Increased Efficiencies Though Mobile SAP/GIS Integration

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Hydro One Background

• Dates back more than 100 years to 1906
• 98% of Ontario’s transmission capacity
• 30,000 circuit km high-voltage transmission
• 123,000 circuit km primary distribution networks
• 1,076,395 km² of service territory
• Nearly two times the size of Texas
Hydro One Background

- **Transmission System**
  - Primary Voltage of 500, 230 & 115 kV
  - 26 facilities interconnect systems, 6,510 MW and exports of 6,270 MW.

- **Distribution Systems**
  - 1.6 million Dx poles, roughly 1:1 to customers
  - Primary Voltage of 44, 27.6, 12, 8.32 & 4.16 kV
  - 11,884 line segments, 3690 km’s of submarine cable.
Move to Mobile (M2M) Project

Challenge: Increase system performance with reduced costs amidst increasing customer service expectations

Move to Mobile (M2M) will:

- Optimize plan, schedule and dispatch, increase field productivity
- Improve workflow for employees
- Reduce exception handling volumes
- Provide availability of Distribution Standards and HODS documents and GIS maps
- Enhance field safety
- Improve data quality and timeliness
M2M Key Project Objectives

• Examine work processes and re-engineer to shift us to the leading utility
• Upgrade scheduling tool including new functionality to improve plan, schedule & dispatch activities
• Implement SAP Work Manager in SAP-ECC and GIS across the Field forces for all types of work
Project Timeline

Phased Approach:
1. GIS maps and work standards
2. Full solution

- Tablet Release for Early Adoption
- Tablets & Towers Installed
- Managing Change Workshop #2
- Managing Change Workshop #3
- Tablet Training & Release
- Move to Mobile Support & Sustainment
- Full Solution Release

- M2M Roadshows
- SIT 2 Testing
- SIT 3 Testing
- UAT Testing
- SAP Work Manager Training & "Go-Live"

50 training locations to be established
283 Schedule, Dispatchers, Back Office
372 Distribution Engineering Techs & Meter Readers to be engaged
968 linemen will be impacted

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Move to Mobile – At a Glance

Market Regulator challenged Hydro One to increase productivity & efficiency. M2M is targeting a **5% improvement**

With M2M, workers spend **~24 minutes** less driving time/day, **reducing windshield time**

**Data is crucial** for all decisions. M2M will increase the timeliness of data input and the integrity of the field submissions.

M2M introduces **best in class technology** that replaces 40+ paper forms, supports our data improvements, modernizes our scheduling methods and gives real time access to SAP - GIS Maps.
“As Built” Process Duration Comparison

- Improved Safety - updates to maps, prints and schematic drawings
- Workflow Efficiency Gains - less hand-offs and manual intervention
- Improved Work Completion Cycles - external billing, asset installation
- Data Accuracy & Timeliness Improvements - 40% of received paper requires rework (truck rolls/emails/phone calls)
- Improved Cycle Times of In-Service Additions / Capitalization of Major Works
M2M Solution Components

Sources of Work: Maintenance, Customer, Emergency, Projects

Mobile Work Management Application

SAP Work Manager

Hydro One GIS Data Basemaps, Location

Spatial Data & Graphical Work Design

Enterprise Asset Management

Scheduling and Dispatch

PCAD

Crew & Work Dispatch Work Completion Status

Work Orders Notifications Work Completion Asset Data

SAP

Asset Synchronization

GIS

Hydro One Map Layers
Why is As-built process important?

Design created and CU's synced between ArcFM and SAP

Upon Payment Construct Order is Generated in SAP and As-Built Package Generated

Crew Scheduled and Perform Work

Construct activities Recorded on Paper as part of As-Built package

As-Built package sent back to office for manual entry
What Did we Do About It

- Design created and CU's synced between ArcFM and SAP.
- Upon Payment Construct Order is Generated in SAP. Once Scheduled As-built GeoCache created.
- Crew Scheduled and Perform Work
- As-Built data QA/QC
GIS/SAP Integration Solution Overview

- Leveraged existing GIS and added back-end tools and mobile map functionality
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**EXISTING INFRASCTUTURE AND INTERFACES**

- SAP Work Manager
- SAP
- Production GDB
- Web GIS
- GeoCache
- Designs Ready For Construction
- Existing Assets
- Construction Designs
- Facility GIS Data and Basemaps
- Select offline GIS files
- Design editing tools
- Offline Capable GIS Infrastructure for Design Files
- Controls geographic extent and frequency of offline GIS data
SAP Work Manager GIS Components

• Edit Design in Work Manager map interface
SAP Work Manager GIS Components

• Offline capabilities
  – Backend: user configures what GIS data goes offline, at what frequency and extent
  – Client: selects what data to download by ops center – allowing users to work outside traditional boundaries
SAP Work Manager GIS Components

- Crew locations
- Location data available in both Work Manager and PCAD
SAP GIS/SAP Integration Components

- Create notifications from the map

Create new Notification from map

View Work Orders, Notifications and Defects
Demo/Video
Contact Information

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