CITY OF
SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: HONORABLE MAYOR AND
CITY COUNCIL

FROM: Dolan Beckel

SUBJECT: SMART CITY PRIORITIES

DATE: May 23, 2018

Approved _____

Date S·23-18

BACKGROUND

The Mayor's March Budget Message for Fiscal Year 2018-2019, as approved by the City Council, recommended three key areas of investment – data integration, My San Jose 2.0, and the Smart City Roadmap – and directed the Administration to provide a proposed timeline for implementation of the aforementioned Smart City priorities, costs, and funding plan for Council consideration.

This memorandum lays out the overall framework for San Jose's Smart City journey, as well as specific details for funded priorities, in the following sections:

- **The Smart City Journey So Far**: What has been accomplished over the past two years.
- **Where We're Going as a Smart City**: What we expect to accomplish over the next three years through civic innovation leadership and capacity building across the City.
- **Key Smart City Investments in 2018-2019**: Specific details about Smart City priorities in the Proposed Operating Budget.
- **Smart City Potential Investments in 2019-2020 and 2020-2021**: Additional potential investments to continue the priority 2018-2019 projects.
- **Proposed Smart City Timeline**: Summary timeline for Smart City Roadmap, costs and funding plan.

ANALYSIS

THE SMART CITY JOURNEY SO FAR
This section reviews accomplishments and lessons learned from the last two years.

Year 1 (2016): Set Out the Bold Vision

On March 29, 2016, the City Council unanimously adopted the Smart City Vision with the aspiration of making San Jose the most innovative city in the United States by 2020.

The Smart City Vision articulates broad outcomes spanning five domains:

- Safe City
- Inclusive City
- User-Friendly City
- Sustainable City
- Demonstration City

To drive implementation of this vision, the City created the Office of Civic Innovation & Digital Strategy (Innovation Team) within the Office of the City Manager in August 2016.

Year 2 (2017): Putting the Vision into Action

In January 2017, the City Council moved this vision toward execution by adopting the City's first ever Innovation Roadmap (Figure 1). This effort has focused the efforts of departments on a defined list of projects and strategies to address problems that are:

1. Important to our residents and businesses;
2. Core to what the City of San José does; and
3. Achievable at scale with technology or process improvement.

Figure 1. Current Innovation Roadmap

Innovation Roadmap Projects

	Non-Negotiable Citywide Implementation	Highly Desirable Strategic Investments	Desirable Dept Investments	Demonstration Projects	Emerging Projects
Process Improvement	Talent Recruitment Initiative	Development Services			
Digital Front Door	My San Jose	Website Redesign			
Smart City Infrastructure	Digital Inclusion & Broadband Strategy	LED streetlights/ anyCOMM pilot	IoT Strategy		
Demo Projects	Facebook Terragraph Wifi	Access Eastside	Silver Spring Networks	Demonstration Policy	
IT Brilliant at the Basics	Citywide Data Architecture	Business Process Automation	Business Tax System	Integrated Permitting System	
Transportation	Autonomous Vehicle RFI	Transportation Events Tracking	Radar Sensor Module Strategy	Vehicle Fleet Telematics	
Safe City	Safe City Strategy	Emergency Mgmt Tech/Data			
Innovation Support	Innovators Network				

PRIORITIZATION

As important as *what* we do is *how* we do our work. To become more innovative as an organization, we have begun training and coaching our people to integrate three keystone behaviors into our processes:

- **Champion the Customer:** We relentlessly focus on the customer experience and do the hard work to make services easy, reliable and enjoyable.
- **Learn through Data:** From data, we see patterns, from patterns we derive insights, and from insights we drive action. We use data and evidence to inform our actions and measure our results.
- **Iterate to Improve:** We embrace new ways of working, take calculated risks, and rapidly iterate to learn from failure before scaling initiatives.

