



Mobilize Field Operations for Utilities Using Mobile SAP Work Manager

Session ID # 83406

About the Speakers

Alejandro Reyes

- IT Program Director, AES
- ✓ Delivers large transformation technology projects across Global Enterprises
- ✓ 12 years SAP experience
- ✓ MsMIT from University of Virginia



Go HOOS!

Suhas Aligave

- Manager, PwC
- ✓ Senior advisor responsible for Digital Utilities, Enterprise mobility, Robotics Process Automation, Drones, Data Science

Rick Siegfried

- Director, PwC
- ✓ Power & Utilities Leader

Key Outcomes/Objectives

Mobilize Field Operations for Utilities Using SAP Work Manager

Attend this session to learn how AES Utilities field technicians complete work and meet regulatory and compliance standards, specifically with preventive & reactive maintenance using SAP Work Manager on a mobile device.

- Hear lessons learned from this project
- Learn how SAP Mobile WorkManager digitize field operations
- Leverage SAP cloud for enterprise mobile solution
- See a live demonstration on how to complete work using a mobile device
- Overview how mobile fits into PWC's SMART T&D approach

Agenda

- | | |
|----------------------------------------------------------------------|----------------|
| 1. Overview and Context | 10 mins |
| 1. AES Overview & Background | |
| 2. AES ERP replacement for IPL & DPL | |
| 3. DPL Substation IPS replacement – Infographic | |
| 4. IPS Business challenges, scope & timeline | |
| 2. Solution & Demo | 25 mins |
| 1. SAP WorkManager 6.5.5, Benefits of WorkManager | |
| 2. Enhancements – Measurement Points, Compliance, Attachments, GIS | |
| 3. Business benefits to AES, SAP / Agency Cloud Edition Architecture | |
| 4. Demo – SAP WorkManager / SAP Cloud Platform | |
| 3. PwC Advisory for Utilities Overview | 5 mins |
| 1. PwC Overview | |
| 2. SMART T&D integrated solution | |

AES is a Fortune 500 Global Power Company

4

Market-oriented strategic business units

4

Continents

15

Countries



AES Serves
2.4M
customers



6
Utility
Companies

AES is energized by a global workforce of approximately

9,000
PEOPLE

\$32.5B

Total Assets owned & Managed

\$10.7B

Total 2018 Revenues



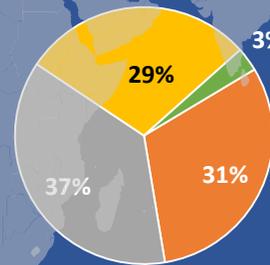
31,792

Gross MW in Operation*

4,440 MW

Generation capacity under constructions

Fuel Type



Coal

Gas

Renewables

Oil/Diesel/Pet Coke

Mission

Improving lives by accelerating a safer and greener energy future.

Values

- Put Safety First
- Act with Integrity
- Move with Agility
- Have Fun through Work
- Strive for Excellence

* 22,232 proportional MW (gross MW multiplied by AES' equity ownership percentage)

AES ERP replacement for IPL & DP&L

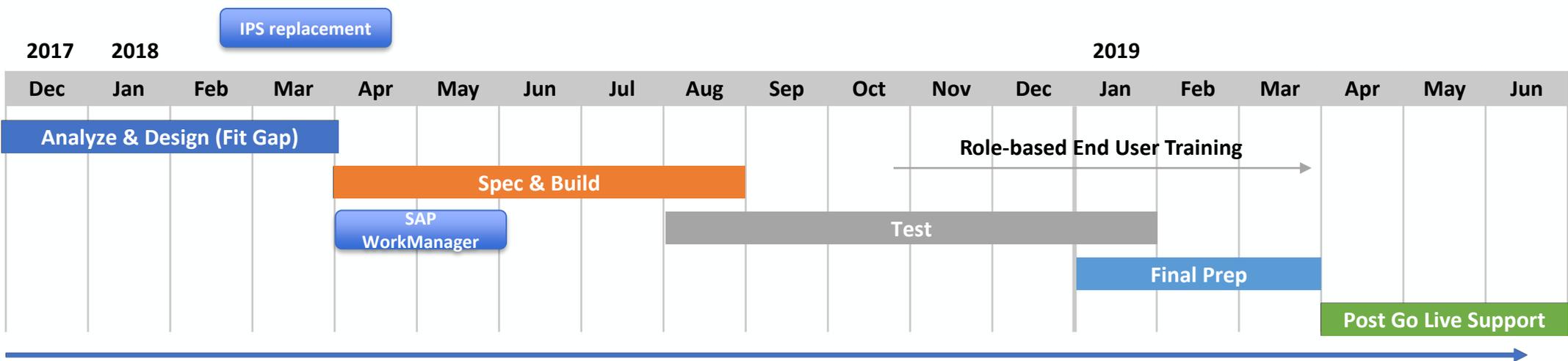
Current Landscape



Project Objectives

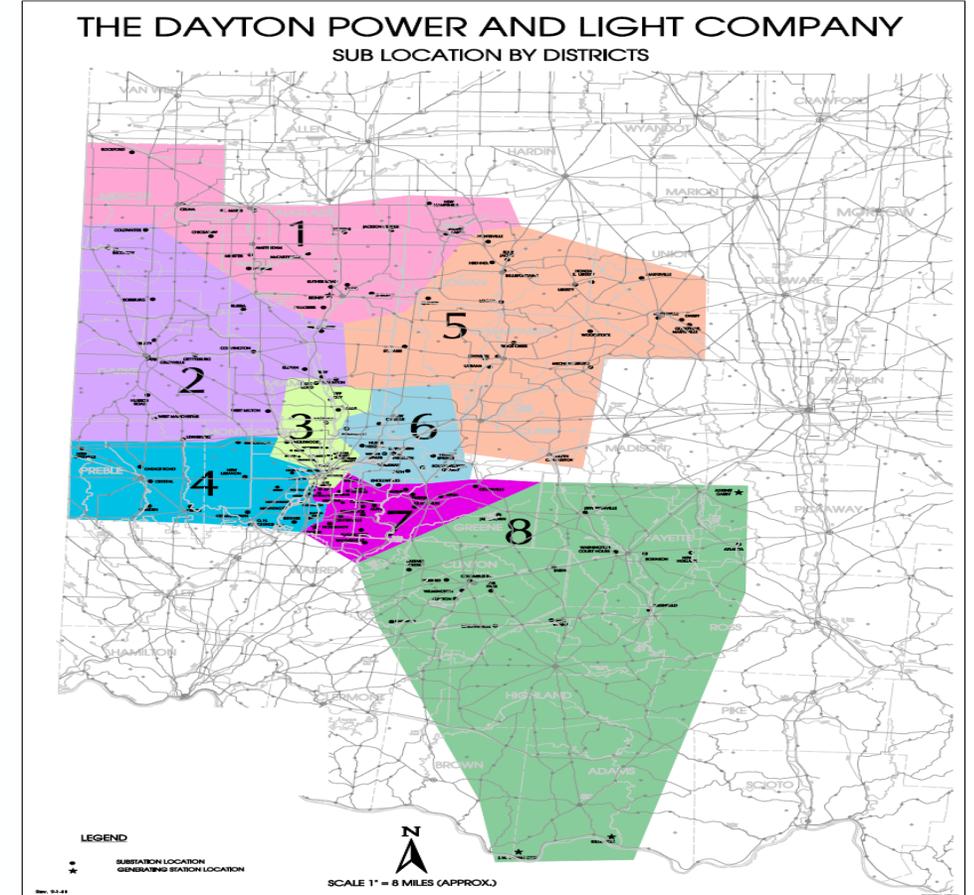
- Implement common business processes across IPL & DPL
- Facilitate adoption of SAP global templates
- Enables improvements in local and global processes
- Reduce complexity of technology
- Deliver operational benefits

