Oakland County
Department of Information Technology
Project Scope and Approach

Project Name: GIS Enterprise Program **Project ID: D19182GB**

Leadership Group: Land			
Department: Information Technology		**Division:** Application Services	
Project Sponsor: Phil Bertolini	**Date Requested**: 5/9/2018	**PM Customer No.** 182	
Request Type:	***New Development X*** ***Enhancement*** ***Customer Support*** ***Planned System Maintenance or Upgrade***		
IT Team Name: Infrastructure and GIS		**IT Team No**: 1	
Project Manager/Leader: Susan Moore			
Account Number: 17321	**Account Description:** Enterprise GIS Fund	**Customer Name:**	Application Services
Grant Funded? Yes	**No** X	**Mandate?** **Yes**	**No** X
		Mandate Source:	

Project Goal

To provide a progressive, location-based solution so that informed decision making is promoted, citizen services are improved, and collaboration across all levels of government is encouraged.

Business Objective

To expand Oakland County's location-based services to reach anyone, at any time, from anywhere.

To create and sustain innovative partnerships and collaboration opportunities.

To strategically implement and promote focused, location-based services to facilitate citizen access to information.

Major Deliverables

Examples include:

- Expanded use of spatial technologies by County departments and local cities, villages, and townships (CVTs).
  - Meet with additional County departments regarding spatial location, providing sample applications relevant to their business use.
  - Coordinate GIS "industry parties" County and CVT staff with similar business processes to learn about and collaborate on GIS solutions.
  - Create new, topic-focused workshops for staff on spatial technologies
  - Create template data layers to further simplify the collecting, maintaining, analyzing and sharing of data for end users.
- Additional Maps of the Month (partnering with eGovernment).
- Campus Locator application for citizens to use when navigating the County campus.
- Updated GIS marketing and communication plans.

- Opportunities for innovation and new collaboration by designing, for example, mapping app competitions.
- Research and evaluation regarding Oakland County's participation in national and regional programs.
- GIS Data Distribution Workflow improvements (for data not part of Open Data policy).
    - Create GIS data availability reports.
    - Create workflow, and potentially application, for identification and distribution of sensitive data.
    - Utilize a System (potentially existing, such as Salesforce) to track contact with CVTs

Approach

- Develop Detailed Project Plans, as Needed
- Review Current Business Processes
- Document Business Requirements
- Research New Collaboration Opportunities, and Evaluate their Value
- Document Data Policy Changes
- Assess Hardware and Software Requirements
- Develop Implementation Plans
- Develop New Systems/Data
- Develop User Acceptance Test Plans
- Test New System/Data
- Develop User Training
- Develop User Documentation, SLA, Disaster Recovery Toolkit, Service Center Knowledge Documents
- Train/Notify Users of New System/Data
- Conduct Change Control
- Release New System/Data into Production

Business Objective

To foster a sustainable technological environment for Oakland County location-based services.

To leverage accurate and current location-based data to support decision making in Oakland County.

Major Deliverables

Examples include:

- New map caches using vector (rather than raster) tile format.
- Evaluation of new, relevant GIS technologies as they become available
- Standard Enterprise GIS application templates that can be repurposed for specific department uses, such as:
    - Crowd sourcing
    - Simple editing/markup
    - Notification pushes
- New, or enhanced, enterprise GIS datasets, as they are requested.

- Expose additional customer data to make it available for analysis and decision-making by a larger group.
- Revised GIS enterprise data maintenance and publishing workflows, as needed.
- Implementation of new functionality offered by AGO during the scheduled quarterly releases.
- Improved administration of the County's ArcGIS Online account.
    - Create scripts to automate tasks.
    - Document standards and best practices.
    - Create and implement communication plan that will notify users of enhancements and further attract their interest in spatial technologies.
- Implement new enterprise GIS offerings as needed to meet customer needs
- Consumption of additional ESRI Marketplace applications within the County's AGO account to further refine administrative functions and end user experience.
- Configuration of new failover alternative for GIS servers, if needed.

