Oakland County
Department of Information Technology
Project Scope and Approach

Project Name: FMO Replace Building Management System   **Project ID: D19147BM**

Leadership Group: Land	
Department: Facilities Management	**Division: Facilities Maintenance and Operations**
Project Sponsor: Art Holdsworth/Stephen Foster	**Date Requested: 2/6/18**	**PM Customer No. 147**

Request Type: **X _New Development_**   ***Enhancement***   ***Customer Support***
Planned System Maintenance or Upgrade

IT Team Name: Infrastructure and GIS	**IT Team No: 1**

Project Manager/Leader: Mike Dagle

Account Number:	75503	Account Description:	FM&O Development	Customer Name:	Facilities Mgmt

Grant Funded? Yes	**X No**	**Mandate?** Yes **X No**	
		Mandate Source:	

Project Goal

Continue to implement a new Facilities Management Building Management System (BMS) for HVAC so that the current system can be modernized.

Business Objective

Improve productivity and overall response time by monitoring various HVAC alarms and systems
with a new secure and high availability Building Maintenance System for all County buildings.

Major Deliverables
- Detailed Project Plan
- Technical Design & Architecture Documentation
- Implementation Plan
- Implement Phases 2 & 3 of BMS implementations
- Implement Smart Metering solution/integration with BMS
- Service Level Agreement
- Disaster Recovery Toolkit
- Service Center Knowledge Documents

Project Name: FMO Replace Building Management System   **Project ID: D19147BM**

Approach
- Develop Detailed Project Plan with Integrator
- Review current business process and conduct needs assessment with customer, ensuring current manual processes are refined and automated
- Determine and document system architecture and diagram
- Gather information regarding best practices for a secure BMS network
- Assess User Hardware and Software Requirements
- Order hardware and software, if needed
- Work with software vendor to determine implementation
- Acquire User Acceptance Sign off
- Conduct Change Control
- Develop User Documentation, SLA, Disaster Recovery Toolkit, Service
- Center Knowledge Documents
- Release new system into production
- Retire existing Wonderware system

Research & Analysis

Gartner Research Recommendation - Previous research identified that the industry standard was to implement an open Tridium based system

Benefits

See Return on Investment (ROI) Analysis Document

Impact

Number of Users   60

Divisions   Facilities Management - Facilities Maintenance

Leadership Groups   Land

Oakland County
Department of Information Technology
Project Scope and Approach

Project Name: FMO Replace Building Management System   **Project ID: D19147BM**

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:	Art Holdsworth/Stephen Foster	As Needed

Facilities
- All JACE locations will be within 300' of a network switch
- Power is already available for each JACE

Technical
- There are available ports on each network switch, in every building
- Building locations within scope of this project will be on Oakland County network/fiber

Funding
- Facilities Management

Other
- None

Priority
- TBD

Project Name: FMO Replace Building Management System   **Project ID: D19147BM**

Constraints

- None

Exclusions

- None

Oakland County
Department of Information Technology
Project Scope and Approach

Project Name: FMO Replace Building Management System   **Project ID: D19147BM**

PROJECT PHASE AUTHORIZATION

Phase(s): **All**		
Total Estimated Application Services	**Hours:** 688	
Total Estimated Technical Systems	**Hours:** 256	
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: Art Holdsworth		
Title:		Date:

PROJECT SUMMARY

Authorized Development (see above)	**Hours:** 944	
Preliminary Estimated Development for Future Phases	**Hours:**	
Grand Total Estimated Development	**Hours:** 944	**Cost:** $ 155,760

Oakland County
Department of Information Technology
Project Scope and Approach

Project Name: FMO Replace Building Management System   **Project ID: D19147BM**

PROJECT COMPLETION AUTHORIZATION

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

FMO Replacement Building Management - Size Estimate (+/- 10% to 50%)

	Type	ID	Task Name	Estimated	Estimate Notes
1				Hours	
2					
3	**3**	**000000**	**PROJECT MANAGEMENT**	**390**	
4	Phase	200000	DEFINE BUSINESS REQUIREMENTS	12	
5	Phase	300000	DESIGN SYSTEM ARCHITECTURE	40	
6	Phase	500000	DEVELOP APPLICATION	0	
7	Phase	600000	IMPLEMENTATION PHASE	424	
8	Phase	080000	POST IMPLEMENTATION SUPPORT	78	
9	Task		Prep for UAT		
10				944	

