPUT

The memorandum does not require input from a board or commission.

CLIMATE SMART SAN JOSE

The 2017-2019 IT Strategic Plan included actions to modernize the compute and networking layers of the City's technology operating environment. Use of modern, EnergyStar-rated equipment and reducing overall hardware footprint in the City's data centers significantly reduce carbon emissions and e-waste produced by the City from lower power consumption and more efficient hardware inventory. The are no identified effects on Climate Smart San Jose water or mobility goals.

FISCAL/POLICY ALIGNMENT

This action is consistent with the City's Fiscal Year 2019-2020 Operating Budget and the City Manager's Enterprise Priorities.

COST SUMMARY/IMPLICATIONS

The IT Strategic Plan designates areas of investment and staff has completed research to support resource requests. Specific investments and their costs have and will continue to be considered in the City's Budget Process.

CEQA

Not a Project, File No. PP17-003, Agreements/Contracts (New or Amended) resulting in no physical changes to the environment.

ROB LLOYD
Chief Information Officer

For questions, please contact Rob Lloyd, Chief Information Officer, at (408) 535-3500.

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