Approach

- Develop Detailed Project Plans, as Needed
- Document Research Findings
- Share Research Findings at GIS Meetings.
- Review Current Business Process
- Conduct Needs Assessment with Customer
- Document Business Requirements
- Negotiate terms of contracts/SLAs with Vendors and Partners, as Needed
- Create Presentation for Board of Commissioners, as Needed
- Document Data Model Design and System Requirements
- Document System Architecture
- Determine and Document Automation/Conversion
- Assess Hardware and Software Requirements
- Develop Implementation Plan
- Develop New System/Data
- Develop User Acceptance Test Plan
- Test New System/Data
- Acquire User Acceptance Sign-Off
- Develop User Training
- Develop User Documentation, SLA, Disaster Recovery Toolkit, Service Center Knowledge Documents
- Train/Notify Users of New System/Data
- Conduct Change Control
- Release New System/Data into Production

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Research & Analysis

Gartner Research Recommendation

In the Gartner article *Three Geospatial and Location Intelligence Use Cases to Meet Governments' Biggest Challenges* (November 27, 2017), analyst Bill Finnerty discusses numerous themes that align with the deliverable of the GIS Enterprise Program.

One of the key themes throughout the article is the importance of developing public-facing geolocation services that provide transparency, empower users to address social challenges, and turn data into information to which the public can relate. These services should take advantage of real-time data and 3D modeling, whenever possible.

Throughout the next 2 years, the hours in the GIS Enterprise Program will be used expand the data in our Open Data Portal, develop new 3D products (including new 3D basemaps), and continue the Map of the Month program to provide information to the public. In addition, new technologies will be researched and possibly piloted to take advantage of sensors to feed real-time data services.

The article recommends increasing internal collaboration, providing additional training on spatial technologies, and extending geospatial services to partners. One of the key activities in the GIS Enterprise Program focuses on outreach to our County, Road Commission, and city/village/township (CVT) users via new communication methods, innovative training approaches, and the next phase of the GIS Roadshow, aka "Industry Parties." These Industry Parties will bring together government staff who share similar jobs to encourage collaboration of ideas, data and technology, with the ultimate goal of increasing government efficiency and saving money.

Benefits

See Return on Investment (ROI) Analysis Document

Impact

Number of Users Unlimited

Divisions All geospatial data and application consumers

Leadership Groups Land

Project Name: GIS Enterprise Program **Project ID: D19182GB**

Risk

Business Environment Medium - Project will require some changes to existing business processes.

Technical Environment Medium – Previously implemented technologies with new aspects and/or new requirements.

Assumptions

Staffing IT Staffing: resources will be available for the hours indicated per the attached project plan.

Other Staffing: additional staffing will be available as follows:

Role:	Name	Hours per Day
Project Sponsor:	Phil Bertolini	As needed.

Facilities

- None

Technical

- No additional hardware purchases will be required specifically for this work.

Funding

- Funded

Other

- None

Priority

- TBD

Constraints

- None

Exclusions

- None

Oakland County
Department of Information Technology
Project Scope and Approach

Project Name: GIS Enterprise Program **Project ID: D19182GB**

PROJECT PHASE AUTHORIZATION

Phase(s): **All**	
Total Estimated Application Services **Hours: 7168**	
Total Estimated Technical Systems **Hours: 40**	
Total Estimated CLEMIS **Hours:**	
Total Estimated Internal Services **Hours:**	
IT Application Services Division Manager Approval:	**Date:**
IT Technical Systems Division Manager Approval:	**Date:**
IT CLEMIS Division Manager Approval:	**Date:**
IT Internal Services Division Manager Approval:	**Date:**
IT Management Approval:	
Approved: Yes No	Date:
Reason:	
Project Sponsor Approval:	
Title:	Date:

PROJECT SUMMARY

Authorized Development (see above)	**Hours: 7208**	
Preliminary Estimated Development for Future Phases	**Hours:**	
Grand Total Estimated Development	**Hours: 7208**	**Cost: $1,189,320**

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PROJECT COMPLETION AUTHORIZATION

Customer Acceptance of Product:	
Title:	Date:
Project Office Review:	Date:

GIS Enterprise Program - Size Estimate (+/- 10% to 50%)