Timeline



Dayton Power and Light IPS Replacement

1. Over 520,000 customers in 24 counties throughout the Miami Valley in Ohio
2. Service territory over 6,000 square miles
3. 154 electrical transmission and distribution substations
4. 8 Districts
5. Two technicians per district
6. ~450 Maintenance orders / year, multiple operations per order, multiple measuring points per operation



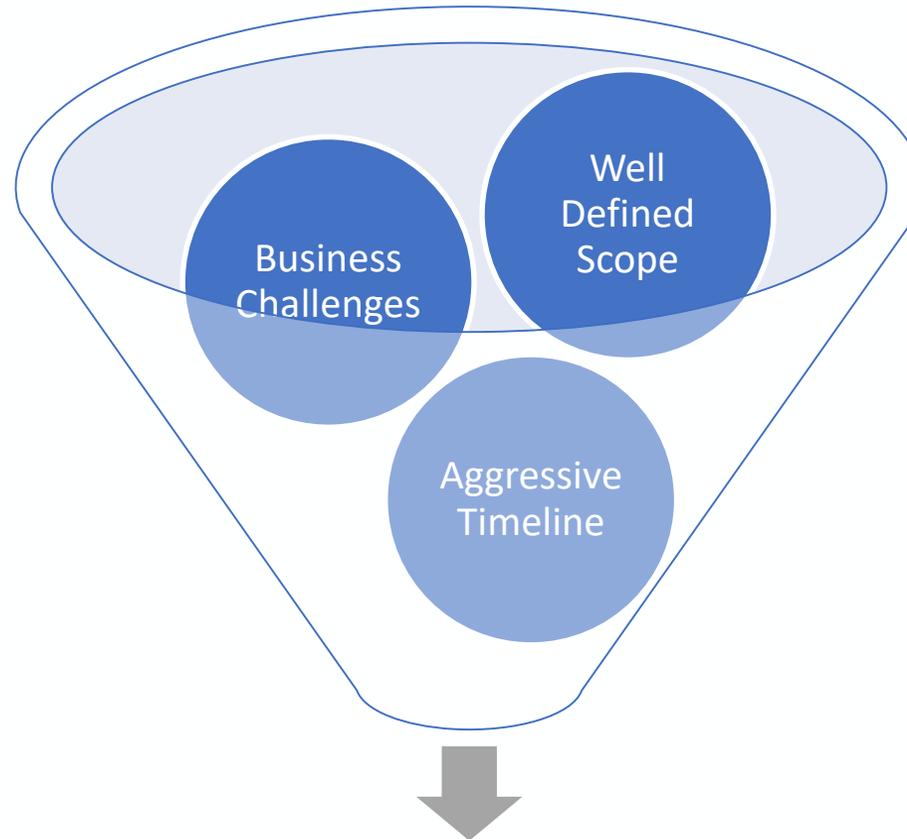
IPS Business challenges, scope, timeline

Business Challenges:

- Regulatory inspection of every equipment in cycles of 40 days
- Geographical distribution of substations
- Manual process (paperwork)
- Dated legacy solution
- No work scheduling in place

Aggressive Timeline:

- 6 – 8 months



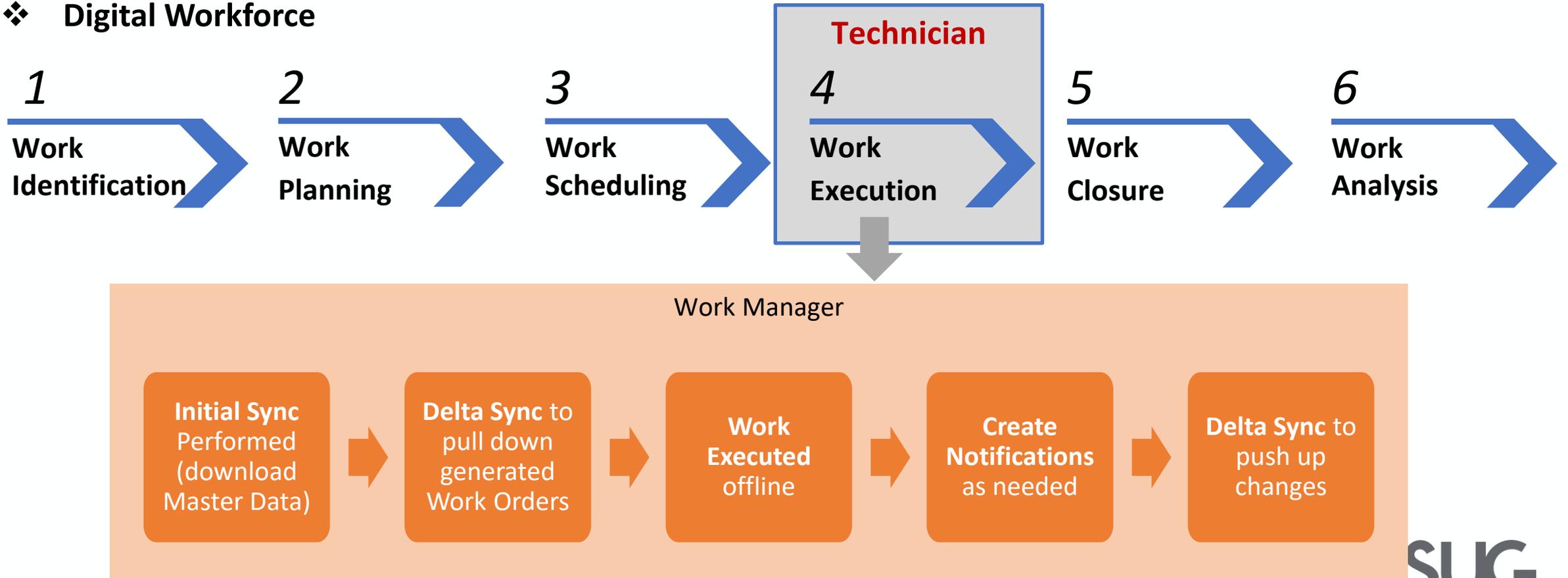
Successful Go Live

Scope:

- Deploy SAP Workmanager mobile solution for Preventive and Corrective maintenance
- Leverage SAP's Cloud Platform to deploy Agency Service
- Simplify the measurement point screen & compliance date calculation
- Provide equipment manuals attached to the assets through WorkManager

Business Drivers for DPL Substations

- ❖ Workplace Safety
- ❖ Compliance
- ❖ Industry Standard IPSECA Work Management Process
- ❖ Digital Workforce



