FME AI FOR INDUSTRY JAAREVENT



Toepasbare innovatie in Field Service Management met Al

11 december 2024





FME PLATFORM AI FOR INDUSTRY AGENDA

- Ramon Hendriks Boon Edam: Optimalisatie field service management processen bij Boon Edam
- 2. Jason Enti SAP:

De praktische toepassing van AI in SAP Field Service Management

3. Vragen & discussie





OVER KONINKLIJKE BOON EDAM INTERNATIONAL

TROTS OP ONS WERK

Sinds 1873 houdt Boon Edam zich bezig met het ontwerpen en vervaardigen van hoogwaardige toegangsproducten die speciaal zijn gebouwd om mensenstromen in verschillende soorten gebouwen binnen allerlei industrieën te beheren.

BOON EDAM

ONS ERFGOED.

HEDENDAAGSE MEESTERS

Wat in 1873 begon als een kleine Amsterdamse timmerfabriek, is uitgegroeid tot een modern, innovatief bedrijf dat het gevoel voor vakmanschap en familiegeest nooit heeft verloren. Onze eerste draaideur werd in 1903 in die werkplaats geproduceerd. De waarden en het erfgoed die toen de kern van ons merk vormden, blijven doorschijnen in de manier waarop we tot op de dag van vandaag hand in hand met onze klanten samenwerken.





WORLDWIDE PRESENCE.

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Worldwide 1400 people employed



Factories located in in Netherlands, US en China



16 International Subsidiaries



Exclusive distributors in more than 55 countries



Challenges to Field service management SAP

Change management

- Local support needed, key users teams to be available
- New solution Full training needed for end users

Local challenges

- Legal requirements
- Small Differences in way of working
- Accurate Time recording

System challenges

- Workmanager not supported
- FSM implemetation phasing needed due to time pressure, phasing out workmanger



Change to Field Service Management

Workmanager not sustainable for future

- Not supported
- Only in English language
- Not fool proof and lacking user friendliness

Planning optimization

- No Optimization in MRS possible
- Inefficient / manual planning (non-productive hours)
- Workarounds in place via Excel with additional work involved

Prepare for Future technological developments



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Boon Edam FSM Web-service

Full service call details available, also available on I-pad for engineers.

| FSM Web-service | Good Afternoon | | | | | 📱 eric.kok@boo | nedam.com - Royal Boon Edam | n International B.V. 🛛 Sign out |
|-----------------|----------------------|--|--------------------------------|--|---|--|-----------------------------|---------------------------------|
| Orbit TriSens | FSM Planner | | | | | | | |
| | Planning Information | | | | | | | |
| | < > today | | | 7 – 13 Oct | 2024 | | | week list month |
| | | | | | <u>W 41</u> | | | |
| | Resources | <u>Mon 07/10</u> | <u>Tue 08/10</u> | <u>Wed 09/10</u> | <u>Thu 10/10</u> | <u>Fri 11/10</u> | <u>Sat 12/10</u> | <u>Sun 13/10</u> |
| | | | | | | | | |
| | Service Kontor | Madde och David till GBG 07:00 - 16 | :00 | Hawsar på REP Centralstation #4403811 12:00 - 16:00 | Madde och David i Skåne 00:00 - 23:59 | Townhallmöte 08:00 - 08:30 | | |
| | Portpartner Johan | REP JKPG Tingsrätt #4372283 + #43 | | | | | | |
| | Portpartner Per | REP JKPG Tingsrätt #4372283 + #43 | 72278 + #4372280 07:00 - 16:00 | | | | | |
| | Underentreprenör 5 | | | | | | | |
| | Projekt Kontor | | | | | Townhallmöte 08:00 - 08:30 | | |
| | 🗆 External | | | | | | | |
| | Mikael Olsen | Start at: 07:00 Order: 4400260 🗎 Uppsala Stadshus - Stadshusgatan 2 - 753 21 - Uppsala | | Start at: 07:00 Order: 4400260 a Uppsala Stadshus - Stadshusgatan 2 - 753 21 - Uppsala | | Start at: 07:00 Order: 4400260 a Uppsala Stadshus - Stadshusgatan 2 - 753 21 - Uppsala | | |
| | | Not Communicated | Not Communicated | Not Communicated | Not Communicated | Not Communicated | | |
| | | | | | Start at: 11:00 Order: 4403811 Centralstationen - 3044 - | | | |
| | | | | | Centralplan 15 - 111 64 - Stockholm | | | |
| | | | | | Not Communicated Start at: 12:00 Order: 4409637 Westinghouse Västerås - Bränslegatan 1 - 721 36 - Västerås | | | |
| | | | | | Communicated | | | |



Links, integrations, partners







Al in SAP Field Service Management

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AI Enabled Services in SAP Field Service Management

Unlock value for field service organizations using AI

• Intelligent Filtering

Enhance efficiency by enabling natural language processing for intuitive and accurate job search.

Equipment Insights

Optimize operations through proactive maintenance and real-time insights into equipment performance based on past jobs.