	Type	ID	Task Name	Estimated	Estimate Notes
2				Hours	
3	**3**	**000000**	**GIS Enterprise Program**	**7,208**	
4				7,208	

D19182GB

Oakland County GIS Enterprise Program

Return on Investment Analysis

As Of: 5/9/18

Project Summary

Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Benefits/Savings:							
Tangible Benefits Subtotal:	0	0	0	0	0	0	0
Cost Avoidance Subtotal:	1,170	1,193	1,217	1,242	1,266	1,292	7,381
Costs:							
Development Services Subtotal:	627,660	640,213	34,333	35,020	35,720	36,435	1,409,381
Hardware Subtotal:	0	0	0	0	0	0	0
Software Subtotal:	0	0	0	0	0	0	0
Infrastructure Subtotal	0	0	0	0	0	0	0
Training Subtotal:	0	0	0	0	0	0	0
Other Subtotal:	0	0	0	0	0	0	0
Annual Statistics:							
Annual Total Savings	1,170	1,193	1,217	1,242	1,266	1,292	7,381
Annual Total Costs	627,660	640,213	34,333	35,020	35,720	36,435	1,409,381
Annual Return on Investment	(626,490)	(639,020)	(33,116)	(33,778)	(34,454)	(35,143)	(1,402,001)
Annual Costs/Savings Ratio	53646.15%	53646.15%	2820.51%	2820.51%	2820.51%	2820.51%	
Project Cumulative Statistics:							
Cumulative Total Savings	1,170	2,363	3,581	4,822	6,089	7,381	7,381
Cumulative Total Costs	627,660	1,267,873	1,302,206	1,337,226	1,372,947	1,409,381	1,409,381
Cumulative Return on Investment	(626,490)	(1,265,510)	(1,298,626)	(1,332,404)	(1,366,858)	(1,402,001)	(1,402,001)
Cumulative Cost/Savings Ratio	53646.15%	53646.15%	36367.69%	27730.16%	22548.99%	19096.01%	19096.01%
Year Positive Payback Achieved							NO PAYBACK
State or Federal Mandate?							
Signatures:							
Benefits Reviewed By Project Sponsor				Date:			
Costs (including IT Resources) Reviewed By Information Technology Project Manager				Date:			

REV: January 22, 2018

Oakland County GIS Enterprise Program

Return on Investment Analysis

Savings Detail

Benefit/Savings Description	Project Savings Category	Budget Category/ Funding Source	Unit Desc	Units	Rate per Unit	Total Savings	Annual Multiplier
Map of the Month program increases public awareness of services and activities provided by Oakland County and local businesses.	Intangible Benefit					0	
Creating Enterprise ArcGIS Server services that can easily be consumed by other applications reduces (or even eliminates) the development time for new applications, which makes the IT Department more responsive to customer needs.	Intangible Benefit					0	
Creating additional Enterprise ArcGIS Server services makes them available to non-programming staff for use within their own AGO maps and applications.	Intangible Benefit					0	
Expanding the user base to even more County departments and CVTs further leverages our current investment of GIS technology and data.	Intangible Benefit					0	
Provides single location for the inventory of Oakland County spatial data for use by County Departments & CVTs.	Intangible Benefit					0	
Participation in the community maps program provides a better nationwide basemap for use by our departments.	Intangible Benefit					0	
Improved AGO administration facilitates use of the product by providing clear, easy-to-follow guidelines.	Intangible Benefit					0	
Improved data modeling can streamline GIS data maintenance and improve data accuracy.	Intangible Benefit					0	

