

# Oakland County Department of Information Technology Project Scope and Approach

**Project Name: FM GIS Expansion**

**Project ID: D11147GE**

<b>Leadership Group:</b> Land			
<b>Department:</b> Facilities Management		<b>Division:</b> Facilities Maintenance and Operations	
<b>Project Sponsor:</b> Art Holdsworth	<b>Date Requested:</b> 3/9/20	<b>PM Customer No.</b> 147	
<b>Request Type:</b> <u>New Development</u> <i>Enhancement</i> <i>Customer Support</i> <span style="margin-left: 100px;"><i>Planned System Maintenance or Upgrade</i></span>			
<b>IT Team Name:</b> Infrastructure and GIS		<b>IT Team No:</b> 1	
<b>Project Manager/Leader:</b> Dennis Faustich			
<b>Account Number:</b> 75503	<b>Account Description:</b> FM&O Development	<b>Customer Name:</b>	Facilities Mgmt
<b>Grant Funded?</b>	Yes <u>No</u>	<b>Mandate?</b>	Yes <u>No</u>
		<b>Mandate Source:</b>	

## **Project Goal**

To expand the use of GIS and ArcGIS Online for Facilities Management (FM) so that additional information can be standardized, collected and reported on from a central location.

## **Business Objective**

To improve staff and project reporting to ensure work is correctly allocated, completed on time and within budget. To create a long-term data management strategy to ensure FM data is created and edited with established and documented workflows.

To add additional FM assets into CAMS so that they can be spatially located and tracked in a central location with a standardized data model, providing opportunity for improved reporting and proactive maintenance scheduling.

## **Major Deliverables**

- Document GIS data requirements
- Create Data models for the following layers:
  - Irrigation
    - Valve Controllers
    - Water Mains
  - Snowplow
    - Dumping Zones
    - Routes
  - Ground Cover
    - Shrubs
    - Flower Beds
- Create data collection application(s)

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- Digitize Snowplow dumping zones
- Create a Dashboard for Tree Inventory
- Train staff on new systems and workflows

## **Approach**

- Develop Detailed Project Plan
- Work with customer to create and document data management strategy and workflows
- Work with customer to develop and document data model for new data layers
- Apply Database Schema Changes
- Create new GIS features
- Develop data collection plan for impacted layers
- Provide data collection mechanism (application)
- Create and Configure AGO Apps/Dashboard
- Develop User Acceptance Criteria
- Acquire User Acceptance Sign off
- Conduct Change Control
- Develop User Documentation
- Train users on new system and new workflows
- Release new changes/data into production

## **Research & Analysis**

**Gartner Research Recommendation – No Results Found**

## **Benefits**

***See Return on Investment (ROI) Analysis Document***

## **Impact**

**Number of Users**      20+

**Divisions**              Facilities, Maintenance and Operations

**Leadership Groups**    Land

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**Risk**

**Business Environment**      Low - Little or no impact to existing business processes

**Technical Environment**      Low – Proven and Previously implemented technologies.

**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:

<b><u>Role:</u></b>	<b><u>Name</u></b>	<b><u>Hours per Day</u></b>
Project Sponsor:	Art Holdsworth	As Needed
FM Data/Content Editors	Rob Mabe	As Needed

**Facilities**

- None

**Technical**

- AGO will be used for application creation and data collections

**Funding**

- 50% funded by Facilities, Maintenance and Operations (\$25,000)
- 50% funded via FPE charge code using the General Fund (\$24,500)

**Other**

- None

**Priority**

**Constraints**

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- None

**Exclusions**

- Not at this time

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## PROJECT PHASE AUTHORIZATION

<b>Phase(s):</b>	
<b>Total Estimated Application Services</b>	<b>Hours: 300</b>
<b>Total Estimated Technical Systems</b>	<b>Hours:</b>
<b>Total Estimated CLEMIS</b>	<b>Hours:</b>
<b>Total Estimated Internal Services</b>	<b>Hours:</b>
<b>IT Application Services Division Manager Approval:</b>	<b>Date:</b>
<b>IT Technical Systems Division Manager Approval:</b>	<b>Date:</b>
<b>IT CLEMIS Division Manager Approval:</b>	<b>Date:</b>
<b>IT Internal Services Division Manager Approval:</b>	<b>Date:</b>
<b>IT Management Approval:</b>	
Approved: <span style="margin-left: 150px;">Yes</span> <span style="margin-left: 100px;">No</span>	<b>Date:</b>
Reason:	
<b>Project Sponsor Approval:</b>	
Title:	<b>Date:</b>

