CenterPoint’s Insight-to-Action Development with SAP PdMS

Dan Greenwood, Asset Management Consultant, CenterPoint Energy
Oliver Mainka, Product Manager, SAP

Session ID 84572
About the Speakers

Dan Greenwood
• Asset Management Consultant, CenterPoint Energy
• Dan has more than 20 years of experience in the Electric Utility Industry which includes various roles both within the industry and as a consultant.
• I water skied when I was younger and actually received a college scholarship to water ski competitively.

Oliver Mainka
• Product Manager, SAP
• “SAP Lifer” since 1990. Responsible for parts of the PdMS product. Also the SAP point of contact for the ASUG EAM SIG.
• I have been writing an almost daily photo email to family and friends in Germany and the USA since 2001
Agenda

Brief Introduction to SAP Intelligent Asset Management (IAM) and SAP Predictive Maintenance and Service (PdMS)

Introduction to CenterPoint Energy and its asset management practices

Business value case

Applying PdMS to Underground Residential Distribution (URD) equipment

Project lessons learned / results and benefits

Outlook for our future with SAP PdMS

Invitation to influence SAP on PdMS / join the ASUG SIG EAM

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Summary

Questions
SAP Intelligent Asset Management

- **Asset Network and Collaboration**
  - SAP Asset Intelligence Network (AIN)

- **Asset Strategy and Performance**
  - SAP Asset Strategy and Performance Management (ASPM)

- **Asset Health Prediction and Optimization**
  - SAP Predictive Maintenance and Service (PdMS)
  - SAP Predictive Engineering Insights Enabled by ANSYS (PEI)

- **Mobile Asset Management**
  - SAP Asset Manager
SAP Predictive Maintenance and Service

- Enables a **data science driven approach** to condition monitoring
- Flexible **extension concept** for customers to build industry or customer specific models and analytics
- A scalable **Machine Learning Engine** that drives data science insights into our business processes
- **Flexible visualizations** across equipment structures
- End-to-end process integration… Alert, Discover, Remedy
Predictive Maintenance Enables Earlier Issue Detection

More time to respond enables greater flexibility to dynamically plan maintenance events

Why more IT driven approaches?
- IIoT/device connectivity
- Big data available for training models
- Declining hardware and software costs
- Massive computing power

Potential Failure = First Indication of Failure
Part of a comprehensive asset management portfolio

SAP Predictive Maintenance and Service

- Share asset health indicators with operators/customer

- Assess asset health indicators and real-time performance to determine maintenance strategy effectiveness

- Monitor asset condition and health indicators to prioritize work and plan resources (tools, parts, tech pubs)

E2E process integration

OEM / 3rd Party Maintenance Service Provider

Reliability Engineer

Maintenance & Service Technicians
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Questions
Cautionary Statement

This presentation and the oral statements made in connection herewith contain statements concerning CenterPoint Energy, Inc.’s (“our,” “CenterPoint Energy,” or the “Company”) expectations, beliefs, plans, objectives, goals, strategies, future operations, events, financial position, earnings, growth, costs, prospects, capital investments or performance or underlying assumptions (including future regulatory filings and recovery, liquidity, capital resources, balance sheet, cash flow, capital investments and management, financing costs, and rate base or customer growth) and other statements that are not historical facts. These statements are “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. You should not place undue reliance on forward-looking statements. Actual results may differ materially from those expressed or implied by these statements. You can generally identify our forward-looking statements by the words “anticipate,” “believe,” “continue,” “could,” “estimate,” “expect,” “forecast,” “goal,” “intend,” “may,” “objective,” “plan,” “potential,” “predict,” “projection,” “should,” “target,” “will,” or other similar words. The absence of these words, however, does not mean that the statements are not forward-looking.

Examples of forward-looking statements in this presentation include statements about our anticipated capital investments, among other statements. We have based our forward-looking statements on our management’s beliefs and assumptions based on information currently available to our management at the time the statements are made. We caution you that assumptions, beliefs, expectations, intentions, and projections about future events may and often do vary materially from actual results. Therefore, we cannot assure you that actual results will not differ materially from those expressed or implied by our forward-looking statements.