Oakland County GIS Enterprise Program

Return on Investment Analysis

Savings Detail

Benefit/Savings Description	Project Savings Category	Budget Category/ Funding Source	Unit Desc	Units	Rate per Unit	Total Savings	Annual Multiplier
Having up-to-date marketing and communication plans allows IT to take advantage of the latest technologies and venues to promote our program, both internally and externally.	Intangible Benefit					0	
Public engagement improves effectiveness and decision making.	Intangible Benefit					0	
Creating collaboration opportunities such as an online mapping contest promotes creative thinking and leverages our existing investment into data development.	Intangible Benefit					0	
New vector caching format improves user experience with faster panning and the ability to zoom in to a lower level. It also reduces the number of caches we need to maintain.	Intangible Benefit					0	
Developing targeted workshops for County and CVT staff sets staff up for successful use of spatial technologies.	Intangible Benefit					0	
Creating opportunies for CVTs and Departments to work together (e.g., "industry parties") encourages collaboration and discussion directly amoung the relevant staff.	Intangible Benefit					0	
Streamlining our data distribution workflow reduces Business Analyst staff time to answer questions regarding data.	Cost Avoidance		HR	13	50	650	1.020
Streamlining our data distribution workflow reduces CAD tech II staff time spent investigating if data exists, and if so, who can have access to it.	Cost Avoidance		HR	13	40	520	1.020
						0	
						0	

Oakland County GIS Enterprise Program

Return on Investment Analysis

Savings Detail

Benefit/Savings Description	Project Savings Category	Affects Project ROI? Y1	Y2	Y3	Y4	Y5	Y6	Potential Savings Extensions Y1	Y2	Y3	Y4	Y5	Y6
Map of the Month program increases public awareness of services and activities provided by Oakland County and local businesses.	Intangible Benefit												
Creating Enterprise ArcGIS Server services that can easily be consumed by other applications reduces (or even eliminates) the development time for new applications, which makes the IT Department more responsive to customer needs.	Intangible Benefit												
Creating additional Enterprise ArcGIS Server services makes them available to non-programming staff for use within their own AGO maps and applications.	Intangible Benefit												
Expanding the user base to even more County departments and CVTs further leverages our current investment of GIS technology and data.	Intangible Benefit												
Provides single location for the inventory of Oakland County spatial data for use by County Departments & CVTs.	Intangible Benefit												
Participation in the community maps program provides a better nationwide basemap for use by our departments.	Intangible Benefit												
Improved AGO administration facilitates use of the product by providing clear, easy-to-follow guidelines.	Intangible Benefit												
Improved data modeling can streamline GIS data maintenance and improve data accuracy.	Intangible Benefit												

Oakland County GIS Enterprise Program

Return on Investment Analysis

Savings Detail

Benefit/Savings Description	Project Savings Category	Affects Project ROI? Y1	Y2	Y3	Y4	Y5	Y6	Potential Savings Extensions Y1	Y2	Y3	Y4	Y5	Y6
Having up-to-date marketing and communication plans allows IT to take advantage of the latest technologies and venues to promote our program, both internally and externally.	Intangible Benefit												
Public engagement improves effectiveness and decision making.	Intangible Benefit												
Creating collaboration opportunities such as an online mapping contest promotes creative thinking and leverages our existing investment into data development.	Intangible Benefit												
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Creating opportunies for CVTs and Departments to work together (e.g., "industry parties") encourages collaboration and discussion directly amoung the relevant staff.	Intangible Benefit												
Streamlining our data distribution workflow reduces Business Analyst staff time to answer questions regarding data.	Cost Avoidance	x	x	x	x	x	x	650.00	663.00	676.26	689.79	703.58	718
Streamlining our data distribution workflow reduces CAD tech II staff time spent investigating if data exists, and if so, who can have access to it.	Cost Avoidance	x	x	x	x	x	x	520.00	530.40	541.01	551.83	562.86	574

Oakland County GIS Enterprise Program

Return on Investment Analysis

Savings Summary

	Benefit/Savings Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Tangible Benefit:								
	Tangible Benefits Subtotal:							
Cost Avoidance:								
	Streamlining our data distribution workflow reduces Business Analyst staff time to answer questions regarding data.	650	663	676	690	704	718	4,100
	Streamlining our data distribution workflow reduces CAD tech II staff time spent investigating if data exists, and if so, who can have access to it.	520	530	541	552	563	574	3,280
	Cost Avoidance Subtotal:	***1,170***	***1,193***	***1,217***	***1,242***	***1,266***	***1,292***	***7,381***
Intangible Benefit:								
	Map of the Month program increases public awareness of services and activities provided by Oakland County and local businesses.							
	Creating Enterprise ArcGIS Server services that can easily be consumed by other applications reduces (or even eliminates) the development time for new applications, which makes the IT Department more responsive to customer needs.							
	Creating additional Enterprise ArcGIS Server services makes them available to non-programming staff for use within their own AGO maps and applications.							
	Expanding the user base to even more County departments and CVTs further leverages our current investment of GIS technology and data.							
	Provides single location for the inventory of Oakland County spatial data for use by County Departments & CVTs.							
	Participation in the community maps program provides a better nationwide basemap for use by our departments.							