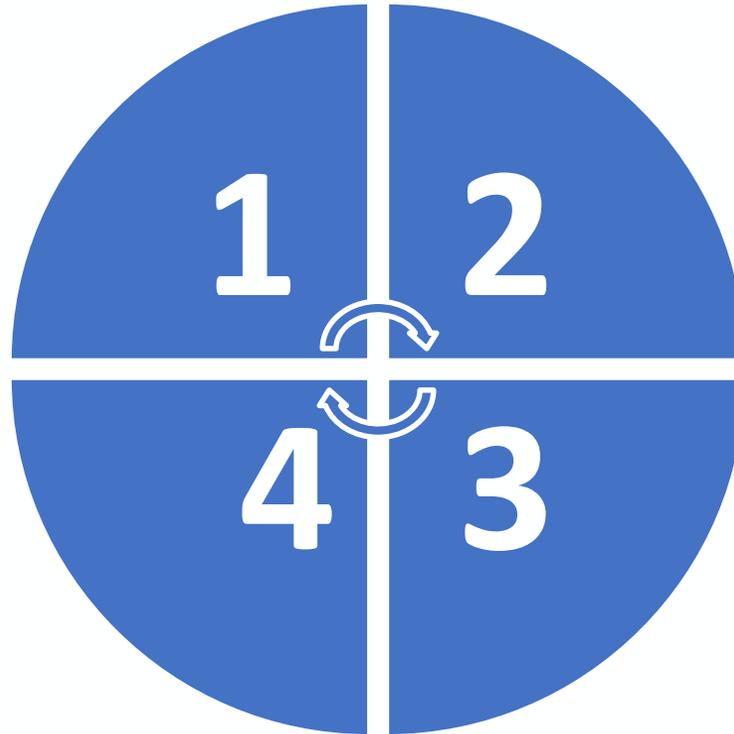
SAP WorkManager

Work Order Management

- **SAP Mobile Solution**
- Manage work orders and notifications, recording of problems, actions, time, parts, measurement readings, and attachments
- Enable geographic information system (GIS) integration

Flexible Connectivity

- **Access maintenance data and processes anytime, anywhere**
- Manage existing work and asset data whether you're online, **offline**, or occasionally connected
- Automate synchronization with the SAP backend at user-defined intervals



Device Flexibility

- **Run natively on mobile devices**
- Support iOS and Android phones and tablets and Windows laptops
- Support for SAP ERP and SAP S/4HANA as an asset management backend solution

Deployment Flexibility

- **Choose between cloud or on premise deployment**
- Use SAP Cloud Platform Mobile Services or SAP HANA Enterprise Cloud for cloud deployment
- Leverage SAP Mobile Platform for on premise deployment

SAP WorkManager Mobile Solution

The screenshot displays the SAP Work Manager mobile application interface. The top navigation bar includes a back arrow, the text "SAP Work Manager", and a refresh icon. Below this is a menu with tabs for "Work Orders", "Notifications", "Functional Location", "Equipment", and "Settings".

The main content area is split into two panels. The left panel, titled "Work Orders", shows a summary of "80 Total" work orders. It includes a search field and a list of work orders with expandable details:

- SPS2-72.5-40-1 2000/40 TYPE 7PM**
TD20 2001296823 DISTR4
RR-1 69G103
FuncLoc NORTHLAWN 69 KV
- HVB-362-50KA 2000/50 TYPE 11PM**
TD20 2001296825 DISTR6
ST-EE 345G056
FuncLoc STUART 345 KV
- HVB-362-50KA 2000/50 TYPE 11PM**
TD20 2001296828 DISTR6
ST-TT 345G038
FuncLoc STUART 345 KV
- 690GM5000 2000/40 TYPE 8PM**
TD20 2001296829 DISTR4
RR-1 69G103

The right panel displays the details for the selected work order "Work Order 2001296823 - Received". It features tabs for "Detail", "Notification", and "Operations". The "Detail" tab is active, showing the following information:

- Work Order 2001296823 - Received**
- Description:** SPS2-72.5-40-1 2000/40 TYPE 7PM
- Planning Plant:** 1923 - Dayton Service Building
- Work Center:** DPL_SUBS - DP&L Substations
- Wrk Ctr Plant:** 1923 - Dayton Service Building
- Type:** TD20 - Preventive / Predictive Maint Rel
- Activity Type:** 040
- FuncLoc:** 1923-SUB-RR0-00069-BRK00-1 - RR-1
- Equipment:** 3000523542 - SPS2-72.5-40-1 2000/40 TYPE 7

Below the details is a "History" link and a "Work Order Notes" section containing the following text:

SPS2-72.5-40-1 2000/40 TYPE 7PM
Mobile status set to RECEIVED by user MCCRAYB00 on 2019-03-06 15:02:12

Simplified Compliance

- ✓ Meet compliance by completing the work within timeframe
- ✓ Enhance the WorkManager screen to color code the Order and Operation based on compliance date

The image displays three overlapping screenshots of the SAP Work Manager interface. The top-left screenshot shows a list of work orders with a total of 6. The middle screenshot shows a list of work orders with a total of 9, where the top item is highlighted in green. The bottom-right screenshot shows a detailed view of an operation with a total of 21, where the top item is highlighted in green. The color coding indicates compliance status: Red for overdue, Orange for grace period, and Green for within compliance.

