PROBLEMS IMPACTS SOLUTIONS BENEFITS

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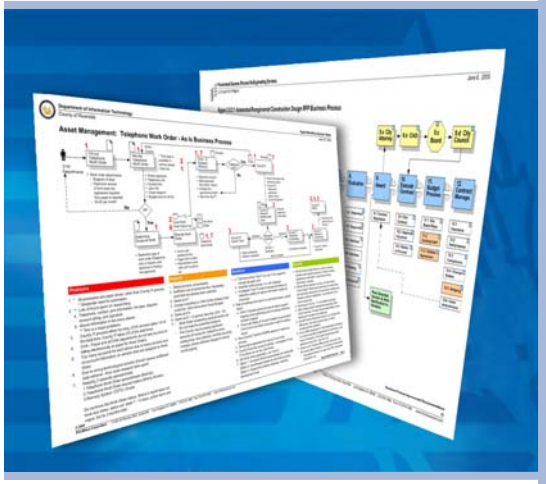

PASADENA

Information Technology Strategic Plan & Roadmap

Part 2: Implementation Roadmap

February 7, 2018

ThirdWave

ThirdWave Corporation
Information Systems Intelligently Applied

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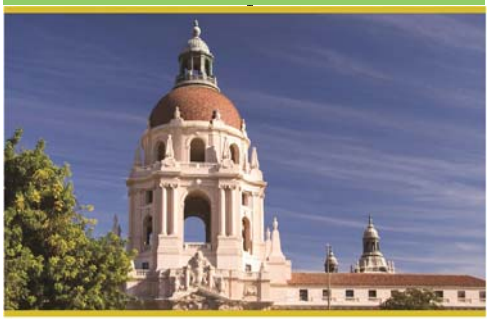
Section 1
Introduction



1.1 Introduction to the ITSP Implementation Roadmap

This document provides the City of Pasadena a five-year ITSP Implementation Roadmap, including phased and prioritized Information Technology initiatives. The Roadmap addresses the acquisition and implementation of Strategic Business Technologies, in addition to addressing the sustainability of the ITSP Roadmap with IT human resources.

Part 1 of the ITSP Roadmap, the Information Technology Strategic Plan Findings and Recommendations (another document) articulates "what" should be undertaken. This document is a management tool that defines "when" ITSP Roadmap initiatives might be carried out and what investment.

As with any planning document, the ITSP Roadmap should be revisited and refreshed on a yearly basis. Updates should consider changing circumstances in a variety of areas: e.g., City organization, community demographics, emerging Information Technologies, and fluctuations in the state of the economy.

The following pages lay out a pragmatic Implementation Roadmap that will ensure the successful deployment of the IT Strategic Plan, and reflects sound investments in technologies specific to the City of Pasadena, addressing the following:

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- The criteria used to prioritize ITSP Roadmap Initiatives;
- Implementation Roadmap over a 5-year timeline; and,
- Resources required to sustain the ITSP implementation.

1.2 ITSP Vision, Mission and Values

The following outlines the City of Pasadena's ITSP Implementation Roadmap (Roadmap) vision, mission and values:

Vision
Provide a comprehensive Information Technology Roadmap fostering the use of proven and emerging state-of-the-practice Information Technologies in the most strategic, innovative, cost-effective and efficient ways possible to support internal City operations, encourage business development, and provide extraordinary customer service delivery to the constituents of Pasadena.

Mission
Ensure IT investments in strategic business technologies are customer focused, sound, and deliver the highest possible value to the City and its constituents.

Values
Information Technology actions are guided by values integral to everything the DoIT organization does:

Excellence:	Lead with a clear vision, communicate, form partnerships, and take full ownership and responsibility in fulfilling our mission. Our Information technology work is relevant, timely, and delivered with superior customer service that reflects our commitment to collaboration and the highest standards of quality.
Transparency:	Uphold a standard of municipal transparency, accountability, and reliability. We conscientiously run our IT operations to promote a City workforce that is worthy of the public trust.
Innovation:	Constantly seek new ways to accomplish our work through efficiencies and collaboration to generate extraordinary transformative results. We are dedicated to delivering creative, innovative and forward-looking solutions.

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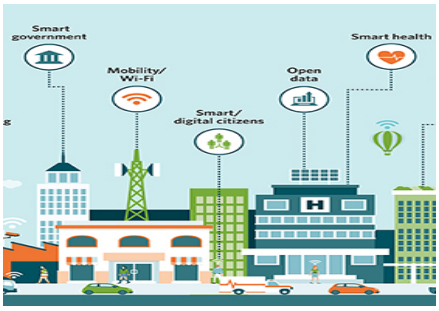
1.3 ITSP Roadmap Framework: Digital "Themes"



Adoption of the ITSP Roadmap will foster a transformative framework for how the City leverages its Information Technologies.

The City will continue to embrace Information Technology as a strategic enabler, embedding it as a critical and fundamental component in all the City does. The City will continue to ensure the use and application of Information Technologies stays aligned with and supportive of an efficient and responsive delivery of services to all of the City's constituents – residents, businesses, and visitors.

By aligning Information Technology in support of the City's business and service delivery processes, Pasadena will become a more agile organization that is better able to support the service demands of its community. Moreover, the Roadmap will allow the City leverage emerging trends and evolving technologies. Through investment in a new technology framework consisting of the **ITSP Themes**, listed below, the City will develop and implement innovative and cost-effective approaches for improving the quality and delivery of needed services to its constituents.

The City's ITSP Themes include:

Digital Workforce & Workplace:
Employee training and skills development with internal/external social collaboration tools, ubiquitous Wi-Fi, video conferencing, and paperless business processes.

Digital Services:
Services delivered online, focused on self-service, the customer/constituent experience and digital workflow automation.

Mobile:
Services delivered through mobile devices, mobile apps, employee field and remote access to City information, services and systems.

Data Analytics:
Data extracted/categorized to identify and analyze behavioral data/patterns, to identify organizational/constituent requirements and solutions.

Internet of Things:
Employing sensors/actuators and other computing devices embedded in everyday objects connected by networks to computing systems to enhance livability, workability, and sustainability.

Smart City:
Information/communications technology to enhance, livability, workability, and sustainability. Data collected, fused, and communicated to users via wireless networks, from all data points.

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1.4 ITSP Implementation Roadmap Objectives

The objectives of the City of Pasadena ITSP Implementation Roadmap are to:

- Develop a high performance and reliable Citywide IT infrastructure, including networks, wi-fi and fiber, to support the dynamic requirements of the City;
- Align the City's IT initiatives with the City's strategic plans, while ensuring the City's responsibilities and priorities are recognized and taken into account;
- Invest in IT systems based on a rational and impartial assessment of both tangible and intangible benefits, and a realistic assessment of project costs, benefits and risks;
- Reduce the cost of operations and service delivery, while improving the quality of services delivered to customers through responsible IT investment;
- Deliver IT services, internally to the City and externally to the residents of Pasadena in a cost-effective manner; and,
- Build on the success of the previous IT Strategic Plan from 2011.

1.5 ITSP Implementation Roadmap Guiding Principles

ThirdWave recommends that the City of Pasadena reinforce and recommit to the following set of guiding principles related to the implementation of the ITSP. Many of the following have been successfully incorporated by DoIT since the last ITSP project, but are restated for emphasis.

