

# City of Tacoma: IT Strategic Plan 2017 - 2021



JUNE 9, 2017

# CONTENTS

<b>Executive Summary .....</b>	<b>1</b>
Introduction .....	2
Project Background and Methodology .....	4
IT Mission, Vision, and Guiding Principles .....	5
IT Goals and Strategies .....	6
<b>Strategic Directions .....</b>	<b>8</b>
Goal 1: Digital Citizen Engagement .....	9
Goal 2: Digital Equity .....	11
Goal 3: Digital Workplace .....	12
Goal 4: Smart Technology in City Services and Operations .....	14
Goal 5: Cybersecurity and Resiliency .....	16
<b>Implementation Roadmap .....</b>	<b>19</b>
Implementation Roadmap .....	20
Investment Summary .....	22
Critical Success Factors .....	26
<b>Appendices</b>	
A: Measuring Progress .....	28
B: Project Descriptions .....	30



## Executive Summary



## Introduction

The Puget Sound region is home to approximately 3.8 million people and is projected to grow to over five million by 2040. The City of Tacoma is located just south of Seattle and is the second largest city in the region. With just over 200,000 residents today, the City is estimated to grow by more than 127,000 residents and over 97,000 jobs by 2040. It serves as the center of the South Sound region for business activity, and has a rich history of international trade.



The City of Tacoma's 10-year citywide strategic plan and vision, also known as Tacoma 2025, was inspired by Tacoma's growth and diversity, and developed to guide the City in decision-making and resource allocation. It will require an unprecedented level of civic engagement, and the full participation and commitment of public, nonprofit, and business partners. As part of the City's commitment to ensuring this plan is implemented in partnership with residents and other stakeholders in a transparent manner, city departments are developing supporting component five-year strategic action plans. This Information Technology (IT) Strategic Plan is one of these component plans.

The City relies increasingly on information technology to promote connected neighborhoods and a vibrant cultural sector; ensure a strong economy with good employment opportunities; support education and learning; promote civic engagements; and ensure all residents are treated equitably and have access to services – the five citywide objectives included in Tacoma 2025.

- Livability** By 2025, the City of Tacoma will be a city of choice in the region known for connected neighborhoods, accessible and efficient transportation and transit options, and vibrant arts and culture. Residents will be healthy and have access to services and community amenities while maintaining affordability.
- Economy & Workforce** By 2025, Tacoma will be a growing economy where Tacoma residents can find livable wage jobs in key industry areas. Tacoma will be a place of choice for employers, professionals, and new graduates.
- Education** By 2025, Tacoma will lead the region in educational attainment among youth and adults. In addition to producing more graduates from high school and college, more college graduates will find employment in the region. Lifelong learning and access to education will be prioritized and valued.
- Civic Engagement** By 2025, Tacoma residents will be engaged participants in making Tacoma a well-run city. The leadership of the City, both elected and volunteer, will reflect the diversity of the City and residents will fully participate in community decision-making.
- Equity & Accessibility** By 2025, Tacoma will ensure that all residents are treated equitably and have access to services, facilities, and financial stability. Disaggregated data will be used to make decisions, direct funding, and develop strategies to address disparate outcomes.



Recognizing the critical role IT plays in achieving these city objectives, the City has committed to investing in technology to elevate service levels to residents and further increase operational efficiencies. IT spending has increased 10% from \$54.6 million in FY 2013-14 to \$60.3 million in FY 2017-18. The result of this investment has led to national recognition among the City's peers. The City has been recognized by the Center for Digital Government as a leading example of cities using technology to improve services, increase transparency and community engagement, and boost efficiencies – winning the top 10 Digital Cities Survey for cities between 125,000 and 249,999 in population in 2013, 2014, and 2015.

This IT Strategic Plan sets out a long-term vision to support the City's 2025 citywide objectives, and a five-year roadmap to guide technology investments and:

- Foster a collaborative environment between the City and the community through increased digital engagement
- Empower Tacoma residents by facilitating digital equity and accessibility
- Enable city staff to increase productivity by creating an efficient digital workplace
- Deliver the next generation of services to the community leveraging Smart City technologies
- Strengthen citywide cybersecurity and resiliency

## Project Background and Methodology

In April of 2016, the City of Tacoma engaged Plante & Moran, PLLC (Plante Moran) to facilitate the development of this IT Strategic Plan. The following summarizes the key components of Plante Moran's methodology.

### IT Strategic Review

Plante Moran conducted over 30 interviews with city executives and senior leadership, 15 focus group sessions with city departments, and 12 focus group sessions with IT staff. Participants shared their business priorities as well as current and anticipated demand for technology and IT services – and how new technology could potentially enhance the delivery of government services. They also provided their perspectives on existing business solutions, technology infrastructure, and IT services. Additionally, to gain a user perspective on central information technology support and services, effectiveness of existing technologies, and the value of potential new technologies, Plante Moran conducted a survey of end users across the city general government. A total of 584 city general government employees responded to the survey, representing a total of 18 different departments. The City received a separate IT Strategic Review report summarizing these review findings.

### GIS Assessment

Plante Moran partnered with Applied Geographics (AppGeo) to conduct a comprehensive assessment of the City's GIS environment. They reviewed the City's geospatial Internet applications, administered an online survey of selected city staff, and conducted departmental staff interviews. This assessment was designed to answer "What are the strengths, weaknesses, opportunities, and threats (SWOT) of the City's existing GIS technologies and services?" The City received a separate GIS Assessment report summarizing these SWOT findings and associated recommendations.

### Peer City Survey

To provide a comparative context for municipal technology trends, Plante Moran distributed a survey to five cities selected by the City of Tacoma for their national recognition as leading Smart or Digital Cities. The cities of Alexandria, Virginia and Bellevue, Washington provided responses to the survey – sharing which municipal technology trends they have recently implemented or are currently or planning to implement in the near future. These survey results are included in the separate IT Strategic Review report.

### Market Research

To provide a broader, national perspective on Smart City technologies, Plante Moran drew on best practices, industry standards, public frameworks, academic research, leading organization case studies, and its own experience working with recognized professionals in the field and over 500 local government organizations over the past 30 years.

### Strategy Development Retreats

Plante Moran conducted two separate strategy development retreats with the City's IT Strategy Steering Committee. The first retreat validated Plante Moran's review findings presented in the IT Strategic Review report and introduced municipal trends being implemented by leading Smart and Digital cities across the nation. During the second retreat, Plante Moran facilitated discussions regarding IT vision and mission, and potential goals and strategies. IT Strategy Steering Committee members were asked to prioritize potential goals and strategies, which are presented in this IT Strategic Plan.

## IT Mission, Vision, and Guiding Principles

The IT Department at the City of Tacoma established a vision statement, mission statement, and a set of guiding principles to ensure direction and accountability in its pursuit of becoming a municipal leader in innovative technologies.

### VISION

A vision statement provides a broad aspirational image of the future that an organization is trying to achieve. In developing a vision for information technology, the Information Technology Department considered the City's 10-year citywide strategic plan and vision, also known as Tacoma 2025. The IT vision below reflects this consideration.

**ITD will lead the City's effort to leverage technology to provide the right information to the right people at the right time and deliver solutions which contribute to a thriving city.**

### MISSION

A mission states the purpose of an organization. The IT mission below reflects the City's desire to employ information technology as a tool to achieve specific strategic outcomes.

**We provide technology leadership and solutions to business units and the community in support of effective city and utility operations, robust community engagement, and a thriving local economy.**

### GUIDING PRINCIPLES

Driven by the spirit of the IT vision and mission, the following principles are intended to guide specific actions as the City implements the strategic roadmap presented in this IT Strategic Plan.

**Integrity** We conduct our personal, work group, and organizational actions in an ethical and honest manner, and we serve as responsible stewards of the public resources entrusted to us.

**Service** We treat everyone with courtesy and empathy. We provide customer-focused municipal services that produce high value and results.

**Excellence** We achieve the highest performance possible. We use collaborative and inclusive approaches to organizational and community issues. We are accountable for individually and collectively meeting high standards.

**Equity** We understand and reflect the community we serve. We ensure every community member has services and opportunities that will enable people to satisfy their essential needs and advance their wellbeing.

## IT Goals and Strategies

In support of Tacoma's IT vision and mission, the City developed five major goal areas and 12 supporting strategies. While a goal expresses "what" an organization wants to accomplish, a strategy describes generally "how" it is to be accomplished.



### Goal 1: Digital Citizen Engagement

In an effort to enhance civic engagement, the City's Information Technology Department (ITD) will partner with city business units, other government agencies, and leading technology service providers to deliver innovative technology applications that enable citizen engagement, services growth, and business efficiency.