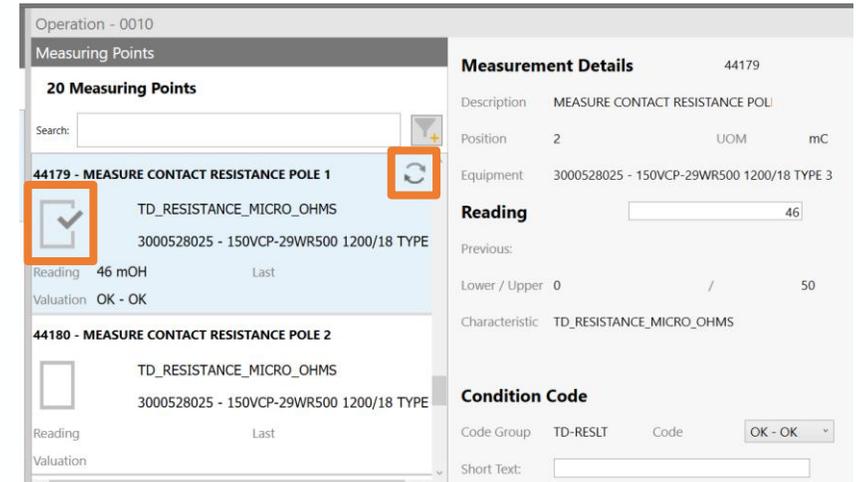
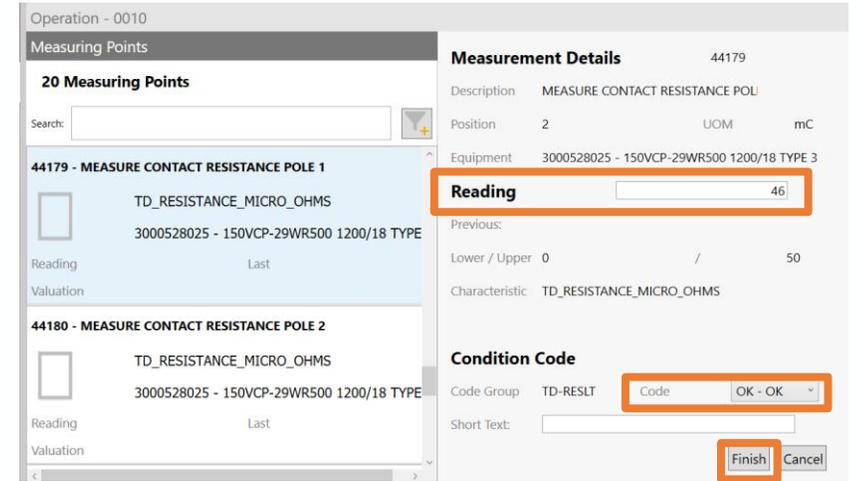
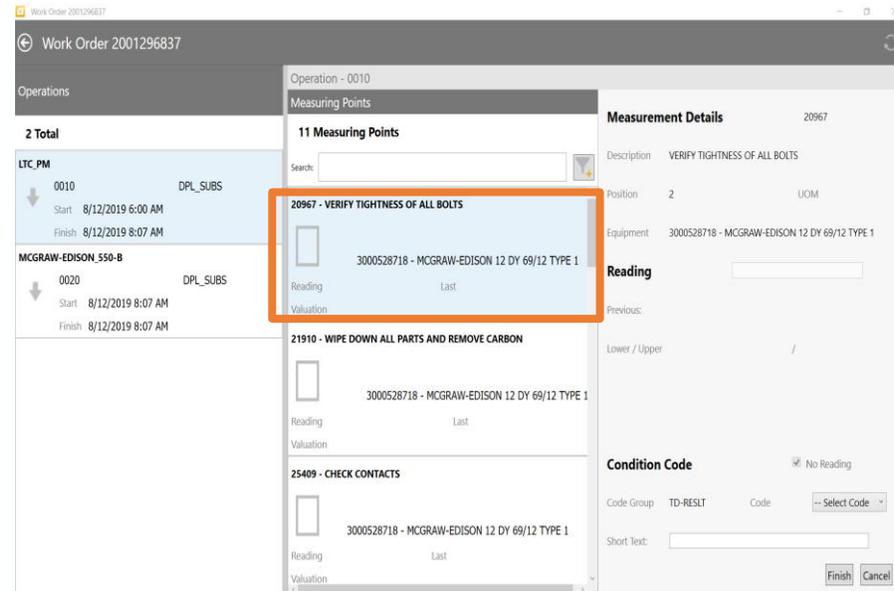
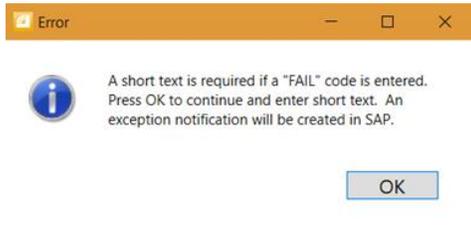
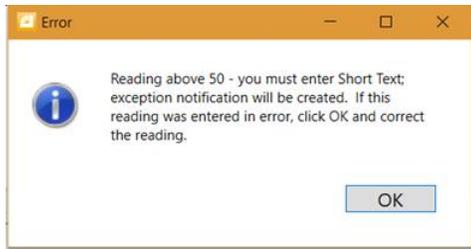
Work Order ID	Priority	Due Date	Compliance Status
200117710	Priority 2	11/28/2018	Overdue (Red)
200117784	Priority 3		Grace Period (Orange)
2001180742	Priority 2		Overdue (Red)
2001180843	Priority 3	12/20/2018	Overdue (Red)
2001180871	Priority 2	1/8/2019	Overdue (Red)
2001180889	Priority 3	1/9/2019	Within Compliance (Green)

Operation ID	Start Date	Finish Date	Compliance Status
0010	1/9/2019 5:00 AM	1/9/2019 5:00 AM	Within Compliance (Green)
0020	1/9/2019 5:00 AM	1/9/2019 5:00 AM	Overdue (Red)
0030	1/9/2019 5:00 AM	1/9/2019 5:00 AM	Overdue (Red)

- **RED** – Work Overdue
- **ORANGE** Grace Period
- **GREEN** Within Compliance

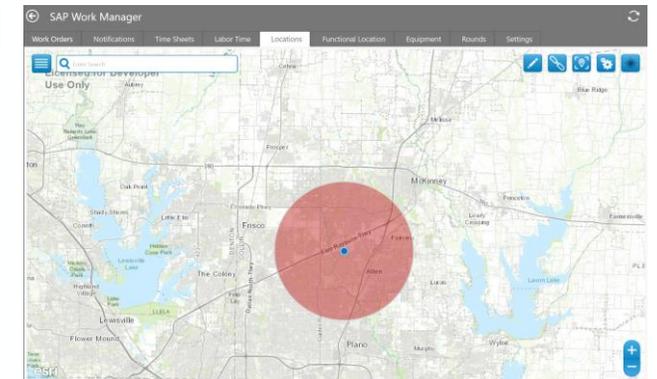
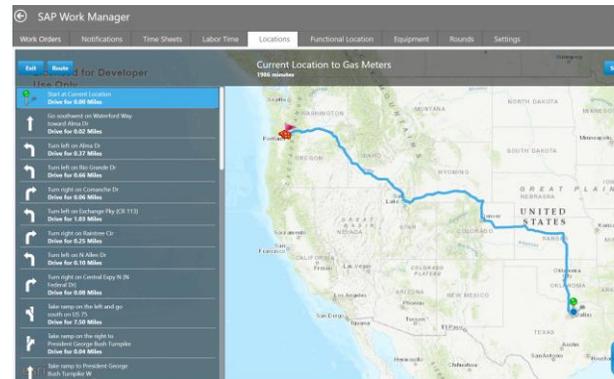
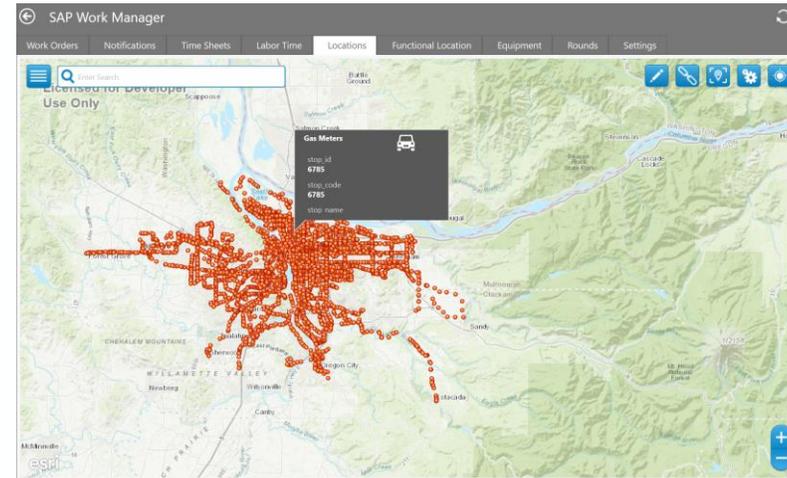
Simplified Data Collection

- ✓ Simplified Measurement Read Screen
- ✓ Reduced number clicks
- ✓ Integrated validation within mobile solution
- ✓ Automated Notification Trigger



Future Scope - Integration with ESRI GIS

- ✓ ESRI map guided work execution
- ✓ Know the work location on the map
- ✓ Know the asset location on the map
- ✓ Create GIS tags for assets based on the map
 - ✓ Point
 - ✓ Linear
 - ✓ Polygon
- ✓ Turn by turn driving direction
- ✓ Show the work near me



SAP WorkManager Key Benefits to AES

Meet Compliance Requirement

Timely processing of workorders, notifications, asset master data whether online or offline. Avoid cost of the missed compliance due to color coding the Orders, Operations and ensure assets are serviced in a timely manner