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CenterPoint Energy: An Electric & Natural Gas Utility
Asset Management Enables Us To Achieve Corporate Objectives

Outcomes
- Reduced Asset Risk
- Capital Effectiveness
- System Reliability
- Maintenance Strategies
- Regulatory Transparency
- Customer and Worker...

Asset Analytics
- Readily available quality asset data enables proactive, objective ranking and insight into asset condition

Condition assessment for assets and systems
- Asset condition establishes risk and supports asset strategies

Asset risk mitigation strategies support project and program selection
- Asset risk mitigation strategies used to support project and program value

Projects and Programs
- Projects and programs support corporate objectives

Investment Optimization
- Portfolio Optimization maximizes risk mitigated per dollar invested
Asset Management Process Strategy

Value
- Technical basis for Capital and O&M budgets with measured risk
- Metrics to assess decision effectiveness
- ISO 55000 referenced
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Questions
Business Value – SAP Predictive Maintenance and Service

Moving to an Asset Health Application shifts a historically reactive asset and outage management approach to a more proactive, predictable, efficient process for managing O&M and Capital.

PdMS on SAP HANA

- **Operational Efficiency** - Better Planning and Execution and optimizing field work
- **Reliability** - More Effective Monitoring and Proactive Maintenance impacting employee utilization
- **Safety** - Understanding and Mitigating Hidden Risks providing enhanced field work management and crew preparation

- Integrating Multiple Sources of Data
- Flexible access to data closer to real time improves decision making
- The speed and flexibility to perform analysis whenever and as often as possible
- Predictive engine to compute Asset Health score
- Integration to SAP ECC allows work order creation based on insight
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Questions
Overview of Underground Residential Distribution (URD)
URD Population Characteristics

- 20,000+ URD loops
- 14,000+ miles of cable
- 200,000+ pad-mounted transformers
- Secondary pedestals, primary pull holes, terminal poles, terminators, elbows, splices and other equipment
Analytics Insights With PdMS

- Thorough analytics and statistical modelling has told us what factors are significant in determining risk of failure.
- SME input was used to determine which severity factors are significant along with the weighting of those factors.
- Through analytics and SME input we are able to determine the Risk Score of a URD loop.

URD loops are the first asset to be incorporated into the PdMS environment as it will provide valuable insight into likelihood of failure for capital investment, resulting in increased reliability and reductions in reactive work.
### Integrated Asset & Risk Analytics Benefit

Summary details of the asset as well as the analytics components can be quickly accessed to understand the loop priority score.

**Risk Score** = **Risk of Testing Failure** * **Severity**

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Data Integration Into Single Screen

PdMS allows for the user to understand work activity associated with a particular asset as well as outage information to better understand reason for potential risk. All this within a single location for more efficient decision making.

### Work Activities (3)

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Executable Order Creation

PdMS not only provides valuable insight into asset condition but also provides a method to execute the appropriate task in order to reduce risk.
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Questions
PdMS streamlined the overall work order creation process

The business process requires multiple work orders to be created for various reasons across the process lifecycle. We are now able to reduce the time and communication required to execute this process through efficiencies created by PdMS.
Reactive Outage Response Results

Loops older than 1985 experience more outages per year. Targeted assessment of these older loops provides a significant reduction in outages per year.

- **All Assessed**
  - Pre-Assessment: 0.75
  - Post-Assessment: 0.35
  - Performance Improvement: (53%)

- **PSR Not Completed**
  - Pre-Assessment: 0.60
  - Post-Assessment: 0.42
  - Performance Improvement: (30%)

- **PSR Completed**
  - Pre-Assessment: 0.94
  - Post-Assessment: 0.33
  - Performance Improvement: (65%)

