SAP based Mobile Maintenance and Service
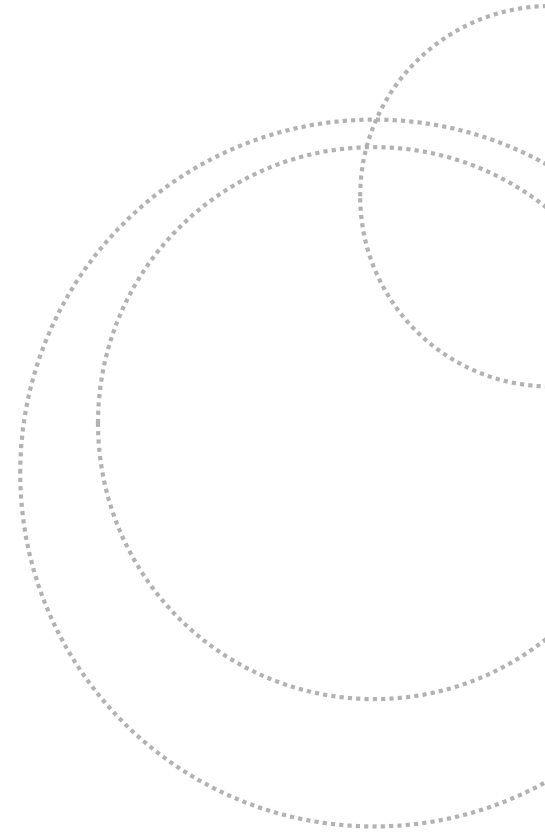
TA Cook - SAP Mobile Applications for Asset Management

26.10.2017

AGENDA

1 Evora IT Solutions Company Overview

2 Our Approach to SAP Mobile Projects

3 Lessons Learned & Outlook

Offices in **USA, Germany, India**

SAP and Mobile expertise: **Mobility & Scheduling (Mobile Workforce Management)**

User experience expertise: **SAP Fiori, SAP Screen Personas and Evora platform templates with SAP UI5**

Partnerships with **SAP, ClickSoftware and leading System Integrators**

Close personal contact to current SAP leadership team

Evora History

Evora IT Solutions is a premier end-to-end provider of scheduling and mobile workforce management solutions with experience in over ten verticals, including utilities, oil & gas, consumer products, manufacturing, and pharmaceuticals, combining expertise from multiple scheduling and mobility solutions including ClickSoftware and SAP.

evora — IT SOLUTIONS —

2002-2009
Evora founders met and work together at SAP & ENERGY4U (Atos)

2011
Evora IT Solutions India founded

2012
Mobility Team wins Syclo Partner of the Year Award

2013
Evora Solutions US and Evora Solutions Germany established

2014
Portfolio enhanced by UX Design Services, Custom App Development & Products

2015
Number of Employees over 40

Global Support Organization (Application Management) established

2016
50+ Projects in <24 months delivered HCP Projects

2017
Projects in 20+ countries

We work with more than half of DAX companies

SAP Strategic Partner & SAP Early Adopter Care

Additional Evora Intellectual Property

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Portfolio

Schedule & Dispatch	Mobile Solutions (Evora and SAP)	Custom Applications	SAP Fiori	SAP Screen Personas

Mobile Workforce Management	Design Services

Cloud & Consulting for Plant Maintenance, Service, Sales and Marketing

Support & Application Management

SAP Work Manager Projects Involving Evora Team Members

AGENDA

The Mobile Workforce Management Cycle

Assign jobs

SCHEDULING AND DISPATCHING

Integrate, install and enhance optimized scheduling systems like **SAP MRS, Click Schedule** or introduce **EvoPlan-Dispatching Tool** for manual assignment