1. Leadership	Embrace technology as a strategic enabler and utilize IT to improve the way City staff perform their jobs and deliver services to residents and businesses.
2. Communications	Foster effective communications between the City and constituents to keep all parties involved and informed on the progress of IT initiatives. Pasadena will keep the public informed on the use of technology in the City via its website, Open Data/ Citizen Engagement and other means.
3. IT Governance	Refine the existing formal management IT Governance process to ensure that IT initiatives are properly vetted for consistency with the ITSP Implementation Roadmap, IT industry trends, are fiscally sound, and are effective in improving operating efficiencies and customer service prior to proceeding with IT initiatives. Adopt the use of Cost-Benefit component to the vetting process.

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4.	**Enterprise Approach**	Encourage an enterprise approach when procuring, implementing and managing the City's Information Technologies. The City will utilize state-of-the-practice technology ensuring investments are effectively leveraged across departments, businesses and constituents while employing economies of scale wherever possible. Information Technologies will foster cost containment and/or the highest return on investments possible.
5.	**Accountability**	Create an environment that encourages accountability through service level agreements, performance measures and individual responsibility, including the City's contracted service providers.
6.	**Proven Technology**	Implement contemporary, but proven, technologies that maximize future options by emphasizing open standards. Applications should use Commercial Off-the-Shelf software wherever possible, and should be web based, wireless ready, employing a Service Oriented Architecture, and GIS enabled, where appropriate and applicable. Internet of Things and Smart City solutions should be considered wherever possible.
7.	**Efficiencies**	Decisions regarding funding for future technology initiatives should be based on a Business Process Improvement assessment using a formal and standard Continuous Improvement methodology, e.g., Lean, Kaizan, Rapid Workflow Process Modeling®, or other similar method. The resulting data will be used to produce a Cost-Benefit Analysis that takes both tangible and intangible costs and benefits of the project into account.
8.	**Strategic Investments**	IT assets, systems, skills and support operations will be viewed as strategic investments that are critical in attaining internal City-wide business and external service delivery objectives.
9.	**Partnerships**	The City will maintain partnerships with outside Information technology firms, consultants and regional government organizations to undertake collaborative efforts in the provision of information and services, and obtain expert advice and knowledge of IT trends.
10.	**Accessibility**	Implement Digital solutions that provides all internal and external customers easy and timely access to online information and services. The City will strive to make data available for the benefit of the public subject only to the need to protect the privacy of individuals.

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Section 2

IT Strategic Plan Initiatives

2.1 Technology Initiatives

The Findings and Recommendations document identified management, operational and technology solutions for enhancing the organization and service delivery environment at the City of Pasadena over the next five years.

The initial list of potential ITSP Roadmap initiatives was consolidated, reduced and prioritized in this document, bringing the final number to thirty-eight (38) technology initiatives. The final list of solutions relates to five Information Technology categories: infrastructure, hardware, departmental software, enterprise software, and E-Government solutions. Other solutions in the ITSP Findings & Recommendation document, not contained in this document, include operational and/or policy management of the City's IT portfolio.

IT solutions identified in the requirements definition phase of the project were vetted to produce the final list used in the prioritization process. Information Technology initiatives are described in some detail in *Volume One: ITSP Findings & Recommendations*, December 29, 2017, which will act as a reference document over the fiver year Roadmap.

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2.2 Prioritization Criteria & Process

The ITSP Roadmap initiatives noted above were processed through a prioritization model, which included a range of performance parameters aligned with common municipal business objectives and tangible internal/public benefits.

This criterion was used by the City/ThirdWave Project Team to identify a preliminary sorting of initiatives. A final prioritization was carried out by ThirdWave, taking into account technology prerequisites, combining related applications, optimum sequencing of IT initiatives on the timeline and investment balancing.

The figure below describes the criteria employed to prioritize ITSP Roadmap initiatives, using a weighted rating system as described below.

Figure 2.2.1: Roadmap Initiative Prioritization Criteria

Business Case Benefit Rating

5 **High:** Provides significant benefit to internal operating efficiency/extraordinary customer service.
3 **Medium:** Provides some benefit to internal operating efficiency/extraordinary customer service.
1 **Low:** Provides limited benefit to internal operating efficiency/extraordinary customer service.

Prioritization Application of Criteria

1. Internal or External ITSP Requirement
- The number of times an initiative was identified in the Rapid Workflow® workshops, Management Interviews, IT Focus Groups and/or Online Staff Survey.
- Provides the architecture/ infrastructure required to implement other key projects;
- Facilitates collaboration; and/or,
- Enterprise solution, highly leverageable, benefiting the City as a whole.

2. Improved Staff Productivity
- Staff time savings;
- Fosters internal operating efficiencies;
- Improves organizational practices, aligning them with enterprise / departmental goals; and/or,
- Enhances the ability to share data.

3. Improved Customer Services
- Significantly improves customer service;
- Provides online 24x7 convenience; and/or,
- Provides Web-enabled services for faster/easier service to the public.

4. Cost Savings
- Provides the potential for hard dollar savings;
- Potential deferred expenses; and/or,
- Provides cost avoidance opportunities.

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5. Revenue Generation

- Provides the potential of increased revenues where the City collects fees for services.

Figure 2.2.2 below provides a list of the final technology initiatives identified in the prioritization process, grouped into yearly phases for management consideration and budgeting.

Figure 2.2.2: Prioritized ITSP Roadmap Technology Initiatives

Legend:

M	Management Initiatives
INF	Infrastructure Systems
HW	Hardware
DSW	Departmental Software
ESW	Enterprise Software
IOT	Internet of Things / Smart City

Phase 1	Type	Description
1.1	ESW	Online Credit Card Payments
1.2	DSW	Pasadena Water & Power / Public Works: WO-Asset Management
1.3	IOT	Right of Way Dashboard
1.4	INF	Fiber Testing Tool
1.5	DSW	Transportation Asset Management
1.6	HW	Tri-Band Radios
1.7	INF	City Fiber to All Facilities
1.8	DSW	Jail Intercom and Locking System

Phase 2	Type	Description
2.1	DSW	Public Works Rent / Lease Management Software
2.2	DSW	Parking Management Software
2.3	DSW	Replace/Upgrade Service Desk Express ITSM
2.4	DSW	Data Analytic Tools (Dashboards)
2.5	DSW	Social Media Analytic Tool
2.6	ESW	Enterprise Content Management System
2.7	IOT	Public Health Software
2.8	IOT	Smart Block Initiative
2.9	INF	Wi-Fi Strategy

Year 3	Type	Description
3.1	DSW	Self-Check-In Software
3.2	ESW	E-Procurement Software
3.3	ESW	Password Reset Solution
3.4	ESW	Data Catalogue / Analytics Assessment
3.5	IOT	My Neighborhood Enhancement (Citizen View)
3.6	DSW	Public Works - DOT Pavement Management Software

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***Figure 2.2.2: Prioritized ITSP Roadmap Technology Initiatives** (continued)*

Year 4	Type	Description
4.1	IOT	Park Irrigation
4.2	IOT	Parking Guidance/Availability
4.3	IOT	City-Wide Service Center
4.4	INF	Data Center Consolidation
4.5	HW	Server Standardization
4.6	HW	Printer Standardization
4.7	IOT	Single Sign-On

Year 5	Type	Description
5.1	IOT	Real Time Data to Constituents (Open Gov)
5.2	IOT	Online Permitting Workflow
5.3	INF	Voice System (Telephones)
5.4	DSW	CAD/RMS System
5.5	DSW	Project Portfolio Management Software
5.6	ESW	Licensing Support Structure

A description of each strategic initiative listed above is provided in the *Volume 1: ITSP Findings & Recommendations* document.

