

Port Asset Management

Presented By: Scott Cattran -Woolpert

November 18th, 2009

Agenda

- Woolpert introduction
- Define Asset Management
- Key Elements of an Asset Management Program
 - Defining a Program
 - Inventory and Condition Assessment
 - Improving Situational Awareness & Decision Making
- Selecting an Asset Management System
- Funding an Asset Management Program
- Open Discussion



Woolpert, Inc.

- 98 year old firm since 1911
- 800+ professionals
- Architectural, Engineering and Technology Firm
 - Enterprise Information Management
 - Surveying/GPS
 - Photogrammetry/Remote Sensing
 - Water Management
 - Facilities Design
 - Planning and Design
 - Site/Civil Design





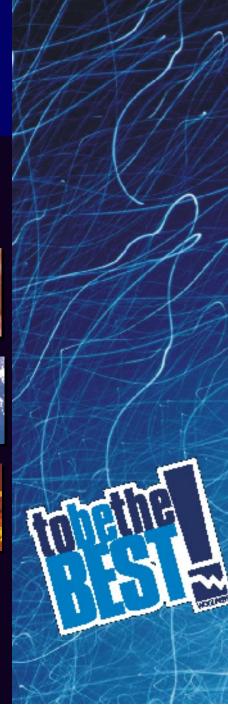












Woolpert Clients & Markets

Airports, Ports, & DOT's

- Phoenix Sky Harbor, AZ
- Port of Miami, FL
- San Diego Regional County Airport Authority, AZ
- South Carolina State Ports Authority, SC
- Miami International, FL
- Cook County Highway, IL
- McGee Tyson, TN
- Indianapolis, IN
- Inchon International Airport, Korea

Public Safety & DOD

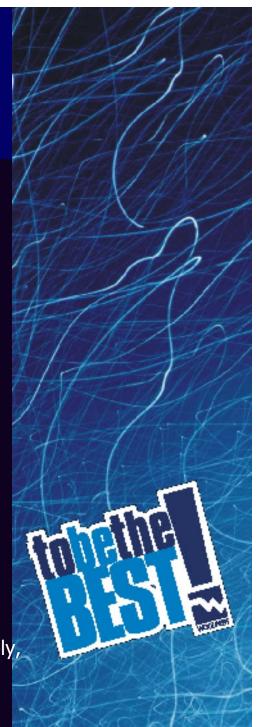
- Honolulu Fire Department, HI
- Federal Protective Services, CO
- Johnson County AIMS, KS
- Vandenberg AFB, CA
- Wright Pat AFB, OH
- McDill AFB, FL
- Kirtland AFB, NM

Cities and Counties

- Los Angeles County, CA
- City of Phoenix, AZ
- City of Indianapolis/Marion County, IN
- City of Long Beach, CA
- City of Cincinnati, OH
- City of Columbia, SC
- City of Charlotte, NC

Water Utilities

- Orange County Sanitation District, <u>CA</u>
- Denver Metro Wastewater Reclamation District, CO
- Miami-Dade Water and Sewer Department, FL
- Honolulu Board of Water Supply HI
- Newport News Public Works Department, VA



Defining Asset Management

- Asset management means different things to different people.
 - Asset management is
 - A program
 - Accurate inventory of Assets
 - Geographic Information Systems
 - Facility management
 - CMMS/EAMS Systems
 - Process that directs O&M
 - CIP planning
 - Improved situational awareness
 - Regulatory Compliance



An Effective Asset Management Program should help answer:

- "Where are my...?"
- "How do I gain access to this facility?"
- "Who is the tenant of this facility and how do I contact them?"
- "What hazardous materials exist at this facility?"
- "How would I manage and coordinate a spill event?"
- "Where should we be spending dollars for facilities management?"
- "How do we extend the life of our assets/ facilities/ infrastructure?"



Drivers for an Asset Management Program

- Security
 - Situational Awareness and Port Security
 - Emergency Response
 - Real time vehicle location
- Save Money
 - Extend the life of current assets
 - Efficient Work Scheduling
 - Effective Property and Lease Management
- Green/ Environmental management and compliance
 - Air and water quality
 - Noise Pollution
 - Species Transport



Defining Asset Management

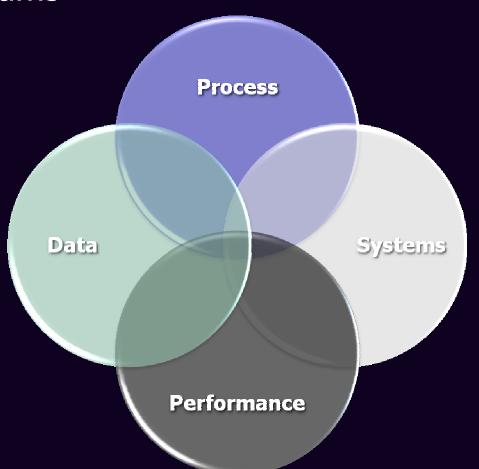
- Asset management is a program and a system
 - The Asset Management Program is set of processes and practices focused on maximizing levels of service and minimizing total cost of ownership
 - The Asset Management System provides information for the acquisition, maintenance, operation, rehabilitation and disposal of assets in support of organizational objectives

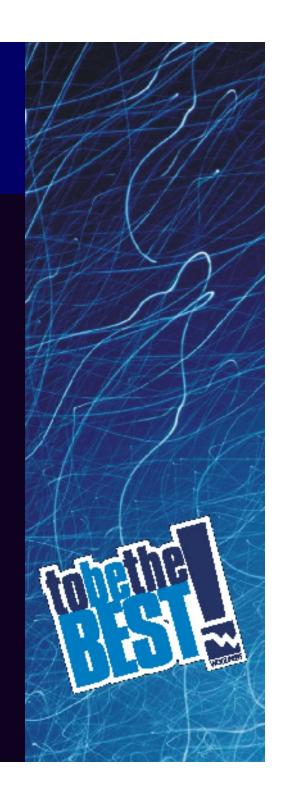


Successful EAM Program Commonalities

All Encompassing Programs

Asset Management is a convergence of programs





Asset Management Program - Highlights

- Define asset management objectives and link to organizational goals
- Map Workflows
- Perform Gap Analysis
- Define Minimum and Optimal Levels of Service
- Define Key Performance Indicators
- Identify data, systems, people to support the program
- Quantify the savings of extending the life of assets vs. run to failure



Enterprise Asset/Maintenance Management Program Defined Building Blocks

Enterprise Asset/Maintenance Management

Continuous Improvement

Total
Productive
Maintenance

Financial Optimization

Predictive Maintenance

Operations Involvement

Reliability
Centered
Maintenance

Stores & Procurement

Work Flow Management

CMMS

Training

Preventive Maintenance



Adopting Asset Management

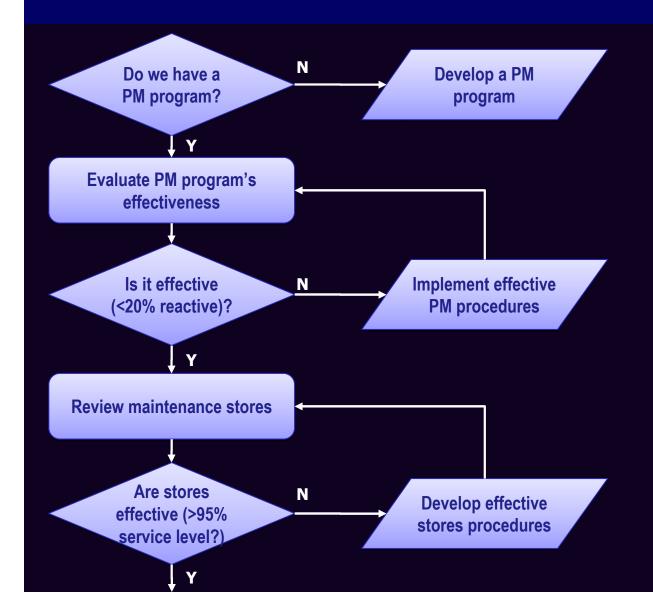
 Conduct a gap analysis to establish the basic roadmap for organizational and system improvements

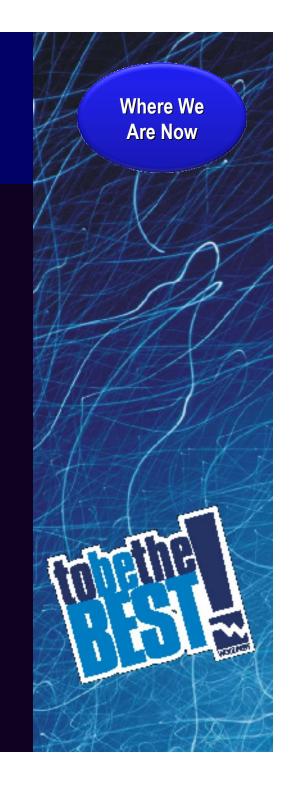


Ultimate

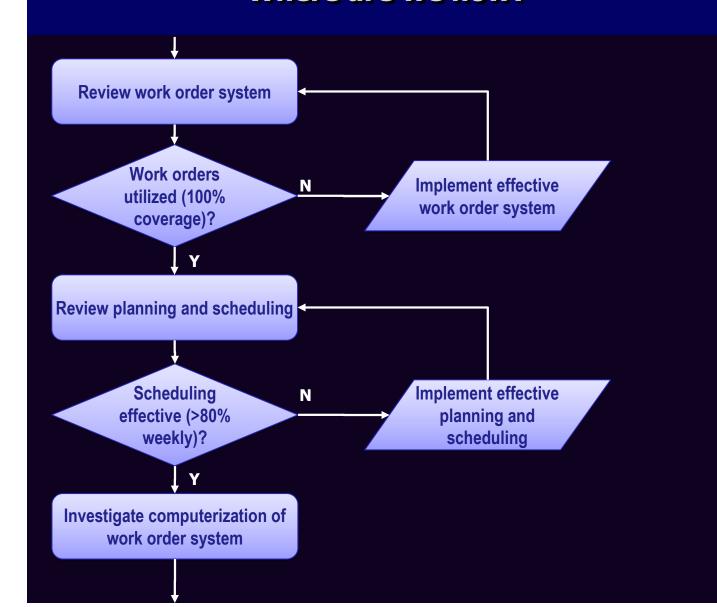


Asset/Maintenance Mgmt Program Decision Tree Where are we now?





Asset/Maintenance Mgmt Program Decision Tree Where are we now?





Comprehensive Inventory

- Effective Asset Management requires a comprehensive understanding of what you own
 - Asset type
 - Size and capacity
 - Construction materials
 - Location
 - Installation date
 - Original cost
 - Condition assessment
 - Performance assessment
 - Original service life
 - Estimate of remaining useful life

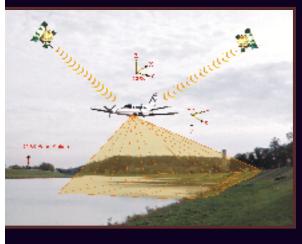


Asset Location and Condition Assessment



Port infrastructure assets:

- Utilities
- Containers
- Buildings
- Storage areas
- Roads
- Security cameras
- Channels
- Wharfs



- Data
 - Data assessment
 - Data collection GPS, GIS, Aerial Lidar, Ground base Lidar
 - Data Migration



Case Study: Phoenix Sky Harbor International Airport

- Owned by the City of Phoenix
- Ninth busiest US Airport
- 3.5 million square feet in 3 terminals



Phoenix Sky Harbor International Airport



Data – Exterior and Utilities

- Survey
 - Outside Utilities water, wastewater, gas, communications, etc.
- Photogrammetry
 - Aerial Photography
 - Digital Orthophotos
- Planning Design
 - HVAC
 - Plumbing Mechanical Electrical
 - Doors, Windows, Signs, Emergency Services, etc.