#### Strategies

- 1.1 Expand digital services to the community and simplify "doing business" with the City
- 1.2 Increase government transparency and accountability



### Goal 2: Digital Equity

In an effort to minimize the digital divide in the community, ITD will work to ensure that every community member has access to affordable broadband service, computing devices, and the skills necessary to safely use the Internet.

#### Strategies

- 2.1 Promote access to affordable high-speed Internet services, devices, and public computers
- 2.2 Facilitate digital literacy skills building opportunities



### Goal 3: Digital Workplace

In order for the City to evolve as a modern workplace, ITD will deliver technology infrastructure services and business solutions that enable collaboration, mobility, and process efficiencies.

#### Strategies

- 3.1 Enable a highly collaborative work environment
- 3.2 Increase operational efficiencies through streamlined business processes and automation
- 3.3 Leverage cloud services where possible





## Goal 4: Smart Technology in City Services and Operations

In order to enable continuous improvement in government and utility operations, public safety, and overall city livability, ITD will research and develop a Smart City program and corresponding public-private partnerships.

### Strategies

- 4.1 Develop a Smart City strategy
- 4.2 Enhance data and information collection and analytics
- 4.3 Pilot and enable Smart City technologies in support of business objectives



## Goal 5: Cybersecurity and Resiliency

In order to enhance government performance and public trust, ITD will ensure citywide integrity of confidential information and resiliency in government and utility services.

### Strategies

- 5.1 Leverage cybersecurity automation and threat intelligence to reduce cyber risk and improve responsiveness to threats and events
- 5.2 Continue to mature the City's cybersecurity program

A person wearing a light blue button-down shirt is shown from the chest up, slightly out of focus. Their right hand is in sharp focus, moving a black chess king piece. The piece is being moved from one position to another on a white document that features a faint, hand-drawn flowchart with circles and connecting lines. The background is a soft, out-of-focus grey.

## Strategic Directions

## Goal 1: Digital Citizen Engagement

In an effort to enhance civic engagement, the City's Information Technology Department (ITD) will partner with city business units, other government agencies, and leading technology service providers to deliver innovative technology applications that enable citizen engagement, services growth, and business efficiency.

### Strategy 1.1. Expand digital services to the community and simplify "doing business" with the City

As the digital age continues to advance, people are becoming more tech savvy and reliant on technology. This is particularly true in the Puget Sound region, where citizens are surrounded by high-tech companies and innovation think tanks. Citizens now expect to see robust, user-friendly digital services available for use within their own communities. Collaboration tools, modern and intuitive websites, mobile applications, self-service

portals, and convenient citizen online accounts are becoming the standard for any local government that wants to be considered a technology leader among municipalities.

According to a survey on digital government trends, 82% of the over 1,100 government leaders that responded indicated that improving the citizen experience was a top priority in 2016<sup>1</sup>. In a recent Digital Cities Survey, citizen engagement was the number three priority for CIOs in 2016.<sup>2</sup>

Plante Moran also distributed a survey to select city employees with the purpose of ranking potential future IT innovation investments. The number one ranked potential future investment was the implementation of a "one-stop shop" for government services (citizen self-service portal).

Both the City of Tacoma and the majority of leading government organizations have deemed expanding digital services and simplifying how citizens do business with the City to be critical to enhancing digital engagement with their citizens. This is no simple task as increasing engagement and customer satisfaction with online services are two of the top four outreach challenges government organizations reported facing in 2016.

#### Case Study:

##### City of Shawnee, KS

The City of Shawnee, KS, was recognized as first place Digital Cities Survey winner in 2015 for its Shawnee Connect. This community portal and mobile app helps neighborhoods self-organize around critical issues and provides details and mapping of all 311 reports for 19 service request categories – from pot holes to construction permits.

In order to create a more connected Tacoma, it is paramount for the City to engage residents and stakeholders with the purpose of forming strong partnerships. The expansion in digital services available to the community will make Tacoma a more attractive area for business, and will help foster a more connected citizen experience. Making it easier to "do business" with the City will increase public trust and support Tacoma's focus on a vibrant economy.

#### Implementation Projects

1. Redesign "Tacoma Means Business" web presence and data services
2. Implement two-way citizen digital collaboration tools
3. Build modern, engaging web and web-map applications
4. Update the City's website
5. Implement a one-stop community self-service portal
6. Prioritize and implement citizen-facing applications for mobile
7. Deploy StreamServe to enhance business communications

<sup>1</sup> DIGITAL GOVERNMENT ENGAGEMENT TRENDS REPORT 2016 (n.d.). Retrieved February 23, 2017, from <https://www.govdelivery.com/resources/2016-digital-government-engagement-trends-report-2/>

<sup>2</sup> Municipal Innovation: Trends from the 2016 Digital Cities Survey (November 14, 2016.). Retrieved from <http://www.govtech.com/dc/articles/Municipal-Innovation-Trends-from-the-2016-Digital-Cities-Survey.html>

**Strategy 1.2. Increase government transparency and accountability**

In a recent Digital Cities Survey, transparency and open data was the number two priority for CIOs in 2016.<sup>3</sup> The City has made great strides toward government transparency and open data. Tacoma already provides the public with unrestricted access to government data online in support of the City's open government initiative. In a recent IT strategic review survey conducted by Plante Moran, city staff showed strong support of its open government initiative with 75% of respondents expressing value in launching a government performance dashboard and 73% of respondents expressing value in expanded open government data.

The trend of open data and government transparency often reduced public disclosure requests, creates an environment where citizens feel more connected to their government, and enables private organizations to perform detailed analytics with government data.

**Implementation Projects**

8. Implement a government performance dashboard
9. Prioritize and publish open government data and data services

**Case Study:****City of Avondale, AZ**

The City of Avondale, AZ, a first place Digital Cities Survey winner for three consecutive years, received national recognition for its transparency initiative, among other innovative technology initiatives. Avondale participates with other local government the OpenBooks initiative that provides access to financial expenditure information for 20 cities with the state. Nearly 87% of citizens in a recent resident satisfaction survey gave Avondale's municipal services a "Good to Excellent" rating.

---

<sup>3</sup> Municipal Innovation: Trends from the 2016 Digital Cities Survey (November 14, 2016.). Retrieved from <http://www.govtech.com/dc/articles/Municipal-Innovation-Trends-from-the-2016-Digital-Cities-Survey.html>

## Goal 2: Digital Equity

In an effort to minimize the digital divide in the community, ITD will work to ensure that every community member has access to affordable broadband service, computing devices, and the skills necessary to safely use the Internet.

### **Strategy 2.1. Promote access to affordable high-speed Internet services, devices, and public computers**

The City proactively seeks ways to create an equitable environment for the community. The Office of Equity and Human Rights has a mission to achieve equity in service delivery, decision-making, and community engagement for all residents. Tacoma 2025's focus on Equity and Accessibility highlights the need to ensure all Tacoma residents are treated equitably and have access to services. However, there is a growing technology gap between the social classes. To ensure digital equity among all Tacoma citizens, it is imperative for each individual to have access to high-speed Internet services, affordable devices, and access to public computers – which will require strong community partnerships.

In a recent IT strategic review survey conducted by Plante Moran, city staff ranked “bridging the digital divide” in the top 10 innovation technologies for potential future investment. Tacoma, along with other Pacific Northwest cities, recognizes the importance of closing the digital divide between citizens by providing them with the necessary resources.

#### **Implementation Projects**

10. Connect residents with low-cost, high-speed Internet service options
11. Provide low-cost devices to people in need
12. Augment access to public computers

### **Strategy 2.2. Facilitate digital literacy skills building opportunities**

The steady advancement in technology has the power to widen the disparity among citizens or increase the standard of living across the community. It is simply not sufficient to provide technology resources. It is also necessary to ensure Tacoma's constituents have the skills to fully leverage these technologies – which again, will require strong community partnerships.

The federal government recently implemented a digital literacy program to assist municipalities in educating the population on Internet usage and communication technologies. This national attention demonstrates the heightened demand for digital literacy to include promoting proper cyber hygiene. With a more digitally literate citizenry, Tacoma will be better positioned to ensure residents have access to the resources they need to be involved in future job growth.

#### **Implementation Projects**

13. Engage with community partners to augment existing digital literacy skills training opportunities



## Goal 3: Digital Workplace

In order for the City to evolve as a modern workplace, ITD will deliver technology infrastructure services and business solutions that enable collaboration, mobility, and process efficiencies.

### **Strategy 3.1. Enable a highly collaborative work environment**

A highly effective workforce is an essential criterion to realizing an efficient and effective government. Many public sector agencies – and the City of Tacoma is no exception – are facing significant retirements and changes in workforce demographics. A 2017 digital workplace study found that workers prefer new collaboration tools over more traditional communication methods, such as email.

Succession planning, tools to facilitate collaboration and the transfer of knowledge, and training will be needed to prepare for this inevitable loss of institutional knowledge, and recruit and retain tomorrow's workforce.