In the first year of implementation there have been successes in projects as diverse as hiring new employees, to partnering with the autonomous vehicle community. Here are a few highlights from Innovation Roadmap accomplishments in 2017-2018:

- **Safe City:** In the first iteration of the Safe City Strategy, the Police Department implemented a new dashboard to visualize crimes throughout the city. In addition, that data is being used to dispatch predictive police missions, thereby making the Police Department more effective. The Fire Department also began implementing a new fire station alerting system, while pursuing redundant network connectivity required to ensure 24/7 operation. As the third pillar of the emerging Safe City Strategy, the Office of Emergency Management is implementing a new mass notification system.
- **Inclusive City:** In November 2017, the Council approved a Broadband and Digital Inclusion Strategy that incents billions of dollars of private sector investment in connectivity, improving broadband across the city while bringing the opportunity and knowledge afforded by home internet access to the under-served communities. As part of a major small cell deployment agreement, the Council approved creation of a Digital Inclusion funding stream. This revenue source aims to bring 95,000 digitally excluded San Jose residents into the digital economy by providing affordable home broadband, devices, and digital literacy training. Including these residents in the digital economy will advance their educational, workforce, medical, and financial outcomes.
- **User-Friendly City:** My San Jose 1.0 was officially launched in July 2017, bringing to reality a convenient, centralized way for residents to report the five most commonly requested services: graffiti, illegal dumping, potholes, streetlight outages, abandoned vehicles, as well as general requests. To date the app has over 22,000 users and City staff have responded to over 100,000 requests. Taking an iterative approach to improve the user experience, the City has released multiple updates; version 1.5 was released in May 2018 with notable usability improvements.
- **Sustainable City:** The City has recently drafted its first ever Internet of Things (IoT) Strategy that recommends taking a balanced view of developing long term foundational capabilities in data management, cybersecurity, digital privacy and smart city platform

while being focused on benefits-driven use cases to improve the effectiveness of City services to its residents. The IoT Strategy was developed in collaboration with department leaders, and included identification of high potential use cases in four areas – public safety, mobility, facilities management and environment. By increasing the deployment of sensors throughout the City with improved connectivity, the City will realize significant efficiencies in City operations, such as through water savings and reduced energy consumption.

- **Demonstration City**: The City evaluated 31 proposals through the Autonomous Vehicle (AV) Request for Information (RFI), which sought AV pilot projects that would advance the City's safety, sustainability, livability and mobility goals.

All of this work is Powered by People. Foundational to our success as a Smart City is our ability to hire, retain and engage talented City staff. In January 2017, the Talent Recruitment Initiative team pioneered a customer-driven approach to reimagine how we hire. The team met with customers and quickly prototyped solutions to eliminate duplicative steps and empower individual departments to speed up the hiring process. In January of 2017, the City had approximately 850 vacancies city-wide (approximately 275 sworn and 575 non-sworn). Since that time the City has further reduced its vacancies by more than 200 for a total of 634 vacancies city-wide (187 sworn positions and 447 non-sworn positions as of April 30, 2018). The continued progress in reducing vacancies is due to strategic and innovative improvements in the hiring process from the launch of the Talent Recruitment Initiative.