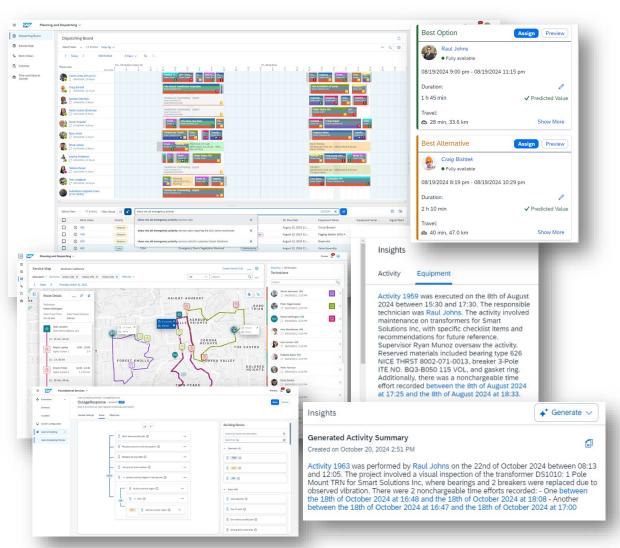
Activity Summary

Quickly access past resolutions for similar issues, enhancing repair planning and efficiency.

Predictive Routing

Reduce travel times and find most optimal routes.

- Job Prediction Duration
 Predict job duration using Machine Learning.
- AI Policy Designer
 Design company specific policies for AI auto-scheduling



AI-based Scheduling and AI Policy Designer

Optimize field service delivery with Albased scheduling and custom scheduling policies

| Extensions v | | | ana a marang n |
|------------------------|--|---|--|
| | Auto-Scheduling Policies / ServicePolicy | Save Cancel | Building Blocks |
| Nectory | ServicePolicy - Version 2 Released Service Policy for Repairs and Installations | | Search by Name and Description Q |
| nstalled | General Settings Rules Objectives | | Search by Tag [9 |
| creen configuration | Gentia Januago Totas Colectres | | |
| .to-Scheduling v | | 48 17 | Operators (3) |
| to Scheduling Policies | Г | Mandatory skills ③ | (((((((((((((((((((|
| | - | I Don't allow parallel jobs (i) +++ | (NOT () |
| | - | I Respect job due date ① | I ((() () () () () () () () (|
| | - | iii Job gluing in sequence for same location and resource (i) | V Rules (43) |
| | - | Resource respects maximum working hours () *** | Date disparity (i) |
| | | II ∧ DR (0) *** | Day of week ④ |
| | | Case 1: Assignment respects WTP and Service Window () *** | Don't allow parallel jobs ① |
| | | I Respect resource work time pattern ① *** | Driving time is less than (|
| | | (AND) I Job respects service window () | Enforce sequential dependency ③ |
| | | Job respects time frame ① | Job due in (i) |
| | AND | Cose 2: Service Window Demands Assignment To Be Outside | Job due within planning horizon ④ |
| | (AND) | | Job duration comparison (j) |
| | | | Job gluing in parallel on same equipment (i) |
| | | (NOT) Respect resource work time pattern (j) *** | |

CHALLENGE

Non optimized schedulers and lack of resources to efficiently schedule high volumes of maintenance and service activities.

SOLUTION

SAP Field Service Management, supplemental services

- Create company specific policies to meet company scheduling objectives and outcomes.
- Optimize schedule creation, and free up dispatchers to focus on high value added tasks.
- Increase resource utilization and allocation by reducing travel times and improving job-technician assignment.
- Define the best matching technician on demand.