#### **Implementation Projects**

14. Enhance workplace collaboration tools and remote work capabilities
15. Enable city employees to fully leverage new technologies
16. Enhance city employee self-service capabilities

### **Strategy 3.2. Increase operational efficiencies through streamlined business processes and automation**

Streamlined business processes are fundamental to ensuring efficient and effective government services. Today, many city business processes lack standardization, rely on manual processes, and can be prone to duplication or error. By evaluating – and redesigning – key enterprise business processes such as procure-to-pay and budgeting, the City can realize significant efficiencies and cost savings, and enhance government performance.

Beyond streamlined business processes, automation can offer further efficiencies. The City of Tacoma currently has a world-class, tier 1 enterprise resource planning (ERP) system for financial and human resource management as well as to support many other key enterprise functions. The City also has numerous best-of-breed solutions to support specialized functions such as permitting, licensing, project management, and document management. However, these solutions along with many other software applications are not being fully utilized, leaving opportunities for business efficiency improvements through enhanced automation.

Citizens expect timely, accurate information from their governments. System enhancements, upgrades, and replacements, in conjunction with business process improvements will increase Tacoma's business efficiencies.

#### **Implementation Projects**

17. Complete procure-to-pay business process improvements and digital transformation
18. Evaluate other City business processes for potential streamlining opportunities
19. Complete the implementation of SAP HANA
20. Prioritize SAP applications for mobile use and implement
21. Expand the use of SAP and GIS for asset management
22. Complete the implementation of electronic content management (TIMS)
23. Enhance financial and budget reporting
24. Implement an automated employee performance management system
25. Enhance or replace tax and licensing software
26. Enhance or replace the pension administration system
27. Create a GIS strategic plan and enhance the City's GIS program
28. Replace gMap to support departmental needs
29. Conduct a mobile spatial application needs assessment

**Strategy 3.3. Leverage cloud solutions where possible**

Adopted for use by private sector organizations for some time, but only recently have been gaining popularity among local governments, SaaS or “public cloud” solutions offer an alternative to traditional on-premise installations, which can require significant capital investment and ongoing support and maintenance. In contrast, public cloud solutions are typically offered as a subscription service, and can represent more scalable computing power while maintaining strict data security measures, regular upgrades, service level guarantees, and often best-in-class security and disaster recovery.

**Case Study:  
City of Boston, MA**

The City of Boston, MA recently underwent a project to make permitting and licensing easier for its citizens – supporting business owners and entrepreneurs when trying to start and grow their business in the Boston area. The City streamlined the appeals process, especially when dealing with smaller project permits, and provided a simple and comprehensive portal where citizens can apply and track the status of their permits/licenses. The results from the project:

- On-time permit issuance increased to 75%, up from 56% from the prior year
- 21% increase in the number of permits issued
- Decrease from 3,500 open building complaints to 212 open complaints in less than one year

Tacoma will realize many of these benefits by leveraging public cloud solutions where they make sense in its application portfolio.

**Implementation Projects**

30. Enhance TacomaFIRST 311
31. Expand the use of permit management software and improve integration
32. Implement learning management software for online training
33. Migrate to Microsoft Office 365 services for employee communications and collaboration software

## Goal 4: Smart Technology in City Services and Operations

In order to enable continuous improvement in government and utility operations, public safety, mobility, and overall city livability, ITD will research and develop a Smart City program and corresponding public-private partnerships.

### Strategy 4.1. Develop a Smart City strategy

The Smart City leverages information and communications technologies to enhance sustainability, citizen well-being, and economic development. In September of 2016, the National Science Foundation (NSF) committed more than \$60 million to fund Smart City initiatives, with more grant money coming in 2017.<sup>4</sup> Increased federal funding and strong partnerships with neighboring local governments and private sector technology firms will make the push towards creating Smart Cities a reality.

The City of Tacoma will prepare to take advantage of these disruptive technologies by assessing its Smart City maturity and readiness, developing a vision, strategy, and governance structure, and enhancing Smart City skills and competencies.

#### Case Study: City of Chicago, IL

The City of Chicago, IL partnered with the University of Chicago and Argonne National Laboratories to construct their strategy of becoming a Smart City. The NSF granted the City over \$3.1 million to fund their Smart City efforts.

### Implementation Projects

34. Assess the City's Smart City maturity and readiness
35. Develop a Smart City vision, strategy, and governance structure

### Strategy 4.2. Enhance data and information collection and analytics

The Smart City is one that knows about itself and makes itself more known to its populace. This begins with the collection and communication of data. Private industry has already proven how unlocking data from core business systems delivers new business insights and supports serving customers in new ways – opening new markets creating appreciable value for private investors. The City's citizen investors expect no less. They expect their leaders to recognize the potential of data to inform public policies and to achieve the most cost-effective investment of public resources. This transformation is an evolutionary process and it must fundamentally begin with how the City internally manages data. The City will harness current and future data so information can be accessible and relevant, and leverage modern visualization technologies to enable forward looking, data informed decision-making.

### Implementation Projects

36. Formalize data management
37. Standardize integrations and prioritize and develop key, core system interfaces
38. Mature data and analytics capabilities

---

<sup>4</sup> National Science Foundation - Where Discoveries Begin. (n.d.). Retrieved February 23, 2017, from [https://www.nsf.gov/news/news\\_summ.jsp?cntn\\_id=189882](https://www.nsf.gov/news/news_summ.jsp?cntn_id=189882)

**Strategy 4.3: Pilot and enable Smart City technologies in support of business objectives**

A Smart City collects information through sensors and other devices and existing systems. For instance, smart meters can measure electricity and water usage with great accuracy. Body cameras on law enforcement officers capture data to increase transparency and accountability.

Municipal technology leaders are all finding ways to leverage Smart City technologies to enhance community services and improve government performance. In a recent IT strategic review survey conducted by Plante Moran, 75% or more of respondents reported value in innovation technologies such as smart LED street lighting, smart metering systems, and police body cameras. The City of Tacoma will similarly pilot selected Smart City technologies in support of business objectives.

**Implementation Projects**

39. Support Tacoma Public Utilities' (TPU) automated meter infrastructure (AMI) initiative
40. Support Tacoma Police Department's (TPD) body camera initiative

**The Smart City Challenge**

Vulcan, a privately held company based in Seattle and the U.S. Department of Transportation partnered to create the "Smart City Challenge." The Smart City Challenge inspired 78 mid-sized cities to compete for the opportunity to demonstrate how advanced data and intelligent transportation systems (ITS) technologies and applications can be used to reduce congestion, keep travelers safe, protect the environment, respond to climate change, and support economic vitality. Vulcan and the U.S. Department of Transportation have contributed a combined \$50 million to fund the Smart City Challenge.

## Goal 5: Cybersecurity and Resiliency

In order to enhance government performance and public trust, ITD will ensure citywide integrity of confidential information and resiliency in government and utility services.

### **Strategy 5.1. Leverage cybersecurity automation and threat intelligence to reduce cyber risk and improve responsiveness to threats and events**

An effective threat management strategy and automated technology is vital in the time response and prevention of threat attempts to the City's network environment and data. The basis of a mature threat management strategy is founded in the procedures and tools implemented by the City, and includes:

- Timely processes for alerting, notification, identification, and remediation tasks
- A process to assess the threat level and impact to the City
- A process to evaluate and analyze the origination and lessons learned associated with the threat

In order to effectively manage and provide an IT governance over threat events, an effective set of policies, standards, and procedures should be established and periodically updated to support the City's threat strategy and automated solutions.

#### **Implementation Projects**

41. Enhance anti-phishing and malware defense through advanced technologies that reduce the risk of malware introduced through email and compromised websites
42. Implement a framework for comprehensive network traffic analysis
43. Automate information security updates for enterprise systems through patch management tools
44. Maximize information sharing and threat intelligence partnerships (e.g. ISACs, security councils, regional and state security agencies)
45. Implement solutions to harden and protect the City's network, computing, and storage infrastructure

### **Strategy 5.2. Continue to mature the City's cybersecurity program**

In a recent Digital Cities Survey, cybersecurity was the number one priority for CIOs in 2016.<sup>5</sup> A critical component for government and public entities competing in today's market is to leverage a mature cybersecurity program to maximize efficiency while effectively controlling and securing their information and hardware assets. Further, an effective cybersecurity program provides an overall benchmark in order to assess and identify areas of control improvement, allocation of resources, and potential areas of high risk.

In the security landscape today, there are a number of cybersecurity frameworks to consider. The following are but a few examples of notable security control frameworks that are commonly identified in the industry today: National Institute Standards Technology (NIST) - NIST 800 series and NIST Cybersecurity framework; the International Standards Organization (ISO) - ISO 27002 series control framework; and the SAN organization - Critical Information Security (CIS) Critical Security Controls (CSC) 20. Each framework is based on identifying critical security areas based on the management of security threats and risk.