The Innovation Team has also created an Innovators Network to engage a broad cross-section of over 300 City staff from all departments around our three core innovation behaviors of Champion the Customer, Learn Through Data, and Iterate to Improve. Through monthly lunch talks, workshops, focused skills trainings, and one-on-one coaching, we are building the capabilities for our organization to innovate at scale.
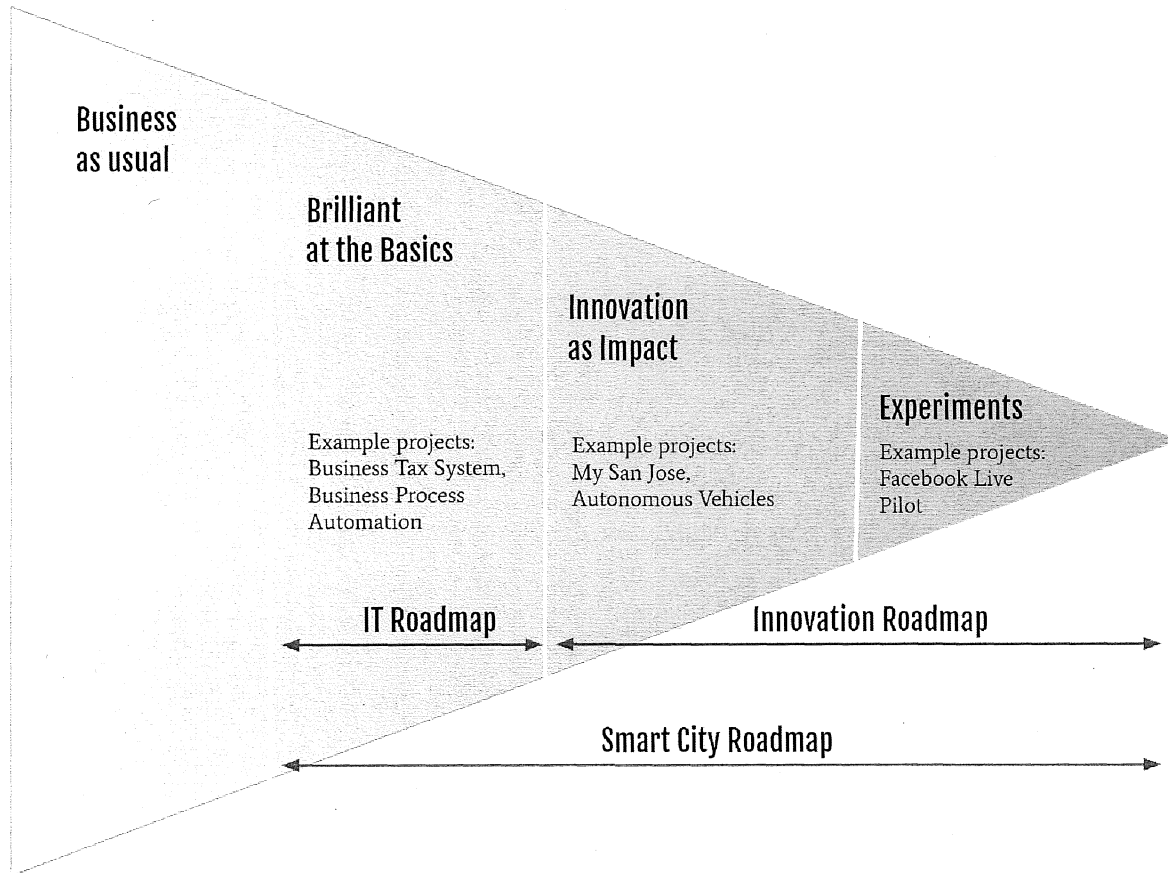
WHERE WE'RE GOING AS A SMART CITY

This section describes what is needed across the organization to achieve the Smart City Vision.

Year 3 (2018): Multiply the Effort

Over the past two years, we have learned what it will take to be a smarter city. Successful execution at scale will require an evolution of our initial Innovation Roadmap to a true Smart City Roadmap that reflects a broader segment of our organization's activities.

The new Smart City Roadmap will consist of an Innovation Roadmap and an IT (Information Technology) Roadmap, together spanning the spectrum from core operations to small scale experimentation. We expect to present an updated Roadmap to the Smart Cities and Service Improvements Committee in September 2018.

Figure 2. Smart City Roadmap Categories of Projects

Business as usual

Brilliant at the Basics

Innovation as Impact

Experiments

Example projects:
Business Tax System,
Business Process
Automation

Example projects:
My San Jose,
Autonomous Vehicles

Example projects:
Facebook Live
Pilot

IT Roadmap

Innovation Roadmap

Smart City Roadmap

These are the three main categories of projects on the Smart City Roadmap:

- **Brilliant at the Basics** – To get the foundation right, we must focus on a short list of technology enterprise improvements that support our day to day operations and innovation at scale, with an emphasis on security and protection of individual privacy.