Oakland County GIS Enterprise Program

Return on Investment Analysis

Savings Summary

	Benefit/Savings Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
	Improved AGO administration facilitates use of the product by providing clear, easy-to-follow guidelines.							
	Improved data modeling can streamline GIS data maintenance and improve data accuracy.							
	Having up-to-date marketing and communication plans allows IT to take advantage of the latest technologies and venues to promote our program, both internally and externally.							
	Public engagement improves effectiveness and decision making.							
	Creating collaboration opportunities such as an online mapping contest promotes creative thinking and leverages our existing investment into data development.							
	New vector caching format improves user experience with faster panning and the ability to zoom in to a lower level. It also reduces the number of caches we need to maintain.							
	Developing targeted workshops for County and CVT staff sets staff up for successful use of spatial technologies.							
	Creating opportunies for CVTs and Departments to work together (e.g., "industry parties") encourages collaboration and discussion directly amoung the relevant staff.							
Savings Total:		***1,170***	***1,193***	***1,217***	***1,242***	***1,266***	***1,292***	***7,381***

Oakland County GIS Enterprise Program

Return on Investment Analysis

Cost Detail

Cost Description	Project Cost Category	Budget Category/Funding Source	Unit Desc	Units	Rate per Unit	Total Cost	Annual Multiplier	Affects Project ROI? Y1	Y2	Y3	Y4	Y5	Y6
IT Hours - New Development	Development Svcs			7,208	165	1,189,320	1.020	x	x				
IT Hours - System Maintenance	Development Svcs			50	165	8,250	1.020	x	x	x	x	x	x
IT Hours - Customer Support	Development Svcs			100	165	16,500	1.020	x	x	x	x	x	x
IT Hours - Planned Maintenance	Development Svcs			50	165	8,250	1.020	x	x	x	x	x	x
User Hours - New Development	Development Svcs					0							
User Hours - PTNE/OT	Development Svcs					0							
Contractor Professional Services	Development Svcs					0							
PC System - Acquisition	Hardware				814	0							
PC System - Maintenance	Hardware				2,304	0							
Notebook - Acquisition	Hardware				1,223	0							
Notebook - Maintenance	Hardware				2,372	0							
Tablet Notebook - Acquisition	Hardware				2,012	0							
Tablet Notebook - Maintenance	Hardware					0							
Laserprinter - Acquisition	Hardware				1,432	0							
Laserprinter - Maintenance	Hardware				1,104	0							
Image Workstations - Acquisition	Hardware					0							
Image Workstations - Maintenance	Hardware				3,496	0							
PC Maintenance User Owned	Hardware				2,304	0							
Printer Maintenance User Owned	Hardware				1,072	0							
File Space (100GB)	Hardware		ANN		173	0							
Internet Bandwidth per MB	Hardware		ANN		750	0							
Package Software - Acquisition	Software					0							
Package Software - Maintenance	Software					0							
Business Objects Access	Software					0							
Term Emulation SFTW-Acquisition	Software					0							
Term Emulation SFTW-Maintenance	Software					0							
Server - Acquisition/Upgrade	Infrastructure				8,000	0							
Server - Maintenance	Infrastructure				360	0							
Server Sftwre - Acquisition/Upgrade	Infrastructure				335	0							
Server Sftwre - Maintenance	Infrastructure					0							
Server Rack Mount	Infrastructure				400	0							
Oracle Enterprise Per Processor - Includes Year 1 Maintenance	Infrastructure				21,372	0							
Oracle Enterprise Per Processor - Year 2 and Beyond	Infrastructure				3,432	0							