INTEGRATION AND CONFIGURATION

Streamline business processes in multiple backend systems e.g. by configuring and enhancing **SAP PM, SAP IS-U or SAP CRM** or by preparing information for efficient mobilization
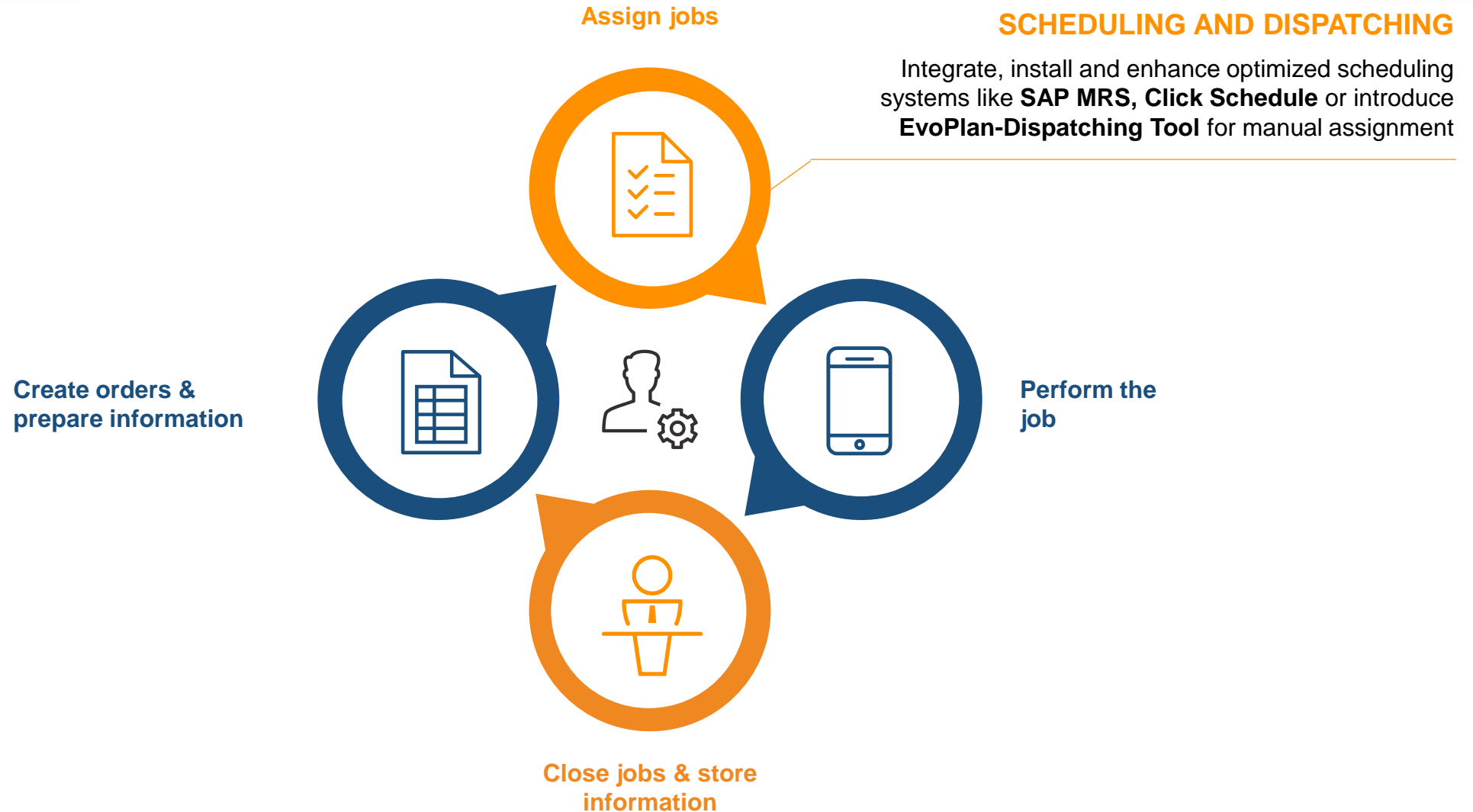
Create orders & prepare information

Perform the job

MOBILE

Mobilize your workforce, customers and partners with tailored mobile solutions based on SAP standards like

SAP Work Manager, SAPUI5 Developments, SAP Fiori

SUPPORT AND CROSS-TOPICS

Introduce review and error management cockpit to ensure a smooth information flow back into the main system. notifications get created to follow up on critical failures starting the cycle anew. Examples: **EvoTime, EvoMon**

Close jobs & store information

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— IT SOLUTIONS —

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— IT SOLUTIONS —
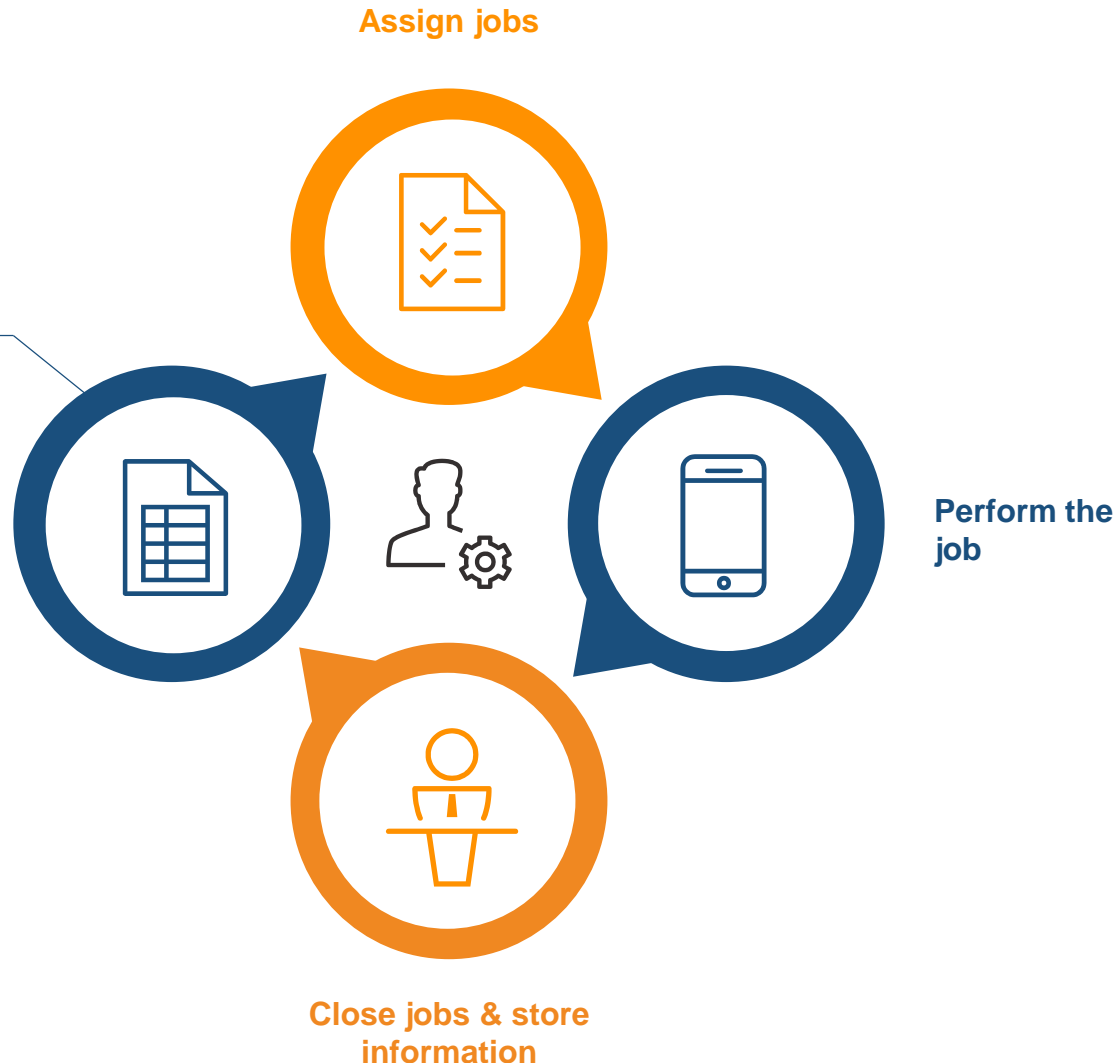
Important topics to get your backend ready