Reduce paper trail

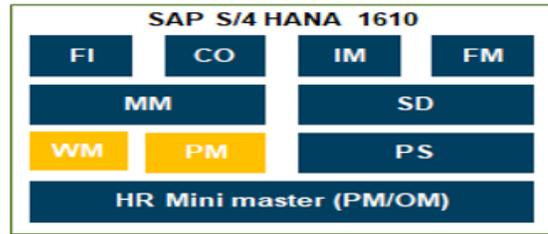
Asset measurement data visible in the backend immediately for further processing. Asset manuals available in offline mode for reference

Improved decision making and reduce risk

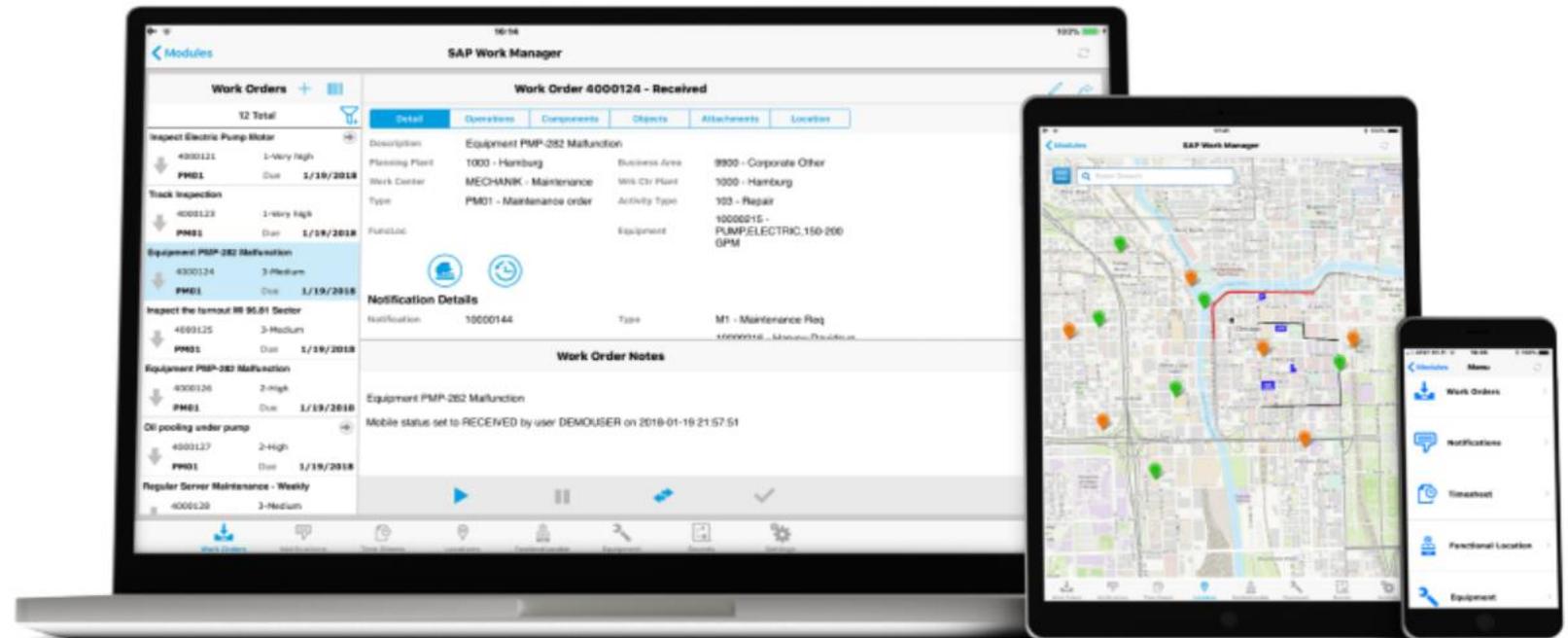
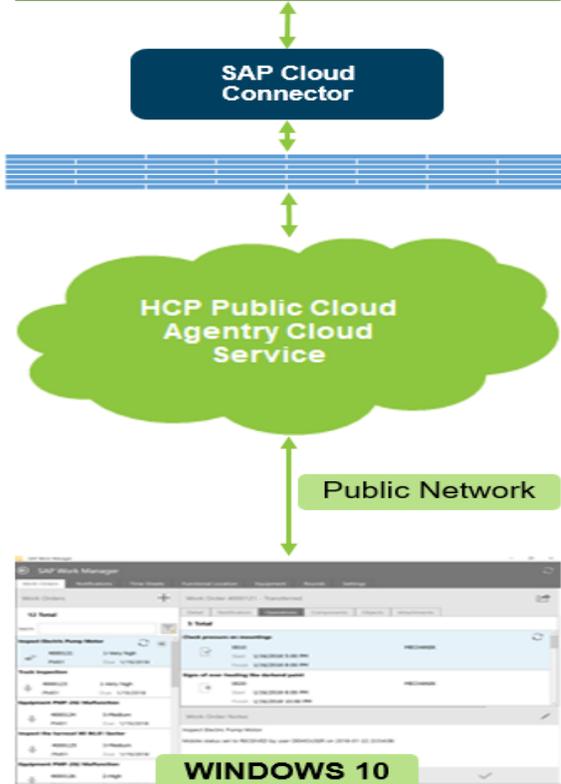
Better visibility into operational activities and Maintenance history from the mobile device and the backend SAP

Increased Asset uptime and reduced maintenance backlog

SAP WorkManager – AES WM Architecture



- SAP S/4-1610 in the **SAP Enterprise Cloud**
- AGENCY Mobile Service in the **SAP Cloud Platform**
- WINDOWS10 Devices



DEMO – SAP WorkManager 6.5.5

DEMO

Completing Readings on Work Orders

The screenshot shows the SAP Work Manager interface. At the top, there are tabs for 'Work Orders', 'Notifications', 'Functional Location', and 'Equipment'. Below the tabs, a search bar is visible. A list of work orders is displayed, including 'GE 12 DY 69/12 TYPE 1PM' and 'NORTH AMERIC 120 YY 138/69 TYPE 1PM'. A 'Filter' dialog box is open in the foreground, showing a filter list with 'District/Location' set to 'equal' and 'DISTR1'. Buttons for 'Set Filter', 'Clear Filter', and 'Cancel' are visible.

The screenshot shows the details of a work order (2001296837) for operation 0010. The 'Measuring Points' section lists 11 points, with one highlighted: '20967 - VERIFY TIGHTNESS OF ALL BOLTS'. A second screenshot shows the details for operation 0010 with 20 measuring points. One point is highlighted: '44179 - MEASURE CONTACT RESISTANCE POLE 1'. The 'Reading' field for this point is set to '46'. The 'Measurement Details' section shows 'Description: MEASURE CONTACT RESISTANCE POLI', 'Position: 2', 'UOM: mC', and 'Equipment: 3000528025 - 150VCP-29WR500 1200/18 TYPE 3'. The 'Condition Code' section shows 'Code Group: TD-RESLT' and 'Code: OK - OK'. A 'SAVE' button is highlighted at the bottom.

Error

Reading above 50 - you must enter Short Text; exception notification will be created. If this reading was entered in error, click OK and correct the reading.

OK

Error

A short text is required if a "FAIL" code is entered. Press OK to continue and enter short text. An exception notification will be created in SAP.

