Integrating Utility Enterprise Systems for a Smart Outage Response
Utility Systems Need Each Other

It’s vital that a utility’s enterprise systems are integrated and work together – for efficiency, safety, and visibility.
Integrating Utility Enterprise Systems

CLEVEST ENTERPRISE MOBILITY PLATFORM
Accurate Outage Information

• Integrated technologies provide accurate outage information
  • Improves field operations and worker safety

Anecdotes (unnamed):
  AWL during hurricane (webinar slides)
  Mutual aid (Dairyland example, TechAdvantage abstract)
• Mobile devices with screenshots...
• Damage/response photo...
Case Study

Colorado Springs Utilities: Waldo Canyon Wildfire
About Colorado Springs Utilities

- Gas, electric, water and wastewater
- 228K electric customers
  - 80% underground
- 140K water customers
- 196K gas customers
- 1,800 employees
CSU Business Challenge

• Make the move from paper-based field operations and phone-based communications

• Major event showed it was time to consolidate separate mobile systems
  • To be used by gas, electric and water divisions
Waldo Canyon Fire

65mph winds quickly escalated the status
Mandatory evacuations
Coordination of operations with fire crews
  Impact on both electric and gas
Support from external crews
Scale of Waldo Canyon Fire

- 32K people evacuated
  - About 300 CSU employees included
- Almost 350 homes destroyed
  - Blue dot = home destroyed
  - Yellow dot = home damaged
  - Green dot = no damage
- 9.3m gallons from water distribution system used for fighting the fire
Extent of Outages

- Event effected gas more than electric
  - Shut off every meter
  - Sectionalize areas
  - Pinch points on main
- Qualified employees diverted to disconnecting services and re-pressurizing mains
- 52 miles of gas main and 4,200 service lines leak surveyed
- Over 4K relights in a week
Enterprise System Challenges

• Multiple disparate mobile systems
  • Electric OMS, customer service, AVL
  • Systems not linked together
  • No system for gas work

• Internal communications
  • Office, field and across departments
  • Relying on tabular data

• GIS maps were paper-based
Lessons Learned From Waldo Canyon Fire

• Highlighted a need for technology improvements
  • Crew locations
  • Availability
  • Skills
  • Real-time status updates
• Needed better integration between back office systems
• Needed to automate manual or paper-based processes
CSU Technology Requirements

- Mobile solution
- Consolidated onto a single mobile platform
- Interface with OMS, CIS, EAMS
  - And potentially others
- Improve outage process
  - More accurate ETORs
  - Real-time status of work
  - Visualize crew locations/availability
  - Reduce restoration times
CSU Technology Requirements (cont.)

- Device agnostic
  - Future-proof hardware decisions
  - Potentially expand out to BYOD crews
- Integrated mobile GIS and AVL
- Support both connected and disconnected modes
- Scalability to support future work types
  - Vegetation management
  - Construction
  - Street light inspections
  - Possibly a full AMI deployment
Coordinating Field Operations During Emergency Outages

Key results

• Single mobile platform for all work types
  • Combined mobile/mobile GIS/AVL/scheduling
  • Reduction in O&M

• Workflows are configured to match utilities’ business processes, minimizing training and manual data entry
  • Supports reporting requirements tied to emergency plans
Coordinating Field Operations During Emergency Outages

Key results

• Improved outage restoration times
  • Simplified coordination of field operations during emergencies
  • Visualize crew locations and availability
  • Reshuffle work as additional crews arrive
  • Real-time access to asset data and outage orders
• Integrated routing tool
• Real-time updates of ETOR, completion data, follow-up orders
• Re-prediction and roll-up of outage incidents sent back to OMS
  • In real-time
  • Restoration orders sent to crews
Coordinating Field Operations During Emergency Outages

Key results

• Integrated mobile GIS
  • Eliminated paper-based processes
• Operates in both connected and disconnected modes
  • Order and GIS data available in both modes
  • Back office users can see if crews are connected or not
  • Auto-syncing when connectivity is restored
• AD sign-on credentials
CSU Technology Ecosystem

**Hardware:**
- Dell laptops

**Integrations:**
- OMS: GE PowerOn via Microsoft BizTalk
- AVL: Verizon Networkfleet via Microsoft BizTalk
- WM: Oracle CC&B
- Mobile Workforce Management and Scheduling: Clevest
CSU Return on Investment

• Significantly reduced overall costs

• Cost is modest compared to savings from:
  • Ease of use
  • Operation efficiencies
  • Streamlined maintenance
  • Greater customer satisfaction
CSU Results

• Significant cost savings each year
• Driving miles reduced
• Reduced service restoration times
• High customer satisfaction ratings
• Full integration with OMS, CIS, GIS, asset management and other systems
• Greater ETOR accuracy
• Real-time status updates of work in progress
• Visualization of crew locations
• Manual data entry eliminated
CSU Future Plans

Additional work types
• Customer service
• Vegetation management
• Street light inspections
• Visualization across departments
• Automating contractors for AMI project
• Automating water and gas operations
CSU – Lessons Learned

1. Take your outage management plan *seriously*

2. Integrate your enterprise systems

3. Get and provide accurate and current operational information

4. Out perform your customers’ expectations
Questions?

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