BWS Enterprise GIS

ESRI International User Conference
July 2010

Honolulu Board of Water Supply
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Today’s Topics

- HBWS Overview
- Systems And Technology
- Application Showcase
- Work Flow Example – Leak in Road
Established in 1929, HBWS is a Semi-Autonomous Agency Of City and County of Honolulu

- GIS Program established 1989
- Largest municipal water utility in the State
- Primary Function is to Provide Municipal Water and Fire Protection for Oahu
- Serves One Million Customers On Oahu, & Provides Support Services To Maui & Kauai
Staff Of More Than 600 Employees

- Delivers 55 Billion Gallons of Water/Year
- 164 Reservoirs and 104 Water Sources
- 2,000 Miles of Pipeline
- 171,000 Metered Connections
External Agencies

- Data sharing with City/County for common layers (parcels, street centerlines, landmarks, other utilities, zoning, disaster preparedness, political districts, etc.)
- City maintains relationships with other external agencies (state, federal, other utilities, etc.)
Technical Engineering Branch

Information Technology Division

Application Systems Development Branch

GIS/Engineering Support (Civil Engineer)
  - Civil Engineer
  - GIS Analysts
  - GIS Cartographic Technician

Operations Support Branch

Hydraulic Model Calibration/GPS (Civil Engineer)

Technical Engineering Projects Branch (Civil Engineer)

GIS Systems/Database Administration (GIS Analyst)
  - Civil Engineers
  - Engineering Support Technicians
GIS Team

- Data Editing, Hydraulic Modeling, Redlining, Analytics, WMS support, Mobile mapping
- 10 staff working in many roles
Systems and Technology

Systems Environment
Backup and Recovery
Virtualization
Systems Environment

3 Full Environments
DEV, PROD, PUBLISH

ESRI Site License
ArcSDE (SQL-Server),
ArcGIS Server,
ArcINFO, ArcEditor,
ArcEngine, Flex, Silverlight
Python, Model Builder
SDE (batch scripts and API)
XMF Alerter
Backups

• SQL-Server backups for all databases
• Application backups
Virtualization

• Executive-level decision to reduce hardware costs, save on power and centralize resources.
• Application and Database servers
• GIS team is hands-on with IT to make sure everything works well – database backups, performance, etc.
Application Showcase

- HONU
- MANO
- GISMO
- Redliner

- Media Pack
- Document Manager
- Isolation
- GPS

- XMF Alerter
- Accelerator
- Hydraulic Modeling
HONU

Data-driven Enterprise web viewer

500+ users

ArcGIS Server – Silverlight
MANO

Field - Mobile Asset Notebooks

- 100+ users
- ArcEngine; WMS integration

Complete Extract and Sync Framework
GISMO

Desktop Work Management Viewer

50+ users

IBM-Maximo/ArcIMS integration
Redliner

Enterprise “Feedback Loop”

500+ users

Web, Mobile and Desktop integration
Media Pack

Enterprise Geo-Referenced Multi-media

50+ users

Web integration – Desktop, Mobile to follow
Document Manager

Web-Service Document Query/Download

500+ users

FileNet and SharePoint integration
Valve Isolation

Network-based Outage Support

50+ users

Mobile integration – Web to follow
Hydraulic Modeling

GIS-driven model creation, calibration and analysis
10+ Users
ArcGIS Model Builder, MWHSoft
XMF Alerter

Enterprise Monitoring and Notification

10+ Users

Real-time monitoring for GIS stack
XMF Accelerator

Google-like Index and Search

- 2.5 million records
- Crawls GIS data layers to support unstructured queries
Workflow Example

• Show use of integrated GIS/Maximo/Hydraulic Model/CIS/SharePoint to perform work
• Example – Leak in Road
  – Call Center receives call from public about water on road
  – Maximo work order generated to investigate
  – Planner/Scheduler assigns WO to crew
Workflow Example

• Example – Leak in Road (con’t)
  – Crew Lead down loads WO to laptop
  – Crew Lead uses HONU/MANO/SharePoint to obtain as-builts and other pertinent information
  – MANO used to determine isolation valves
  – Redliner used to note valve closures, water wagon location, work to be done, etc. and emailed to Supervisors, Dispatch, Comx, etc.
Workflow Example

• Example – Leak in Road
  – Valve found during work missing from GIS
  – Redliner used to note valve location and other asset information and sent to GIS editors
  – GIS updated with new valve
  – New valve AssetID and attribute information sent to Maximo
Workflow Example

• Example – Leak in Road
  – MediaPack used to document asset information (mainbreak location, pipe condition, property damage)
  – Mainbreak information entered into GIS
  – Main replacement project generated based on mainbreak frequency
Workflow Example

• Example – Leak in Road
  – Hydraulic model used to analyze proposed main replacement project
  – CIS/SCADA data used to calibrate model
  – Mainline upsized to meet water system standards
  – Main replacement project designed and constructed
Workflow Example

• Example – Leak in Road
  – New assets GPS’d
  – New as-builts scanned and stored in SharePoint
  – New assets entered in GIS
  – New GIS assets information sent Maximo
  – New asset information in GIS used to update hydraulic model
Questions?

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