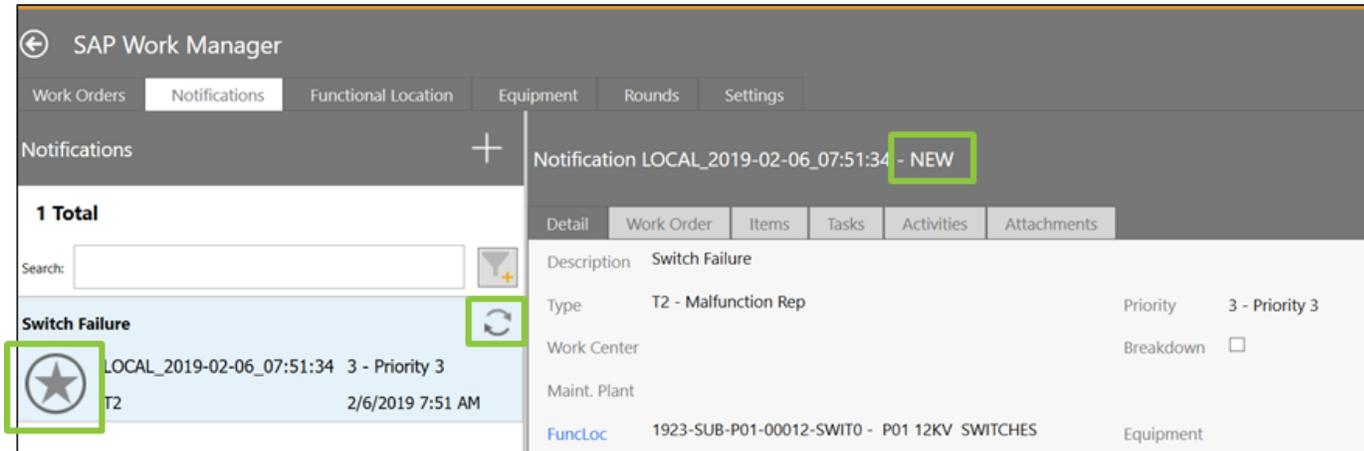
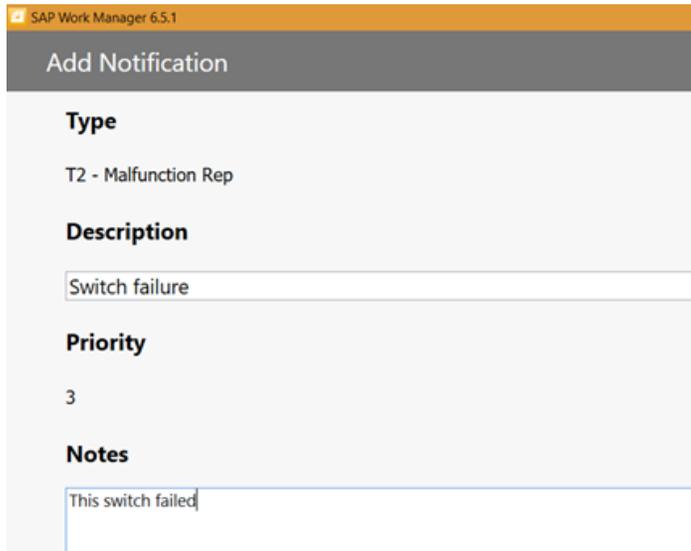
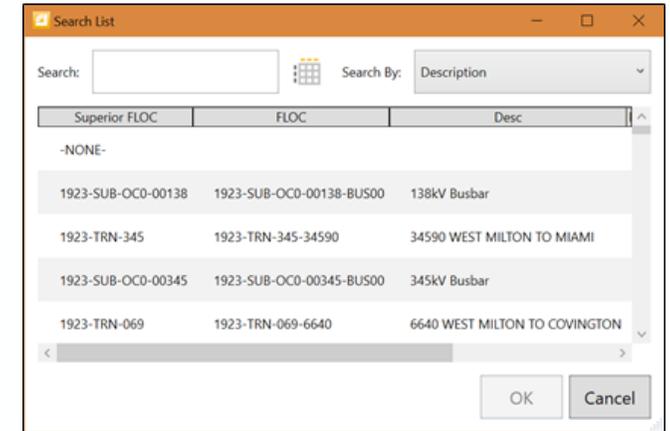
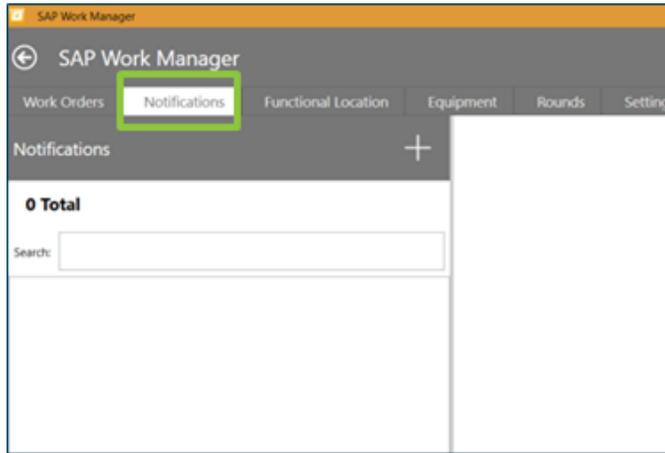
OK

Not all Measuring Points Complete

This operation can not be completed. Please action all associated measurement points.

OK

Creating Notifications



Finding Manuals and SO Prints

Work Order 2001290165 - Received

Detail	Notification	Operations	Components	Objects
Description	AHJ-60-138-15000 2000/60 TYPE 5PM			
Planning Plant	1923 - Dayton Service Building	Business Area		
Work Center	DPL_SUBS - DP&L Substations	Wrk Ctr Plant	1923 - Dayton Service	
Type	TD20 - Preventive / Predictive Maint Rel	Activity Type	040 - Preventive Main	
FuncLoc	1923-SUB-RS0-00138-BRK00-B - RS-B	Equipment	3000528618 - AHJ-60-	

SAP Work Manager

Work Orders | Notifications | **Functional Location** | Equipment | Settings

Functional Location: **Functional Location - 1923-SUB-BC0**

1 Total

Search:

SHELBY

1923-SUB-BC0

Serial

Plant: 1923 - Dayton Service Building

Status

Description: SHELBY
 Category: M - Technical system - standard
 Type
 Plant: 1923 - Dayton Service Building
 Superior
 Location: DP&L District 1
 Room
 Section

[Orders](#)

Equipment - 3000528618

Equipment - 3000528618

Description	AHJ-60-138-15000 2000/60 TYPE 5	Status	INST
Plant	1923 - Dayton Service Building	Type	
Work Center	DPL_SUBS	Category	M - Machines
FuncLoc	RS-B	Manufacturer	MCGRAW-EDISON
Superior		Model No.	
Location	DP&L District 7	Part No.	
Section		Serial No.	19943
Room		Inventory No.	IPS_0011199

[Orders](#) | [Notifications](#) | [Warranties](#) | [Partners](#)

1 Linked Documents

	Name: AHJ-54, AHJ-60 - S290-30-1.pdf	Status: Not Downloaded
	Type: AHJ-54 & AHJ-60 - S290-30-1	

Functional Location - 1923-SUB-R50

Description: SUGARCREEK
 Category: M - Technical system - standard
 Type
 Plant: 1923 - Dayton Service Building
 Superior
 Location: DP&L District 7
 Room
 Section

[Orders](#)