CenterPoint Energy Proprietary and Confidential Information
### PdMS: Results & Benefits

| Insight to action | - Merges EAM and APM by bringing system operations and analytics under one tool  
|                  | - End-to-end solution, which covers business process from assessment to work order creation |
| Capital investment optimization | - Focus capital resources on high risk assets |
| Enhanced reliability | - Enables easy identification of candidates for assessment/replacement, improving reliability and customer satisfaction |
| Quantitative predictive AM model | - Integrates survival models and severity components to assign Health Score to assets |
| Ability to manage complete asset hierarchy | - Data, visualization, linear assets (i.e., complete loops) |
| Disparate information under a unified framework | - Outage data, IMCORP testing results, work orders, TLM w/ size recommendation, GIS information |

*CenterPoint Energy Proprietary and Confidential Information*
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Questions
CenterPoint's Future For PdMS

- Currently going through a PdMS FP06 upgrade with additional functionality
  - Review additional functionality with Asset Management team and provide feedback and gap analysis
  - Complete PdMS FP06 upgrade
  - Test and validate new functionality within system using URD Loops

- Evaluate expert algorithms for additional assets

- Implement additional assets into PdMS system
  - 3-phase underground transformers
  - Intelligent Grid Switching Devices (Reclosers)
  - Substation Equipment
    - Transformers
    - Breakers
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Questions
Opportunities to Collaborate and Try

Remote Sessions
- Share business processes / pain points
- Review functions and designs
- 1:1 or in group

On-site Workshops and User Research
- Business user research / observations
- Usability Testing
- Conference room discovery workshops
- 1-2 day events
- 1:1 with SAP

Influence Council

Interested?
Contact
oliver.mainka@sap.com

Proof-of-concept
- In-depth PoC against customer processes, data
- 1-3 month project involving several customer business and IT people
- Research into customer needs
- 1:1 with SAP

Sales Cycle

Influence Depth

Effort
What the ASUG EAM SIG Does

Mission: help its members get more value from and learn about SAP EAM

Educate
- Organize webcasts (calendar)
- ASUG Annual Conference EAM track
- Provide content for other ASUG SIGs and local chapters

Influence – foster and communicate EAM content in
- Customer Connection program (EAM focus)
- Customer Engagement Initiative program
- Influence Councils (currently none)

Network
- Collaboration web site for posting content and Q&As
# EAM Solutions in our Community

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<th>Road Map Link</th>
<th>Help Link</th>
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**Details and Links**
Your ASUG EAM SIG Volunteer Team

Organizing the EAM SIG

Listening to your suggestions for a better EAM community

Details and contacts

Customer Volunteers

Linda Dietzel / The Hershey Company

Bob Pennington / CITGO Petroleum

Jeff Smith / Fairfax Water

SAP Point of Contact

Oliver Mainka / SAP

ASUG Advocates

Paul Kurchina / ASUG

Andrea Pennington / ASUG
How to Become a Member

1. Register for the EAM SIG
   Go to your member dashboard
   Select your Profile Status
   Select to Join ASUG Communities
   Select Special Interest Group
   Join the EAM community

2. Follow the content on the SIG community website
   - Go to the site
   - Select Follow
   - Select all options
   - Select Profile Preferences
   - Select email options

3. Engage!
   - Post content
   - Ask and answer questions
   - Make your desires known to the volunteer team
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Questions
Key Outcomes/Objectives

1. CenterPoint Energy applied SAP Predictive Maintenance & Service to determine Underground Residential Distribution equipment in need of proactive mitigation, and create work orders to remediate and reduce risk
2. A number of procedural and operational benefits were gained by using the product
3. CenterPoint Energy plans to expand the use of SAP Predictive Maintenance & Service to other asset types
4. SAP invites customers and partners to influence the future direction of SAP Predictive Maintenance & Service
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Take the Session Survey.

We want to hear from you! Be sure to complete the session evaluation on the SAPPHIRE NOW and ASUG Annual Conference mobile app.
Q&A

For questions after this session, contact us at richard.greenwood@centerpointenergy.com and oliver.mainka@sap.com.
Presentation Materials

Access the slides from 2019 ASUG Annual Conference here:

http://info.asug.com/2019-ac-slides
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