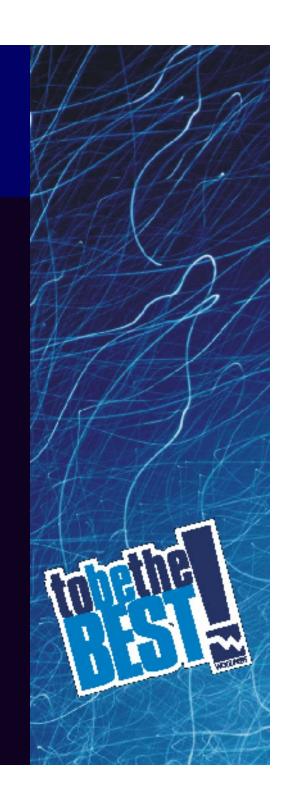


Category 1	Category 2	Category 3
Building Boundary	HVAC Equipment	Lights - General
Floor Level Boundary	Plumbing Equipment	Power Distribution - Raceways
Space Classification Boundary	Baggage Carousel	HVAC Ductwork
Lease Boundary	Baggage/Cargo Conveyors	HVAC Ductwork Accessories
Cost Center Boundary	Baggage Cart Racks	HVAC Piping System
Ceiling Type Boundary	Express Pay Machines	HVAC Pipe Accessories
Floor Type Boundary	Parking Ticket Machines	Plumbing Piping System
Roof Area Boundary	Parking Garage Automatic Gates	Plumbing Pipe Accessories
Exterior Walls	Pull Stations	Fire Protection Piping System
Interior Walls	Smoke Detectors	Fire Protection Pipe Accessories
Windows	Roof Drains	Furniture
Columns	Floor Drains	Wall - Movable Partitions
Column Grid	Cleanouts	
Stairs	Grease Traps	
Elevators	Water Closet	
Escalators	Urinal	
Moving Walkways	Lavatory	
Secure Area Boundary	Sink	
Fire Alarm Panel Boundary	Visual/Audible Alarms	
Fire Suppression Zone Boundary	Magnetic Hold-Open Devices	
Exterior Doors	FIDS Monitors	
Interior Doors	Paging System Monitors	
Interior Signage	Sprinkler Heads	

			2
Exit Lights	Speakers		
Back Flow Preventor	CCTV Monitor		
Fire Extinguishers	Paging System Microphones		
Fire Protection Equipment	Electrical Sub-Panels		1
Fire Alarm Panels	Service Entrance Section		1
CCTV Camera	Motor Control		
Access Control Panel	Power Distr - Switch Gear		1
Access Pad	Transformers		
Emergency Duress Unit	Generators	Legend	
AEDs	Trash Containers	Blue Text—Accuracy of ± 2'-0"	1.
Covert Alarm Button	Display Cases	Red Text—Accuracy of ± 0'-3"	
	Ceiling Grid		
			1

Exterior Data

- Large Features Best Collected Photogrammetrically
 - Building Footprints, Roof Prints
 - Roads & Parking Lots
 - Airfield Features & Markings
 - Light/Utility Poles
 - Manholes



Exterior Data

- GPS, Laser Scanning or Conventional Surveys are needed to collect Exterior Features not visible in the aerial imagery.
 - Fuel Shut-offs
 - Fire Extinguishers
 - Wall mounted signs



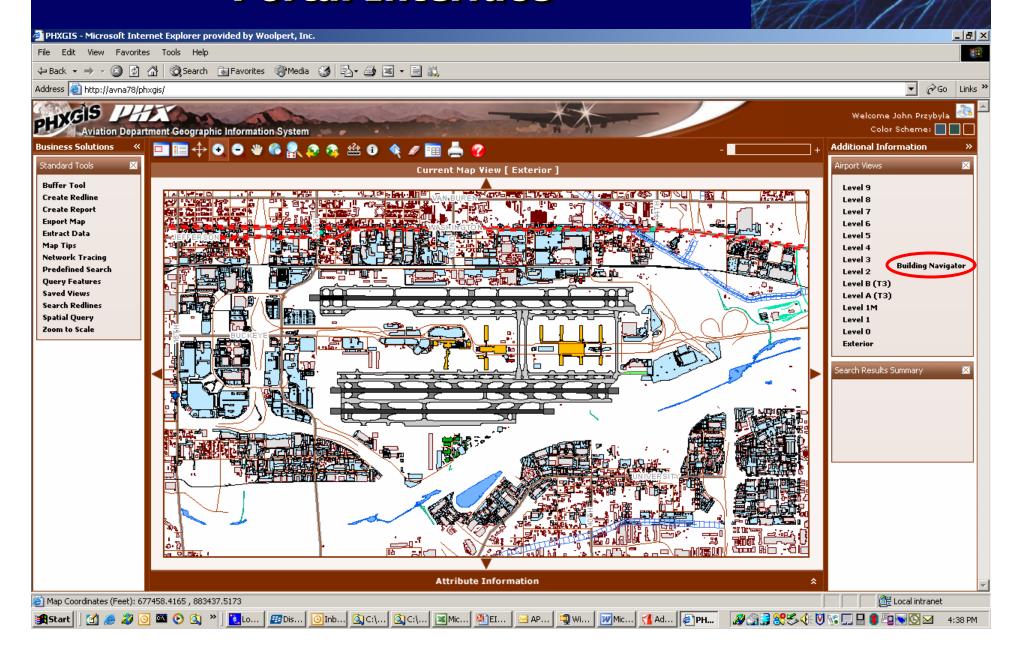


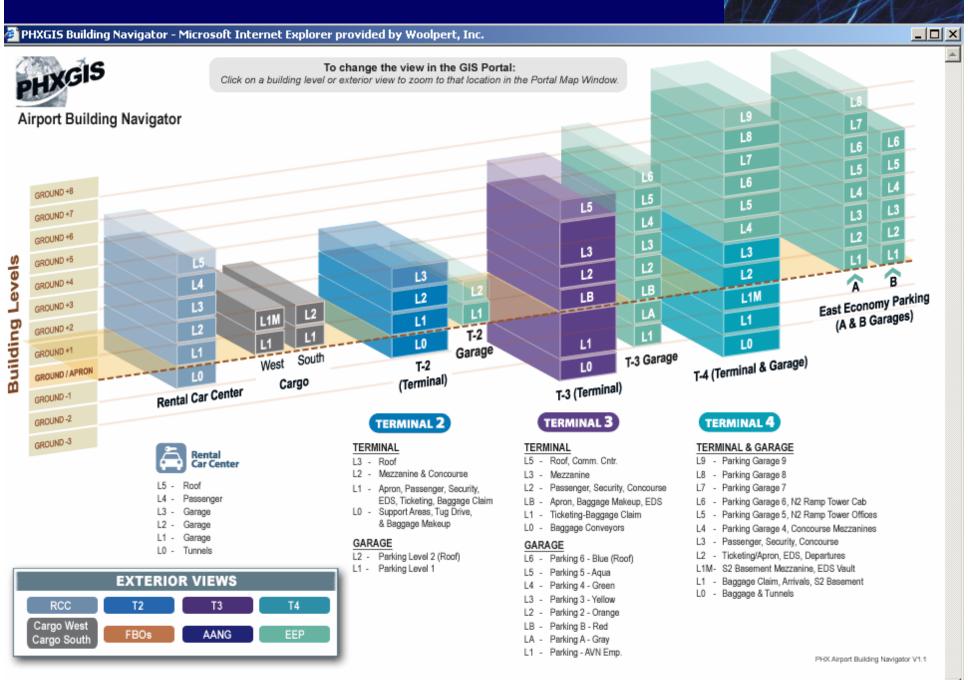
Laser Scanning

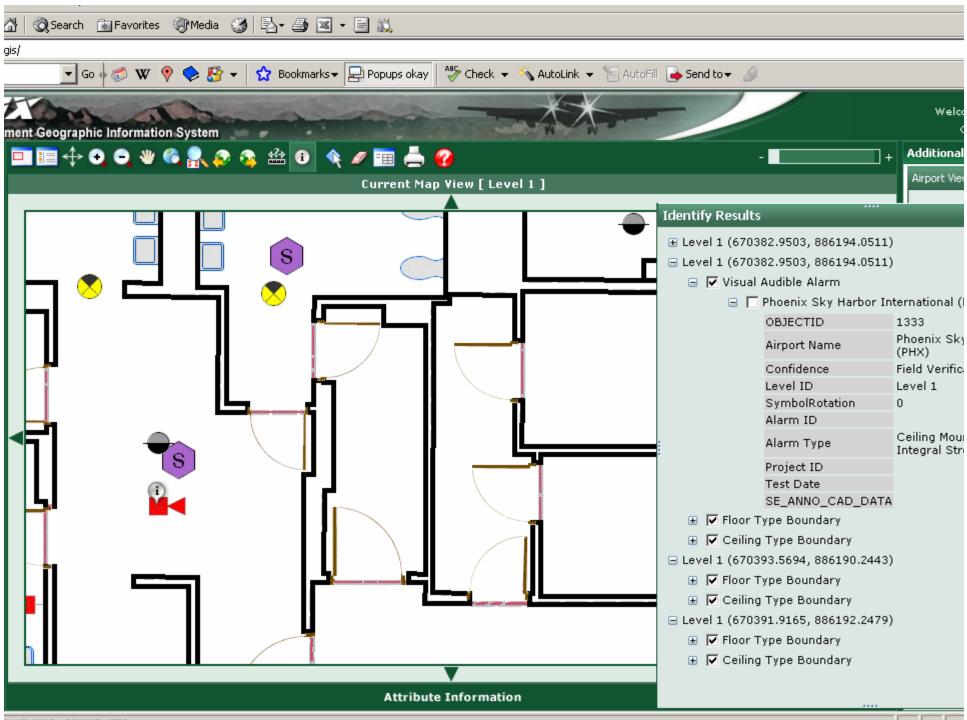
- Interior Laser Scanning
- Three-dimensional cloud of points from which features can be extracted.
- Photographs can be draped over the points for visualizations



Portal Interface







Port Of Miami, FL

- Reviewed all existing utility Data
- Prioritized areas for Subsurface Utility Engineering
- Used geophysical prospecting techniques

 electromagnetic and radio frequency
 technologies to denote utility lines
- Used above ground SV to capture features