- Define task types for rule-based scheduling and to drive mobile processes

- Think about task durations and variations

- Which data needs to be visible in the subsequent steps?
  - Documents at work order, notification and technical object level
  - Measurement points and characteristics
  - Notification information
  - Checklists and forms

- Which data do you have today about your technicians?
  - Shifts
  - Absences
  - Organizational structure

- How does your unified digital process look like?

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Example: EvoPlan

- Lightweight Drag&Drop Dispatching of Orders and Notifications

- Work Assignment for large Numbers of Work Orders or Operations

- Workload Monitoring by Operation Status

- Map Visualization

- Map-based Dispatching

GIS – Map-based Dispatching @ Tadano Faun
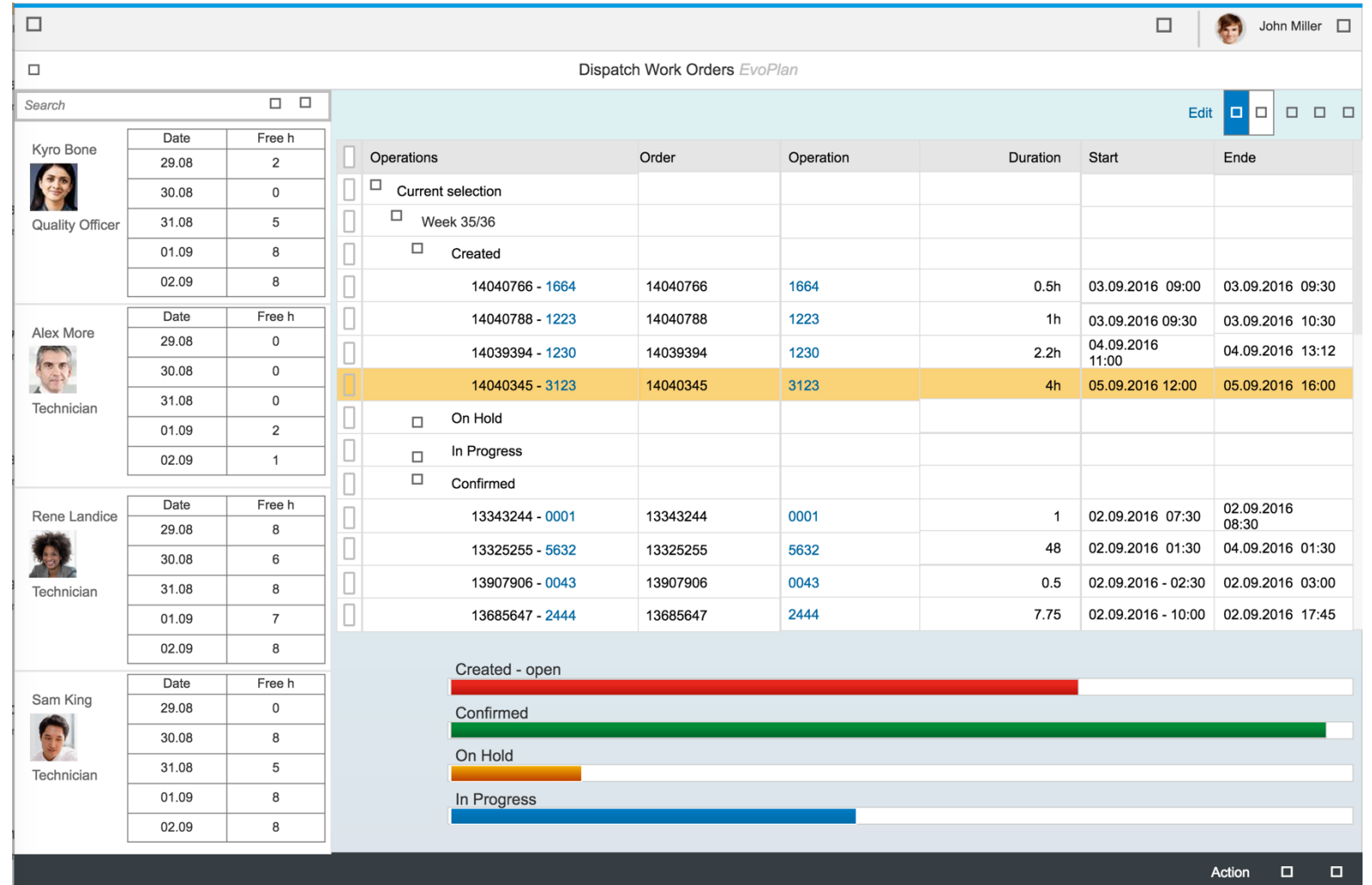
In the map view, the orders are selected using different shapes, which can be drawn in the map.