Oakland County GIS Enterprise Program

Return on Investment Analysis

Cost Detail

Cost Description	Project Cost Category	Budget Category/Funding Source	Unit Desc	Units	Rate per Unit	Total Cost	Annual Multiplier	Affects Project ROI? Y1	Y2	Y3	Y4	Y5	Y6
SQL Server Enterprise - Per Processor (4 cores) - Purchased Sept 2016-Aug 2017 - Includes Maintenance thru Aug 2019	Infrastructure				24,533	0							
SQL Server Enterprise - Per Processor (4 cores) - Purchased Sept 2017-Aug 2018 - Includes Maintenance thru Aug 2019	Infrastructure				20,759	0							
SQL Server Enterprise - Per Processor (4 cores) - Purchased Sept 2018-Aug 2019 - Includes Maintenance thru Aug 2019	Infrastructure				16,985	0							
SQL Server Enterprise - Maintenance, Per Processor (4 cores) - Sept 2019 and Beyond	Infrastructure				4,218	0							
SQL Server Standard - Per Processor (4 cores) - Purchased Sept 2016-Aug 2017 - Includes Maintenance thru Aug 2019	Infrastructure				6,398	0							
SQL Server Standard - Per Processor (4 cores) - Purchased Sept 2017-Aug 2018 - Includes Maintenance thru Aug 2019	Infrastructure				5,414	0							
SQL Server Standard - Per Processor (4 cores) - Purchased Sept 2018-Aug 2019 - Includes Maintenance thru Aug 2019	Infrastructure				4,429	0							
SQL Server - Standard Maintenance, Per Processor (4 cores) - Sept 2019 and Beyond	Infrastructure				1,100	0							
Websphere Basic Per Processor Single/Dual Core - Includes Year 1 Maintenance	Infrastructure				3,506	0							

Oakland County GIS Enterprise Program

Return on Investment Analysis

Cost Detail

Cost Description	Project Cost Category	Budget Category/Funding Source	Unit Desc	Units	Rate per Unit	Total Cost	Annual Multiplier	Affects Project ROI? Y1	Y2	Y3	Y4	Y5	Y6
Websphere Basic Per Processor Single/Dual Core - Year 2 and Beyond	Infrastructure				701	0							
Websphere ND Per Processor Single/Dual Core - Includes Year 1 Maintenance	Infrastructure				13,180	0							
Websphere ND Per Processor Single/Dual Core - Year 2 and Beyond	Infrastructure				2,635	0							
SSL Certificate	Infrastructure				845	0							
Internet Access	Infrastructure				180	0							
Imperva Web Application Firewall (External Web Applications Only)	Infrastructure		ANN		500	0							
App Code Directories on Consolidated IIS Server (Virtual)	Infrastructure		ANN		415	0							
Database (5 GB) on Consolidated SQL Instance Server	Infrastructure		ANN		930	0							
Database Instance (125 GB DB) on Consolidated SQL Server	Infrastructure		ANN		2,395	0							
Database SQL Maint Server	Infrastructure		ANN		834	0							
Database SQL Server Physical	Infrastructure		ANN		19,158	0							
DB Maintenance (Annual Cycle $610)	Infrastructure		ANN		610	0							
DB Maintenance (Semi-Annual Cycle $1220)	Infrastructure		ANN		1,220	0							
DB Maintenance (Semi-Annual Cycle $2440)	Infrastructure		ANN		2,440	0							
Dedicated Virtual Server	Infrastructure		ANN		4,150	0							
DB Instance Setup	Infrastructure				976	0							
DBA MS SQL Database Creation on Exisitng Instance	Infrastructure				366	0							
Extra Small - 2 Core 8GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $601 On Premise Physical Server = N/A	Infrastructure		ANN			0							