Air Force Mobility Command

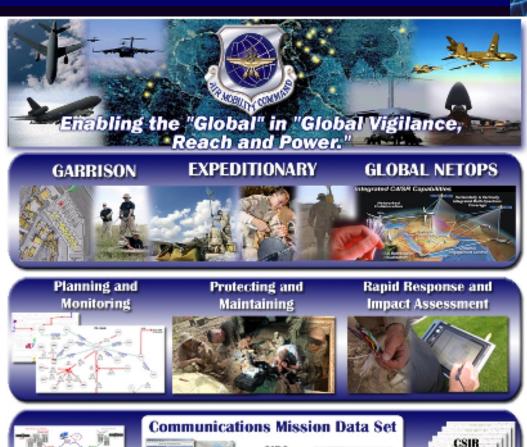
Design Drawings

AMC Mission Fulfillment









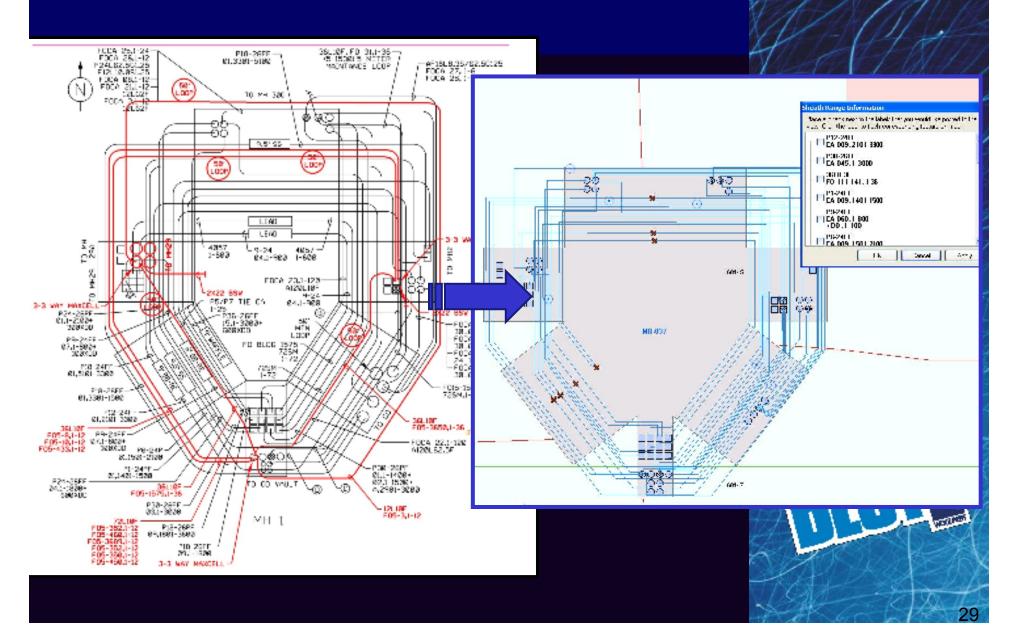
Visualization

GeoSpatial

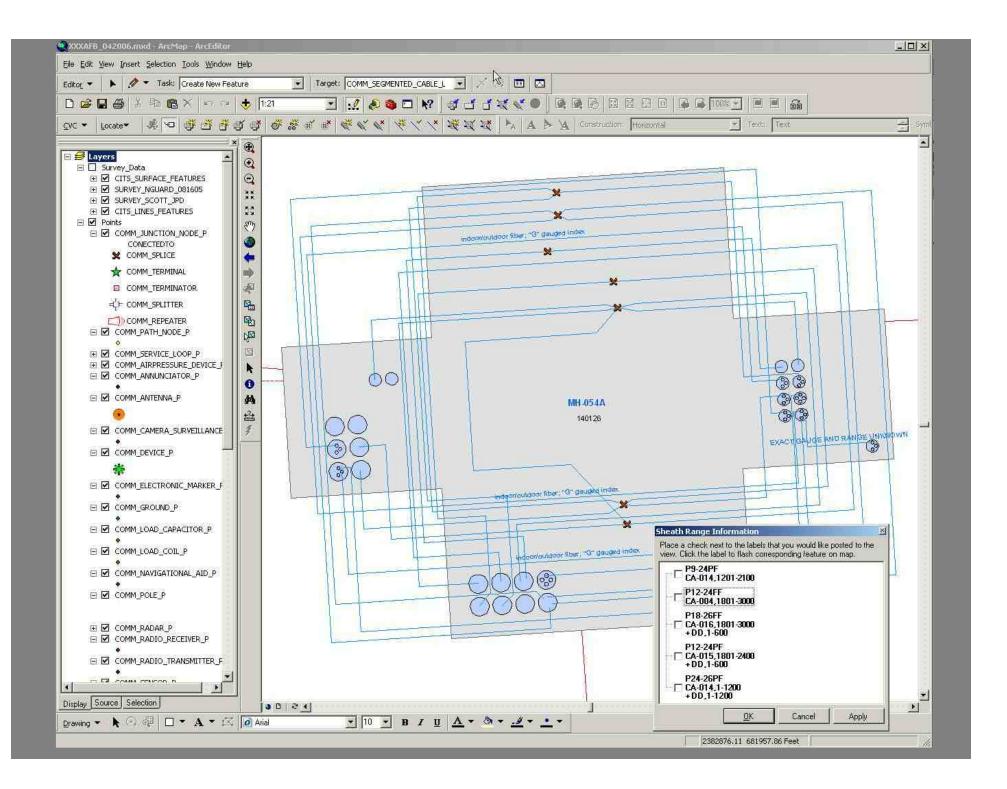
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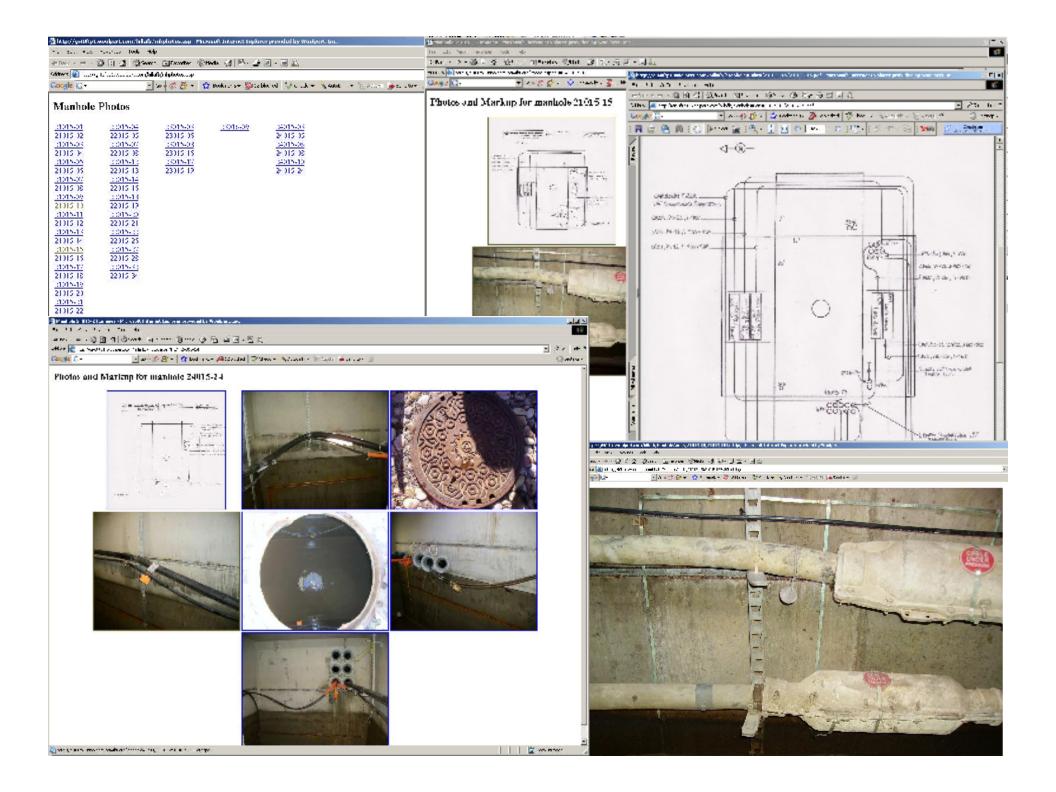
Infrastructure

Data: Validate, Convert, Access







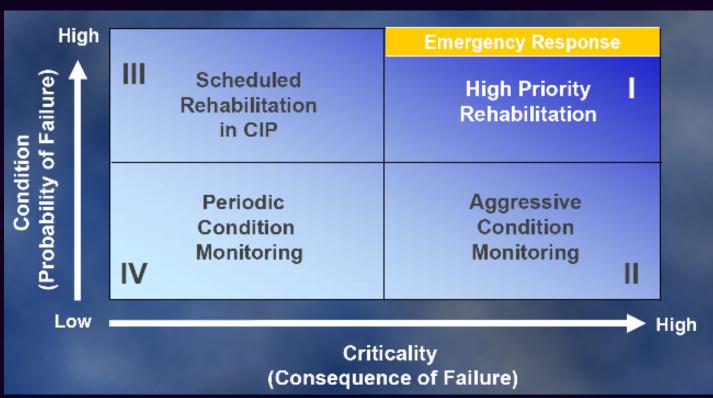


Recommendation

• Data driven asset management programs start as inventories...but they need to evolve into Condition and Criticality programs.



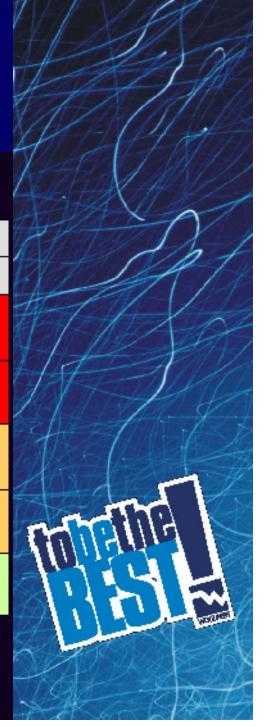
Condition and Criticality





Condition and Criticality Rating

		Criticality											
		1	2	3	4	5							
	5	Mid Priority Program Rehab	Mid Priority Program Rehab	High Priority Program Rehab	Immediate Action	Immediate Action							
Condition	4	Mid Priority Program Rehab	Mid Priority Program Rehab	High Priority Program Rehab	Immediate Action	Immediate Action							
Conc	3	Low Priority	Low Priority	Regular Monitoring	Frequent Assessment	Frequent Assessment							
	2	Low Priority	Low Priority	Regular Monitoring	Frequent Assessment	Frequent Assessment							
	1	Low Priority	Low Priority	Regular Monitoring	Regular Monitoring	Regular Monitoring							



Criticality By Asset

											LEAD HAX THE WAY						
Asset Register and Hierarchy				Current LOS	Min Perf	Backup Reduction (Redund- ancy)	Prob of Fail	Conseq of Fail	BRE Rating	Renew Strat	Maint Strat	Future Maint % Change	Current FY Budget Adjustments	Renew	Recom'd Renewal Year	Rene	ie of
Current															,		- 0
Year	2008			1 to 5	1 to 5	%	1 to 10	1 to 10				%	\$	\$			
Level 1	Level 2	Level 3	Level 4	Tab B		Tab D	Calc'd	Tab C	Calc'd	Tab F		Tab E		Estimate	Calc'd	2.5	0%
Utility																	
	Water Distribution																
		Water Mains															1
			Young Street	3	2	0%	10	10	100	7	in CIP			\$ 4,350	2008	\$	4,350
			Peter Street	1	3	50%	1	3	1.5	1			\$ -	\$ 1,700	2055	\$	533
			Main Street	3	2	50%	4	5	10	2 or 3	Maint		\$ 100	\$ 1,000	2021	\$	725
			Spring Hill Blvd	2	1	25%	7	10	18	6 or 7	in CIP			\$ 6,600	2015	\$	5,552
	Wastewater Collection																Ž.
		Gravity Mains															7
			Brown Line Road	3	2	50%	4	9	18	2 or 3	Maint		\$ 180	\$ 18,000	2020	\$ 1	13,384
			Pleasant Run	4	2	0%	10	3	30	2 or 3	Maint		\$ 240	\$ 2,400	2013	\$	2,121
			Eagles Nest Pkwy	3	2	0%	10	8	80	7	in CIP			\$ 1,000	2011	\$	929
		Force Mains															
			Glendale Avenue	1	3	0%	3	7	21	1			\$ -	\$ 170	2052	\$	57
			Lafayette Road	3	2	0%	5	5	25	2	Maint		\$ 150	\$ 15,000	2040		6,807
			Lewis Street	3	2	0%	10	3	30	7	in CIP			\$ 13,000	2008	\$ 1	13,000
		Pump Stations															
					-	500/			40					A 500	2017		400
	0		Lewis Street PS	2	3	50%	4	8	16	2 or 3	Maint		\$ 50	\$ 500	2017	\$	400
	Stormwater	D															
		Bristol Watershed															1
			Campus Catchment	3	2	0%	8	2	16	2	Maint		\$ 180	\$ 1,800	2028	\$	1,098
														esa in income		A / 175 MI	The same of

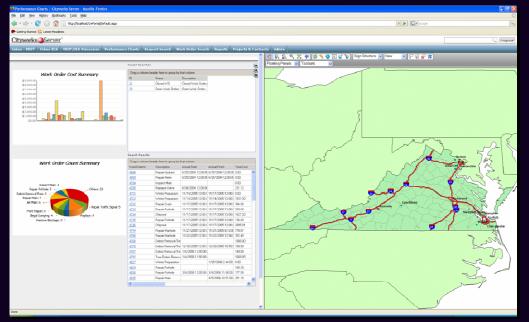
CIP-Forecasting for Preventive Maintenance