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Section 3

Budget Estimate

3.1 Budget Overview

The following budget estimate reflects a comprehensive analysis, drawing on specific data collected in the course of the City's ITSP project. It provides a management planning budgeting tool.

While every effort has been made to project the approximate cost of the proposed ITSP initiatives (i.e., gross order of magnitude estimates), **the City should be aware that technology hardware and software vendor prices vary widely, both in pricing models, product suites, bundling and maintenance options.** Moreover, the cost of implementation vendors/systems integrators can vary even more than system vendors, depending on the geographic location, size of the firm, overhead costs and business model.

The following pages provide high level budget estimates, or investment requirements, for a phased 5-year implementation of the City of Pasadena's ITSP Roadmap.

It should be noted that the budget estimate represents gross level of effort estimates using the most currently available data; **it does not represent a price quote**.

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Furthermore, the budget estimates do not include detailed and/or total training costs, data conversion costs, systems integration costs, and other system related costs. These costs can only be developed when the solution is known, and functional and technical requirements have been identified and the training approach determined, i.e., Train-the-Trainer, professional training services, internal training, etc. Similarly, data conversion costs cannot be determined until an audit of existing data (content, size, structure, data integrity, etc.) has been performed.

High level budget estimates have been determined by:

- Applying industry best practice estimating for the implementation of Information Systems;
- Past experience carrying similar IT initiatives;
- Data provided by the City, based on staff research; or
- Data researched by ThirdWave.

All proposed solutions identified in the ITSP Roadmap should be thoroughly reviewed and go through the formal development of project requirements, specifications and preliminary work breakdown structures, resource allocation planning and development of MS Project Schedules prior to the issuance of solicitation documents or internal implementation by the City's IT organization.

3.2 Information Technology Investment

ThirdWave recommends that Information Technology continue to play a strategic importance at the City of Pasadena, and that an IT Innovation Fund be established to successfully execute and sustain the implementation of the ITSP Roadmap.

The figures on the following pages provide high level investment requirements for a phased multiple year implementation of the City of Pasadena's ITSP Implementation Roadmap.

The budget estimates represent the following, as appropriate:

- Hardware, onetime cost
- Software, onetime costs
- Software, ongoing yearly maintenance costs, assuming 24% of the software purchase price
- Professional services costs

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Figure 3.2.1: ITSP Roadmap 5-Year Estimated Investment

Phase	Type	Initiaitive	Year 1	Year 2	Year 3	Year 4	Year 5
Phase 1							
1.1	ESW	Online Credit Card Payments	-	-	-	-	-
1.2	DSW	PWP / PW: WO-Asset Management System	300,000	50,000	50,000	50,000	50,000
1.3	IOT	Right of Way Dashboard	20,000	-	-	-	-
1.4	INF	Fiber Testing Tool	20,000	5,000	5,000	5,000	5,000
1.5	DSW	Transportation Asset Management	220,000	30,000	30,000	30,000	30,000
1.6	HW	Tri-Band Radios	8,000,000	-	-	-	-
1.7	INF	City Fiber to All Facilities	200,000	135,000	135,000	135,000	135,000
1.8	DSW	Jail Intercom and Locking System	374,000	25,000	25,000	25,000	25,000
Phase 2							
2.1	DSW	Rent / Lease Management (PW)		115,000	18,750	18,750	18,750
2.2	DSW	Parking Management System		220,000	30,000	30,000	30,000
2.3	DSW	Replace/Upgrade Service Desk Express ITSM		75,000	20,000	20,000	20,000
2.4	DSW	Data Analytic Tools (Dashboards)		24,000	6,000	6,000	6,000
2.5	DSW	Social Media Analytic Tool		24,000	6,000	6,000	6,000
2.6	ESW	Enterprise Content Management System		80,000	25,000	25,000	25,000
2.7	IOT	Public Health Applications		300,000	25,000	25,000	25,000
2.8	IOT	Smart Block Initiative		230,000	20,000	20,000	20,000
2.9	INF	Wi-Fi Strategy		80,000	25,000	25,000	25,000
Phase 3							
3.1	DSW	Self Check In Application			72,000	10,000	10,000
3.2	ESW	E-Procurement			100,000	10,000	10,000
3.3	ESW	Password Reset Solution			20,000	5,000	5,000
3.4	ESW	Data Catalogue / Analytics Assessment			60,000	-	-
3.5	IOT	My Neighborhood Enhancement (Citizen View)			100,000	10,000	10,000
3.6	DSW	PW - DOT Pavement Management Software			180,000	20,000	20,000
Phase 4							
4.1	IOT	IOT Park Irrigation				120,000	30,000
4.2	IOT	IOT Parking Guidance/Availability				180,000	45,000
4.3	IOT	City-Wide Service Center				32,000	8,000
4.4	INF	Data Center Consolidation				100,000	-
4.5	HW	Server Standardization				100,000	-
4.6	HW	Printer Standardization				200,000	-
4.7	IOT	Single Sign-On				60,000	15,000
Phase 5							
5.1	IOT	Real Time Data To Constituents (Open Gov)					64,000
5.2	IOT	Online Permitting Workflow					200,000
5.3	INF	Voice System (Telephones)					1,200,000
5.4	DSW	CAD/RMS					7,000,000
5.5	DSW	Project Portfolio Management Software					40,000
5.6	ESW	Licensing Support Structure					40,000
			9,134,000	1,393,000	952,750	1,267,750	9,117,750
		10% Contingency	913,400	139,300	95,275	126,775	911,775
			10,047,400	**1,532,300**	**1,048,025**	**1,394,525**	**10,029,525**
						Total 5 Year	**24,051,775**

3.3.1: ITSP Implementation Roadmap

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Note:
A "0" cost indicates work carried out by City staff or no net maintenance and support costs, typically because the ITSP initiatives does not involve software purchases or related maintenance costs.

Implementation Assumptions:
The footnotes below provide a synopsis of assumptions for each of the ITSP initiatives listed over the 5-year timeline. The foregoing assumes all projects deployments will be preceded by the development of formal business, functional and technical requirements, development of a comprehensive yet concise Request for Proposal document where appropriate, and will utilize competitive solicitations processes to contain costs.