The City will leverage these frameworks to continue to build and enhance its current control framework and technology that leverages security features to enhance and assist the City's obligations for protecting the confidentiality, availability, and integrity of information and IT assets, as well as compliance with various security and privacy regulations. The City will take into consideration business needs versus tolerance for risk and align outcomes accordingly.

---

<sup>5</sup> Municipal Innovation: Trends from the 2016 Digital Cities Survey (November 14, 2016.). Retrieved from <http://www.govtech.com/dc/articles/Municipal-Innovation-Trends-from-the-2016-Digital-Cities-Survey.html>





***Implementation Projects***

46. Establish a comprehensive cybersecurity policy framework and multiyear implementation roadmap
47. Perform periodic risk assessments, identify key risk indicators, and maintain a risk register
48. Enhance cybersecurity training for city technology professionals
49. Foster a cybersecurity awareness culture for all city employees
50. Extend and evolve the City's infrastructure to support alternate application delivery models



## Implementation Roadmap



## Implementation Roadmap

Each of the implementation projects identified in the previous chapter and further described in Appendix B represent a primary focus on: 1) people and partnerships; 2) policy and process; or 3) technology. The following Gantt chart illustrates the target implementation timeline for these projects, and indicates their primary focus area, according to the key at the bottom of each page.


Project		FY 17-18	FY 19-20	FY 21-22
<b>Goal 1: Digital Citizen Engagement</b>				
<b>1.1 Expand digital services to the community and simplify "doing business" with the City</b>				
1.	Redesign "Tacoma Means Business" web presence and data services			
2.	Implement two-way citizen digital collaboration tools			
3.	Build modern, engaging web and web-map applications			
4.	Update the City's website			
5.	Implement a one-stop community self-service portal			
6.	Prioritize and implement citizen-facing applications for mobile			
7.	Deploy StreamServe to enhance business communication			
<b>1.2 Increase government transparency and accountability</b>				
8.	Implement a government performance dashboard			
9.	Prioritize and publish open government data and data services			
<b>Goal 2: Digital Equity</b>				
<b>2.1 Promote access to affordable high-speed Internet services, devices, and public computers</b>				
10.	Connect residents with low-cost, high-speed Internet service options			
11.	Provide low cost devices to people in need			
12.	Augment access to public computers			
<b>2.2 Facilitate digital literacy skills building opportunities</b>				
13.	Engage with community partners to augment existing literacy skills training opportunities			

People and Partnerships = 


Policy and Processes = 

Technology = 

		Project	FY 17-18	FY 19-20	FY 21-22
<b>Goal 3: Digital Workplace</b>					
<b>3.1 Enable a highly collaborative work environment</b>					
14.	Enhance workplace collaboration tools and remote work capabilities				
15.	Enable city employees to fully leverage new technologies				
16.	Enhance city employee self service capabilities				
<b>3.2 Increase operational efficiencies through streamlined business processes and automation</b>					
17.	Complete procure-to-pay business process improvements and digital transformation				
18.	Evaluate other City business processes for potential streamlining opportunities				
19.	Complete the implementation of SAP HANA				
20.	Prioritize SAP applications for mobile use and implement				
21.	Expand the use of SAP and GIS for asset management				
22.	Complete the implementation of electronic content management (IIMS)				
23.	Enhance financial and budget reporting				
24.	Implement an automated performance management system				
25.	Enhance or replace tax and licensing software				
26.	Enhance or replace the pension administration system				
27.	Create a GIS strategic plan and enhance the City's GIS program				
28.	Replace gMap to support department needs				
29.	Conduct a mobile spatial application needs assessment				
<b>3.3 Leverage cloud solutions where possible</b>					
30.	Enhance TacomaFIRST 311				
31.	Expand the use of permit management software and improve integration				
32.	Implement learning management software for online training				
33.	Migrate to Microsoft Office 365 services for employee communication and collaboration				




People and Partnerships = 

Policy and Processes = 

Technology = 






	Project	FY 17-18	FY 19-20	FY 21-22
<b>Goal 4: Smart Technology in City Services and Operations</b>				
<b>4.1 Develop a Smart City strategy</b>				
34.	Assess the City's Smart City maturity and readiness			
35.	Develop a Smart City vision, strategy, and governance structure			
<b>4.2 Enhance data and information collection and analytics</b>				
36.	Formalize data management			
37.	Standardize integrations and prioritize and develop key, core system interfaces			
38.	Mature data and analytics capabilities			
<b>4.3 Pilot and enable Smart City technologies in support of business objectives</b>				
39.	Support TPU's AMI initiative			
40.	Support TPD's body camera initiative			
<b>Goal 5: Cybersecurity and Resiliency</b>				
<b>5.1 Leverage cybersecurity automation and threat intelligence to reduce cyber risk and improve responsiveness to threats and events</b>				
41.	Enhance anti-phishing and malware defense			
42.	Implement a framework for comprehensive network traffic analysis			
43.	Automate information security updates for enterprise systems through patch management tools			
44.	Maximize information sharing and threat intelligence partnerships			
45.	Implement solutions to harden and protect the City's network, computing, and storage infrastructure			
<b>5.2 Continue to mature the City's cybersecurity program</b>				
46.	Establish a comprehensive cybersecurity framework and multi-year implementation roadmap			
47.	Perform periodic risk assessments, identify key risk indicators, and maintain a risk register			
48.	Enhance cybersecurity training for city technology professionals			
49.	Foster a cybersecurity awareness culture for all city employees			
50.	Extend and evolve the City's infrastructure to support alternative application delivery models			










People and Partnerships =   
 Policy and Processes =   
 Technology = 























## Investment Summary



















Each of the projects in this IT Strategic Plan will require a significant investment – in both dollars in people – to implement. The following table summarizes this estimated investment for projects according to the key below.

Estimated Cost	Level of Effort
\$ = Less than \$200,000	 Requires lower level of effort and can be accomplished with few to no resources outside of ITD
\$ \$ = \$200,000 to \$1 million	 Requires moderate level of effort and some collaboration across one or more city departments
\$ \$ \$ = More than \$1 million	 Requires significant level effort and collaboration across multiple city departments and/or public/private partnerships

While these projects will require significant investment, the City anticipates significant business value as well – in terms of cost savings, process efficiencies, service improvements, and/or revenue enhancements. The following table summarizes these anticipated benefits with “3” being significantly high business value, “2” moderately high business value, and “1” moderate business value.

		Investment		Business Value
#	Project	Cost	Effort	
Goal 1: Digital Citizen Engagement				
1.1 Expand digital services to the community and simplify “doing business” with the City				
1.	Redesign "Tacoma Means Business" web presence and data services	\$		3
2.	Implement two-way digital citizen collaboration tools	\$		2
3.	Build modern, engaging web and web-map applications	\$ \$		1
4.	Update the City's website	\$		3
5.	Implement a one-stop community self-service portal	\$ \$ \$		3
6.	Prioritize and implement citizen-facing applications for mobile	\$ \$ \$		1
7.	Deploy StreamServe to enhance business communication	\$ \$		2
1.2 Increase government transparency and accountability				
8.	Implement a government performance dashboard	\$ \$		2
9.	Prioritize and publish open government data and data services	\$		2

		Investment		Business Value
#	Project	Cost	Effort	
Goal 2: Digital Equity				
2.1 Promote access to affordable high-speed Internet services, devices, and public computers				
10.	Connect residents with low-cost, high-speed Internet service options	\$		3
11.	Provide low-cost devices to people in need	\$		1
12.	Augment access to public computers	\$		2
2.2 Facilitate digital literacy skills building opportunities				
13.	Engage with community partners to augment existing literacy skills training opportunities	\$		2
Goal 3: Digital Workplace				
3.1 Enable a highly collaborative work environment				
14.	Enhance workplace collaboration tools and remote work capabilities	\$ \$		3
15.	Enable city employees to fully leverage new technologies	\$ \$		3
16.	Enhance city employee self-service capabilities	\$ \$		2
3.2 Increase operational efficiencies through streamlined business processes and automation				
17.	Complete procure-to-pay business process improvements and digital transformation	\$ \$		3
18.	Evaluate other City business processes for potential streamlining opportunities	\$		2
19.	Complete the implementation of SAP HANA	\$ \$ \$		2
20.	Prioritize SAP applications for mobile use and implement	\$ \$		2
21.	Expand the use of SAP and GIS for asset management	\$ \$ \$		3
22.	Complete the implementation of electronic content management (TMS)	\$ \$ \$		3
23.	Enhance financial and budget reporting	\$ \$		2
24.	Implement an automated employee performance management system	\$ \$		2
25.	Enhance or replace tax and licensing software	\$ \$ \$		3
26.	Enhance or replace the pension administration system	\$ \$ \$		2
27.	Create a GIS strategic plan and enhance the City’s GIS program	\$		2
28.	Replace gMap to support department needs	\$ \$		3
29.	Conduct a mobile spatial application needs assessment	\$		1
3.3 Leverage cloud solutions where possible				
30.	Enhance TacomaFIRST 311	\$		3
31.	Expand the use of permit management software and improve integration	\$ \$		3