- **Innovation as Impact** – To deliver tangible improvements in the real world, we must focus on resident-facing strategies that deliver more effective and efficient services with real cost savings and returns on investment.

- **Small Scale Experiments** – To be as innovative as the community we serve, we must create space for small and beautiful experiments with external partners to rapidly learn and adopt new technologies.

Notably, the Smart City Roadmap overall will represent a greater number of projects, corresponding to our organization's growing capacity to innovate. These projects will be aligned with high level strategies that guide our organization's investments in areas such as connectivity,

digital service delivery, and data integration. Each of the strategies will have an executive sponsor, product owner, internal team, and external partners.

Figure 3 below shows an overall timeline for the Smart City Transformation, including the evolution from the Smart City Vision to the Innovation Roadmap to the Smart City Roadmap.

Becoming a Smart City will require significant investments in the capabilities of our People, Process and Technology. In the remainder of 2018, we will be focused on "multiplying the effort" by engaging more of our staff in leading and implementing the improvements to our processes and technology.

Figure 3. Smart City Transformation Timeline
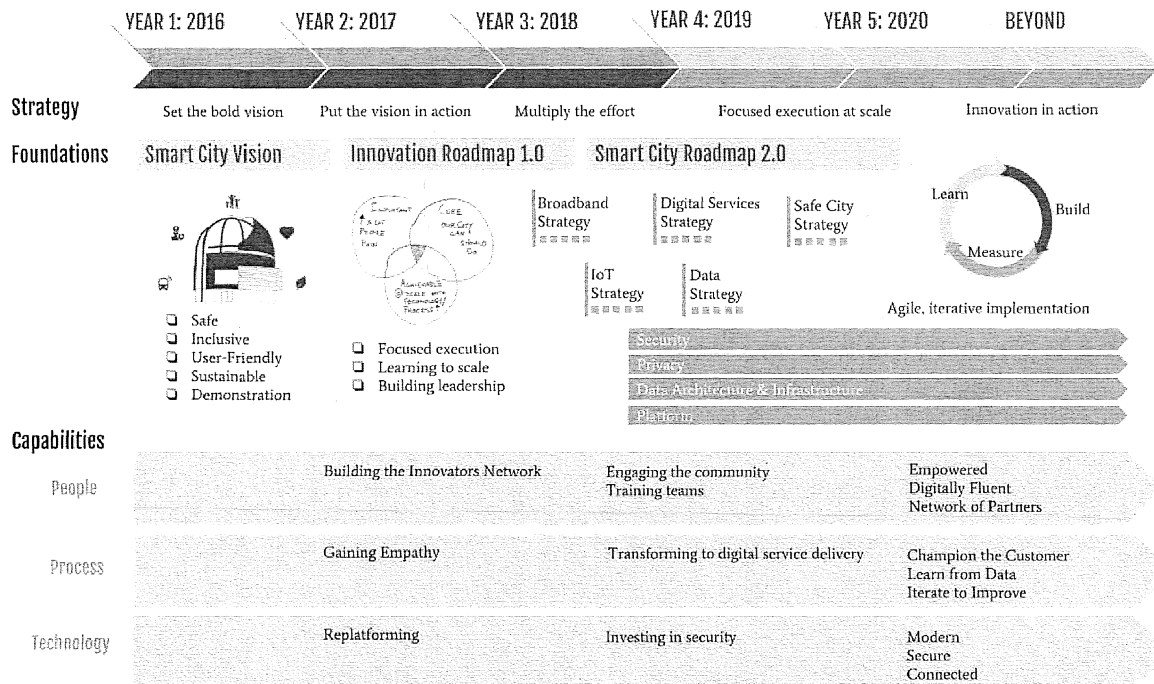
Years 4 (2019) & 5 (2020): Focused Execution at Scale

By 2019 and 2020, we expect to be focused on execution of strategies and projects in the Smart City Roadmap at scale across the City. The concept of scale applies to both the breadth of the projects themselves and the percentage of City departments and employees who are working on Smart City projects relative to 'business as usual' activities. In 2019 and 2020, a significant percentage of the City's people should be using innovative ways to deploy next generation technologies that improve the City's ability to deliver efficient and effective services.