YEAR 1

1.1 ESW ***Online Credit Card Payments:*** *This cost reflects an initiative that will entail software, software maintenance and professional services provided by a Systems Integrator, in addition to ongoing software maintenance costs.*

1.2 DSW ***PWP / PW: WO-Asset Management System:*** *This cost reflects an initiative that will entail software, software maintenance and professional services provided by a Systems Integrator, in addition to ongoing software maintenance costs.*

1.3 IOT ***Right of Way Dashboard:*** *This cost reflects an initiative that will entail software, software maintenance and professional services provided by a Systems Integrator, in addition to ongoing software maintenance costs.*

1.4 INF ***Fiber Testing Tool:*** *This cost reflects an initiative that will entail software and implementation provided by DoIT staff.*

1.5 DSW ***Transportation Asset Management:*** *This cost reflects an initiative that will entail software, software maintenance and professional services provided by a Systems Integrator, in addition to ongoing software maintenance costs.*

1.6 HW ***Tri-Band Radios:*** *This cost reflects an initiative that will entail hardware purchases and professional services provided by a vendor.*

1.7 INF ***City Fiber to All Facilities:*** *This cost reflects an initiative that will entail professional services provided by a Systems Integrator.*

1.8 DSW ***Jail Intercom and Locking System:*** *This cost reflects an initiative that will entail software and professional services provided by a vendor.*

YEAR 2

2.1 DSW ***Rent / Lease Management (PW):*** *This cost reflects an initiative that will entail software, software maintenance and professional services provided by a vendor, in addition to ongoing software maintenance costs.*

2.2 DSW ***Parking Management System:*** *This cost reflects an initiative that will entail software, software maintenance and professional services provided by a Systems Integrator, in addition to ongoing software maintenance costs.*

2.3 DSW ***Replace/Upgrade ITSM:*** *This cost reflects an initiative that will entail software, software maintenance and professional services provided by a Systems Integrator.*

2.4 DSW ***Data Analytic Tools (Dashboards):*** *This cost reflects an initiative that will entail software and services provided by DoIT staff.*

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2.5 DSW ***Social Media Analytic Tool:*** *This cost reflects an initiative that will entail software, software maintenance and services provided by DoIT staff.*

2.6 ESW ***Enterprise Content Management System:*** *This cost reflects an initiative that will entail leveraging existing ECMS software and rolling it out to other City Departments by DoIT staff.*

2.7 DSW ***Public Health Applications:*** *This cost reflects an initiative that will entail software and professional services provided by a Systems Integrator.*

2.8 IOT ***Smart Block Initiative:*** *This cost reflects a cross functional initiative that will entail software, software maintenance and services provided by Systems Integrator and DoIT staff.*

2.9 INF ***Wi-Fi Strategy:*** *This cost reflects an initiative that will entail professional services provided by a Systems Integrator.*

YEAR 3

3.1 DSW ***Public Health Self Check-in Application:*** *This cost reflects an initiative that will entail software and professional services provided by a Systems Integrator.*

3.2 ESW ***E-Procurement:*** *This cost reflects an initiative that will entail software, software maintenance cost and professional services provided by a Systems Integrator.*

3.3 ESW ***Password Reset Solution:*** *This cost reflects an initiative that will entail software and implementation by DoIT staff.*

3.4 ESW ***Data Catalogue / Analytics Assessment:*** *This cost reflects an initiative that will entail professional services provided by a Systems Integrator.*

3.5 IOT ***My Neighborhood Enhancement:*** *This cost reflects an initiative that will entail software, software maintenance and professional services provided by a vendor.*

3.6 DSW ***PW - DOT Pavement Management Software*** *This cost reflects an initiative that will entail software, software maintenance and professional services provided by a vendor.*

YEAR 4

4.1 IOT ***Park Irrigation:*** *This cost reflects an initiative that will entail software, software maintenance and professional services provided by a vendor.*

4.2 IOT ***Parking Guidance/Availability:*** *This cost reflects an initiative that will entail software, software maintenance and professional services provided by a vendor.*

4.3 IOT ***City-Wide Service Center:*** *This cost reflects an initiative that will entail systems costs with implementation provided by DoIT staff.*

4.4 INF ***Data Center Consolidation:*** *This cost reflects an initiative that will entail systems costs with implementation provided by DoIT staff.*

4.5 HW ***Server Standardization:*** *This cost reflects an initiative that will entail systems costs with implementation provided by DoIT staff.*

4.6 HW ***Printer Standardization:*** *This cost reflects an initiative that will entail systems costs with implementation provided by DoIT staff.*

4.7 IOT ***Single Sign-On:*** *This cost reflects an initiative that will entail software costs with implementation provided by DoIT staff.*

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YEAR 5

5.1 IOT ***Open Gov:*** *This cost reflects an initiative that will entail software and professional services provided by a vendor.*

5.2 IOT ***Online Permitting Workflow:*** *This cost reflects an initiative that will entail software and professional services provided by a vendor.*

5.3 INF ***Voice System (Telephones):*** *This cost reflects an initiative that will entail systems and professional services provided by a vendor.*

5.4 DSW ***CAD/RMS:*** *This cost reflects an initiative that will entail software and professional services provided by a vendor.*

5.5 DSW ***Project Portfolio Management Software:*** *This cost reflects an initiative that will entail software and professional services provided by a vendor.*

5.6 ESW ***Licensing Support Structure:*** *This cost reflects an initiative that will entail software and implementation by DoIT staff.*

The ITSP project identified the need for addition DOIT resources to address existing IT projects, in addition to resources to sustain the proposed initiatives provided in the ITSP Roadmap.

The following figures provides a gross budget estimate for the necessary resources to successfully assist in the implementation of the ITSP Roadmap as well as provide the ability to sustain the City's strategic Information technologies over time. (These numbers do not reflect fully burdened salaries.)

Figure 3.2.2: ITSP 5-Year Sustainability Resources Investment

Ongoing Sustainability DoIT Resources	Year 1	Year 2	Year 3	Year 4	Year 5
Cyber Security Officer	155,000	155,000	155,000	155,000	155,000
Application Specialist: Asset Management	100,000	100,000	100,000	100,000	100,000
Application Specialist: IoT/Smart City Apps		100,000	100,000	100,000	100,000
Yearly Subtotal	**255,000**	**405,000**	**405,000**	**405,000**	**405,000**

Cyber Security Officer: $140,000 - $170,000

Job Responsibilities
Under limited supervision, the incumbent serves as the City's Cyber Security Office reporting directly to the Chief Information Officer. Oversees and manages information security incident prevention, detection, communication, containment, and remediation, through effective use of appropriate controls. Manages threat assessment and analysis through technologies in the City's environment. Serves as the subject matter expert in information security technologies within a team environment. Facilitates information security governance. Develops and publishes up-to-date security standards and guidelines. Consults with service providers and identifies requirements for cyber security products and services.

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Minimum Requirements
A bachelor's degree in information technology (IT) systems, computer science, or related field and ten (10) years of IT experience; or an approved equivalence. Extensive knowledge and background in information technology infrastructure and security. Must possess skills in information security systems and processes, such as intrusion detection, investigation, and eradication; incident response; threat assessment and analysis; and security event correlation and monitoring.

Preferred Qualifications
CISSP (Certified Information Systems Security Professional), CISM (Certified Information Security Manager), or SANS GAIC (Global Information Assurance Certification) certifications or similar are preferred.

Application Specialist: Asset Management: $80,000 – $110,000

Job Responsibilities
Will report directly to the DoIT Application Support Supervisor. Will take a lead role in the City's Asset Management/Work Order applications, including participation in the installation and configuration of the applications with the selected vendors. Perform coordination and oversight of technical support of the application and assist end user make effective use of the applications.