FMO Replace Building Management System

Return on Investment Analysis

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:	203,537	31,147	32,082	33,044	218,027	35,056	552,893
Costs:							
Development Services Subtotal:	77,880	77,880	0	0	0	0	155,760
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	203,537	31,147	32,082	33,044	218,027	35,056	552,893
Annual Total Costs	77,880	77,880	0	0	0	0	155,760
Annual Return on Investment	125,657	(46,733)	32,082	33,044	218,027	35,056	397,133
Annual Costs/Savings Ratio	38.26%	250.04%	0.00%	0.00%	0.00%	0.00%	
Project Cumulative Statistics:							
Cumulative Total Savings	203,537	234,684	266,765	299,809	517,837	552,893	552,893
Cumulative Total Costs	77,880	155,760	155,760	155,760	155,760	155,760	155,760
Cumulative Return on Investment	125,657	78,924	111,005	144,049	362,077	397,133	397,133
Cumulative Cost/Savings Ratio	38.26%	66.37%	58.39%	51.95%	30.08%	28.17%	28.17%
Year Positive Payback Achieved	Year 1						Year 1
State or Federal Mandate?							
Signatures:							
Benefits Reviewed By Project Sponsor				Date:			
Costs (including IT Resources) Reviewed By Information Technology Project Manager				Date:			

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
PCs with old software (XP) can be eliminated.	Intangible Benefit					0	
Upgrade costs for Wonderware licensing	Cost Avoidance		EA	1	63,827	63,827	1.020
System monitoring and adjustment can potentially be done from any location.	Intangible Benefit						
All tech support would no longer be the responsibility of a single person at a vendor.	Intangible Benefit					0	
Kors support would no longer be needed.	Cost Avoidance		ANN	1	30,240	30,240	1.030
Provide better customer service with improved response times to employees and citizens on Oakland County properties.	Intangible Benefit					0	
PCI cards on workstations	Cost Avoidance		EA	41	800	32,800	
New PCs to host Wonderware application	Cost Avoidance		EA	41	814	33,374	
IT setup and deployment costs for new PCs	Cost Avoidance		EA	41	552	22,632	1.030
Wonderware support services to upgrade software.	Cost Avoidance		EA	41	504	20,664	1.030
Reporting abilities would help FM determine problems in buildings (e.g., if temperature is continually an issue or very different from a similar building), which will assist with building improvement planning (windows, insulation, etc.) and/or demolition planning.	Intangible Benefit					0	
						0	
						0	

FMO Replace Building Management System

Return on Investment Analysis

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
PCs with old software (XP) can be eliminated.	Intangible Benefit												
Upgrade costs for Wonderware licensing	Cost Avoidance	x				x		63,826.50				69,087.86	
System monitoring and adjustment can potentially be done from any location.	Intangible Benefit												
All tech support would no longer be the responsibility of a single person at a vendor.	Intangible Benefit												
Kors support would no longer be needed.	Cost Avoidance	x	x	x	x	x	x	30,240.00	31,147.20	32,081.62	33,044.06	34,035.39	35,056.45
Provide better customer service with improved response times to employees and citizens on Oakland County properties.	Intangible Benefit												
PCI cards on workstations	Cost Avoidance	x				x		32,800.00				32,800.00	
New PCs to host Wonderware application	Cost Avoidance	x				x		33,374.00				33,374.00	
IT setup and deployment costs for new PCs	Cost Avoidance	x				x		22,632.00				25,472.52	
Wonderware support services to upgrade software.	Cost Avoidance	x				x		20,664.00				23,257.51	
Reporting abilities would help FM determine problems in buildings (e.g., if temperature is continually an issue or very different from a similar building), which will assist with building improvement planning (windows, insulation, etc.) and/or demolition planning.	Intangible Benefit												