Asset Register and Hierarchy 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2016 2017 2018 2016 2017 2018 2018 2018 2019											1000	THA X	W M	1
Peter Street Main Street	Asset Register and Hierarchy			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Main Street Spring Hill Blvd Spring Hill Blvd			Peter Street	,										
Wastewater Collection				,	•	•	•	r	•	•	•	•	•	
Collection Co			Spring Hill Blvd	,	•	•	•	•	•	•	" \$ 6,600	•	•	
Brown Line Road Pleasant Run \$ 2,400	Wastewat Collection		Opining Film Direct	,										
Brown Line Road		Gravity Mains		'							•	•		
Eagles Nest Pkwy Force Mains Glendale Avenue Lafayette Road Lewis Street Pump Stations Lewis Street PS Stormwater Bristol Watershed Campus Catchment			Brown Line Road	'						•	•	•		
Force Mains Glendale Avenue Lafayette Road Lewis Street \$ 13,000 \$ 500 \$ 500 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$			Pleasant Run	'				•	5 2,400					
Force Mains Glendale Avenue Lafayette Road Lewis Street Pump Stations Lewis Street PS Stormwater Bristol Watershed Campus Catchment			Eagles Nest Pkwy	'			5 1,000		•					
Glendale Avenue Lafayette Road Lewis Street Pump Stations Lewis Street PS Stormwater Bristol Watershed Campus Catchment		Force Mains		·										
Latayette Road Lewis Street \$ 13,000 Pump Stations Lewis Street PS Stormwater Bristol Watershed Campus Catchment			Glendale Avenue											
Pump Stations Lewis Street PS Stormwater Bristol Watershed Campus Catchment			Lafayette Road	ĺ										
Stormwater Bristol Watershed Campus Catchment			Lewis Street	\$ 13,000	'									
Stormwater Bristol Watershed Campus Catchment		Pump Stations		L .		_	_	_	_	_	_	_	_	
Stormwater Bristol Watershed Campus Catchment														
Bristol Watershed Campus Catchment			Lewis Street PS										\$ 500	
Watershed Campus Catchment	Stormwate							-						
Campus Catchment							₩							
			Campus Catchment											
				ĺ										
				\$ 27,850										
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Viewing/Analyzing Indicators Dashboards









True EAM is an integration of multiple systems

- GIS visualize the spatial data, incident response,
- Asset Management maintain facilities and assets
- Property Management lease and tennant information
- Automatic Vehicle Location port security and situational awareness
- Permitting environmental compliance, hazardous and parking permits for ships
- Electronic Document Management Systems - access historical information
- Performance Management or Dashboards – single lens view to operational performance metrics
- Mobile /field solutions



Case Study: McGee Tyson Airport

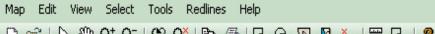


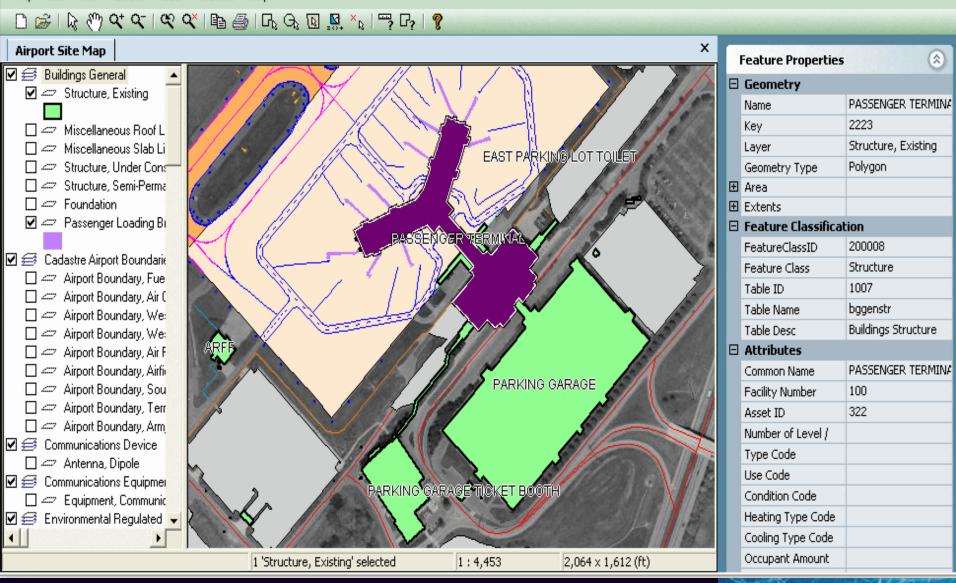




GIS Data Viewer

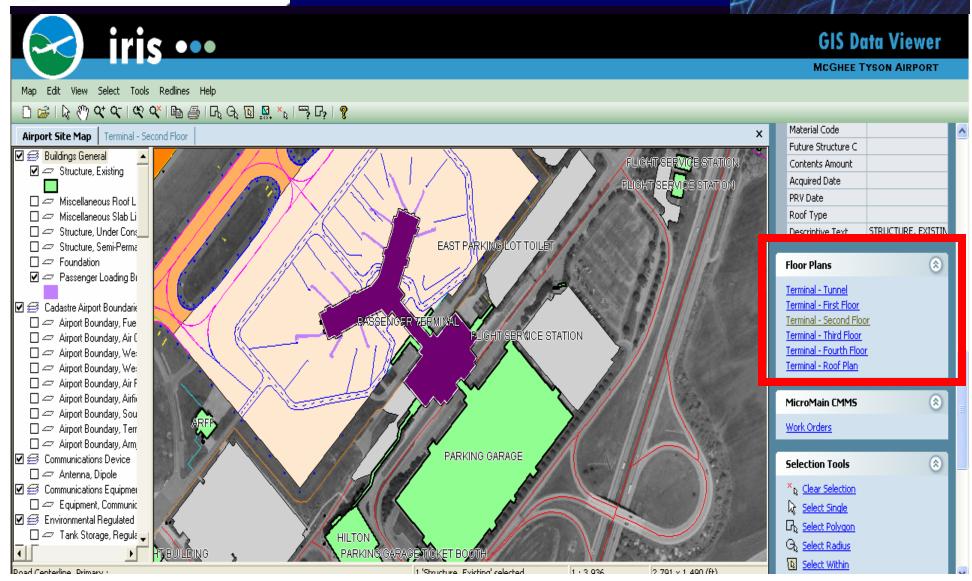
MCGHEE TYSON AIRPORT





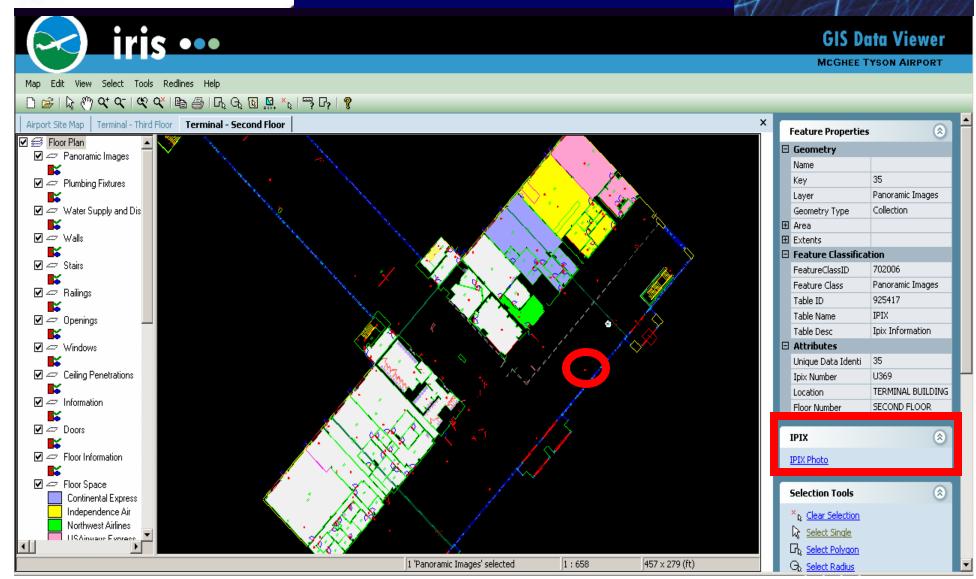


Integrated Spatial and Tabular Data





Integrated CAD Floor Plans



Linked-in IPIX Photos





GIS Data Viewer

MCGHEE TYSON AIRPORT

Map Edit View Select Tools Redines Help

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Airport Site Map Terminal - Third Floor Terminal - Second Floor IPIX Photo



iPIX Tools

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Q+ Zoom In

<u>Q</u> Zoom Out

Pan Right

44 Pan Left

About PIX Control

X Close

iPIX Navigation

iPIX Navigation Using the Mouse

(2)

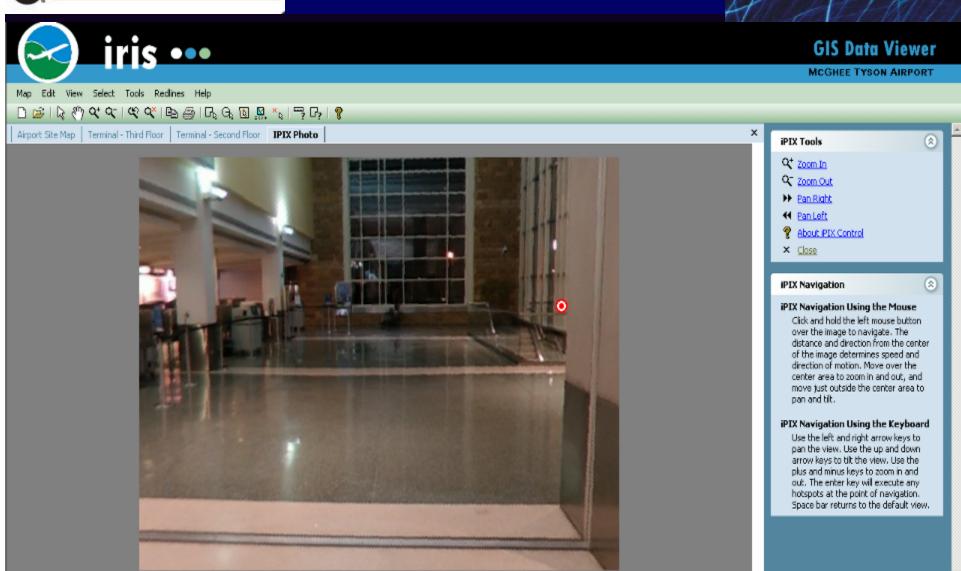
Click and hold the left mouse button over the image to navigate. The distance and direction from the center of the image determines speed and direction of motion. Move over the center area to zoom in and out, and move just outside the center area to pan and tilt.

iPIX Navigation Using the Keyboard

Use the left and right arrow keys to pan the view. Use the up and down arrow keys to tilt the view. Use the plus and minus keys to zoom in and out. The enter key will execute any hotspots at the point of navigation. Space bar returns to the default view.