#	Project	Investment		Business Value
		Cost	Effort	
32.	Implement learning management software for online training	\$ \$		2
33.	Migrate to Microsoft Office 365 services for employee communications and collaboration	\$		3
<b>Goal 4: Smart Technology in City Services and Operations</b>				
<b>4.1 Develop a Smart City Strategy</b>				
34.	Assess the City's Smart City maturity and readiness	\$		2
35.	Develop a Smart City vision, strategy, and governance structure	\$		2
<b>4.2 Enhance data and information collection and analytics</b>				
36.	Formalize data management	\$		3
37.	Standardize integrations and prioritize and develop key, core system interfaces	\$ \$		3
38.	Mature data and analytics capabilities	\$ \$ \$		3
<b>4.3 Pilot and enable Smart City technologies in support of business objectives</b>				
39.	Support TPU's AMI initiative	\$ \$ \$		3
40.	Support TPD's body camera initiative	\$ \$		3
<b>Goal 5: Cybersecurity and Resiliency</b>				
<b>5.1 Leverage cybersecurity automation and threat intelligence to reduce cyber risk and improve responsiveness to threats and events</b>				
41.	Enhance anti-phishing and malware defense	\$		3
42.	Implement a framework for comprehensive network traffic analysis	\$		2
43.	Automate information security updates for enterprise systems through patch management tools	\$		3
44.	Maximize information sharing and threat intelligence partnerships	\$		3
45.	Implement solutions to harden and protect the City's network, computing, and storage infrastructure	\$		3
<b>5.2 Continue to mature the City's cybersecurity program</b>				
46.	Establish a comprehensive cybersecurity framework and multiyear implementation roadmap	\$		2
47.	Perform periodic risk assessments, identify key risk indicators, and maintain a risk register	\$		3
48.	Enhance cybersecurity training for city technology professionals	\$		3
49.	Foster a cybersecurity awareness culture for all city employees	\$		3
50.	Extend and evolve the City's infrastructure to support alternative application delivery models	\$ \$		3

## Critical Success Factors

The following factors are critical to the success and ongoing maintenance of this IT Strategic Plan.

1. **Executive Sponsorship.** This IT Strategic Plan was developed in collaboration with the City's IT Strategy Steering Committee, composed of representatives from selected city departments. It is vital that this plan now goes in front of the City's Information Systems Governance Board (ISGB) to validate the strategic goals, associated strategies, and specific implementation projects – and to gain citywide executive support for the significant investment that will be required to successfully implement the plan. This could include additional resource commitments, both financial and personnel. Support will also be necessary to develop and/or reinforce citywide policies and procedures (e.g., Information Management Policy, Mobile Device Management Policy) to ensure goal achievement.
2. **Continued Business Alignment.** This IT Strategic Plan was developed in a point in time, in close alignment with the business priorities outlined in Tacoma 2025. As these priorities change, so should the vision, mission, and goals of this plan be revisited.
3. **Flexibility and Agility.** This IT Strategic Plan introduces a significant number of enabling, and potentially disruptive technologies to support city objectives and achieve IT goals. It is important that the City challenge its traditional pace of government IT service delivery to position itself to quickly evaluate and take advantage of these technologies, and easily adapt to the ever-changing technology landscape and expectations of its citizens and employees. In order to adapt, it is vital that the City explore and experiment with new technologies, work methodologies and organizational models.
4. **Strategic Partnerships.** Tacoma's goals of citizen engagement, digital equity, smart technology in city operations, and even cybersecurity and resiliency will require strong community partnerships. The City's Digital Equity Program and other partnerships with public and private agencies will be needed to "bridge the digital" divide and enhance city services.
5. **Maturity of Capabilities.** Technologies such as advanced data analytics, Smart City technologies, cybersecurity technologies, cloud-based services and modern applications will impact the City as an organization as well as individual employees, and will require specialized technical skills and continuous learning. This is why technology training programs and potentially an IT Academy will be so critical. It is imperative that we optimize the develop of "soft skills" as well, in order to ensure the City stays effectively engaged with colleagues, customers, contractors, vendors, and business unit technologists.
6. **Measurement and Reporting.** Often quoted Peter Drucker once stated, "You can't manage what you don't measure." A key element of effectively evaluating the ongoing effectiveness of this IT Strategic Plan will be measuring progress against the technology goals. Appendix A provides a set of candidate performance measures to be refined over time.





## Appendices

## Appendix A: Measuring Progress

As already noted, a factor critical to the success of this IT Strategic Plan is the ability to measure, report on, and be held accountable for progress. This appendix provides a set of candidate performance measures to be refined over time.

### Goal 1 Digital Citizen Engagement

In an effort to enhance civic engagement, the City's Information Technology Department will partner with city business units, other government agencies, and leading technology service providers to deliver innovative technology applications that enable citizen engagement, services growth, and business efficiency.

Performance Measures	Target FY 17-18	Target FY 19-20	Target FY 21-22
Visits to the City's website			
Individual page views			
Fiscal volume of online citizen service transactions			

### Goal 2 Digital Equity

In an effort to minimize the digital divide in the community, ITD will work to ensure that every community member has access to affordable broadband service, computing devices, and the skills necessary to safely use the Internet.

Performance Measures	Target FY 17-18	Target FY 19-20	Target FY 21-22
% of Tacoma census tracts above 80% fixed broadband penetration			
% of median Tacoma household income spent on Internet service (broadband affordability index)			

**Goal 3 Digital Workplace**

In order for the City to evolve as a modern workplace, ITD will deliver technology infrastructure services and business solutions that enable collaboration, mobility, and process efficiencies.

<b>Performance Measures</b>	Target FY 17-18	Target FY 19-20	Target FY 21-22
Cumulative number of business services available to employees through mobile technology			
Number of City-authorized and secured mobile devices			
Total completed online service requests (TacomaFIRST 311)			

**Goal 4 Smart Technology in City Operations**

In order to enable continuous improvement of government and utility operations, public safety, and overall city livability, ITD will research and develop a Smart City program and corresponding public-private partnerships.

<b>Performance Measures</b>	Target FY 17-18	Target FY 19-20	Target FY 21-22
Smart City maturity level			
Number of planned Smart City initiatives piloted			

**Goal 5 Cybersecurity and Resiliency**

In order to enhance government performance and public trust, ITD will ensure citywide integrity of confidential information and resiliency in government and utility services.

<b>Performance Measures</b>	Target FY 17-18	Target FY 19-20	Target FY 21-22
Number of security incidents reported to the IT Service Desk each quarter			
Average number of days to remediate identified cybersecurity vulnerabilities			

## Appendix B: Project Descriptions

### **(1) Redesign “Tacoma Means Business” web presence and data services**

This project creates a new microsite for the City of Tacoma's Community and Economic Development Department (CEDD) to assist in bringing in businesses of any size to the City. This new microsite will replace the existing TacomaMeansBusiness.org with new branding and a more professional appearance. The CEDD team is looking for this microsite to be built with a Content Management System (CMS) for the ease of use that will allow them to update and manage more effectively. The CED team is looking to use more infographics and media content to help showcase how great Tacoma could be for any business looking to start, grow or move to the area. New Economic Development tools SizeUp and Zoom Prospector will also be integrated into the microsite as useful features for prospective businesses. This project will support CEDD's goal of bring new or expanding existing businesses in the Tacoma area. Among other benefits, it will allow CEDD to direct property hunters to their Zoom Prospector tool to search for properties, and educate entrepreneurs seeking to start or grow a business in the area, highlighting the talent pool and geographic advantages.

### **(2) Implement two-way digital citizen collaboration tools**

The City of Tacoma has a clear goal to promote “connected” government and foster civic engagement. Digital collaboration technologies and tools are increasingly enabling citizens to engage with their government and with each other in new and different ways. Examples include solutions such as Crowdbrite, which enables citizens to collaborate real time in meetings from remote locations, Codigital, which allows citizens to contribute to ongoing conversations and comment on previous contributions, and MySidewalk, which offers citizens a platform to better understand geodata. This project works collaboratively with community representatives to identify the interest in and possible uses for technologies such as these. It prioritizes these opportunities and evaluates alternative software tools.

### **(3) Build modern, engaging web and web-map applications**

This project designs and builds several web and web-map applications for the public. Today, Tacoma has several web and web-map applications, but these combine city business needs and information of general interest to the public (e.g., gMap), or are focused but only include information of limited public interest (e.g., permits or licenses). The public web-map applications are part of an overall strategy implemented by the City to use web-map applications for common GIS view/query needs. This alleviates licensing copies of desktop GIS software used infrequently and, more important, diminishes the training/knowledge burden inevitable in using complex software for simple purposes. The technical means used to create the web-map applications makes them responsive, so the applications work on mobile devices and regular computers.