1 Linked Documents

	Name: so055-Default-000.pdf
	Type: SUGARCREEK SO PRINT

Installed | Uninstalled | **Documents** | Classifications

1 Linked Documents

Name: so055-Default-000.pdf

Type: SUGARCREEK SO PRINT

Work Manager Lessons Learned

- Involve field technicians from early on to make them familiar with the mobile solution – **For User adoption**
- Perform data volume sizing to make sure the cloud can handle the data (Full SYNC) – **Avoid surprises after GoLive**
- Address device management and device security – **Audit**

PwC Overview

PwC Global SAP placemat

Helping our clients maximize the value of their SAP investment



Our practice:
9200 SAP consultants in over **59** countries

5000 Consultants trained on S/4HANA

SAP Alliance:
#5 Global Partner* & top 3 Partner in 7 countries

#1 S/4HANA on-prem & cloud Partner & **#2** for global certifications

+\$125M SAP software license impact

SAP credentials:
303 S/4HANA projects** with **105** live in **38** countries

- What are PwC unique differentiators?**
- PwC is unique in our value to clients and do not compete with the commoditized SI's
 - We build upon legacy relationships with our clients and find new opportunities to provide roadmaps for large, complex business transformation work.
 - PwC IP for BXT digital driven customer co-creation events as well as our agile delivery methodology
 - S/4HANA P3 global industry templates, Enterprise Insights, Leonardo industry solutions, and our analytics tools.
 - Expansion of our SAP practice into other lines of business such as Tax, Assurance, Finance Effectiveness and Deals enable us to deliver world class projects
 - "Hiring smarter", recruiting the best talent from top universities as well as growing our direct admit partner team with highly skilled product and industry experience from leading competitors.
 - S/4HANA product Advisory Council member

- Industry Focus**
- Consumer
 - HighTech
 - Industrial Products
 - Utilities
 - Energy
 - Pharma
 - Retail
 - Aero & Defense

- Alliance Contacts:**
- Global: Jacqueline Towers
 - US & LATAM: Mayra Cedeno
 - EMEA: Sandra Collins
 - APJ: Dipanwita Ghosh
 - CAN: Doug Hommy

- Integrated Solutions***
- Finance Transformation
 - HR Transformation
 - Source2Pay
 - Connected Supply Chain
 - Smart Factory
 - Sales & Marketing Excellence
- These focus areas cover all core products in SAP's Intelligent Enterprise portfolio
- *Many other industry focused integrated solutions will align with our Global Industry PoV's

What the Analysts say about PwC	Worldwide Consulting GartnerLeader	Financial Management Consulting GartnerLeader	Business Transformation Forrester Leader	Digital Transformation & Systems Integration IDC Leader	Procurement Consulting AML Leader	SAP implementation services IDC Leader

*2018 calendar year results; based on 17 partners

**S/4 stats as of Feb 19, 2019



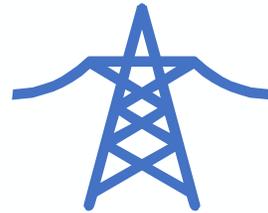
S/4HANA SMART T&D Integrated Solution

The Power & Utilities Industry is Changing



Emerging Disruptive Technology

New technologies enabling utility modernization



Shifting Utility Economics

Changes to revenue sources and distribution



Expanding Customer Requirements

Increased need to drive customer engagement

S/4 HANA SMART T&D Integrated Solution

Suhas

These rapidly changing trends to digitize and integrate can be **overwhelming, time consuming** and **expensive**

Our client's are asking for future looking industry solutions that allow them to visualize "what good looks like" and allows them to more rapidly deliver innovation, integration and business improvement.

Work Management Solution

Providing consolidated system and process to **standardize** and **simplify** operations

Asset Management Solution

Providing lean asset-location hierarchy for accurate rendering of assets and **up-to date** and **compliant** asset maintenance

Integration & Analytics

Scheduling Solution

Providing **transparency** into crew availability and **flexibility** to make last minute changes without losing productivity

Mobile Solution

Providing mobile devices to streamline the data collection process and increase overall efficiency in the field

Efficiency & Compliance

T&D/Customer:

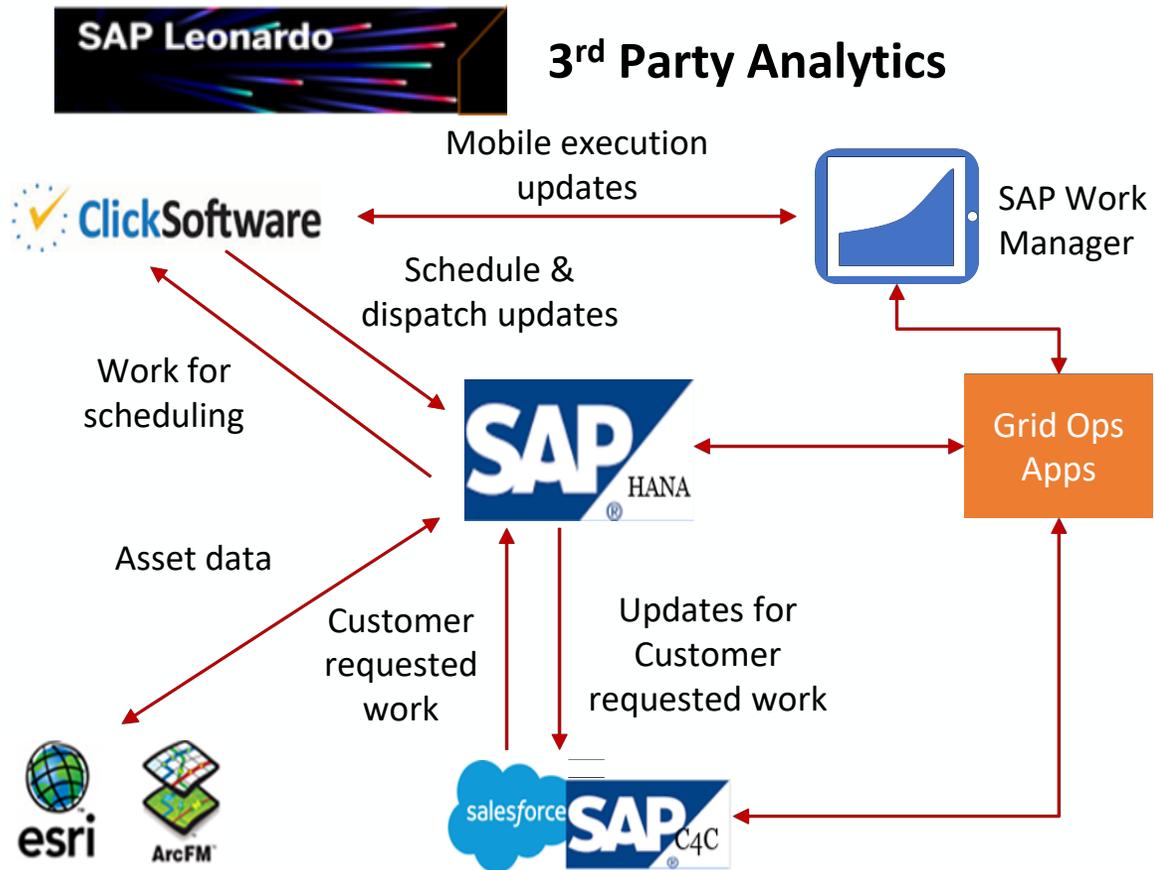
Immediate and transparency into crew Availability and flexibility to make last minute changes, we solve the short cycle/long cycle challenge