Minimum Requirements
- Bachelor's Degree in Computer Science or related field.
- Demonstrated knowledge, skills and abilities to implement, manage and support asset management work order systems in organizations of comparable size as the City.
- Demonstrated ability to define problems, collect data, analyze data, and draw valid conclusions to support business initiatives
- Strong verbal and written communication skills
- Ability to establish good rapport and interact with end users.
- High level organizational skills with the ability to multi-task and prioritize as needed in a changing work environment

Preferred Qualifications:
Must have at least 5 years of experience and expertise in the implementation and support of Asset Management / Work Order systems, preferably in government organizations.

Application Specialist: IoT/Smart City Apps $80,000 – $100,000

Job Responsibilities
Will report directly to the DoIT Web Development & Support Supervisor. Will take a lead role in working with City end users to define functional and technical specifications, requirements, and cost-benefit analysis for new IoT/Smart City applications, whether Commercial of the Shelf or Custom Programmed. Will participate in the installation and configuration of the applications with the selected COTS vendors. Perform technical support of these applications and assist end user make effective use of the applications.

Minimum Requirements
- Bachelor's Degree in Computer Science or related field.
- Demonstrated knowledge, skills and abilities to implement, manage and support web-enabled technologies and applications.
- Demonstrated ability to define problems, collect data, analyze data, and draw valid conclusions to support business initiatives

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- Strong verbal and written communication skills
- Ability to establish good rapport and interact with end users.
- High level organizational skills with the ability to multi-task and prioritize as needed in a changing work environment

Preferred Qualifications:
Must have at least 10 years of experience and expertise in web-enabled application development and 3 years of experience working with IoT/Smart City applications, preferably in government organizations.

The figure below provides an investment summary for IT initiatives and sustainability resources.

Figure 3.2.3: Total ITSP Roadmap Sustainability Investment Summary

Total Investment	Year 1	Year 2	Year 3	Year 4	Year 5
ITSP Roadmap Investment	10,047,400	1,532,300	1,048,025	1,394,525	10,029,525
Sustainability DoIT Resources	255,000	405,000	405,000	405,000	405,000
Total 5-Year Investment	**10,302,400**	**1,937,300**	**1,453,025**	**1,799,525**	**10,434,525**

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Section 4

ITSP Implementation Roadmap

4.1 ITSP Roadmap Implementation Principles

The ITSP Roadmap illustrates the prioritized sequencing and projected timelines for strategic initiatives over a 5-year period. The Roadmap represents the logical and well-planned construction phase of the IT Strategic Plan.

The following pages provide yearly project schedules reflecting the final prioritized IT Initiatives identified in the ITSP Roadmap Project ***as of this writing***. However, it bears noting that this Roadmap is a living document. As a planning and implementation document, **this document is subject to continuous review and adjustment as the City's organization needs, financial position, technologies emerge, and the City's Information Technology portfolio changes.**

4.1.1 Technology Implementation Principles

The ITSP Implementation Roadmap adheres to a framework comprised of a number of general operating principles, as outlined below:

1. ***Build a solid and secure infrastructure foundation***
   The ITSP Roadmap assumes that the City's network and communications infrastructure is sound and secure, allowing for the deployment of various strategic technologies, including

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Fiber and Wi-Fi technologies in the near future. This is a prerequisite to the deployment of departmental and enterprise applications.

2. ***Focus on economies of scale in the investment and deployment of initiatives***
   For instance, the implementation of web-enabled Asset Management / Work Order System will meet the needs *for several departments;* the E-Government applications can assume a "write-once use many" approach where an Online Payments application can be used to address several online payment requirements across numerous departments and applications.

3. ***Provide staff with sufficient tools of the trade***
   The ITSP Roadmap focuses on providing staff with the fundamental tools needed to provide City services ***and*** interface with all of the City's constituents, i.e., contemporary application software, mobile devices, workflow automation, and Smart City/IoT web-enabled service delivery solutions.

4. ***Recognize deployment prerequisites***
   The ITSP Roadmap recognizes that deployment of certain solutions requires up-stream system preparation, i.e., Wi-Fi for ubiquitous remote access to data for City staff working in the field. In some cases, this may require the City to acquire enabling hardware and/or software technologies either in-house or through "cloud-based" service providers.

5. ***Utilize parallel deployment approaches to fast track initiatives***
   To the extent possible, based on available resources, some ITSP Roadmap initiatives will occur in parallel using appropriate IT resources and/or service providing firms, to execute IT initiatives. However, multiple enterprise systems should not be deployed at the same time as that might unnecessarily tax the workload of existing City staff.

6. ***Use IT best practices for prioritizing, estimating and management of ITSP Roadmap initiatives***
   All development and implementation projects will use formal industry standard PMBOK® (the Project Management Institute's *Project Management Body of Knowledge*) Project Management methodology and a uniform Enterprise Architecture, Structured Development Life Cycle (SDLC) methods and development tools..

7. ***Allocate sufficient IT resources to ensure sustainability***
   The ITSP Roadmap currently includes ITSP initiatives of varying scale and complexity over the next several years. This represents a significant workload for the IT organization – in addition to what already exists. The implementation will require that the City place a high level of importance on IT staff resource allocation (City staff, contractors and/or consultants) to successfully deploy and effectively sustain the IT Strategic Plan.

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4.2 5-Year Implementation Timeline

The figure on the following page (4.2.1) provides an overview of the proposed 5-year Implementation Roadmap. In general, the 5-year plan follows the prioritization identified in Section 2 of this document. The following should be noted:

- Projects anticipated to be carried out by existing IT resources without a solicitation phase are shown with a solid bar indicating approximate deployment timelines. (The solid bar indicates the projected implementation timelines, not the upfront requirements definition and solicitation timelines.)
- ***Projects requiring requirements definition and/or a solicitation process are shown with a light-colored bar preceding the solid dark color bar***, which indicates the deployment timelines. ITSP Roadmap initiatives that require a solicitation process tend to be the larger and more complex projects. These projects will generally be carried out by external professional resources in collaboration with internal City IT staff/subject matter experts.

  From a planning perspective, the solicitation timelines are important because they imply:
  - A formal requirements definition effort;
  - The formation staff resources for the development of RFP documents;
  - The formation of end user evaluation / selection committees;
  - The assignment of appropriate IT staff resources for the execution of the initiatives;
  - The possible assignment of appropriate City staff backfill resources for the execution of large IT projects; and
  - The identification of appropriate Change Management activities.
- Ongoing ITSP Roadmap initiatives are shown with a dashed line.
- The number in the column titled “MO” indicates the approximate number of months estimated to carry out an initiative.
- ***The timing of ITSP Roadmap initiatives are subject to change based on the availability of funding,*** either at the department or enterprise level.
- ***The ITSP Roadmap proposed here is not cast in concrete*** and should be reviewed on a yearly basis, in conjunction of call for projects, and be updated as appropriate.