Applications will be device-independent to support mobile usage, tailored for simplicity of use, and focused on information of keen interest to the public. The applications will use a consistent technical approach so they are easier to maintain and are appropriately branded through design conventions, making them readily recognized as city applications.

This project also specifically replaces gMap for public map data. Although gMap is used by the public, it is confusing to use. Many modern web browsers and mobile devices cannot use the web application at all, because it is built on outdated technology. Replacing gMap for the public requires understanding why the public uses it. Before a new public version of gMap is created, assessment, evaluation, and planning occurs. This project studies the public usage statistics and patterns for the existing gMap, defining the top 30 uses made of it by the public. It then creates a survey for public users, which is linked on the gMap home page and asks users to rank the top 20 gMap uses. This will be reviewed with the City's GIS team(s), and a design and development plan is written. This plan will be the basis for building a new “public gMap” or determining that web applications (described above) can meet public priorities.

Engaging the public with attractive and useful web-map applications enhances citizen engagement in many ways. First, maps give one a great overall view of the City. They are far more effective than lists or text in, for instance, showing people Tacoma's many parks and activities within them. Second, maps and map query applications provoke citizens to interact with their government. For example, finding out that a new building is proposed nearby might induce a citizen to attend a planning meeting or write an opinion about the action. Third, maps can save city employees time in responding to citizen information requests by showing events or conditions in near real time. Street construction, temporary closures, emergency information can all be conveyed efficiently through maps.

#### **(4) Update the City's website**

The City's website was developed by a Canadian contract years ago, and is now maintained by the Information Technology Department. This project updates the City's website to enhance the user interface, improve navigation, ensure compliance with state and federal standards, and add language options.

#### **(5) Implement a one-stop community self-service portal**

In the age of Amazon and other technology enabled, customer-focused organizations, customers have high expectations of their services providers. They expect these providers to "know" them: be familiar with their preferences and transaction history; anticipate their future needs; and provide helpful information based on their unique profiles. This is now no different for providers of government services. This project works with community representatives to identify and prioritize opportunities to provide services via an online portal much like an Amazon shopping site. For example, a citizen submitting a complaint would be alerted to other interactions with the City, such as a water bill that is due or the status of a previous report of a pothole. This project uses community input to define the requirements for and scope of a constituent relationship management (CRM) system that would enable this type of future. It includes CRM system selection, design and configuration, data conversion, interface development, report development, testing, training, and go-live support.

#### **(6) Prioritize and implement citizen-facing applications for mobile**

This project creates an inventory of existing citizen-facing mobile applications and identifies opportunities for new mobile applications. A review team, with representation from the public, ranks the value of each application (existing and potential new mobile applications). This project then creates development or enhancement plans for high-ranked mobile applications.

Many mobile applications benefit from map interfaces. The inventory, ranking, and development processes will consider the value of map interfaces in existing and future applications.

#### **(7) Deploy StreamServe to enhance business communication**

The City already has deployed StreamServe to support agile messaging in its utility bills. This project expands this deployment of StreamServe to support multiple types of communications across multiple platforms, including traditional mailings, email, and texting.

#### **(8) Implement a government performance dashboard**

Today, city department performance data is published in the biennial budget. However, this information is difficult for the average resident to find. This project implements a public dashboard of the City's key performance measures. It publishes this dashboard on the City's website in support of the City's accountability and transparency goals. It considers both on-premise as well as Software as a Service (SaaS) solutions. This project includes requirements definition, solution selection, design and configuration, interface development, testing, training, and go-live support.

#### **(9) Prioritize and publish open government data and data services**

The City already owns the Socrata open data application program interface (API) to provide access to a significant amount of open government data. Unlike the government performance dashboard project, this

project publishes source level data rather than aggregated, summarized information. This project engages community members to identify and prioritize the demand for government data. It also considers potential partnerships to enable the contribution of additional data sources for presentation to the public. It capitalizes on this work to expand the publication of open government data and data services.

#### **(10) Connect residents with low-cost, high-speed internet service options**

In a recent survey commissioned by the City of Tacoma and conducted by Pacific Market Research, Inc., and Applied Inference, LLC on residential access to and use of technology, over 90% of respondents rated household access to high-speed Internet as “very important” or “important.” Over 80% of survey respondents indicated they were not aware of available low and no cost programs. Nearly everyone agreed that the City should be involved in increasing access to the Internet for households that don’t have it. This project works with community partners to develop and deploy an awareness campaign surrounding existing low and no cost Internet access programs for “opportunity zones.”

#### **(11) Provide low-cost devices to people in need**

In the same survey on residential access to and use of technology, over 90% of respondents believe that it is somewhat or very important for adults to have access to computers, that computer access is important for success, and the City has a role to play in making sure that residents have the access to low-cost devices. This project institutes a computer recycling program for those in need.

#### **(12) Augment access to public computers**

It is estimated that 20% of households lack Internet access today. The digital divide is largely defined by this lack of access to the Internet. Free access to public computers is one way to bridge this divide. This project works with community representatives to define opportunities for providing free access computers, and provides matching funds to increase the number of public access computers in the community. It considers senior centers, community centers, libraries, and facilities commonly visited by the disenfranchised such as homeless shelters and half-way houses.

#### **(13) Engage with community partners to augment existing literacy skills training opportunities**

In the same survey on residential access to and use of technology, the great majority of respondents rated free or low-cost computer training as “very important” or “important.” This project provides matching funds to promote and augment existing computer training opportunities in the community.

#### **(14) Enhance workplace collaboration tools and remote work capabilities**

The City already is implementing tools and technologies to better enable employees to work collaboratively (e.g., multifactor authentication, file synchronization and sharing, and webtop) and remotely. This project works toward expanding these enabling technologies by working with city departments to define additional requirements and evaluate solutions. Future, related projects will procure and implement these solutions.

#### **(15) Enable city employees to fully leverage new technologies**

This IT Strategic Plan lays out a vision for the City to become a leader in innovative technologies. This requires a highly skilled workforce, trained and ready to fully leverage the technology tools of their jobs. This project develops a strategy to ensure continuous learning for all city employees. Near term, this project considers individual and business unit training plans, training offered with the implementation of new technologies, online city training courses, and externally provided training. Longer term, the Information Technology Department will work collaboratively with the Human Resources Department to evaluate the establishment of a more formal IT Academy, which would become the trusted training resource and partner for the City’s departments.

#### **(16) Enhance city employee self-service capabilities**

The City currently utilizes SAP’s employee self-service (ESS). However, it is not mobile-friendly and employees report it not being user-friendly. This project enhances SAP employee self-service to enable mobile capabilities



and improve the user experience. It includes requirements definition, design and configuration, testing, training, and go-live support.

**(17) Complete procure-to-pay business process improvements and digital transformation**

This project completes the City's existing project to improve the procure-to-pay business process through a combination of business process improvements and system enhancements. This project implements an online shopping cart, digital purchase orders, digital invoicing, and electronic payments. Among other benefits, it removes barriers for bidders, speeds up payments, and provides live support in 21 languages.

**(18) Evaluate other City business processes for potential streamlining opportunities**

Similar to the City's nearly complete project to streamline the procure-to-pay business process, the project works collaboratively with city departments to identify and prioritize other business processes with high potential to yield increased efficiencies from process streamlining, new automation, or system enhancements. This project may consider:

- Budget development and control
- Capital asset management
- Inventory management
- Payroll and time/attendance
- Project, grant, and cost accounting

**(19) Complete the implementation of SAP HANA**

The City's existing SAP database technology is at end-of-life and is losing support. This technical upgrade project moves the SAP in-memory database technology from an Oracle server to a HANA server. This upgrade ensures commercial support through 2025 and maintains the central IT Department as an SAP certified Customer Center of Expertise. It enables (but does not include) an improved user interface, increased mobile capabilities, enhanced, real-time data analytics, and in-memory processing for meter reads.

**(20) Prioritize SAP applications for mobile use and implement**

The current SAP HANA upgrade will allow for enhanced mobile capabilities (e.g., SAP Fiori). This project works collaboratively with city departments to identify requirements for mobile applications, and with the City's Information Systems Governance Board to prioritize applications for implementation.

**(21) Expand the use of SAP and GIS for asset management**

This project expands the use of SAP for asset management, including fleet management and IT and digital assets. Different city departments utilize different asset management software applications, including SAP and Lucidity. Neither is well-integrated with GIS. Expanding the use of SAP asset management software and integration with GIS will bring benefits to more city business units and increased functionality overall, including enhanced mobile capabilities (e.g., MDSI replacement platform). This project evaluates existing asset management systems across the City against functional requirements and develops a strategy to migrate to a single solution (SAP), if possible. It includes requirements definition, solution selection, design and configuration, data conversion, interface development, report development, testing, training, and go-live support. Additionally, this project enhances and expands SAP fleet management capabilities and the use of SAP for IT and digital asset management.