Real Time FERC T&D:

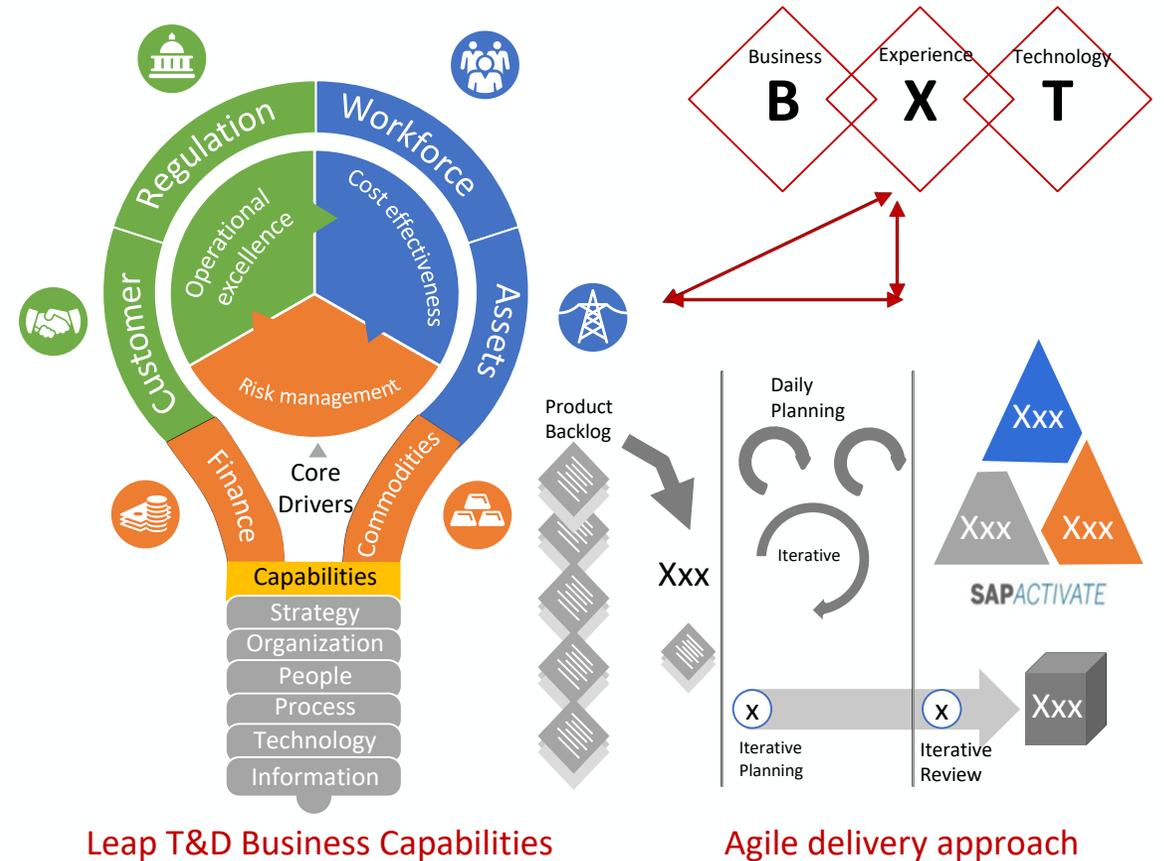
Providing a single, simple solution to FERC data and reporting

S/4 SMART T&D End to End Working Integrated Solution

Industry platforms for business needs and usability



Delivery model maximizing efficiency and innovation



S/4 HANA SMART T&D Provides Utility Outcomes that Matter



Improved Workforce Productivity

Increased demand in Power & Utilities for easy to use solution to streamline scheduling and dispatch processes

- Focus on safety
- Easy to use Digital tools
- Accurate Crew Utilization Rates
- Centralized Resource Allocation
- Real Time Schedule updates and flexibility
- Overview of work and historical records
- Capture & view as-builts on Mobile



Predictable Asset Performance

Establish Asset Location Hierarchy and System of Record

- Embedded asset criticality, FMEA, and Risk
- Seamless asset integration between systems
- Risk based Inspections with Sensors or on Mobile
- Auto sync new assets
- Generate Key Reports



Modern Workforce

Enable transformative capabilities for mobile work execution and advanced scheduling & dispatch

- Eliminate Paper in Plants with eWP
- Reduce Complexity
- Improve Scheduling, Dispatch, and Work Status
- Engage Modern Workforce with Mobile
- Maximize GIS tools for T&D / Customer



Improved Compliance

Redefine compliance through preventative maintenance, work order supervision and compliance reporting

- Simplified planning
- Automated scheduling of work orders / inspections
- User & security controls to meet compliance
- Easy & quick generation of compliance reports



Configuration Control / Traceability

Key Drivers for configuration / Materials Traceability are “Where does this item come from?” and “Where are similar items installed?”

- Managed alignment between Design – As-Built – Operation Data
- Clear link between lot, item, and asset
- Shared Asset characteristics across all System of Use
- Single point of tracking
- Clear audit trail
- Multiple parties can input data

Enablers:

Clean Data

RPA

ML/AI

Digital/Mobile

Standard Process

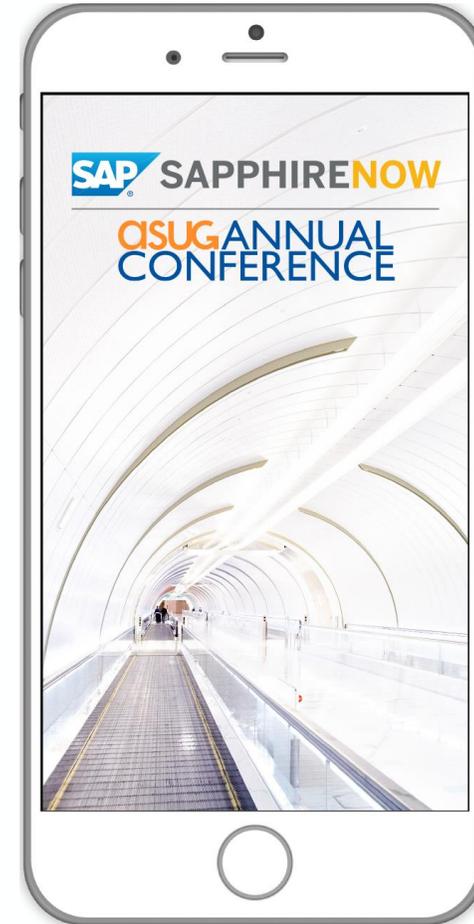
BOTs

Dashboards

Forward Metrics

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.



Presentation Materials

Access the slides from 2019 ASUG Annual Conference here:

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

Q&A

For questions after this session, contact us at
Sahas.Aligave@pwc.com and alejandroj.reyes@aes.com
rick.siegfried@pwc.com

Thank You

©2019 PwC. All rights reserved. PwC refers to the US member firm or one of its subsidiaries or affiliates, and may sometimes refer to the PwC network. Each member firm is a separate legal entity. Please see www.pwc.com/structure for further details.

This content is for general information purposes only, and should not be used as a substitute for consultation with professional advisors.

Let's Be Social.

Stay connected. Share your SAP experiences anytime, anywhere.
Join the ASUG conversation on social media: **@ASUG365 #ASUG**