KEY SMART CITY INVESTMENTS IN 2018-2019

This section provides detail on the Smart City priorities funded in the coming fiscal year.

In response to the Mayor's Budget Message, the 2018-2019 Proposed Operating Budget includes one-time funding to advance Smart City priorities, as shown in Figure 3. Also shown in Figure 3 are estimated budgets for the subsequent two years that may be recommended for allocation as funding and other City Council and Administration priorities allow, which are detailed in the following section entitled "Smart City Proposed Future Investments".

Figure 4. Summary of Proposed Operating Budget Related to Smart City Priorities

	Recommended Funding	Potential Future Funding	
Item	**2018-2019 Amount**	2019-2020 Amount	2020-2021 Amount
Smart City Roadmap: Privacy and Data Security, Community Wi-Fi and Safe City Strategy	**$300,000**	$500,000	$0
Citywide Open Data Environment and Architecture	**$600,000**	$3,000,000	$3,000,000
Office of Civic Innovation Staffing (Chief Data Officer, Chief Privacy Officer)	**$200,000***	$400,000	$400,000
My San Jose and Digital Services Strategy	**$1,720,000****	$1,500,000	$1,000,000
City Portfolio-Product-Projects Office (IT Department)	**$150,000**	$560,000	$560,000
Total	**$2,970,000**	$5,960,000	$4,960,000

*An additional $200,000 has been reserved for use in 2019-2020.
**Includes $220,000 of anticipated funding from a Knight Foundation grant that will be awarded later in the budget process.

Smart City Roadmap

As described in the prior section, in 2018-2019, we will evolve from the current Innovation Roadmap to a Smart City Roadmap, which will be presented to the Smart Cities & Service Improvements Committee for consideration in September 2018.

The 2018-2019 Proposed Budget adds one-time funding of $300,000 to advance the following key strategies as part of the Smart City Roadmap:

- **Privacy and Data Security**. Activities will support engagement efforts with the community and development of a Privacy Policy and Program for City Council

review and approval in 2018-2019, as well as a review and operational model for data security.

- **Community Wi-Fi Strategy**. With the deployment of Access East Side Wi-Fi, the testing of the downtown expanded Wi-Fi networks, and other potential expansions, the City requires a clear strategy to guide the deployment and operation of community Wi-Fi. This funding will create a deployment roadmap to guide future investment in the coming fiscal years.
- **Safe City Strategy**. Supports the development of a Safe City Strategy guiding the City's use of technology in support of a safer community. The strategy will be developed in collaboration with the Police Department, Fire Department, Office of Emergency Management, among other key stakeholders. This funding will create a deployment roadmap to guide future investment in the coming fiscal years.

Data Investments

One of the fundamental concepts that makes a Smart City actually smart is better use of data at scale to transform city service delivery. On top of every kind of city infrastructure, from traffic lights, to sewers, to our vehicle fleet, there is now a new 'data layer' that uses sensors and connectivity to provide data that can improve services, and even shift to new services that have never previously existed. This is possible if, and only if, we invest in new approaches to our data infrastructure, architecture and analytic capability.