These can be assigned by
1. selecting the technician
2. Assign Order!

GIS – Map-based Dispatching – Web-based EvoPlan

- Evora is currently developing a web-based Version of EvoPlan

- The HTML5-based Version runs in a Browser and can also be used on Tablets

SAP MRS – Scheduling in SAP

Scheduling in SAP GUI or browser

Possibility to integrate maps

Shows the technicians to one or more workcenters

Shows unavailabilities

Open demands from e.g. SAP work order operations

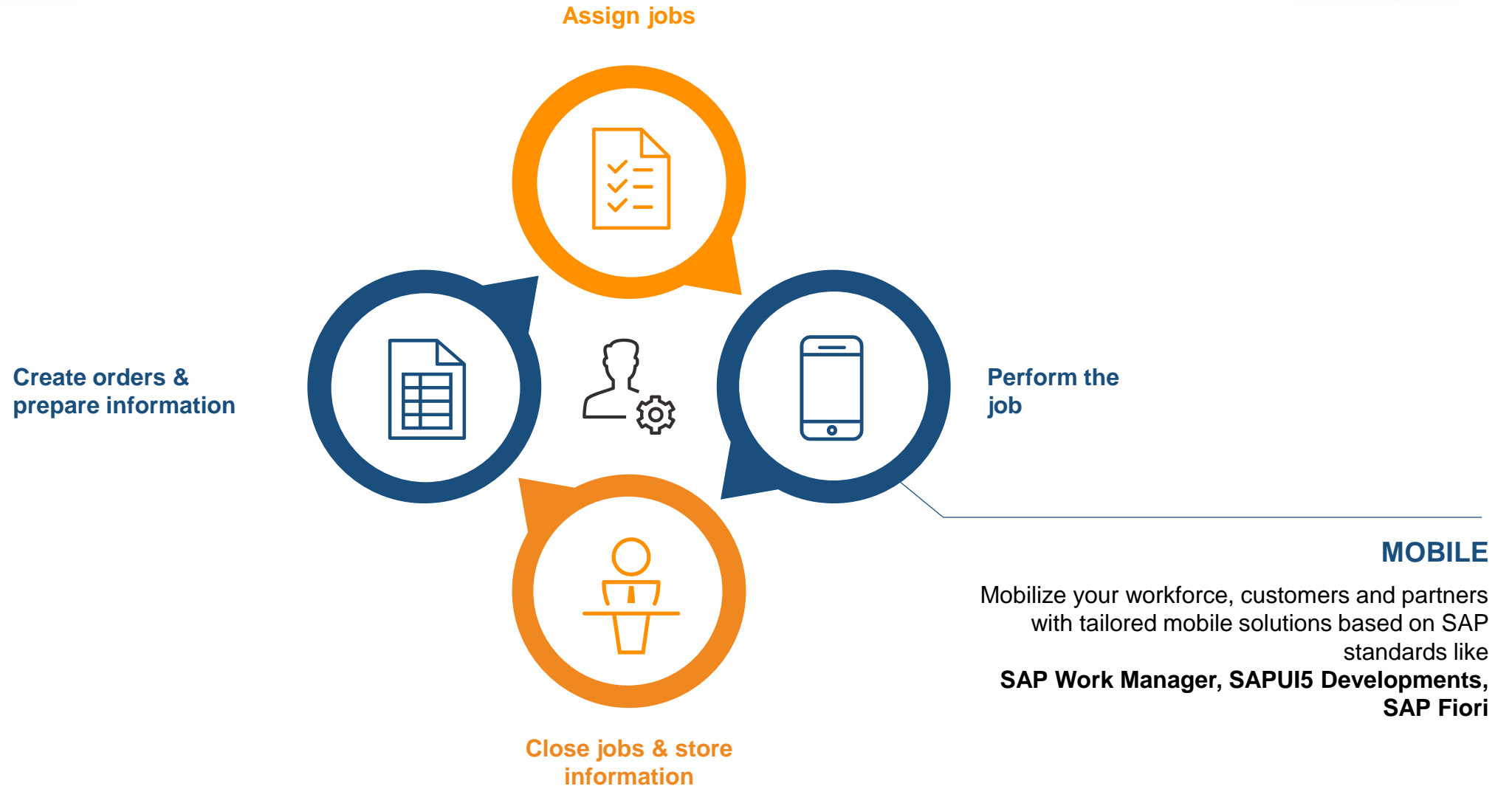# Automated Malfunction Reporting – Iberdrola USA

- Iberdrola USA is using a SCADA System to monitor its Electricity and Gas Pipeline Grid

- Automatic Issue Detection Algorithms create Malfunction Notifications automatically