## PROJECT SUMMARY

<b>Authorized Development (see above)</b>	<b>Hours: 300</b>
<b>Previously Authorized Development</b>	<b>Hours:</b>
<b>Preliminary Estimated Development for Future Phases</b>	<b>Hours:</b>
<b>Grand Total Estimated Development</b>	<b>Hours: 300      Cost: \$49,500</b>

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**PROJECT COMPLETION AUTHORIZATION**

<b>Customer Acceptance of Product:</b>	
Title:	Date:
<b>Project Office Review:</b>	Date:

FM GIS Expansion - Size Estimate (+/- 10% to 50%)

1	Type	ID	Task Name	Estimated
2				Hours
3	3	000000	PROJECT MANAGEMENT	85
4	Phase	200000	DEFINE BUSINESS REQUIREMENTS	34
5	Phase	300000	DESIGN SYSTEM ARCHITECTURE	11
6	Phase	500000	DEVELOP APPLICATION	124
7	Phase	600000	IMPLEMENTATION PHASE	22
8	Phase	800000	POST IMPLEMENTATION SUPPORT	24
9				300

**Oakland County -- FM CAMS Expansion**  
Return on Investment Analysis

Project Summary

Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
<b>Benefits/Savings:</b>							
Tangible Benefits Subtotal:	0	0	0	0	0	0	0
Cost Avoidance Subtotal:	20,000	20,000	20,000	20,000	20,000	20,000	120,000
<b>Costs:</b>							
Development Services Subtotal:	49,500	8,333	8,416	8,500	8,585	8,671	92,004
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
<b>Annual Statistics:</b>							
Annual Total Savings	20,000	20,000	20,000	20,000	20,000	20,000	120,000
Annual Total Costs	49,500	8,333	8,416	8,500	8,585	8,671	92,004
Annual Return on Investment	(29,500)	11,668	11,584	11,500	11,415	11,329	27,996
Annual Costs/Savings Ratio	247.50%	41.66%	42.08%	42.50%	42.92%	43.35%	
<b>Project Cumulative Statistics:</b>							
Cumulative Total Savings	20,000	40,000	60,000	80,000	100,000	120,000	120,000
Cumulative Total Costs	49,500	57,833	66,248	74,748	83,333	92,004	92,004
Cumulative Return on Investment	(29,500)	(17,833)	(6,248)	5,252	16,667	27,996	27,996
Cumulative Cost/Savings Ratio	247.50%	144.58%	110.41%	93.44%	83.33%	76.67%	76.67%
Year Positive Payback Achieved				Year 4			Year 4
State or Federal Mandate?							
<b>Signatures:</b>							
Benefits Reviewed By Project Sponsor	_____			Date:	_____		
Costs (including IT Resources) Reviewed By Information Technology Project Manager	_____			Date:	_____		

**Oakland County -- FM CAMS Expansion**  
Return on Investment Analysis

Savings Detail

<b>Benefit/Savings Description</b>	<b>Project Savings Category</b>	<b>Budget Category/Funding Source</b>	<b>Unit Desc</b>	<b>Units</b>	<b>Rate per Unit</b>	<b>Total Savings</b>	<b>Annual Multiplier</b>
Staff time spent investigating the locations of underground utilities.	Cost Avoidance			500	40	20,000	1.000
Overall cost to repair damaged underground utilities	Intangible Benefit					0	
Documentation of organic location knowledge assists other FM staff members in maintaining underground assets.	Intangible Benefit					0	
						0	
						0	
						0	
						0	
						0	
						0	
						0	
						0	
						0	
						0	
						0	
						0	

**Oakland County -- FM CAMS Expansion**  
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Savings Detail

Benefit/Savings Description	Project Savings Category	Affects Project ROI?						Potential Savings Extensions					
		Y1	Y2	Y3	Y4	Y5	Y6	Y1	Y2	Y3	Y4	Y5	Y6
Staff time spent investigating the locations of underground utilities.	Cost Avoidance	x	x	x	x	x	x	20,000.00	20,000.00	20,000.00	20,000.00	20,000.00	20,000.00
Overall cost to repair damaged underground utilities	Intangible Benefit												
Documentation of organic location knowledge assists other FM staff members in maintaining underground assets.	Intangible Benefit												