Each ITSP Road initiative is preceded by an abbreviation indicating what type of technology it is. This will allow respective responsible groups in DoIT identify the project s that related to their divisions:

INF Infrastructure System Initiatives
HW Hardware Initiatives
DSW Departmental Software Initiatives
ESW Enterprise Software Initiatives
IOT Internet of Things / Smart City Initiatives

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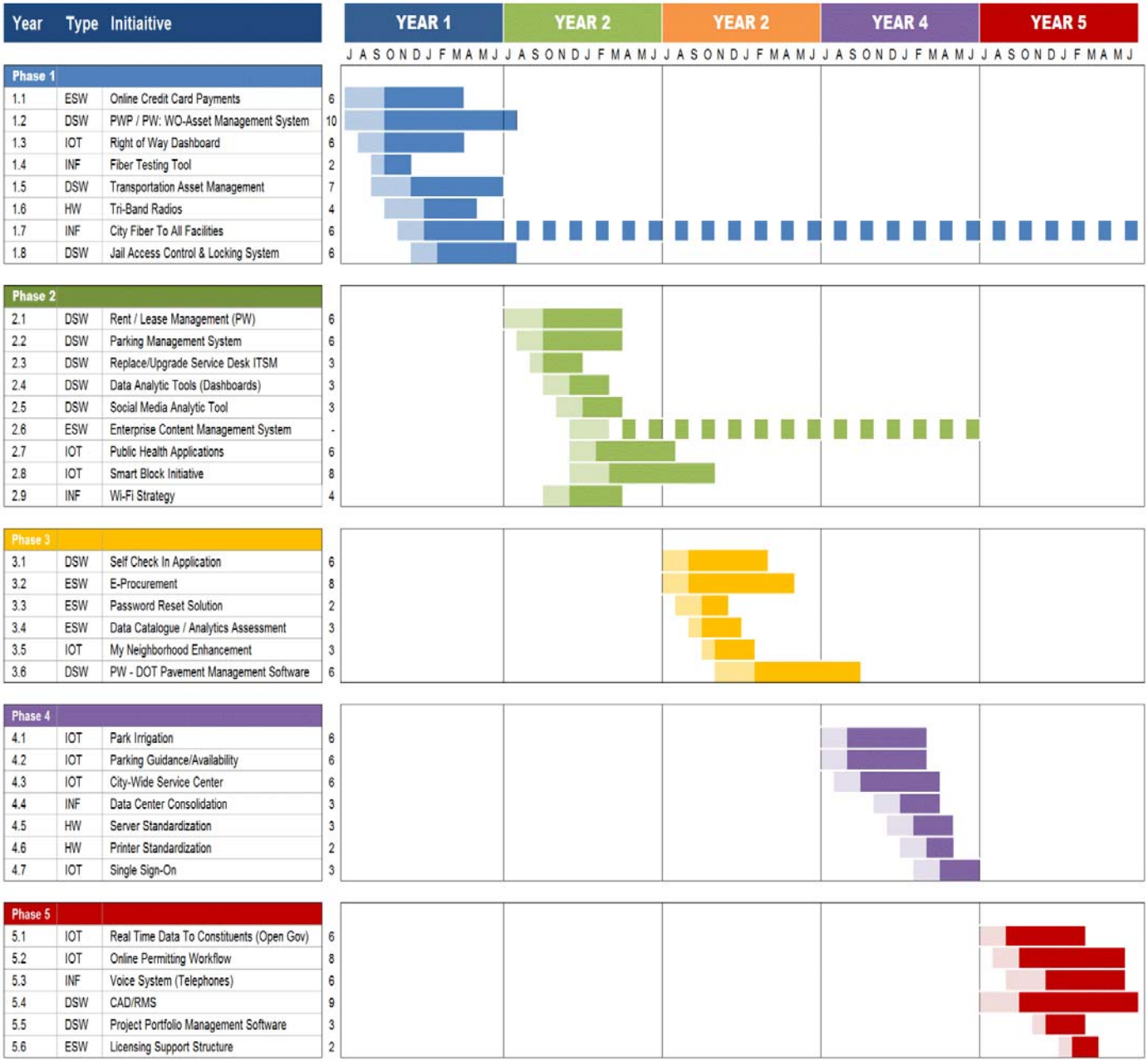
Figure 4.2.1: Overall 5-Year Implementation Roadmap



Year	Type	Initiaitive	Mos.
Phase 1			
1.1	ESW	Online Credit Card Payments	6
1.2	DSW	PWP / PW: WO-Asset Management System	10
1.3	IOT	Right of Way Dashboard	6
1.4	INF	Fiber Testing Tool	2
1.5	DSW	Transportation Asset Management	7
1.6	HW	Tri-Band Radios	4
1.7	INF	City Fiber To All Facilities	6
1.8	DSW	Jail Access Control & Locking System	6
Phase 2			
2.1	DSW	Rent / Lease Management (PW)	6
2.2	DSW	Parking Management System	6
2.3	DSW	Replace/Upgrade Service Desk ITSM	3
2.4	DSW	Data Analytic Tools (Dashboards)	3
2.5	DSW	Social Media Analytic Tool	3
2.6	ESW	Enterprise Content Management System	-
2.7	IOT	Public Health Applications	6
2.8	IOT	Smart Block Initiative	8
2.9	INF	WI-FI Strategy	4
Phase 3			
3.1	DSW	Self Check In Application	6
3.2	ESW	E-Procurement	8
3.3	ESW	Password Reset Solution	2
3.4	ESW	Data Catalogue / Analytics Assessment	3
3.5	IOT	My Neighborhood Enhancement	3
3.6	DSW	PW - DOT Pavement Management Software	6
Phase 4			
4.1	IOT	Park Irrigation	6
4.2	IOT	Parking Guidance/Availability	6
4.3	IOT	City-Wide Service Center	6
4.4	INF	Data Center Consolidation	3
4.5	HW	Server Standardization	3
4.6	HW	Printer Standardization	2
4.7	IOT	Single Sign-On	3
Phase 5			
5.1	IOT	Real Time Data To Constituents (Open Gov)	6
5.2	IOT	Online Permitting Workflow	8
5.3	INF	Voice System (Telephones)	6
5.4	DSW	CAD/RMS	9
5.5	DSW	Project Portfolio Management Software	3
5.6	ESW	Licensing Support Structure	2

LEGEND (Typical)

Execution of Initiative
Requirements / Solicitation
Ongoing Initiative

Note:

The numbers shown in the "Mos." column indicate the number of months for the implementation of an ITSP initiative, shown with the dark colored bar. It does not include the front-end work to develop requirements or carry out a solicitation shown in the lighter color bar.

3.3.1: ITSP Implementation Roadmap

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Implementation Assumptions:

The footnotes on the following page provide a synopsis on the implementation approach for each of the ITSP initiatives listed over the 5-year timeline. The number inside the parenthesis indicates the estimated implementation timeline in months. The foregoing assumes all project deployments will use formal PMBOK™ Project Management and Change Management Best practices.