- Multiple Notifications are grouped by Root Issue and a Work Order is created & dispatched to Technicians as Emergency

- Evora implemented ClickSchedule for automated Scheduling as well as Map-based manual Dispatching ("Show close-by Technicians")

- Evora implemented ClickMobile for mobile Work Order Execution

- Updated SAP Emergency Orders also update Information in the SCADA System

The Mobile Workforce Management Cycle

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Perform the job

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MOBILE

Mobilize your workforce, customers and partners with tailored mobile solutions based on SAP standards like

SAP Work Manager, SAPUI5 Developments, SAP Fiori

OpenUI Enhancements for SAP Work Manager

Challenge:

- Many customers chose Windows based devices for SAP mobility and existing applications
- Some UX features of standard Agentry and SAP Work Manager can be greatly enhanced using the SAP OpenUI Technology contained in SMP 3.0
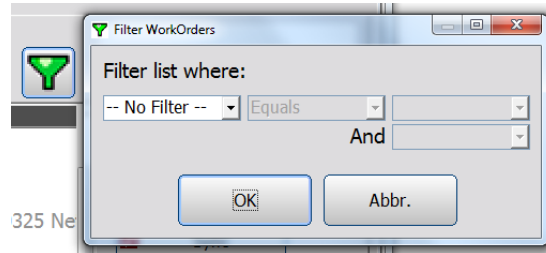
Solution:

- Therefore, we implemented native .NET controls leveraging OpenUI on the client
- We closely aligned the .NET controls to standard SAP Work Manager to ensure seamless integration into the existing UI
- Focus was to provide an easier UI for technicians in handling their daily tasks

Filtering and Sorting

Common Customer Request:

- Search is accessing all available data fields and all words within the table are considered. The search results are updated after each keystroke.
- Standard Agentry column based search requires too many clicks and does not cover the general search case.

Solution:

- Filtering functionality provided as part of the native list control. Each keystroke updates the work order lists and filters available entries based on all columns of the list.
- The list allows sorting for one or several columns

Filtering and Sorting

SAP Work Manager

| swb Arbeitsaufträge | Arbeitsaufträge | Meldungen | Personalzeit |

Filter:

Nr.	Start	Kurztext	Technischer Platz	Arbeitsplatz	Messpunkt	Klassifizierung
4000138	09.10.2014 03:40	Wartung Hochspannungsst. 03130	1000-001-AA-04	AIR	Messpunkte...	Klassifizierung...
4000137	09.10.2014 01:29	Wartung Hochspannungsst. 03130	1000-001-AA-03	AIR	Messpunkte...	Klassifizierung...
4000136	09.10.2014 09:26	Inspektion Stromnetz	1000-001-AA-03	AIR	Messpunkte...	Klassifizierung...
4000135	09.10.2014 01:24	Wartung Hochspannungsst. 03130	1000-001-AA-03	AIR	Messpunkte...	Klassifizierung...
4000134	09.10.2014 01:22	Inspektion Hochspannungsst. 03130	1000-001-AA-03	AIR	Messpunkte...	Klassifizierung...
4000133	09.10.2014 01:21	Wartung Mittelspannungsst. gelb	1000-001-AA-03	AIR	Messpunkte...	Klassifizierung...
4000131	09.10.2014 01:15	Wartung Armaturen	1000-001-AA-03	AIR	Messpunkte...	Klassifizierung...
4000130	09.10.2014 01:13	Inspektion Gasstation	1000-001-AA-03	AIR	Messpunkte...	Klassifizierung...
4000129	09.10.2014 01:10	Gasnetz Wartungsauftrag	1000-001-AA-03	AIR	Messpunkte...	Klassifizierung...
4000128	09.10.2014 01:07	Wartung Gaswerk	1000-001-AA-03	AIR	Messpunkte...	Klassifizierung...
4000127	10.10.2014 01:06	Wartung Gaswerk 2	1000-001-AA-03	AIR	Messpunkte...	Klassifizierung...
4000125	09.10.2014 00:59	Wartung Station		AIR	Messpunkte...	Klassifizierung...
4000124	09.10.2014 01:09	Wartung Gaswerk 3		AIR	Messpunkte...	Klassifizierung...
4000119	08.10.2014 22:04	Inspektion Hochspannungsst. 0325 Netz	1000-001-AA-04	AIR	Messpunkte...	Klassifizierung...
4000117	08.10.2014 20:26	Inspektion Mittelspannungsst. 0325 Netz	1000-001-AA-03	AIR	Messpunkte...	Klassifizierung...
4000116	08.10.2014 20:04	Wartung Gasregelung	1000-001-AA-03	AIR	Messpunkte...	Klassifizierung...
4000114	08.10.2014 19:45		1000-001-AA-03	AIR	Messpunkte...	Klassifizierung...
4000109	01.08.2014 14:13	CM 493/2007-SCHERING_PLOUGH		MOBILE	Messpunkte...	Klassifizierung...
4000108	29.07.2014 14:52	Calibratie (lage) geleidbaarheid		MOBILE	Messpunkte...	Klassifizierung...
4000107	08.10.2014 19:43	Preventative Maintenance	1000-001-AA-03	AIR	Messpunkte...	Klassifizierung...