The *Citywide Open Data Environment and Architecture* is assigned one-time funding of $600,000 to increase the City's capability to use data to inform better decision making and service delivery. Specifically, the funding will be used to continue implementation of the City's Open Data Environment (ODE) for citywide use and to stand up a consolidated Data and Transparency Portal (DTP) for public use. The ODE will serve as the default data storage, access, and analytics resource for the City, maximizing utility of data, avoiding fragmentation of information and duplicative costs associated with multiple data solutions and products. This investment builds on the Infrastructure Refresh Initiative funded in the Information Technology Department in 2017-2018 and currently in procurement. The DTP consolidates the City's two open data portals currently in use for financial transparency and open data sets into a single resource. Partially offset by a $100,000 Silicon Valley Community Foundation grant, this action will facilitate developing data insights for key issues such as public safety, housing and homelessness, or transportation.

The *Chief Data Officer, Chief Privacy Officer* (CDO) is a two-year limited combined role position that will provide strategic expertise and project management capacity as the City continues to build tools that better leverage internal and external data resources to improve public service delivery in alignment with the City's Smart City Vision. The CDO's near-term focus will be on engaging community stakeholders on data privacy, as well as on leveraging data to support City goals in the areas of housing, public safety, and transit.

My San Jose and Digital Services Strategy

My San Jose is a major step toward realizing the Smart City Vision of a User Friendly City by using digital platforms to empower residents and make the City more responsive to the needs of the community.

The Proposed Budget adds one-time funding of $1.5 million to support a more effective and efficient response to complaints about graffiti, abandoned vehicles, broken streetlights, potholes, and general requests through the My San Jose application and web portal. While the initial response to My San Jose has been positive, the reality is, like any great tech application, the product launch is only the beginning.

My San Jose "2.0" will deliver:

- A reliable, easy, and enjoyable customer experience. From reporting a problem to finding out its status, every interaction should build our residents' trust.
- Effective, efficient workflows for back-end service teams. We'll reduce time-consuming and duplicative staff effort, and direct resources toward the most important customer needs and City priorities.
- A more configurable and more modular technology platform. To improve My San Jose, it must be easy for staff to iterate on existing services and add new services.
- Systematic use of data analytics to monitor, plan, prioritize and improve service delivery.

The practices used to develop My San Jose 2.0 will serve as a blueprint for scaling the City's approach to digital service delivery. As part of this work, a citywide digital services roadmap will be created to prioritize and set standards for digital services. In addition to the $1.5 million, funding of $220,000 from the Knight Foundation is expected (bringing the total to $1.7 million) to provide residents increased responsiveness, user-friendly design, and customized digital experiences. Recognition of this grant will be brought forward as part of the Recommended Amendments to the 2018-2019 Proposed Operating and Capital Budgets Manager's Budget Addendum.

City Portfolio-Product-Projects Office

Through the reallocation of existing resources in the Information Technology Department, the 2017-2018 Adopted Operating Budget established the City Portfolio-Product-Projects Office to build project execution capacity within the City organization. The action recommended in the 2018-2019 Proposed Budget adds resources of $150,0000 on a one-time basis to help meet the surge of information technology solutions in the coming year, including My San Jose 2.0, departmental integration with the Master Address Database, and innovation demonstration projects across departments.

Leveraging Private Sector Investments to Increase Broadband and Digital Inclusion

The City will continue to execute on the broadband and digital inclusion strategy in 2018-2019 with a focus on:

- Engaging all major service providers (AT&T, Comcast, Verizon, T-Mobile, and Sprint) and new entrants in agreements to accelerate their broadband deployments including fiber, small cells, and macro cells through value trading and other innovative forms of public private partnerships;

- Growing the digital inclusion fund in partnership with the private sector;

- Building a core Broadband Team within Civic Innovation including a Broadband Manager, a Broadband Policy Analyst, and a Demonstration Project Manager;

- Building a Vertical Infrastructure Team in Public Works and Transportation that is able to permit all broadband technologies such as small cells and macro cells with greater speed and predictability (Public Works staffing included in the 2018-2019 Proposed Budget);

- Developing a dig-once policy to accelerate fiber and coax deployments to underserved areas throughout the City;

- Leveraging our 64,000 street lights to create a "Street Light as a Platform" capability. As part of the LED retrofit, next generation smart lighting controllers deployed at scale can enable the creation of a IoT network for the City. As the City's privacy and security policies mature and an IoT platform is developed, the "Street Light as a Platform" enables potential smart city use cases such as flood. monitoring, emergency management response, shot gun detection, crowd management, and traffic monitoring.