FMO Replace Building Management System

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:							
Upgrade costs for Wonderware licensing	63,827				69,088		132,914
Kors support would no longer be needed.	30,240	31,147	32,082	33,044	34,035	35,056	195,605
PCI cards on workstations	32,800				32,800		65,600
New PCs to host Wonderware application	33,374				33,374		66,748
IT setup and deployment costs for new PCs	22,632				25,473		48,105
Wonderware support services to upgrade software.	20,664				23,258		43,922
Cost Avoidance Subtotal:	*203,537*	*31,147*	*32,082*	*33,044*	*218,027*	*35,056*	*552,893*
Intangible Benefit:							
PCs with old software (XP) can be eliminated.							
System monitoring and adjustment can potentially be done from any location.							
All tech support would no longer be the responsibility of a single person at a vendor.							
Provide better customer service with improved response times to employees and citizens on Oakland County properties.							
Reporting abilities would help FM determine problems in buildings (e.g., if temperature is continually an issue or very different from a similar building), which will assist with building improvement planning (windows, insulation, etc.) and/or demolition planning.							
Savings Total:	*203,537*	*31,147*	*32,082*	*33,044*	*218,027*	*35,056*	*552,893*

FMO Replace Building Management System

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		HR	944	165	77,880		x	x				
IT Hours - System Maintenance	Development Svcs		HR		165	0	1.030		x	x	x	x	x
IT Hours - Customer Support	Development Svcs		HR		165	0	1.030		x	x	x	x	x
IT Hours - Planned Maintenance	Development Svcs				165	0							
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		EA		1,223	0		x					
Notebook - Maintenance	Hardware		ANN		2,372	0		x					
Tablet Notebook - Acquisition	Hardware		ANN		2,012	0		x					
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							

FMO Replace Building Management System

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							

FMO Replace Building Management System

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							

FMO Replace Building Management System

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
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							

FMO Replace Building Management System

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	77,880.00	77,880.00				
IT Hours - System Maintenance	Development Svcs		0.00	0.00	0.00	0.00	0.00
IT Hours - Customer Support	Development Svcs		0.00	0.00	0.00	0.00	0.00
IT Hours - Planned Maintenance	Development Svcs						
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	0.00					
Notebook - Maintenance	Hardware	0.00					
Tablet Notebook - Acquisition	Hardware	0.00					
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						

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						

FMO Replace Building Management System

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						

FMO Replace Building Management System

Return on Investment Analysis

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						

FMO Replace Building Management System

Return on Investment Analysis

Cost Summary

Cost Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Development Services:							
IT Hours - New Development	77,880	77,880					155,760
IT Hours - System Maintenance		0	0	0	0	0	
IT Hours - Customer Support		0	0	0	0	0	
IT Hours - Planned Maintenance							
User Hours - New Development							
User Hours - PTNE/OT							
Contractor Professional Services							
Development Services Subtotal:	*77,880*	*77,880*					*155,760*
Hardware:							
Notebook - Acquisition	0						
Notebook - Maintenance	0						
Tablet Notebook - Acquisition	0						
Hardware Subtotal:							
Software:							
Software Subtotal:							
Infrastructure:							
Infrastructure Subtotal							
Training:							
Training Subtotal:							
Other:							
Other Subtotal:							
Costs Total:	*77,880*	*77,880*					*155,760*

FMO Replace Building Management System
Return on Investment Analysis

Assumptions

Date	Assumption Description
21-Feb-18	Kors support person charges $84/hour. He spends an average of 30 hours/month (360/year) supporting Wonderware, for an annual total of $360*$84 = $30,240 annually. Assuming the hourly rate will increase by 3% annually.
21-Feb-18	41 PCs need Wonderware installed on them.
21-Feb-18	Cost of Wonderware upgrade to existing licenses was supplied by Wonderware to FM on 3/27/14 (total of $62,575). This was special pricing, so assuming the cost now has increased by 2%, for a total of $63,826.50.
21-Feb-18	Assuming new PCs would be needed to support the latest version of Wonderware.
21-Feb-18	Assuming a Kors support person would spend 6 hours on each PC to upgrade (6hrs @ $84/hr x 41 PCs, for a cost of $20,664 per upgrade)
21-Feb-18	Assuming it would take Workstation Services 4 hrs/PC to Install, configure and deliver/deploy each new PC. The rate for Workstation Services is $138/hr. ($138/hr * 4 hrs * 41 PCs = $22,632 per upgrade)
21-Feb-18	Upgrades of Wonderware would need to take place every 5th year to stay somewhat current.