Year 1

1. ***ESW*** ***Online Credit Card Payments:*** *This initiative assumes detailed technical and functional requirements will be developed and incorporated into an RFP (as denoted by the light bar); followed by an estimated 6-month deployment by a vendor.*
2. ***DSW*** ***PWP / PW: WO-Asset Management System:*** *This initiative assumes detailed technical and functional requirements will be developed and incorporated into an RFP (as denoted by the light bar); followed by an estimated 10-month deployment by a vendor with participation with appropriate City staff.*
3. ***IOT*** ***Right of Way Dashboard:*** *This initiative assumes detailed technical and functional requirements will be developed and incorporated into an RFP; followed by an estimated 6-month development by a vendor.*
4. ***INF*** ***Fiber Testing Tool:*** *This initiative assumes DoIT will procure the required software, followed by an estimated 2-month implementation by appropriate DoIT staff.*
5. ***DSW*** ***Transportation Asset Management:*** *This initiative assumes detailed technical and functional requirement would be developed and incorporated into an RFP for a COTS software; followed by an estimated 6-month deployment by a vendor.*
6. ***HW*** ***Tri-Band Radios:*** *This initiative assumes a detailed technical specification will be developed by DoIT and incorporated into an RFP for the procurement or lease of new radios; followed by an estimated 6-month deployment by a vendor.*
7. ***INF*** ***City Fiber to All Facilities:*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for a fiber systems design, engineering and development of a Request for Bid to install fiber to all City facilities; followed by an estimated 12-month build out by a vendor.*
8. ***DSW*** ***Jail Intercom and Locking System:*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for the procurement of a system and professional services to do the installation; followed by an estimated 4-month deployment.*

Year 2

9. ***DSW*** ***Rent / Lease Management (PW):*** *This initiative assumes detailed technical and functional requirements will be developed and incorporated into an RFP for a Commercial off-the-shelf software (COTS); followed by an estimated 6-month deployment by a vendor.*
10. ***DSW*** ***Parking Management System:*** *This initiative assumes detailed technical and functional requirement will be developed and incorporated into an RFP for a COTS software; followed by an estimated 6-month deployment by a vendor.*
11. ***DSW*** ***Replace/Upgrade ITSM:*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for a COTS to replace or upgrade the existing software; followed by an estimated 3-month deployment by DoIT staff.*

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12. ***DSW*** ***Data Analytic Tools (Dashboards):*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for a COTS software; followed by an estimated 3-month deployment b DoIT staff.*

13. ***DSW*** ***Social Media Analytic Tool:*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for a COTS software; followed by an estimated 3-month deployment by DoIT staff.*

14. ***ESW*** ***Enterprise Content Management System:*** *This initiative assumes that a detailed implementation plan will be developed by DoIT and used to deploy ECMS across all appropriate City Departments over 2 years.*

15. ***IOT*** ***Public Health Applications:*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for a COTS software; followed by an estimated 6-month deployment by a vendor.*

16. ***IOT*** ***Smart Block Initiative:*** *This initiative assumes detailed technical specification will be developed by DoIT in collaboration with several departments, and specifications incorporated into an RFP for a combination of COTS, custom app development and systems integration; followed by an estimated 9-month deployment by a vendor.*

17. ***INF*** ***Wi-Fi Strategy:*** *This initiative assumes a detailed technical specification will be developed by DoIT and incorporated into an RFP for to retain a consultant to produce a Wi-Fi strategy for the City, estimated to take 4 months.*

Year 3

18. ***DSW*** ***Self Check-in Application:*** *This initiative assumes a detailed technical specification will be developed by DoIT and incorporated into an RFP for the procurement of a COTS, followed by an estimated 6-month implementation by a vendor.*

19. ***ESW*** ***E-Procurement:*** *This initiative assumes a detailed technical specification will be developed by DoIT who will explore whether Munis has a solution for, and if not, incorporated the requirements into an RFP for the procurement of a COTS, followed by an estimated 8-month implementation by a vendor.*

20. ***ESW*** ***Password Reset Solution:*** *This initiative assumes DoIT will procure the required software, followed by an estimated 2-month implementation by appropriate DoIT staff.*

21. ***ESW*** ***Data Catalogue / Analytics Assessment:*** *This initiative assumes a detailed technical specification will be developed by DoIT and incorporated into an RFP to retain a consultant to assess and/or develop a data catalogue for the City, estimated to take 3 months.*

22. ***IOT*** ***My Neighborhood Enhancement:*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for retaining professional services to provide web development services; followed by an estimated 3-month deployment.*

23. ***DSW*** ***PW - DOT Pavement Management Software:*** *This initiative assumes a detailed technical specification will be developed by DoIT and incorporated into an RFP for a COTS software; followed by an estimated 6-month deployment by a vendor.*

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Year 4

24. ***IOT*** ***Park Irrigation:*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for a COTS; followed by an estimated 6-month deployment by a vendor.*

25. ***IOT*** ***Parking Guidance/Availability:*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for a COTS; followed by an estimated 6-month deployment by a vendor.*

26. ***IOT*** ***City-Wide Service Center:*** *This initiative assumes detailed technical specification will be developed by DoIT; followed by an estimated 6-month deployment by DoIT staff.*

27. ***INF*** ***Data Center Consolidation:*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for retaining professional services to consolidate the existing data centers; followed by an estimated 3-month consolidation project.*

28. ***HW*** ***Server Standardization:*** *This initiative assumes detailed technical specifications/plan will be developed by DoIT; followed by an estimated 3-month deployment carried out by appropriate DoIT staff.*

29. ***HW*** ***Printer Standardization:*** *This initiative assumes detailed technical specifications/plan will be developed by DoIT; followed by an estimated 3-month deployment carried out by appropriate DoIT staff.*

30. ***IOT*** ***Single Sign-On:*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for retaining professional services to provide web development services; followed by an estimated 3-month deployment.*

Year 5

31. ***IOT*** ***Real Time Data to Constituents (Open Gov):*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for the procurement of an Open Gov COTS and professional services to do the implementation; followed by an estimated 6-month deployment.*

32. ***IOT*** ***Online Permitting Workflow:*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for the procurement of a COTS and professional services to do the implementation; followed by an estimated 8-month deployment.*

33. ***INF*** ***Voice System (Telephones):*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for the procurement of a new telephone system and professional services to do the implementation; followed by an estimated 6-month deployment.*

34. ***DSW*** ***CAD/RMS:*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for the procurement of a COTS and professional services to do the implementation; followed by an estimated 8-month deployment.*

35. ***DSW*** ***Project Portfolio Management Software:*** *This initiative assumes detailed technical specification will be developed by DoIT and incorporated into an RFP for the procurement of a COTS, followed by an estimated 3-month deployment by DoIT staff.*

36. ***ESW*** ***Licensing Support Structure:*** *This initiative assumes funding will be secured to purchase more licenses, followed by an estimated 3-month deployment by DoIT staff.*

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Section 5

City & Constituent ITSP Benefits

5.1 Sorted ITSP Roadmap Benefits

A number of quantitative and qualitative benefits were identified in nineteen (19) Rapid Workflow® workshops/focus groups as part of the ITSP Roadmap project. The benefits data set indicates considerable opportunity for enhancing internal business operations as well as service delivery to the public.

Qualitative business process improvement and service delivery benefits were split equally across external (customer focused) and internal benefits. And while the benefits were not quantified (i.e., there is no measure of the magnitude of benefits in terms of dollars) the list below provides a general indicator of the opportunity.

The figure on the following page provides a compiled list of potential ITSP Roadmap benefits identified by City staff and management if the initiatives identified in the project were implemented. This list indicates that the most substantial benefits of implementing an enterprise driven ITSP Roadmap are the outcomes all municipalities strive for.

The top 10 potential benefits identified include:

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1. **Improved efficiencies & productivity** (65)
   Implementation of the ITSP Roadmap will further the efficient use of City resources (staff and financial), in terms of executing common work tasks, looking for information, not re-keying data into redundant systems, and/or looking for (and gathering) information from numerous disparate systems. Execution of the ITSP Roadmap will improve staff productivity by fostering a digital workplace/digital workforce where more can be done with fewer or existing resources.