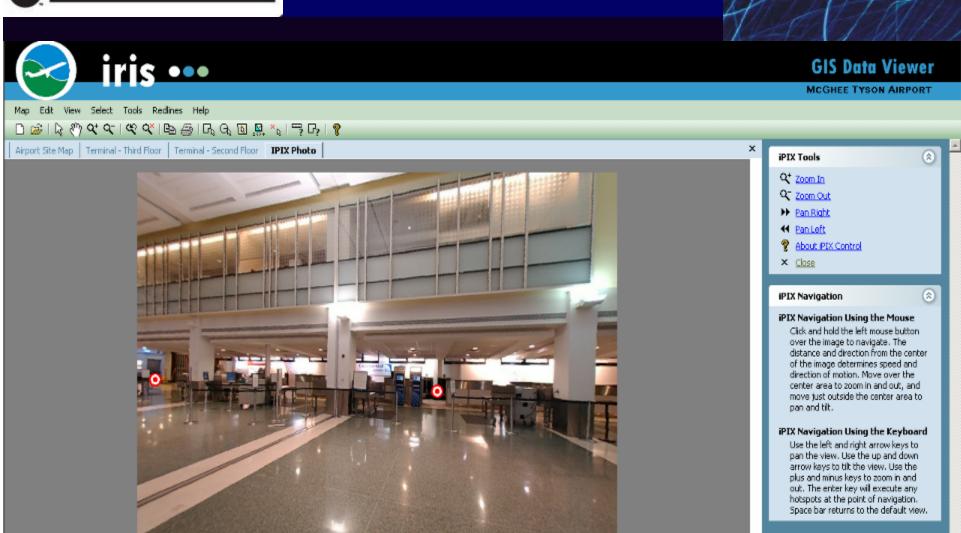
MCGHEE TYSON AIRPORT

Zoom and Pan IPIX Photos



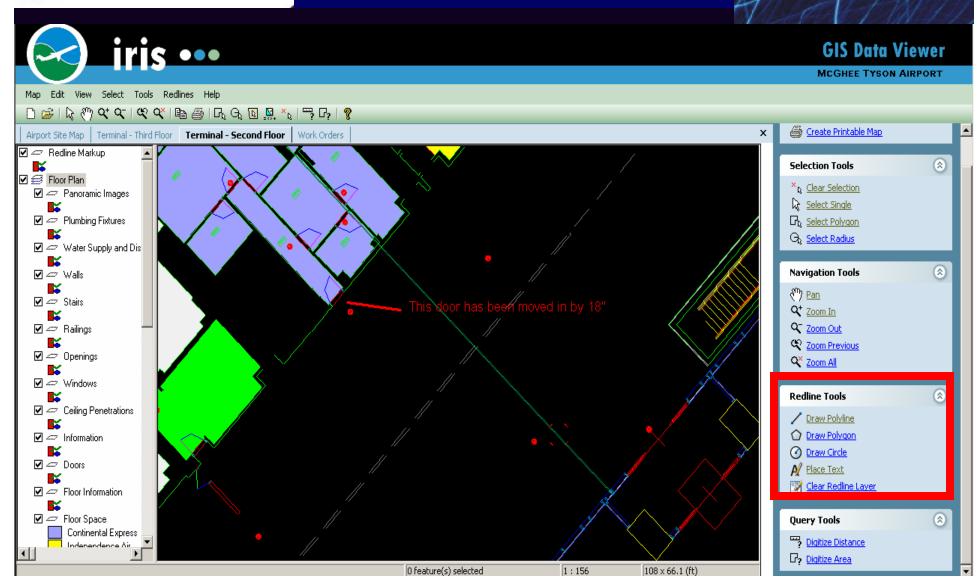


Traverse by Following Photos



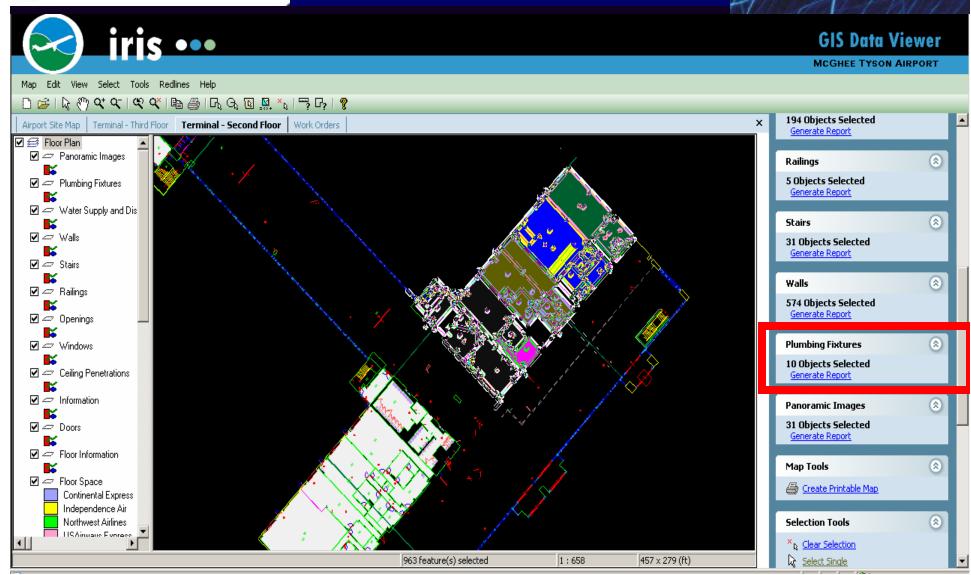


Built-in Redline Tools



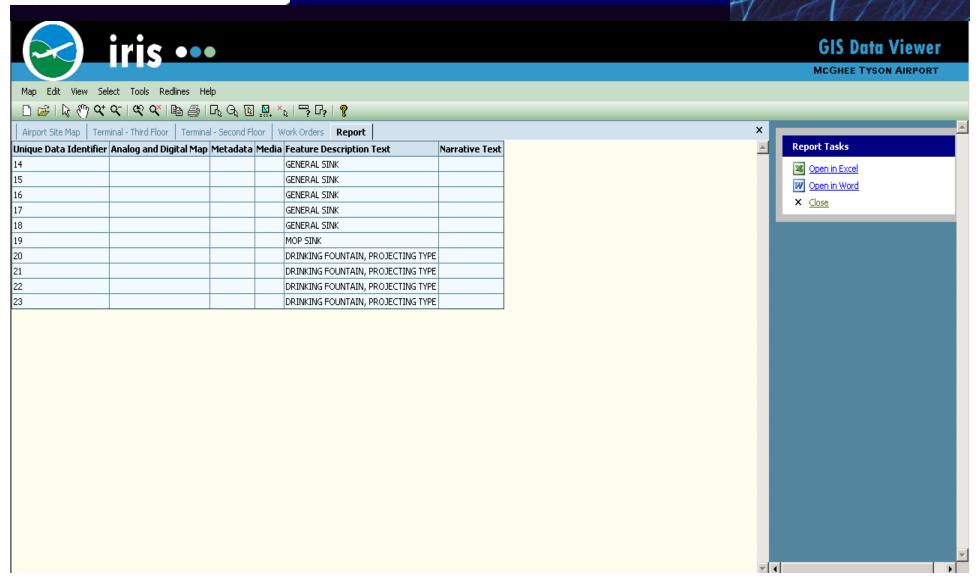


Select Features and Report Quantities



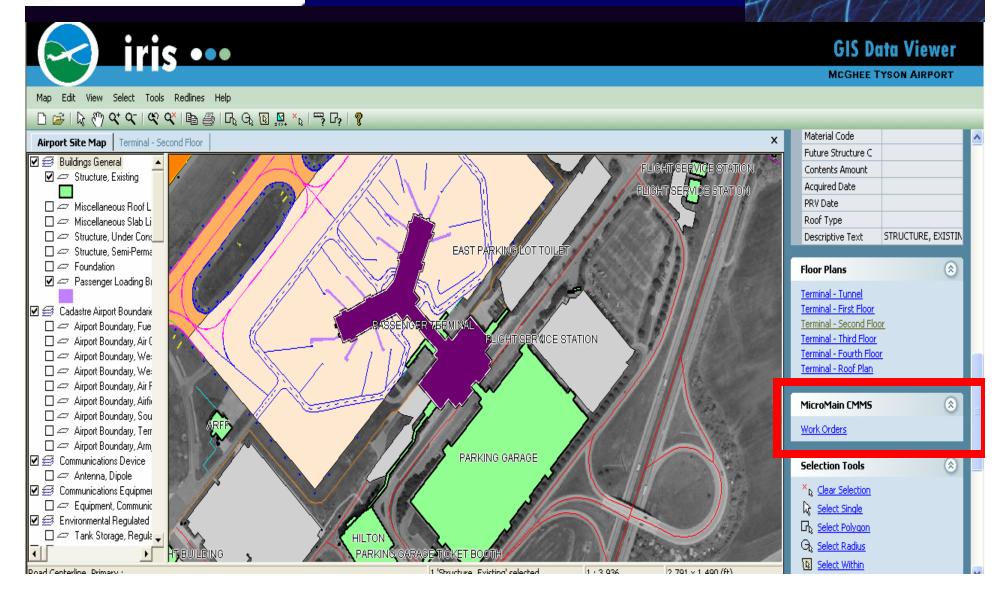


Report or Export Selected Features



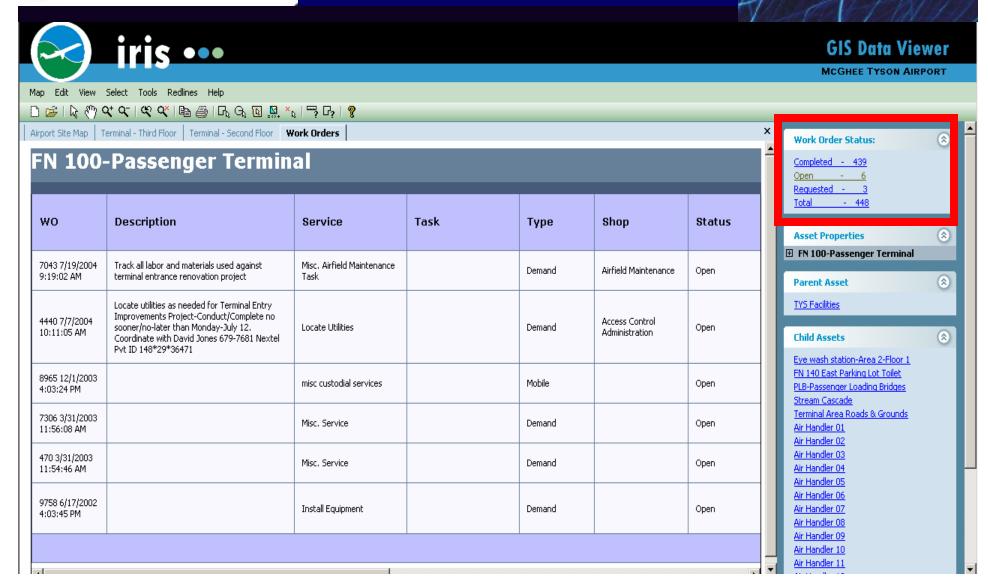


Retrieve Work Order Data From GIS



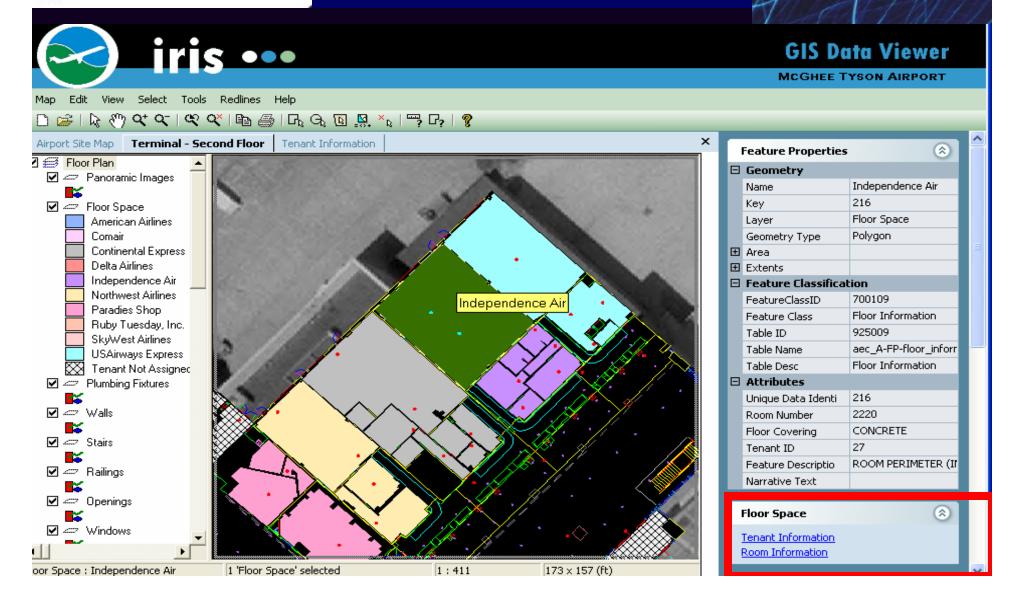


Query Selected Work Orders