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Cost Description	Project Cost Category	Budget Category/Funding Source	Unit Desc	Units	Rate per Unit	Total Cost	Annual Multiplier	Affects Project ROI? Y1	Y2	Y3	Y4	Y5	Y6
Small - 4 Core 16GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $951 On Premise Physical Server = $9,288	Infrastructure		ANN			0							
Medium - 8 Core 32GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $1,702 On Premise Physical Server = $9,751	Infrastructure		ANN			0							
Large - 16 Core 64GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $3,167 On Premise Physical Server = $10,446	Infrastructure		ANN			0							
Extra Large - 40 Core 160GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $7,564 On Premise Physical Server = $12,906	Infrastructure		ANN			0							
Project Staff Training	Training					0							
User Training	Training					0							

Oakland County GIS Enterprise Program

Return on Investment Analysis

Cost Detail

Cost Description	Project Cost Category	Potential Cost Extensions					
		Y1	Y2	Y3	Y4	Y5	Y6
IT Hours - New Development	Development Svcs	594,660.00	606,553.20				
IT Hours - System Maintenance	Development Svcs	8,250.00	8,415.00	8,583.30	8,754.97	8,930.07	9,108.67
IT Hours - Customer Support	Development Svcs	16,500.00	16,830.00	17,166.60	17,509.93	17,860.13	18,217.33
IT Hours - Planned Maintenance	Development Svcs	8,250.00	8,415.00	8,583.30	8,754.97	8,930.07	9,108.67
User Hours - New Development	Development Svcs						
User Hours - PTNE/OT	Development Svcs						
Contractor Professional Services	Development Svcs						
PC System - Acquisition	Hardware						
PC System - Maintenance	Hardware						
Notebook - Acquisition	Hardware						
Notebook - Maintenance	Hardware						
Tablet Notebook - Acquisition	Hardware						
Tablet Notebook - Maintenance	Hardware						
Laserprinter - Acquisition	Hardware						
Laserprinter - Maintenance	Hardware						
Image Workstations - Acquisition	Hardware						
Image Workstations - Maintenance	Hardware						
PC Maintenance User Owned	Hardware						
Printer Maintenance User Owned	Hardware						
File Space (100GB)	Hardware						
Internet Bandwidth per MB	Hardware						
Package Software - Acquisition	Software						
Package Software - Maintenance	Software						
Business Objects Access	Software						
Term Emulation SFTW-Acquisition	Software						
Term Emulation SFTW-Maintenance	Software						
Server - Acquisition/Upgrade	Infrastructure						
Server - Maintenance	Infrastructure						
Server Sftwre - Acquisition/Upgrade	Infrastructure						
Server Sftwre - Maintenance	Infrastructure						
Server Rack Mount	Infrastructure						
Oracle Enterprise Per Processor - Includes Year 1 Maintenance	Infrastructure						
Oracle Enterprise Per Processor - Year 2 and Beyond	Infrastructure						

Oakland County GIS Enterprise Program

Return on Investment Analysis

Cost Detail

Cost Description	Project Cost Category	Potential Cost Extensions					
		Y1	Y2	Y3	Y4	Y5	Y6
SQL Server Enterprise - Per Processor (4 cores) - Purchased Sept 2016-Aug 2017 - Includes Maintenance thru Aug 2019	Infrastructure						
SQL Server Enterprise - Per Processor (4 cores) - Purchased Sept 2017-Aug 2018 - Includes Maintenance thru Aug 2019	Infrastructure						
SQL Server Enterprise - Per Processor (4 cores) - Purchased Sept 2018-Aug 2019 - Includes Maintenance thru Aug 2019	Infrastructure						
SQL Server Enterprise - Maintenance, Per Processor (4 cores) - Sept 2019 and Beyond	Infrastructure						
SQL Server Standard - Per Processor (4 cores) - Purchased Sept 2016-Aug 2017 - Includes Maintenance thru Aug 2019	Infrastructure						
SQL Server Standard - Per Processor (4 cores) - Purchased Sept 2017-Aug 2018 - Includes Maintenance thru Aug 2019	Infrastructure						
SQL Server Standard - Per Processor (4 cores) - Purchased Sept 2018-Aug 2019 - Includes Maintenance thru Aug 2019	Infrastructure						
SQL Server - Standard Maintenance, Per Processor (4 cores) - Sept 2019 and Beyond	Infrastructure						
Websphere Basic Per Processor Single/Dual Core - Includes Year 1 Maintenance	Infrastructure						