**(22) Complete the implementation of electronic content management**

The Tacoma Information Management System (TIMS) will provide an information architecture and system for managing the City's business records. TIMS will benefit the City through improved business collaboration, more efficient information management, quicker information retrieval and automated records management. This project is ongoing.

**(23) Enhance financial and budget reporting**

The City currently does not utilize SAP's budget module, but rather a combination of Allevio and Excel to consolidate budget data out of SAP. This makes the existing financial and budget reporting process time consuming and subject to error due to manual processes. This project enhances SAP's reporting capabilities to meeting functional reporting requirements.

**(24) Implement an automated employee performance management system**

This project replaces the current Employee Development and Performance Review paper-based process with an online system, making it easier for supervisors and managers to complete reviews and access performance-based information in a timely manner. It provides improved capability to cascade goals throughout the organization. The online system will reduce administrative burden and allow better tracking of key performance indicators through enhanced analytics.

**(25) Enhance or replace tax and licensing software**

The City currently utilizes a solution custom developed within SAP to support tax and licensing automation. While SAP is very capable, intermittent improvements and the lack of a full stabilization period have led to significant manual work and employee intervention. This project clearly defines unmet functional requirements and evaluates SAP enhancements against available public cloud solutions. This project would include either enhancements to FileLocal or a possible mandated replacement based on House Bill 2005. If mandated a replacement solution would include procurement, design and configuration, data conversion, interface development, report development, testing, training, and go-live support.

**(26) Enhance or replace pension administration system**

The City's pension administration system supporting the Tacoma Employee's Retirement System (TERS) is aging and requires enhancement or replacement. This project works with the City's Tacoma Employees' Retirement System (TERS) office to evaluate the costs and benefits of enhancing the existing system against a system replacement. It includes validating requirements, including records management and correspondence modernization, and the implementation of necessary enhancements or the procurement and implementation of a replacement solution.

**(27) Create a GIS strategic plan and enhance the City's GIS program**

Currently, the City of Tacoma does not have a GIS strategic plan that specifies vision, goals, governance, and implementation steps. Some actions that might be part of a fully articulated plan are described as projects in this document. However, creating the plan itself is a high priority project. The plan can then incorporate some of the projects described herein.

Formulating a plan starts by creating a strategic plan team. The Geospatial Advisory Team is an excellent starting point for this team, but it needs to be reformulated to include managers and departmental leads, coordinated by a person in the role of "Geospatial Coordinator". This team can quickly define a vision for how the City will use geospatial information systems. The strategic plan then takes known conditions in IT (ITD GIS) and in business units and describes their desired state at some future point. The plan then describes how these specific goals will be reached – essentially a work plan to achieve the strategic goals.

The GIS Strategic Plan will include specific projects – software, training, governance – needed for the work plan. One of the most essential of these is the development of a data catalog and virtual library, as well as defining the recurring needs, and a program for, recurring data. Other components of this project include the need to evaluate the current data flow processes and define a plan that reduces redundancy and streamlines authoritative data creation. And finally to define map interfaces and workflows by which city personnel can the public can report spatial data errors.

The City has the materials and background needed to create a GIS strategic plan for itself. Indeed, it has done so several times in the past. Cities often use an outside consultant for strategic planning because the plan can be formulated more swiftly and perceptions of departmental bias are minimized.

## **(28) Replace gMap to support department needs**

The current gMap installation uses an obsolete web technology and so is unavailable to many modern web browsers and all mobile devices. gMap is a very important web-map application though, both for public and internal users. This project replaces gMap for internal users with one or more contemporary web mapping applications.

The first step in gMap replacement is to determine the business needs that it must support. These should be compared to public needs (see project above), to eliminate duplication of effort. The City of Tacoma's internal uses are more complicated and more demanding than public use, so careful delineation of datasets needed, required functions, and user experience are outcomes of the needs determination. The City has usage statistics, existing functions, data currently in gMap and many other sources with which to create an initial functional list. This is a starting point for surveying business units for new needs or improvements to the current gMap functions. Not every need will be met in formulating the replacement(s) for gMap though, so a governance body (the GAT) should set priorities as to which functions are mandatory, which are important but not essential, and which are of more limited significance.

The second step in gMap replacement is to take the information gathered in the planning process described above and create specifications for the web application(s) that will replace gMap. The functional needs determine the applications that must be created. For instance, it may be that a single multipurpose application (like gMap today) is best. Or, there may be specific functions that should be separate nearly single-purpose applications (e.g., hydrant maintenance), with a few multipurpose applications (e.g., a planning, zoning, and permitting web-map application).

The third step is transforming the specifications into work programs for the application(s). The work program is tailored to the technologies used and, like any application development process, follows sound development methods such as iterative review, defined testing protocols, and excellent documentation.

## **(29) Conduct a mobile spatial application needs assessment**

Mobile applications are important to City of Tacoma employees today. Their use and value in accomplishing work will continue to increase. One of the most important facets of mobile applications is that many of them inherently rely on geospatial information such as the device's present location or displaying a map to cross-check other information. (e.g., confirming a house address by locating it on a map). There are many potentially valuable uses of mobile spatial applications in City business. However, the City has no list of these possible uses. So, mobile application development is not guided by any plan.

This project performs a needs assessment across City business units. It finds mobile applications used now, planned, and those that might have value but are not even planned yet. From this assessment, a ranking of needs and lists of common features and functions are created. The latter are important to know because developing mobile application features can be costly and so re-use of code developed in one application in every other application that needs the same functions saves costly development. It also lowers future code maintenance costs.

The City's governance entity for GIS then uses this plan to recommend mobile spatial applications for development.

An important consideration in this project is that it should coordinate with assessments of nonspatial mobile applications. In fact, the two projects might best be done together, since in some instances, GIS is an "add-on" to an otherwise nonspatial mobile application.

An important outcome of this project is the City will develop applications efficiently, as part of a plan. Mobile applications will not be developed in separate business units that then, surprisingly, turn out to have duplicated effort. Business units are essential to the effective development of mobile applications – but with everyone aware of the development effort and resulting mobile application.

**(30) Enhance TacomaFIRST 311**

TacomaFIRST 311, a public cloud solution, is an important point of contact between citizens and the Tacoma government. This project first conducts a needs assessment for TacomaFIRST 311 to determine what additional functionality is desired and feasible, including mobile app enhancements, map interfaces and texting capabilities. The needs assessment will include a level of effort estimate and development plan. It includes the near-term implementation of mobile app enhancements. Future implementation of map interfaces and texting capabilities will be a separate project.

Because TacomaFIRST 311 is an important part of the City's digital presence for citizens, the improvements to it increase citizen engagement by providing a natural, map-based method for communicating with the City.

**(31) Expand the use of permit management software and improve integration**

The City recently implemented Accela for permit management. Accela is a best of breed, public cloud solution. However, the City is not currently fully utilizing its capabilities. The project evaluates and implements enhanced payment options and integration with SAP.

**(32) Implement learning management software for online training**

Previously, the City utilized an outside vendor to provide onboarding classes to new employees. It now works with Tacoma Community College to provide these classes. The Human Resources department as well as city managers and staff have expressed a desire to expand online training options for new hires. This project implements a citywide public cloud learning management system (LMS). The LMS will provide management reporting and enable employees to manage their professional development activities. Both instructor-led and online training can be assigned to employees and tracked through to completion. Specific functionality may include: Course Content Delivery, Student Registration and Administration, Training Event Management (i.e., scheduling, tracking), Curriculum and Certification Management, Skills and Competencies Management, Skill Gap Analysis, Individual Development Plan (IDP), Assessments and Evaluations, Reporting, Training Record Management, and Courseware Authoring.

**(33) Migrate to Microsoft Office 365 services for employee communications and collaboration**

This project migrates the City to Microsoft's Office 365 services for employee communications and collaboration. Potential features for this migration include online meetings, SharePoint Online, Exchange Online, OneDrive for file storage and sharing, Power BI, Delve, Microsoft Teams for collaboration, and Office productivity tools.

**(34) Assess the City's Smart City maturity and readiness**

This project engages professional services to evaluate the City's Smart City maturity, using a model that considers strategic intent, data, technology, governance and service delivery models, and stakeholder engagement. It identifies the City's current maturity, target maturity, gap between current and future states, and establishes an action plan to ensure readiness for change.