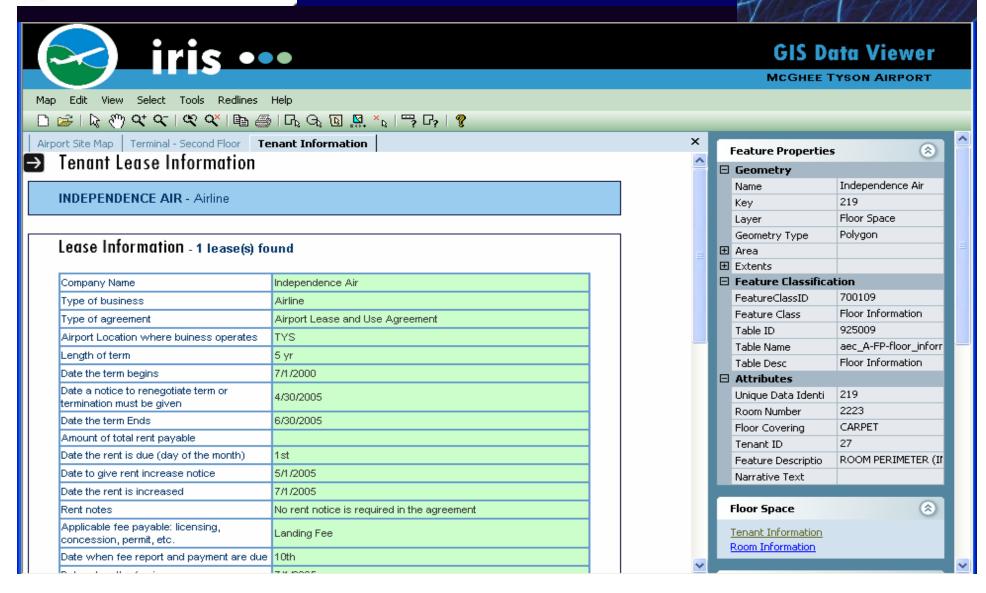


Lease Space / Tennant Information





Lease Space / Tennant Information



Case Study – Federal Protective Services

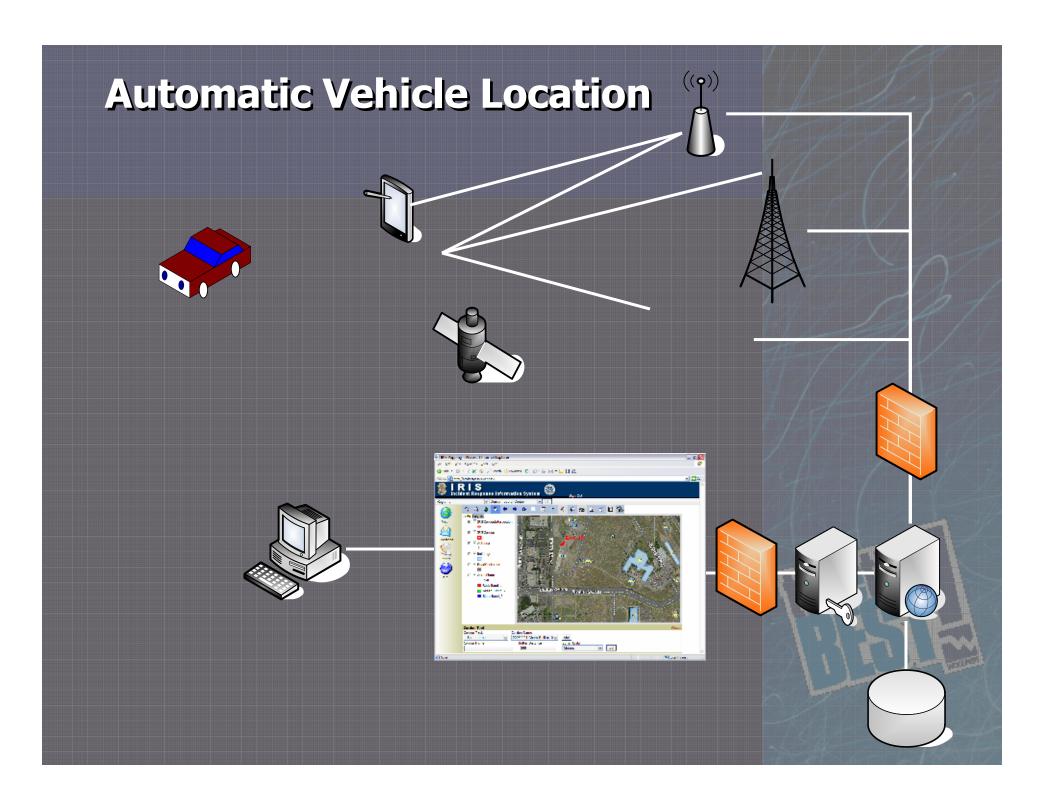
- Federal Protective Service is responsible for policing and securing all non-military federal facilities
- Goal to increase situational awareness and officers' abilities to better manage and respond to incidents.
- This proved to be the foundation for the IRIS (Immediate Response Information System) program that Woolpert created.