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Savings Summary

Benefit/Savings Description		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
<b>Tangible Benefit:</b>								
	<i>Tangible Benefits Subtotal:</i>							
<b>Cost Avoidance:</b>								
	Staff time spent investigating the locations of underground utilities.	20,000	20,000	20,000	20,000	20,000	20,000	120,000
	<i>Cost Avoidance Subtotal:</i>	<b>20,000</b>	<b>20,000</b>	<b>20,000</b>	<b>20,000</b>	<b>20,000</b>	<b>20,000</b>	<b>120,000</b>
<b>Intangible Benefit:</b>								
	Documentation of organic location knowledge assists other FM staff members in maintaining underground assets.							
	Overall cost to repair damaged underground utilities							
	<b>Savings Total:</b>	<b>20,000</b>	<b>20,000</b>	<b>20,000</b>	<b>20,000</b>	<b>20,000</b>	<b>20,000</b>	<b>120,000</b>

**Oakland County -- FM CAMS Expansion**  
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 Development Hours	Development Svcs			300	165	49,500	1.010	x						
IT Hours - System Maintenance	Development Svcs			10	165	1,650	1.010		x	x	x	x	x	x
IT Hours - Customer Support	Development Svcs			40	165	6,600	1.010		x	x	x	x	x	x
IT Hours - Planned Maintenance	Development Svcs				165	0	1.010		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 -- FM CAMS Expansion**  
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 2019 - 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								

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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 Existing 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												

**Oakland County -- FM CAMS Expansion**  
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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		
Small - 4 Core 16GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = \$951 On Premise Physical Server = \$9,288	Infrastructure		ANN												
Medium - 8 Core 32GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = \$1,702 On Premise Physical Server = \$9,751	Infrastructure		ANN												
Large - 16 Core 64GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = \$3,167 On Premise Physical Server = \$10,446	Infrastructure		ANN												
Extra Large - 40 Core 160GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = \$7,564 On Premise Physical Server = \$12,906	Infrastructure		ANN												
Project Staff Training	Training														
User Training	Training														

**Oakland County -- FM CAMS Expansion**

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Cost Detail

Cost Description	Project Cost Category	Potential Cost Extensions					
		Y1	Y2	Y3	Y4	Y5	Y6
IT Development Hours	Development Svcs	49,500.00					
IT Hours - System Maintenance	Development Svcs		1,666.50	1,683.17	1,700.00	1,717.00	1,734.17
IT Hours - Customer Support	Development Svcs		6,666.00	6,732.66	6,799.99	6,867.99	6,936.67
IT Hours - Planned Maintenance	Development Svcs		0.00	0.00	0.00	0.00	0.00
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 -- FM CAMS Expansion**  
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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 -- FM CAMS Expansion**  
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 Existing Instance	Infrastructure						
Extra Small - 2 Core 8GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = \$601 On Premise Physical Server = N/A	Infrastructure						

**Oakland County -- FM CAMS Expansion**  
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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 -- FM CAMS Expansion**  
Return on Investment Analysis

Cost Summary

Cost Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
<b>Development Services:</b>							
IT Development Hours	49,500						49,500
IT Hours - System Maintenance		1,667	1,683	1,700	1,717	1,734	8,501
IT Hours - Customer Support		6,666	6,733	6,800	6,868	6,937	34,003
IT Hours - Planned Maintenance		0	0	0	0	0	
User Hours - New Development							
User Hours - PTNE/OT							
Contractor Professional Services							
<i>Development Services Subtotal:</i>	<b>49,500</b>	<b>8,333</b>	<b>8,416</b>	<b>8,500</b>	<b>8,585</b>	<b>8,671</b>	<b>92,004</b>
<b>Hardware:</b>							
<i>Hardware Subtotal:</i>							
<b>Software:</b>							
<i>Software Subtotal:</i>							
<b>Infrastructure:</b>							
<i>Infrastructure Subtotal</i>							
<b>Training:</b>							
<i>Training Subtotal:</i>							
<b>Other:</b>							
<i>Other Subtotal:</i>							
<b>Costs Total:</b>	<b>49,500</b>	<b>8,333</b>	<b>8,416</b>	<b>8,500</b>	<b>8,585</b>	<b>8,671</b>	<b>92,004</b>