- Revising the City's Master License Agreement for small cells and other wireless attachments on the City's vertical infrastructure in the Public Right of Way.

SMART CITY POTENTIAL INVESTMENTS IN 2019-2020 & 2020-2021

This section provides more detail on the Smart City priorities that could be continued depending on funding availability, the balancing of other key City priorities, and subject to City Council approval as part of future budget development processes.

Figure 5. Summary of Future Funding Required for Smart City Priorities

	Recommended Funding	One Time and Ongoing Potential Future Funding	
Item	2018-2019 Amount	**2019-2020 Amount**	**2020-2021 Amount**
Smart City Roadmap: Privacy & Data Security, Community Wi-Fi and Safe City Strategy	$300,000	**$500,000**	**$0**
Citywide Open Data Environment and Architecture	$600,000	**$3,000,000**	**$3,000,000**
Office of Civic Innovation Staffing (Chief Data Officer, Chief Privacy Officer)	$200,000*	**$400,000**	**$400,000**
My San Jose and Digital Services	$1,720,000**	**$1,500,000**	**$1,000,000**
City Portfolio-Product-Projects Office (IT Department)	$150,000	**$560,000**	**$560,000**
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*An additional $200,000 has been reserved for use in 2019-2020.
**Includes $220,000 of anticipated funding from a Knight Foundation grant that will be awarded later in the budget process.

Smart City Roadmap: Privacy and Data Security, Community Wi-Fi and Safe City Strategy
The investments in 2018 and 2019 would result in an implementation roadmap for the Community Wi-Fi strategy and Safe City strategy. An investment in 2019-2020 of $250,000 per strategy (total of $500,000) would catalyze the roadmap projects with Civic Innovation leadership. In 2020-2021 investments in these strategies would be funded from the individual departments.

Citywide Open Data Environment and Architecture
Ongoing investments would include $1.2 million for data environment (on-premise and cloud storage), $1.3 million for data analytics tools, skills development and a data team, $200,000 for a robust data portal, $200,000 for a security analyst position, and $100,000 for IoT labs and skills development.

Office of Civic Innovation Staffing
Ongoing investments would include $200,000 for a Chief Data Officer position, plus additional ongoing funding of $200,000 for a Chief Privacy Officer to implement and operationalize the City's forthcoming privacy principles and policies.

My San Jose and Digital Services
As the number of My San Jose users and services continues to grow and the city's relationship with the vendor evolves, the application may need to be ported to a new platform (My San Jose 3.0). These efforts may require one-time funding of $1.5 million to complete the build-out at scale with $1.0 million ongoing to sustain an in-house digital services team.

City Portfolio-Product-Projects Office
Ongoing investments include $360,000 for two Product-Project Managers and $200,000 for an Enterprise Architect to supporting the ongoing and additional surge in information technology solutions during 2019-2020 and 2020-2021.

PROPOSED SMART CITY TIMELINE
This section provides a timeline for implementation of Smart City Priorities, costs and a funding plan.

Date	Milestone
July 2018	Following approval of 2018-19 Proposed Operating Budget: - Begin project planning and implementation of prioritized 2018-2019 projects shown in Figure 3.0 - Begin development of Smart City Roadmap inclusive of other projects across all departments in addition to prioritized projects.
September 2018	Present proposed Smart City Roadmap and Funding Plan to Smart Cities and Service Improvements Committee.
January-April 2019	Return with budget requests consistent with Smart City Funding Plan for 2019-2020 budget development process as appropriate and in context of the City's budgetary outlook.

COORDINATION

This memorandum has been coordinated with the Information Technology Department and the City Manager's Budget Office.

Dolan Beckel
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Office of Civic Innovation and Digital Strategy