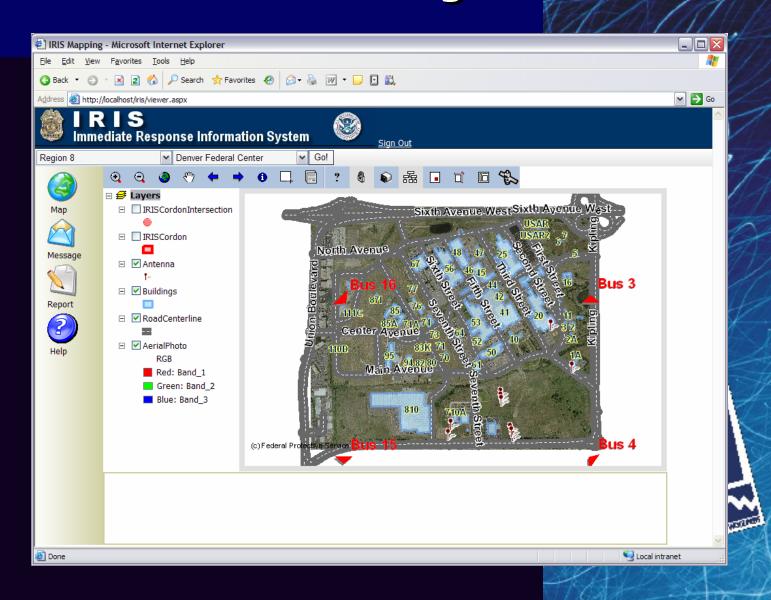
Sample Functionality

- Automatic Vehicle Location
- Cordon Tools





Automated Vehicle Locating

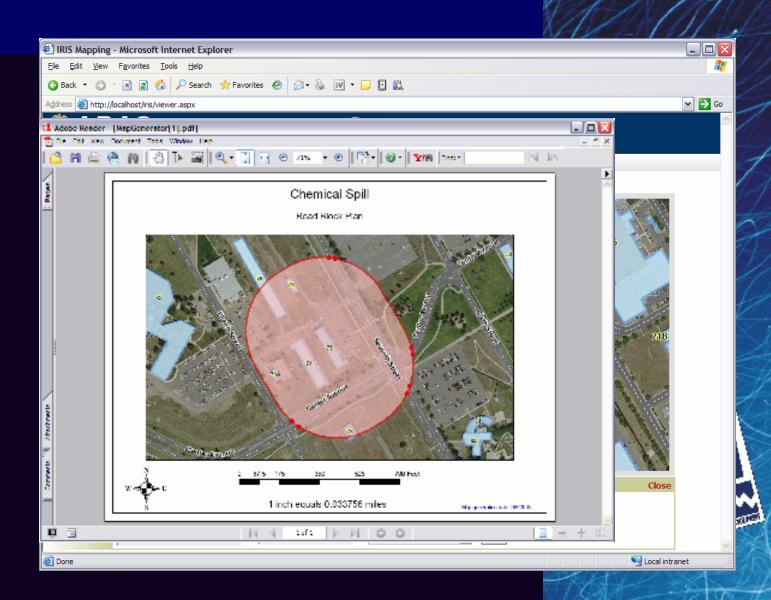


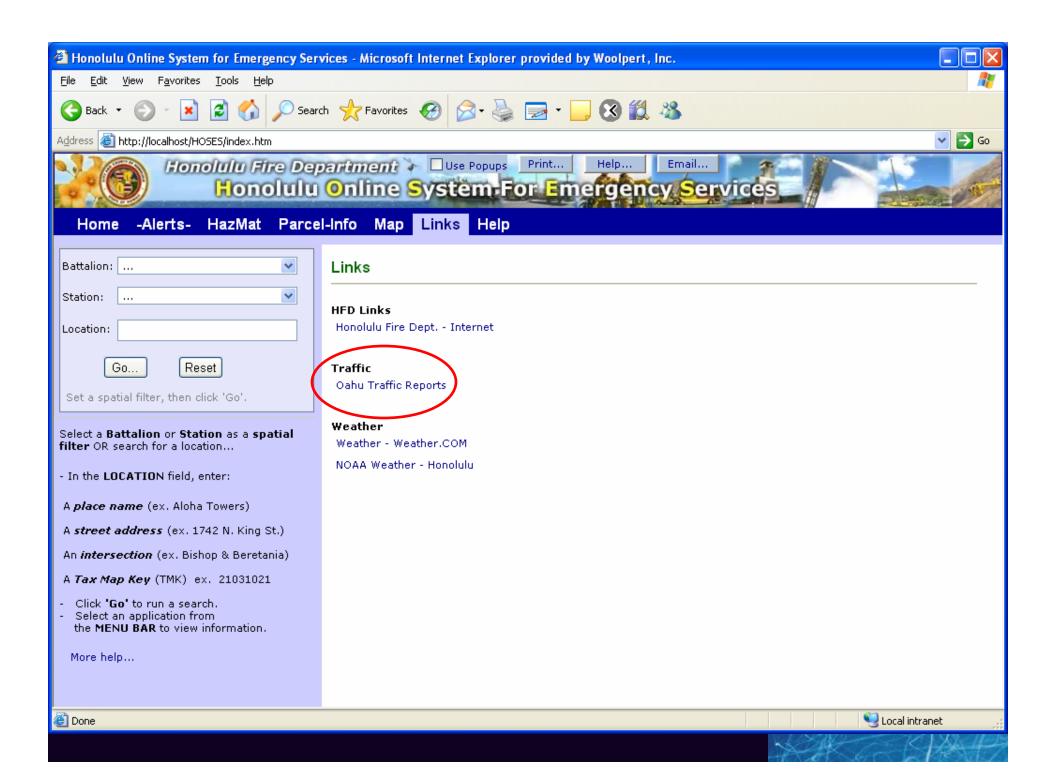
Cordon Tools

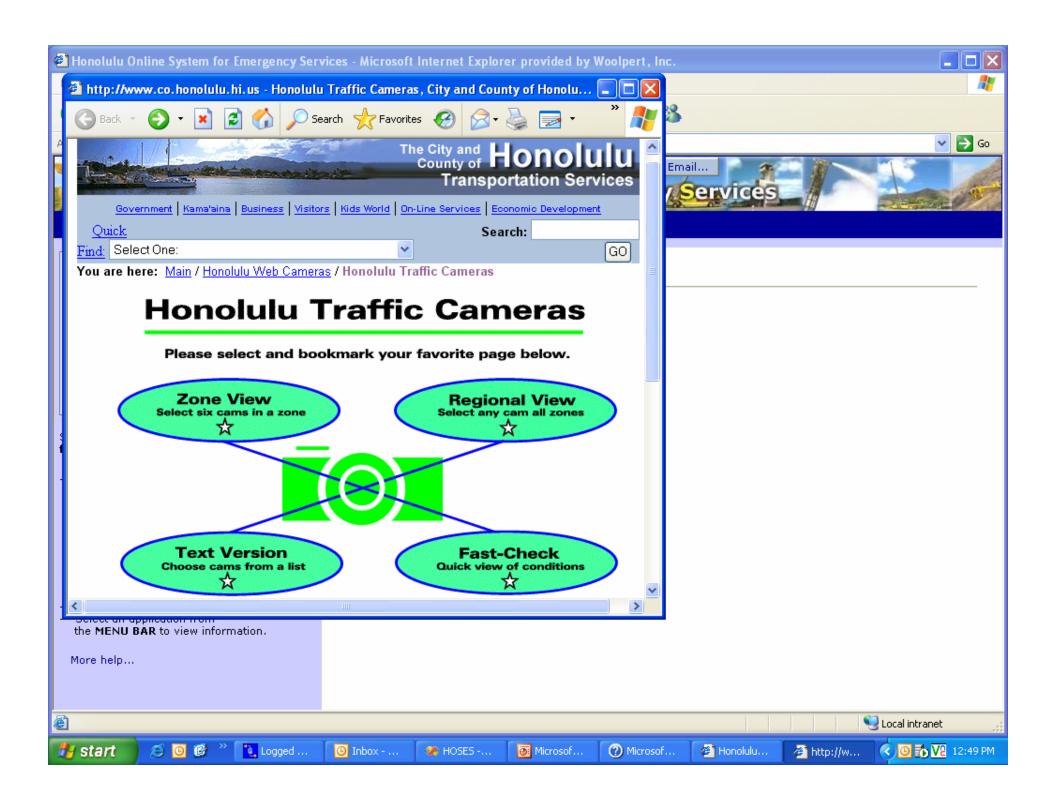
 Purpose is to provide an accurate means to identify "safe" areas away from an incident as well as identify "roadblock" points for preventing traffic from entering a dangerous area.

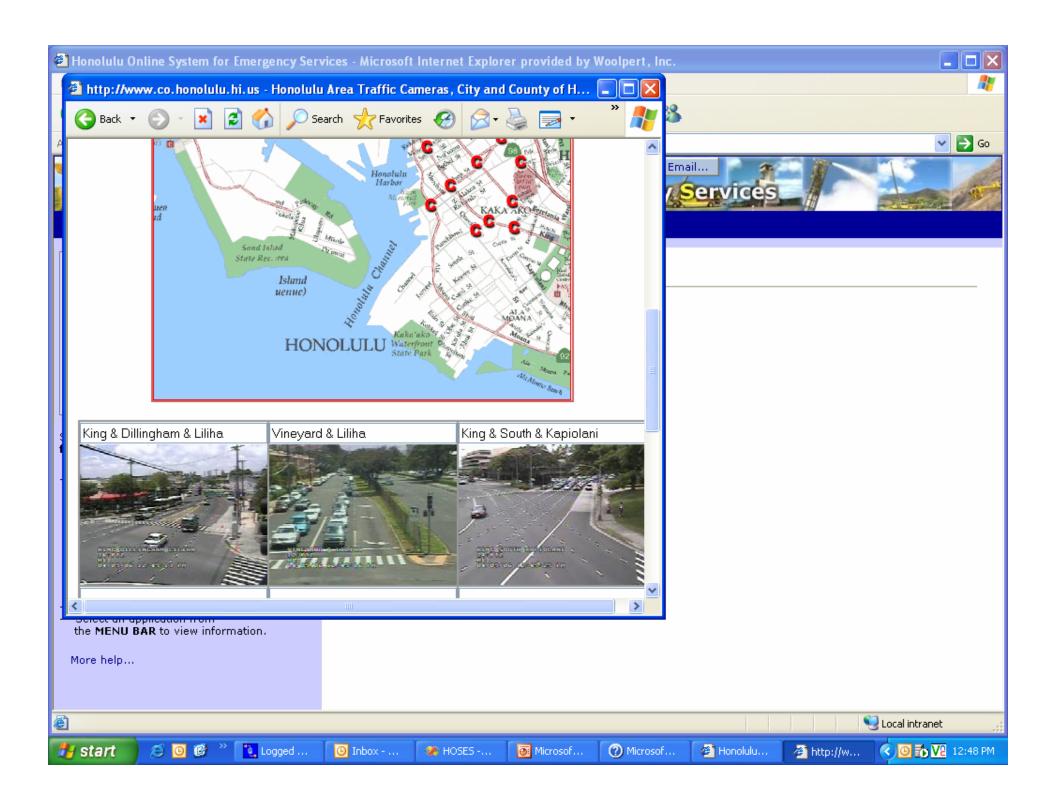


Cordon Tools



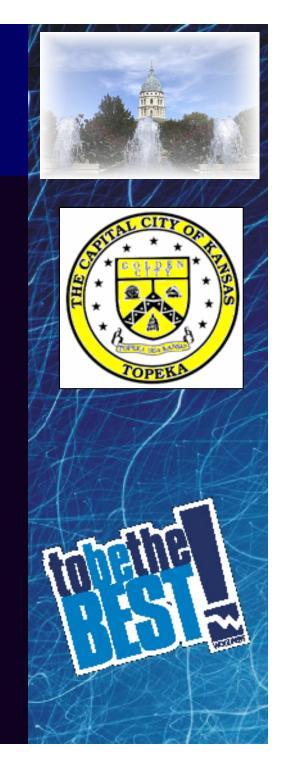




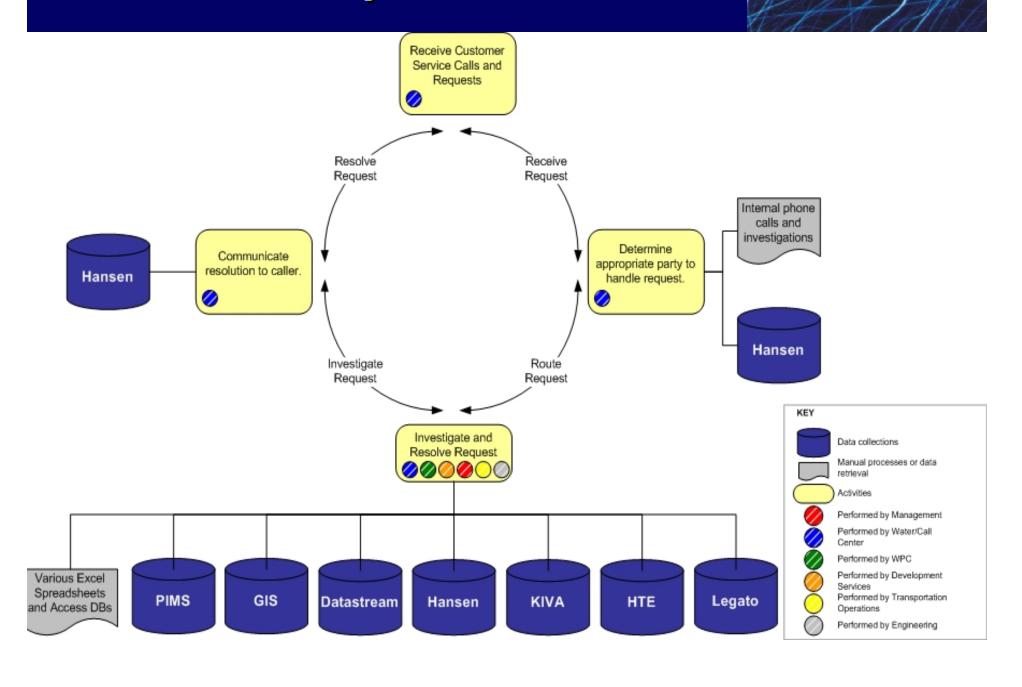


City of Topeka, Kansas

- Key Objective: Develop an Asset Management Program that could leverage a single asset management software solutions
 - Document the key business processes of each department as it relates to managing assets
 - Identify the data and applications used to support the successful completion of these tasks
 - Identify what systems are working, could be enhanced to be more effective, and those that do not support the business functions of the department



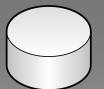
Match Business Processes with Key Systems



Key Findings

- Limited integration & potential bottlenecks were everywhere
- Many systems were being used as data repository's... double data entry
- Institutional knowledge was in desktop excel and access databases...not enterprise applications
- Employee frustration was prevalent
- Preventative maintenance and predictive maintenance was low





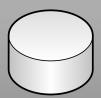
Project Control & Tracking (PIMS) MS Access





CMMS (Hansen) Water Distribution SQL Server Hansen





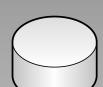
Permitting (KIVA) SQL Server





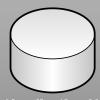
GIS (ESRI) Shapefiles





CMMS (Hanson) Water Plant SQL Server Hansen





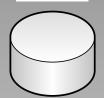
EDMS (Application Xtender) SQL Server Application Xtender





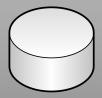
Utility Billing (HTE) AS400 HTE





CMMS (HTE)
Water (Meters Only)
AS400
HTE





Addressing (KAIS) SQL Server KAIS



CMMS (WMA 2000) Streets MS Access



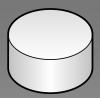


CMMS (Worksheet Inventory DB) Water Preventive Maintenance MS Access/Eyeel



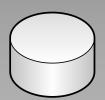


CMMS (DataStream MP2)
WPC Plant Operations
Oracle
MP2
Datastream



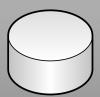
CMMS (CartéGraph) Trans Ops MS Access





CMMS (Grease Traps)
WPC Grease
Trap Inspections
MS Access





CMMS (Hansen)
WPC Collection
SQL Server
Hansen
HANSEN









W. er Distrib.... SQL Server Hansen







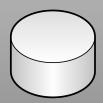
GIS (ESRI) Shapetiles





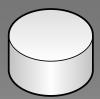
CM 2 (Ha er Vater Pla SQL Server Hansen





EDMS (Application Xtender)
SQL Server
Application Xtender





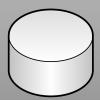
Utility Billing (HTE) AS400 HTE





(Meters hly)
AS400





Addressing (KAIS) SOL Server KAIS





Streets MS Access

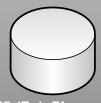




entory Water Preventive

water Freventive Maintenance MS Access/Excel





CMMS (DataStream MP2)
WPC Plant Operations
Oracle
MP2

Datastream



CMM9 Can Traph)
rans Op.
MS Access

CartéGraph



CMMS (reas Traps)

Inap Inspections

MS Access





CM 4 (Ha en) V. C Collection SQL Server

Hansen





Asset Management System Selection

1. OVERVIE

The City of Topeka Public Works Department is currently in the process of developing as Information Management Master Plan (IMMP). The City has contracted with Woodpert, Inc. to assist in the davelopment of the BMMP. The Public Works Department is made un of 6 divisions:

- Water (Treatment and Distribution)
- Water Pollution Contr (Wastewater Treatmer and Collection)
- and Collection)
 Transportation Open
 (Streets and Traffic)
- Administration and Technical Support
- Technical Support Group
 Development Services
 (building inspection &
 code compliance)

Within each division, there are several information systems that are key to the business that the division conducts. One of these systems is the Computerized Maintenance Management System (CMMS). There are several CMMS systems in place within the City including Hannen, DarkStream, CarteGraph, SunTer, and several in-house developed and maintained Microsoft Access and SQL databases. The Public Works department is interested in, as part of the DMMP conject, consolidation these vytems into one or as few succession.