Oakland County GIS Enterprise Program

Return on Investment Analysis

Cost Detail

Cost Description	Project Cost Category	Potential Cost Extensions					
		Y1	Y2	Y3	Y4	Y5	Y6
Websphere Basic Per Processor Single/Dual Core - Year 2 and Beyond	Infrastructure						
Websphere ND Per Processor Single/Dual Core - Includes Year 1 Maintenance	Infrastructure						
Websphere ND Per Processor Single/Dual Core - Year 2 and Beyond	Infrastructure						
SSL Certificate	Infrastructure						
Internet Access	Infrastructure						
Imperva Web Application Firewall (External Web Applications Only)	Infrastructure						
App Code Directories on Consolidated IIS Server (Virtual)	Infrastructure						
Database (5 GB) on Consolidated SQL Instance Server	Infrastructure						
Database Instance (125 GB DB) on Consolidated SQL Server	Infrastructure						
Database SQL Maint Server	Infrastructure						
Database SQL Server Physical	Infrastructure						
DB Maintenance (Annual Cycle $610)	Infrastructure						
DB Maintenance (Semi-Annual Cycle $1220)	Infrastructure						
DB Maintenance (Semi-Annual Cycle $2440)	Infrastructure						
Dedicated Virtual Server	Infrastructure						
DB Instance Setup	Infrastructure						
DBA MS SQL Database Creation on Exisitng Instance	Infrastructure						
Extra Small - 2 Core 8GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $601 On Premise Physical Server = N/A	Infrastructure						

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Cost Detail

Cost Description	Project Cost Category	Potential Cost Extensions					
		Y1	Y2	Y3	Y4	Y5	Y6
Small - 4 Core 16GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $951 On Premise Physical Server = $9,288	Infrastructure						
Medium - 8 Core 32GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $1,702 On Premise Physical Server = $9,751	Infrastructure						
Large - 16 Core 64GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $3,167 On Premise Physical Server = $10,446	Infrastructure						
Extra Large - 40 Core 160GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $7,564 On Premise Physical Server = $12,906	Infrastructure						
Project Staff Training	Training						
User Training	Training						

Oakland County GIS Enterprise Program

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Cost Summary

Cost Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Development Services:							
IT Hours - New Development	594,660	606,553					1,201,213
IT Hours - System Maintenance	8,250	8,415	8,583	8,755	8,930	9,109	52,042
IT Hours - Customer Support	16,500	16,830	17,167	17,510	17,860	18,217	104,084
IT Hours - Planned Maintenance	8,250	8,415	8,583	8,755	8,930	9,109	52,042
User Hours - New Development							
User Hours - PTNE/OT							
Contractor Professional Services							
Development Services Subtotal:	***627,660***	***640,213***	***34,333***	***35,020***	***35,720***	***36,435***	***1,409,381***
Hardware:							
Hardware Subtotal:							
Software:							
Software Subtotal:							
Infrastructure:							
Infrastructure Subtotal							
Training:							
Training Subtotal:							
Other:							
Other Subtotal:							
Costs Total:	***627,660***	***640,213***	***34,333***	***35,020***	***35,720***	***36,435***	***1,409,381***

Oakland County GIS Enterprise Program

Return on Investment Analysis

Assumptions

Date	Assumption Description
29-Jan-18	The average hourly rate for a CAD technician II (including benefits) is $40.06.
29-Jan-18	The average hourly rate for a Business Analyst (including benefits) is $49.77.
29-Jan-18	A GIS CAD Tech II spends approximately 15 minutes every week investigating if data exists. .25 hours x 52 weeks = 13 hours/year. Total annual savings = 13 hours x $40.06/hour = $520.78
29-Jan-18	A Business Analyst spends approximately 15 minutes every week answering inquiries regarding data. .25 hours x 52 weeks = 13 hours/year. Total annual savings = 13 hours x $49.77/hour = $647.01
14-May-18	Assuming 50 hrs/year increase in system maintenace and planned maint, and 100 hrs/year for customer support.