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— IT SOLUTIONS —

Creation of measurement documents

Common Customer Request:
- Measurement points linked to functional locations are displayed in a list and measurement documents can be created directly within the list without clicking additional buttons
- Values are preselected based on SAP configuration

Solution:
- Native list control displays the data and by entering data in the fields the input is validated
- Measurement documents are created automatically and send in the background to SAP

Data Visualization

- Evora implemented Work Manager for Plant Maintenance at a chemicals company

- The Solution downloads Asset Data including Measurement Point History from SAP ECC

- The Mobile Application was extended with a visual Representation of the Data History including Min/Max Limits to improve User Experience and simplify Decision Making

- Technicians use the Data to proactively decide when preventative Maintenance is required

Smart Maintenance @ Hamburg Port Authority (HPA)
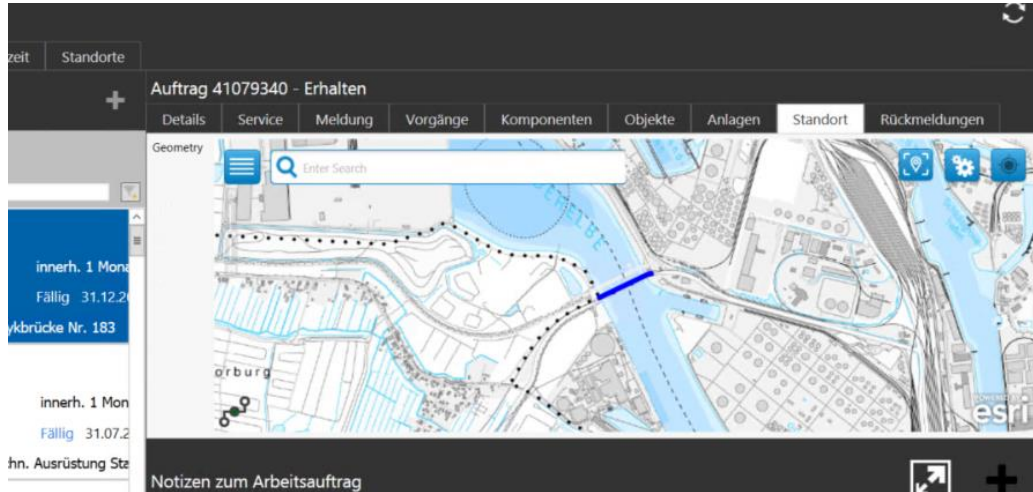
- "Smart Maintenance" Workstream in HPA's "smartPort Logistics" Industry 4.0 Project

- Integrated GIS into SAP Work Manager

- Interaction within Map directly possible, e.g. to see more Details or other Orders

- Options to start new Actions (e.g. create a new Notification)
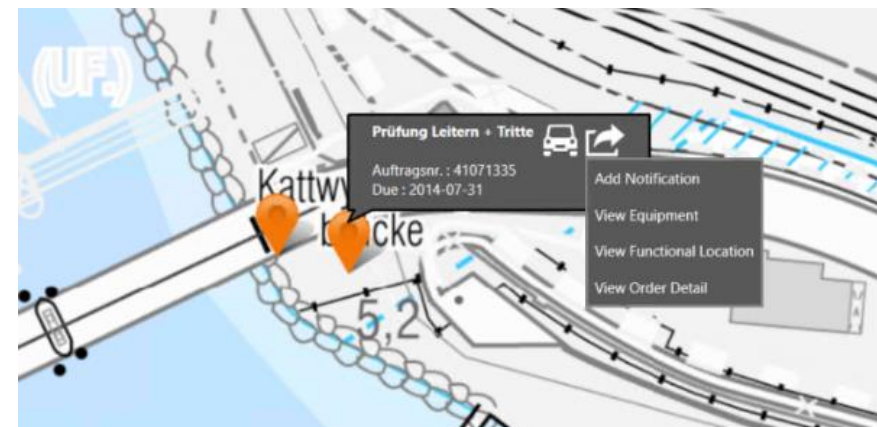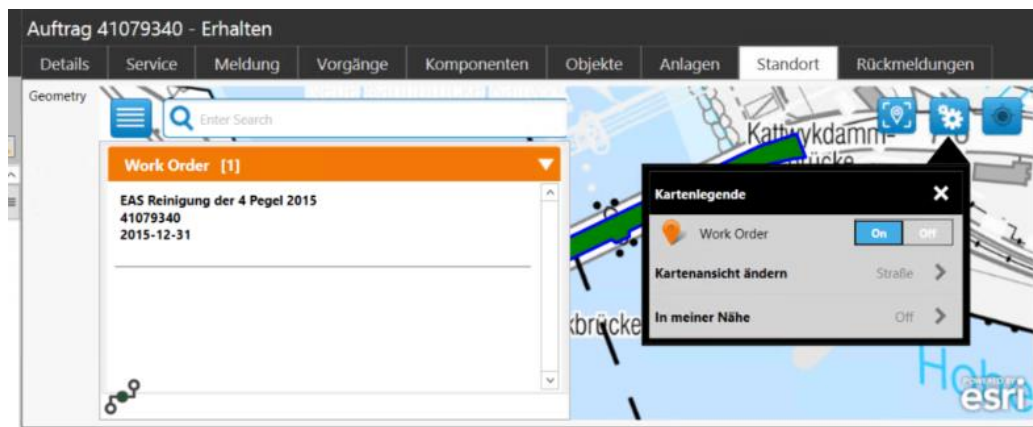
GIS – Map-based Equipment Inspections @ Enwin Utilities

Company
Enwin Utilities Ltd.