As part of the IMMP project, the City and Woolper have identified several critical requirements and scenarios that the CAMS must meet. The purpose of this benchmark is to evaluate the recommended CAMS's wender against these scenarios and requirements to assist the City in making a final decision on the subsected CAMS slutform.

2. FORMAT AND EVALUATION

SCHEDULE AND FORMAT

Following is the benchmark schedule. Each CAMS wendow will be allowed full day for presentation, demonstration and question and answer. The following schedule indicates how the City would like the benchmark to be broken down into applicable areas. The wendow, should allow for QRA during each portion of the benchmark and for questions during the overlaw QRA session at the end of the day. It is determined that the proposability of the contract all benchmarks recention

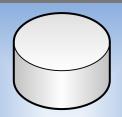
The schedule and format for the benchmark will be as follows:

8:30 AM to 9:15 AM – Product Overview and Direction

Woolpert January 26, 2005 MMS Benchmark Requirements City of Topeka, KS

- Developed requirements (RFP)
- Developed Benchmarks
- Created Sample datasets
- Selected 3 cmms vendors
- Developed Evaluation Criteria:
 - Must follow scenarios that match City's work processes
 - Must integrate with GIS (leverage City's investment)
 - Scored on ability to meet each scenario

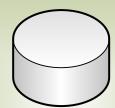




Project Control & Tracking (Microsoft EPM)

SQL Server Project Server 2003 IIS/Project Web Access Sharepoint

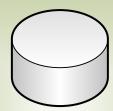




GIS (ESRI) SQL Server ArcSDE 9.x



Enterprise Geodatabase EDMS, CMMS, Permitting Integration Project Mgmt Integration

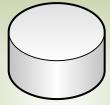


Utility Billing and Finance (HTE)

AS400 HTE

SUNGARD'

Data Warehouse for Integration



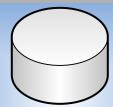
CMMS (DataStream MP2)

WPC Plant Operations
Oracle

MP2

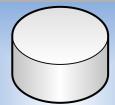
Datastream^{*}

Improved Reporting via Crystal Reports



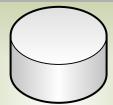
CMMS (Cityworks) Non-WPC Plant Operations SQL Server Cityworks





Permitting (Govern) SQL Server Govern Server Components



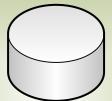


EDMS (App Xtender) SQL Server

Application Xtender



Integration with GIS, CMMS, Permitting Project Mgmt Integration



Addressing (KAIS)

SQL Server KAIS

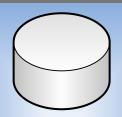
ATCi

Address Validation/Update API

Legend

New System

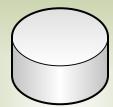
Enhanced System



Project Control & Tracking (Microsoft EPM)

SQL Server Project Server 2003 IIS/Project Web Access Sharepoint



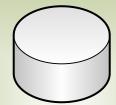


GIS (ESRI) SQL Server

ArcSDE 9.x



Enterprise Geodatabase EDMS, CMMS, Permitting Integration Project Mgmt Integration

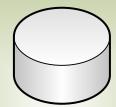


Utility Billing and Finance (HTE)

AS400 HTE

SUNGARD'

Data Warehouse for Integration

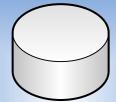


Addressing (KAIS)

SQL Server KAIS

ATCi

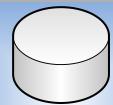
Address Validation/Update API



CMMS (Cityworks)

All Divisions SQL Server Cityworks

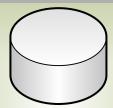




Permitting (Govern)

SQL Server Govern Server Components





EDMS (App Xtender)

SQL Server Application Xtender



Integration with GIS, CMMS, Permitting Project Mgmt Integration

Legend

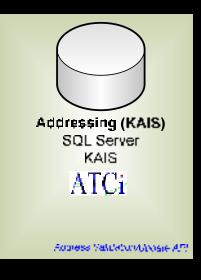
New System

Enhanced System











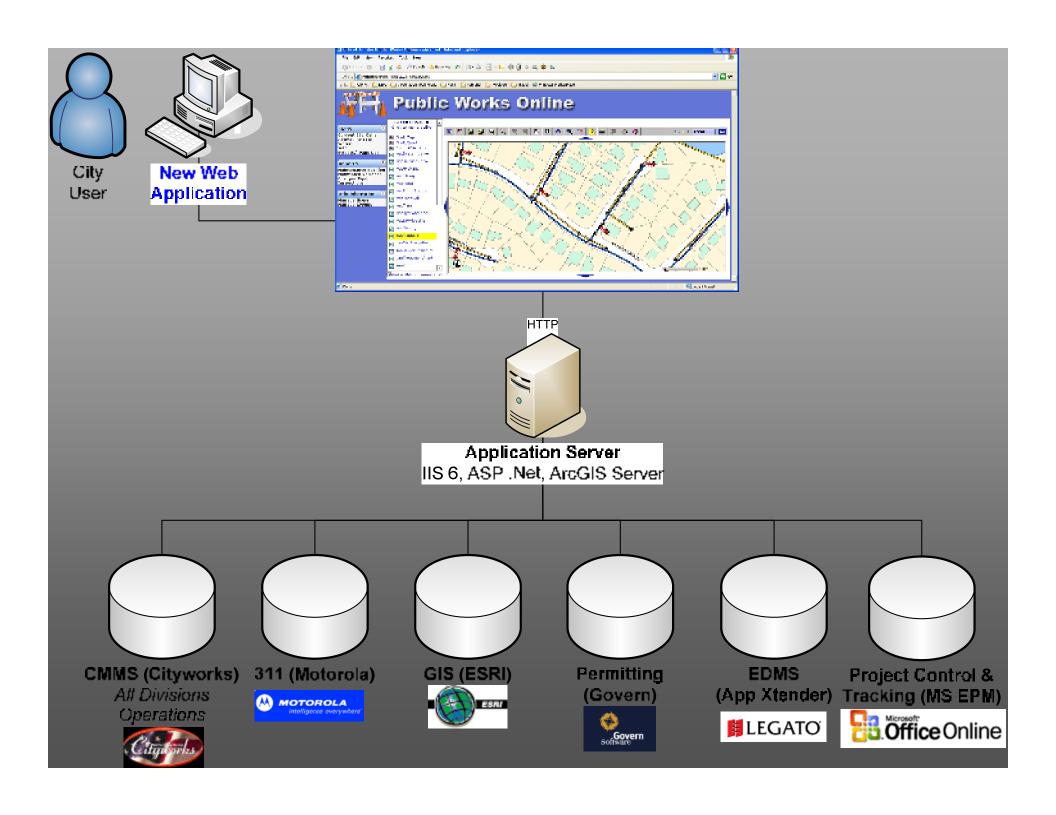












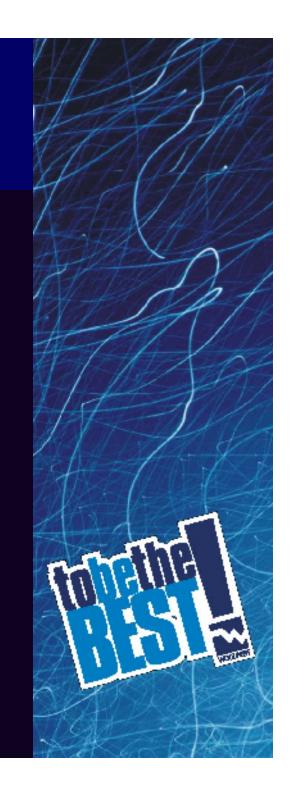
Benefits

- Single Enterprise Asset Management Systems for All Infrastructure
 - Information centralized and accessible by all departments
 - Simplified IT Architecture
 - Lower Total Cost of ownership



Return on Investment

- Costs
 - Master Plan 100K
- Savings
 - ANNUAL Software license maintenance savings – \$150K+ per year
 - Preventative Maintenance \$\$\$\$\$\$



Asset Management Systems















Asset Management - Compare and Contrast

									v	
Vendor	Azteca Cityworks	Cartegraph	Datamasteam Datastream 7k	GBA Mester Series	HansenIMS	Indus EVPAC	MncomBlipse	MRO MAXIMO	RJNCASSWorks	Synergen Synergen Series
Linear Feature Capabilities										
Manages linear features	Y	Υ	N	Y	Y	Y	Y	Y	Y	Υ
Peforms tracing	Ϋ́	Ϋ́	N	Ϋ́	Ϋ́	Ϋ́	Ϋ́	Ϋ́	Ϋ́	Y
Customer links	Ϋ́	·	N	Ϋ́	Ϋ́	Ϋ́	Ϋ́	Ϋ́	Ϋ́	Ϋ́
Address links	Ϋ́		N	Ϋ́	Y	Ϋ́	Ý	Ϋ́	Ϋ́	Y
ArcGIS 8.X Support			.,	•	•		•			•
ArcGIS 8.x interface	Y	N	N	N	N	N	N	3rd party	Y	Y
Works with geodatabases	Y	N	N	N	N	Y	Y	Y	Y	Through GIS
Flexible data structure	Y	Y	Y	Y	Υ	N (Oracle only)	Y	Y	Y	Υ
Comparison with ArcFM Data Model	Identical	Different	Different	Different	Different	Different	Different	Different	Different	Different
Where features are created	CMMS and GIS	CMMS and GIS	CMMS and GIS	GIS only	GIS only	CMMS and GIS	CMMS and GIS	CMMS and GIS	CMMS and GIS	GIS only
How feature databases are reconciled	Automatic	Manually	Manually	Automatic	Manually	Automatic	Automatic	Automatic	Automatic	Reports
Interfaces										
JD Edwards Financial	Υ	Υ	Υ	Y	Y	Y	Υ	Υ	Y	Y
HTE CIS	Υ	Y	Υ	Υ	Υ	Y	Y	Υ	Y	Υ
Key Features										
Customer Call Center front end	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Inventory and warehouses handling capabilities	Υ		Υ	Y	Υ	Υ	Υ	Υ	Υ	Y
Templates included										
Water Distribution	Y	Y	Y	Y	Y	Y	Y	3rd party	Y	Y
Wastewater	Y	Υ	Υ	Y	Y	Y	Y	3rd party	Y	Y
Stormwater	Y	Y	Υ	Y	Y	Y	Y	3rd party	Y	Y
Treatment Plants	N	N	Υ	Y	Y	Y	Y	3rd party	Y	Y
Building Facilities	Y	N	Y	Y	Y	Y	Y	3rd party	Y	Y
Site Operations	Υ	N	Υ	Y	Y	Υ	Υ	3rd party	Y	Y
Signs/signals	Y	Υ	N	Y	Y	Y	Y	3rd party	Y	Y
Pavement	Y	Y	N	Y	Y	Y	Y	3rd party	Y	Y
Street Lights	Y	Y	N	Y	Υ	Y	Y	3rd party	Y	Y
Bridges	Y	Y	N	N	Y	Y	Y	3rd party	Y	Y
Fleet	N	Y	Y	Y	Y	Y	Y	3rd party	Y	Y
Parks and Rec. Facilities	Y	N	Y	Y	Y	Y	Y	3rd party	Y	Υ



Summary: Successful AM Program Commonalities

- Creation of an Asset Management Program links asset management goals with organizational objectives
- Comprehensive inventory of the assets and determining condition and criticality
- Extending the life of these assets through improved maintenance practices (preventive and predictive vs. reactive)
- Improve Situational Awareness and Security
- Address regulatory compliance/environmental issues
- Improved financial management, reporting and compliance



How to Justify paying for an Asset Management Program

- After capital project pressures the money gets tight
- Pilot project: Determining costs associated with critical asset failures vs. preventative maintenance
- Potential cost savings from reduced software portfolio
- Port Security Grant Program?
 - Maritime Domain Awareness?
- Pray



Contact Information

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