**(35) Develop a Smart City vision, strategy, and governance structure**

This project engages professional services in conjunction with the previous project "Assess the City's Smart City maturity and readiness" to additionally facilitate the development of a Smart City vision and strategy. It will consider many of the disruptive technologies and social innovations that are influencing smart technologies today, including:

- Cloud technologies
- Mobile technologies
- Social media and digital platforms
- Bid data
- Artificial intelligence
- Internet of Things (IoT)
- Robotics and drones
- Renewable energy
- Crowd sourcing

The strategy will include a roadmap to transition from the City's current Smart City maturity to its desired state, considering the trending Smart City solutions available in cities today, including:

- Smart transportation and logistics
- Smart safety
- Smart energy, water, and waste
- Advanced Metering Infrastructure (AMI)
- Smart buildings and infrastructure
- Smart health
- Smart education
- Smart finance
- Smart tourism and leisure
- Smart retail and logistics
- Smart manufacturing and construction

It will include prioritization criteria such as community priorities, alignment with the City's business goals, the City's current Smart City maturity, one-time and ongoing costs, anticipated benefits, and resource requirements and staff capabilities.

This project also establishes a governance structure and process to establish a Smart City vision for Tacoma, define Smart City goals and objectives; evaluate, approve, and prioritize related projects; oversee progress and realized benefits; and periodically update the plan. The project considers potential alignment with existing IT governance structures as well as the opportunity to include community representatives.

### **(36) Formalize data management**

Structured data management practices ensure information is reliable, secure, and available to city operations. This project formalizes a data management schema, including data governance, ownership, security, and access. It also includes the classification of data structures that house authoritative sources of information including core financials, permitting and licensing, customer service, public safety, and infrastructure management systems. It catalogs the ways sources of information are used to support city operations and the reporting of performance outcomes.

### **(37) Standardize integrations and prioritize and develop key, core system interfaces**

Responsive business integration implies information is accessible from multiple business systems to support transactional level exchanges of information to generate greater value. Bringing information together through standardized interfaces for both new and existing systems using a services-orientated architecture is one key avenue to reduce the complexity, migration testing, and manual staff time necessary to assemble a complete business picture. This project establishes citywide interface standards enabling linkages between cloud to on-premise, cloud to cloud, and between traditional systems residing in the City's data center. Moving forward, these

standards will need to be incorporated into the terms and conditions for future investments in software, services, and technologies.

The City already has identified three core system interfaces for evaluation and likely development:

- **SAP:Accela.** Interfacing the City's ERP and Accela permitting systems will integrate revenue receipts in the permitting system at the batch and transaction level to the City's core financials in the General Ledger. The opportunity to represent revenue inflows on a daily basis will provide the City with budget to actual reporting that will inform revenue projections for each fiscal year reporting period.
- **SharePoint:GIS.** Interfacing the City's Enterprise Content Management (ECM) in SharePoint with the City's GIS provides a way to spatially index recorded record information. Many business transactions in the City may involve more than one address or span a large section of the City (e.g. utility plan drawings in the right-of-way, an engineering design plan for a park expansion, a road median design for traffic calming techniques). In situations where addresses do not provide an efficient way to index information, tying the spatial indexing capability of GIS to the document management system provides a more efficient, intuitive way to retrieve information.
- **GIS:Accela.** The opportunity to connect the power of the City's GIS with a modern permitting system will assist the City in tying permit records to address and parcel records for historical referencing and new insights. For example, tying construction costs (as represented in Accela's permitting database) to the locations where investments are being made enables the City to measure growth in terms of new service demands in relation to its ability to capture new revenues (e.g. tax increment financing districts, special assessment districts, tax abatement incentives driving investment to specific areas).

This project prioritizes these and other desired interfaces based on alignment with the City's strategic business goals, business value, cost, complexity, and long-term sustainability. It develops these interfaces to more effectively synchronize systems without duplicating information or work processes.

Once implemented, these interfaces will need to be properly managed according to vendor upgrade schedules to enable proper testing across applications.

### **(38) Mature data and analytics capabilities**

This project builds the City's maturity in data analytics to support data informed decisions. It focuses on modern business intelligence, data analytics, and data visualization technologies to transform data into reliable, timely information in support of business operations. This project:

- Defines the analytics requirements of departmental business units
- Creates citywide awareness how existing tools and resources can support analytics requirements
- Demonstrates different ways staff can generate analytics on demand, with a coach (ITD resource) or through a third party professional services provider
- Identifies opportunities to pilot new technologies to mature the City's analytics capabilities
- Defines associated skills requirements and develops training programs
- Facilitates learning events for ITD staff to harness the analytics tools available through the City's database vendors and application service providers.

### **(39) Support Tacoma Public Utilities' (TPU) automated meter infrastructure initiative**

This project provides support to Tacoma Public Utilities for its automated meter infrastructure initiative.

### **(40) Support Tacoma Police Department's (TPD) body camera initiative**

This project supports the Tacoma Police Department's body camera initiative by providing technical and strategic guidance contributing to the selection and implementation of a body camera system. It applies ITD resources to review proposed solutions, participate in vendor discussions, and collaborate on reference

checks. This project will also provide for the technical architecture and security support required to support the selected solution.

**(41) Enhance anti-phishing and malware defense**

This project procures and implements advanced technologies that reduce the risk of malware introduced through email and websites. It focuses on providing an advanced end-point protection solution that is capable of providing threat identification and control from evolving attack surfaces. It includes protecting end-users from spear-phishing, drive-by downloads, Java and Flash exploits, watering hole attackers, ransomware, and many other online attacks.

**(42) Implement a framework for comprehensive network traffic analysis**

This project establishes and implements a framework for optimizing detection, analysis, response, and remediation of cyber threats. It enables the City to consistently prioritize and manage its business needs.

**(43) Automate information security updates for enterprise systems through patch management tools**

This project procures and implements patch management tools to automate information security updates for enterprise systems.

**(44) Maximize information sharing and threat intelligence partnerships**

The security industry has seen an increased growth in the number of security related resources and intelligence organizations, including Multi-State Information Sharing & Analysis Center (MS-ISAC), North American Electric Reliability Corporation (NERC), Federal Energy Regulatory Commission (FERC), and other regional groups. Cities and other organizations have found these resources to be a valuable benefit in the management of security. This project leverages these partnerships to exchange information, share best practices, and develop a repository of security resources and references.

**(45) Implement solutions to harden and protect the City's network, computing, and storage infrastructure**

This project implements the infrastructure security and resiliency recommendations resulting from the initial IT Assessment associated with this plan, related implementation projects included in this plan, and additional assessments yet to be identified. Potential outcomes of this effort may include increased geographic diversification of city infrastructure, introduction of micro-segmentation, and/or additional datacenter controls.

**(46) Implement a comprehensive cybersecurity framework and multiyear implementation roadmap**

A security framework establishes the baseline of controls to build a security program. In the industry today, there are numerous frameworks for reference (e.g. NIST 800 series, ISO, SAN CSC 20). As the first step, this project identifies a security framework to build its security program around. It considers the SANS 20 and NIST cybersecurity framework. Both provide a reasonably flexible control model that would allow the City to adopt into their current IT environment and maintain on an ongoing basis.

A cybersecurity roadmap is the blueprint design for how an organization plans to implement and maintain a formal security program. The roadmap articulates the timing, high level plan and approach, and required resources for key implementation initiatives. This project establishes a cybersecurity implementation roadmap to include:

- Critical cybersecurity objectives
- Key implementation initiatives
- Required resources and personnel



- Scope and timing of the projects
- Security framework controls (e.g., NIST, ISO, SANS)

**(47) Perform periodic risk assessments, identify key risk indicators, and maintain a risk register**

An IT risk assessment provides an overall health check of the IT environment and early detection of potential vulnerabilities and weaknesses. Periodic risk assessments will identify areas where the City can assess and prioritize resources for identified vulnerabilities. This project implements annual or bi-annual risk assessments based on a security risk model that defines potential risk threats, an evaluation of threat impact and risk, level of residual risk, a prioritization of key risks, and identification of controls to address the associated risks identified. This project, along with other associated projects, will assist the City mature its threat management and incident response program.

**(48) Enhance cybersecurity training for technology professionals**

A well-trained technology team is a key component in the protection of the City's data. New technology is continuously introduced into the technology landscape. As a result, this project identifies specific skills requirements, develops training plans, and budgets regular, annual training for the City's technology professionals. This can be augmented by no to low-cost city sponsored online training programs.

**(49) Foster a cybersecurity awareness culture for all city employees**

The project promotes employee awareness and vigilance for protecting IT systems and data. It includes ongoing security awareness training, awareness campaigns, and improvement methodologies.

**(50) Extend and evolve the City's infrastructure to support alternative application delivery models**

This project extends existing infrastructure and adds new technologies and services as needed to support alternative application delivery models such as virtual desktop infrastructure, software as a service, managed application services, and infrastructure as a service. Depending on the selected solutions, there may be collateral benefits to government service resiliency and cybersecurity.