Headquarters Location
Windsor, Ontario, Canada

Industry
Utilities

Products and Services
A management services company providing fleet, billing, collections, credit, financial, human resources, customer service, and information technology services to Windsor Utilities Commission and the City of Windsor

Service Territory
267 km2

Web Site
www.enwin.com

The company's top objectives
- Provide map of work locations for technicians to visualize and determine daily route.
- Consolidate mobile applications to one version used by all technicians
- Support all functionality on multiple device platforms to enable a gradual migration from the older windows laptops to new iPads.
- Enable back office processes to support and increase the efficiency of field technicians.

Evora Projects
SAP Work Manager – 6.2 with ESRI ArcGIS Intgration
- New implementation of work manager with ESRI integration. Notificaitons plotted on the map with pin colors to indicate status. Technicians determine route and navigate the application via the map on iPad & Windows devices. Enhanced GIS integration to support various GIS object types, base layer and feature layers

SAP Work Manager – 5.3 to 6.2 Upgrade
- Upgrade of preexisting Work Manager 5.2 to Work Wanager 6.2 and existing enhancments migrated to map based version. Screens and workflows for hydrant inspections integrated and displayed per user's role.
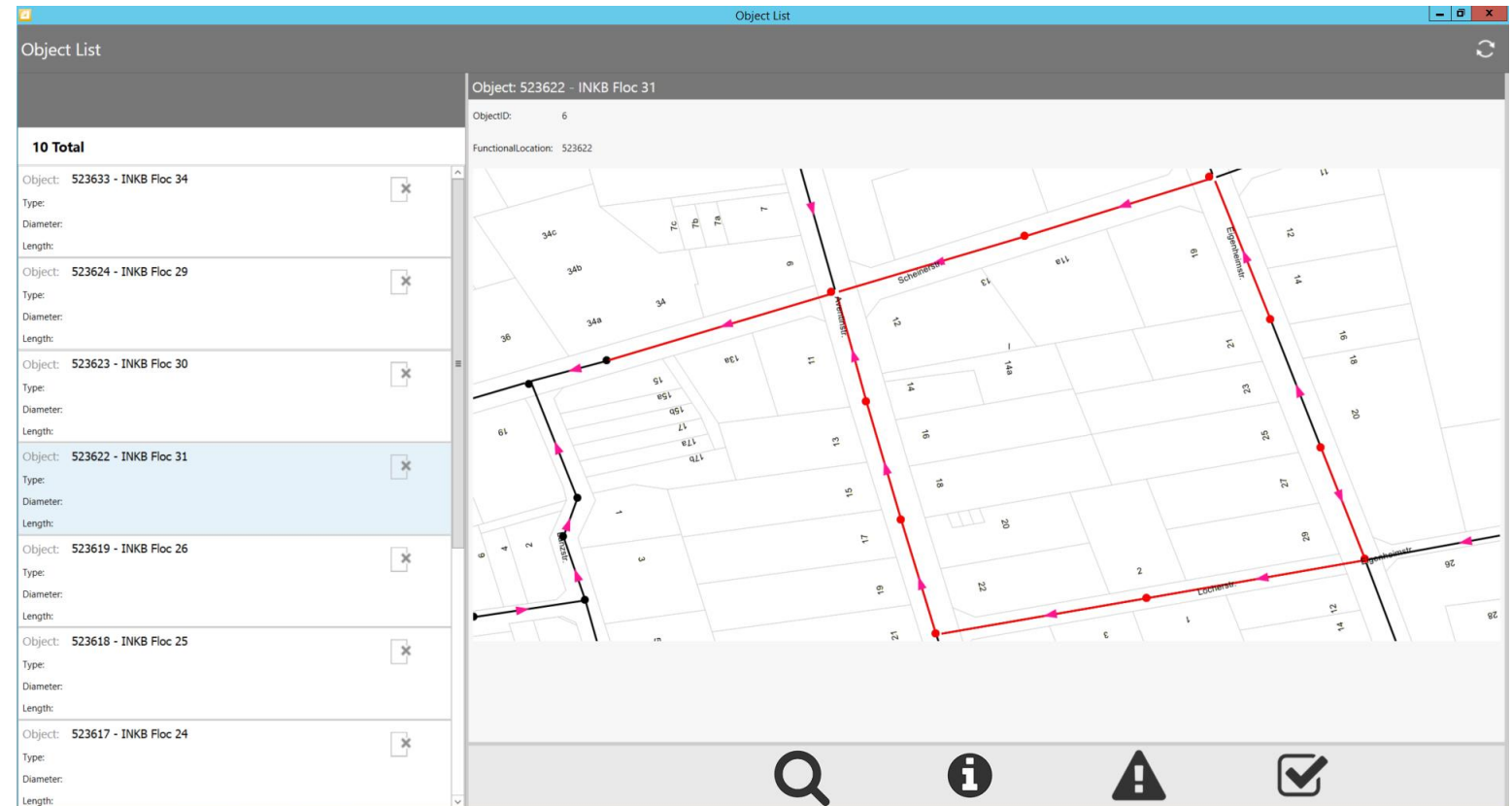
SAP Inventory Manager
- Storeroom Technicians manage Physical Inventory (Cycle Counts), Goods Issue, Goods Return (Reversal), Good Receipt.
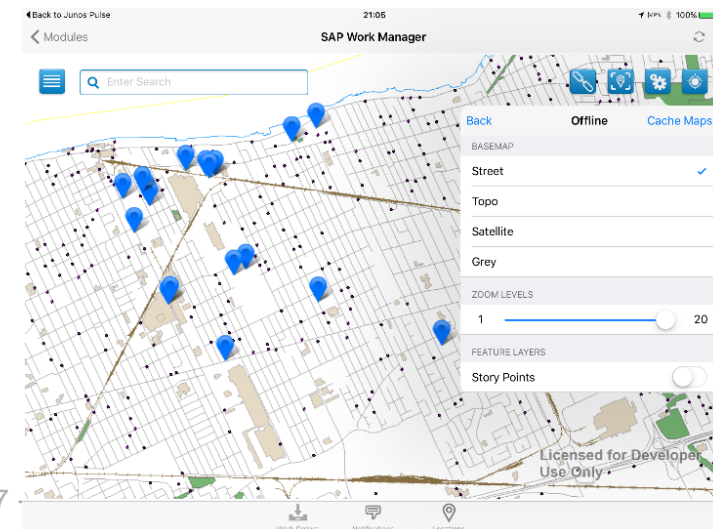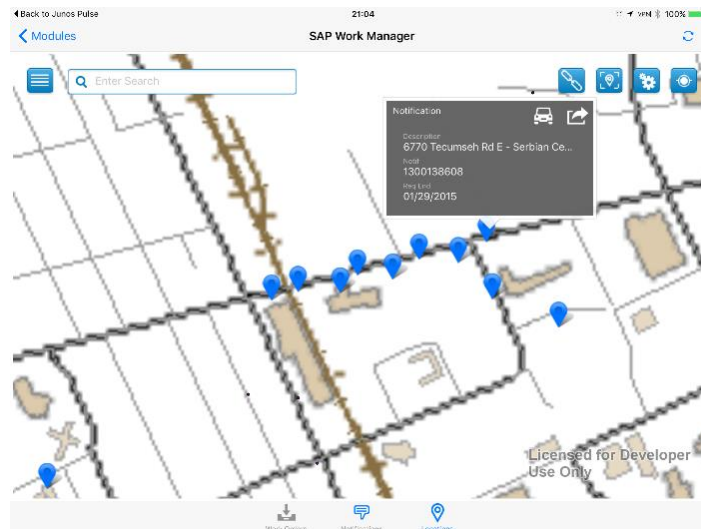
GIS – GML based system with flow information