2. **Better, timely, and improved customer service** (59)
   Implementation of the ITSP Roadmap will improve the levels of customer service, internally amongst City staff and externally to constituents. In both cases, systematizing information via data analytics, offering online transactions, and IoT/Smart City apps, will provide constituents the convenience of accessing City services from mobile devices from anywhere at any time. This will mitigate the need to physically go to the City and/or manage City operations/services with hardcopy documents. Web-enabled applications will allow the public 24x7x365 access. Even though City staff appreciates providing face-to-face services, the use of online applications and E-Forms will allow the public self-services options which are increasingly the norm with progressive E-Government agencies.

   The foregoing will enhance the public experience, including those who visit Pasadena for nationally recognized events such as the Rose Bowl or New Year's Parade. Infrastructure improvements such as Fiber and Wi-Fi will foster a business-friendly environment.

3. **Access to accurate/real time data (45)**
   Implementation of the ITSP Roadmap will provide quicker and easier access to many types of information for City staff and constituents. Most, if not all, of the proposed information systems provide interoperability (the ability to share data across systems) or web-enabled access to information from anywhere at any time from any device. The focus on data analytics will also assist in establishing an Open Government environment at the City, which will promote transparency to the public. The ability of City staff to produce and store more consistent and accurate information will also be a benefit. This benefit apples to the majority of City departments including improved access to data to works crews in the field. For the pubic, this will facilitate an Open Government policy and enhanced transparency.

4. **Staff time savings (42)**
   According to City staff, management and ThirdWave's findings, funding the ITSP Roadmap will allow for better use of staff time and significant time-savings in ay mission critical processes. By far the most significant benefit is mitigating increasing staffing levels. The implementation of the ITSP Roadmap will allow existing City staff to better meet the growing service demands of the City's constituents.

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5. Better cost capture / budgeting (42)

Implementing the ITSP Roadmap will allow City staff to collect data related to the cost of operating and maintaining City facilities and fixed assets. A number of departments identified significant potential saving in benefit related to enhanced business controls by better capturing of cost data via the introduction of inventory, work order and asset management systems, including improved life cycle maintenance of costly assets.

6. Cost savings (40)

Implementing the ITSP Roadmap will reduce the City's operating costs in several areas by reducing: the amount of hardcopy documents, duplicate staff work, wasted staff time, the cost of driving back and forth to City facilities by field staff, etc. City constituents will also see cost savings by accessing City information and services on-line, without having to drive to City Hall, pay for parking (or parking tickets hen meters run out of time) to receive services or gather information.

7. Business process improvement (31)

The adoption and funding of the ITSP Roadmap will provide significant opportunity to streamline the execution of City Department work activities in many areas. For example, in the procurement process, staff noted that approvals of formal solicitations would be significantly streamlined by employing paperless workflow automation and e-signatures. In other processes, enhanced collaboration will be facilities by providing digital/mobile services employing Smart City apps. This will result in improved internal operations and enhanced service delivery to City customers.

8. Improved department collaborations (25)

Implementing the ITSP Roadmap will significantly improve cross-functional/inter-department collaboration via access to data/documents in near/real time, the use of workflow automation of Smart City applications that access existing databases in various systems, and repurposes it for other uses or services. The use of dashboards will allow staff in different departments, as well as the public, to be informed on ongoing activities, programs, fostering feedback and engagement.

9. Better timely / consistent reporting (23)

Implementing the ITSP Roadmap will significantly improve the ability of City staff to process data in a timely manner, with reduced errors. This will offer improved and consistent reporting to City management and the public in various dashboards. The focus on paperless processes supported with and e-forms and/or smart forms will eliminate the time-consuming processing of hardcopy forms requiring duplicate data entry, where the same or similar data is re-keyed into more than one application, resulting in an increased propensity for errors.

10. Happier staff (22)

Implementing the ITSP Roadmap will reduce and mitigate a number of workplace/ business process situations where City staff is experiencing considerable frustration. "Happier staff" was identified as a desirable outcome from the use of automation in streamlining many business processes which currently rely on manual methods. This would enhance service delivery and decrease stress.

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The top 10 benefits identified above, and the remaining quantitative and qualitative benefits provide a compelling business case for approving and funding the City of Pasadena's ITSP Roadmap.

Benefits were identified at several levels, e.g., within a section or division for the business process being examined, to the City of Pasadena as a whole, or the public. This information was used to prioritize ITSP initiatives. A total of seven-hundred and eighteen (718) potential benefits were identified in nineteen (19) business process workshops, an average of thirty-seven (37) benefits opportunities per mission critical business process or technology opportunity.

The figure on the following page provides the top twenty (20) out of 81 potential benefits that will be derived by approving and funding the ITSP. (The number in the column shown as "Qty." indicate the number of times these benefits were identified in all of the Rapid Workflow® workshops.) While benefits are not quantified in terms of hard dollars, this data provides a level of magnitude on the potential impact that ITSP initiatives offer the City of Pasadena and its constituents.

While these benefits are not quantified, they do illustrate the level of magnitude of the benefit of investing in the City's future as innovative user of Information technologies.

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Figure 5.1.1: Summary of Potential Benefits Across All City Departments

		Qty.
1	Improved efficiencies & productivity	65
2	Better, timely, customer service	59
3	Access to accurate/real time data	45
4	Staff time savings	42
5	Better cost capture / budgeting	42
6	Cost savings	40
7	Business process improvement	31
8	Improved department collaboration	25
9	Better timely / consistent reporting	23
10	Happier staff	22
11	Better view of system health	22
12	Reduced paperwork	21
13	Enhanced transparency	21
14	Speed up projects	20
15	Greater public engagement	20
16	Improved perception of the City	17
17	Improved informed decision making	15
18	Improved operational services	13
19	Get projects moving forward	11
20	Staff could work on new things	10
21	Reduced errors, no surprises	10
22	Improved consistency	9
23	Simplify results based on data	9
24	Increased revenue	9
25	Smarter city	8
26	Sell services faster	8
27	Better asset / life cycle managemen	7
28	Sustainability of infrastructure	5
29	Benefits throughout the City	5
30	Better monitoring	4
31	Eliminate reconciling	4
32	Improved year end closing	4
33	Improved up time	4
34	Reduced risk and liability	4
35	Disaster recovery	3
36	Safer work environment.	3
37	Eliminate redundancy	2
38	Improved version control of docume	2
39	Increase the ability to innovate.	2
40	Improved version control	2
41	Cross sharing of newsletter	2
42	One tool train on for City staff.	2

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Section 6
Closing Recommendations

6.1 Adoption & Funding

Based on the voluminous amount of data collected from City staff and management, the findings and recommendations of the ITSP Roadmap project, and the opportunities for making substantial progress in the use of emerging Information Technologies, ThirdWave recommends that the City of Pasadena Information Technology Strategic Plan and Implementation Roadmap be approved and adopted by the City.

Moreover, we recommend that year 1 be funded.

Doing so will result in business process improvement, increased operational efficiencies, and enhanced service delivery to constituents while containing operational costs.

Adoption of the ITSP represents a timely quantum leap into the future in the evolution of an extraordinary City steeped in a tradition of bold vision and entrepreneurial spirit: The Roadmap will strategically position the City of Pasadena for the next 5 to 10 years.

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