- Evora is extracting GIS data into an open format in order to render flow information into the SAP Work Manager

- The resulting map shows both individual objects, as well as the flow direction of waste water over a geographical base map

- Action buttons in the screen allow for quick access of object information, measurement points, etc.

Example: EvoCheck

Platform: Windows (Laptop)

App: SAP Work Manager with maintenance extensions

Capabilities: Checklists are read in the backend based on object (e.g. equipment) and task type. Checklist items can be qualitive or quantitive. Quantitive result recording allows measurment document creation with dynamic upper/lower values. Out-of-range or negative evaluations lead to direct creation of notifications in the SAP system.

Forms Processing in SAP Work Manager @ Netze Duisburg

Several Forms possible per Work Order

Dropdown Values from SAP

Free text entry, calendar selection etc. possible

Calculation on the basis of SAP configured formulars

Accelerators on top of Work Manager - General

- Grid & Meter Management including Smart Metering
- Meter Reading
- SAP MRS Integration
- Permit Management (SAP WCM)
- SAP PS Integration
- SAP CS Enhancement
- Online Lookups for Master Data
- Assignment of Work to Technician on the Client
- Digital Signature
- PDF Creation on Windows 7 Environment
- Sharepoint integration
- Optical read, NFC, RFID…

The Mobile Workforce Management Cycle

Assign jobs

**Create orders &
prepare information**

**Perform the
job**

SUPPORT AND CROSS-TOPICS

Introduce review and error management cockpit to ensure a
smooth information flow back into the main system.
notifications get created to follow up on critical failures
starting the cycle anew. Examples: **EvoTime, EvoMon**

**Close jobs & store
information**

Example: EvoTime

Users: Foreman and Managers

Capabilities: Approve complex timesheets with automatic escalation paths

Functions:
- Insert work order numbers for bookings against notifications
- Enter approval or rejection comments
- Final confirm work orders
- Create IW42 bookings
- Generate HR input files for salaries
- Archive shifts and delete after retention period

Overview - evoSupervisor

SAP UI5 application for tablets and desktop designed for supervisors to manage technicians from the plant floor.

- Dashboard to View:
  - Assigned Work Progress
  - New Work
  - Unassigned Work

- Sophisticated Work Order Search

- Dispatching & Assigning Work Orders

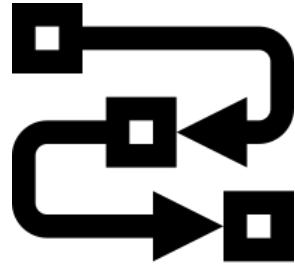- Capacity & Workload Visibility

- Time Entry Review

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Lessons Learned & Outlook

Unified digital processes

Moving into the Cloud

Human factor

Mobile Devices

Vision

Contact Us

✉ **CONTACT US**

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