OUTCOMES

Higher Utilization

Of resources

Optimized

Schedules and field service productivity

13

15

Prediction of Job Duration in Best Match Technician

Predict job duration using Machine Learning

| Project Planner | Dispatching Board | | | | | | | с | Queued 0 / 0 |
|------------------------------|---|---------------------|---|----------------------------------|--|---|--|--|---|
| | Select Wew V 11 Entities | Film Rv v | | | | | | ··· q @ | |
| Dispatching Board | | 04/23/2024 1 Week | U. | | | | | | Best Matching Technicians × |
| Service Map | | Tur. 04/23/2024 (We | | | The | 0000000 | Re organization | Max 0478/2024 (Real 18) | NoOvertime |
| Service Calls | Resources | urc.oco 1 1 12 | | Wed. 04/24/2024 | | 04/25/2024 4 8 12 4 8 12 4 8 | PK.0426/2024 | Mon, 04/29/2024 (Week 18) 4 12 4 8 12 4 8 12 4 8 12 4 8 12 12 1 12 1 12 1 12 1 12 1 12 1 12 1 | Activity 1884: Transformer Inspections |
| Activities | Castro-Jones Service Co. C 05/03/2024 12:08 pm | | 1 | | | Smart Solutions Inc. | St. 1 | Synart Weter Opt. Senart Solutions for | Estimated Duration: Planned Duration: 2 h |
| Time and Material Journal | Craty Blakest | 1 | | 01 | 124/2024 8.0 | Head purs. Family Seaton | Pump Repair Smart Solutions L | Best Option | Assign Preview |
| | Gordon MacNett | | West Pers C Smart So Support L | | New India Serent Sol. Supp. | Seart Solution | St | Raul Johns | |
| | Natal/ Castro (External) | | West Pern C Smart So Support L | | New Insta Smart Sci. Scap. | Start - | Water | Fully available | |
| | Oliver Knaufer | 1 | L L | ŝ | 2 | | | 08/19/2024 9:00 pm - 0 | 9/19/2024 11:15 pm |
| | Raul Johns | - | S 80 | P. | place Meler wt Solutions Inc. | Head policy Family Street | On Call 04/26/2024 8:0 On-call duty | 00/19/2024 9:00 pm - 0 | 0/15/2024 11.15 pm |
| | Rhod James | | - Stat | | New India Search Sec. | On-Call 04/25/2024 8:0 On-call duty | HR Training 04/26/2024 8:0 Meeting | Duration: | I |
| | Sophia Anderson | | | ī | Parto | On-Call 04/25/2024 8:0 On-call duty | | 1 h 45 min | ✓ Predicted Value |
| | Tatiana Reyes | | West Perm C Smart So Support . | | New India Seart Sol Supp. | Constantion St. | | Travel: | |
| | Tom Longboat | OF DAU HO | r 23/2024 8:00 am - 04/24/21 iday | OFF 0.4/24/2024 21 Holiday | 00 am - 04/25/2024 1:59 am | OFF 04/25/2024 2:00 am - 04/26/2024 Holiday | 0FF 04/26/2024 2:00 am - 04/27/2 Holday | 🖨 28 min, 33.6 km | Show More |
| | Select View V Filter Mode | r: 🔠 🔹 Filter By 🗸 | | | | | | Best Alternative | Assign Preview |
| | Priority | Work Order 👳 | Туре | Operation | SC Due Date | Subject | Equipment Name Eq | | |
| | 0 0000 | 439 | maintenance | 1884 | 05/22/2024 11:59 pm | Transformer Inspecti | Transformer_T1000 81 | | |
| | | 430 | maintenance | 1802 | 05/09/2024 11:59 pm | Meter Exchange on c | Single Rate Electric M US | | |
| | | 425 | installation | 1798 | 06/01/2024 1:59 am 06/01/2024 1:59 am | Install new productio | Production Well 3812 28 Production Well 3812 28 | and a second | 9/10/2024 10:20 pm |
| | | 423 | customer ser | 1741 | 05/23/2024 8:00 pm | Repair Multi Eco | Multi Eco 33i N | | 16/19/2024 10:29 pm |
| | 0 00 | 411 | maintenance | 1672 | 03/02/2024 2:59 am | Regular maintenanc | Pigging Station 1001-A 63 | Duration: | 1 |
| | | 409 | maintenance | 1663 | 02/21/2024 6:00 pm | Emergency Pump Re | Pump 554 Cooling Wa XF | | ✓ Predicted Valu |
| | Rows per Page: 200 ~ 1-87 | of 87 < > | | | | | | 211 10 11111 | ✓ Fredicted value |
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| | | | | | | | | 🖨 40 min, 47.0 km | Show More |

CHALLENGE

Inaccurate times planned for field activities leads to delays and under utilization.

SOLUTION

- Implementing AI-based assignment duration prediction in auto-scheduling
- Supported by all semi and fully-automated scheduling use cases
- A machine learning model analyzes historical data to forecast future assignment durations based on technician's logged time efforts, equipment, skills, and other relevant factors.

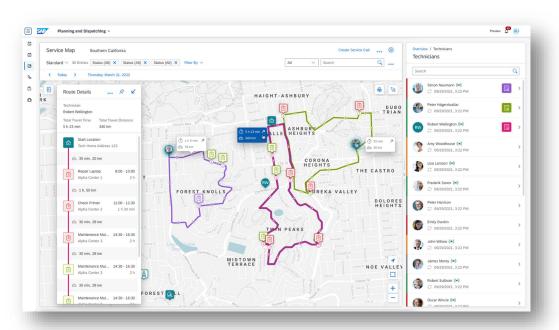
OUTCOMES

Improved scheduling accuracy and enhanced customer satisfaction

by ensuring technicians arrive neither too early nor too late for appointments

Predictive Traffic Routing from Service Map

Reduce travel times and find most optimal routes



CHALLENGE

Field technicians have to drive from one customer appointment to the next during their workday. In certain areas that means getting stuck in traffic during rush hours if routes are not planned taking traffic into consideration.

SOLUTION

SAP Field Service Management, supplemental services

- Improve prediction of travel times during assignment of activities to technicians.
- Reduce travel times and find most optimal routes based on predictive traffic AI patterns.

OUTCOMES*

40 metric tons reduction in CO₂ emissions

Per year due to better routing and reduced fuel usage

13 minutes saved per billed hour

of unbilled travel time freeing up time to provide care to more customers

(*) Outcomes based on customer success story Patterson

This presentation and SAP's strategy and possible future developments are subject to change and may be changed by SAP at any time for any reason without notice. This document is provided without a warranty of any kind, either express or implied, including but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement.

Intelligent order search with natural language filters

Boost dispatcher productivity with quick access to most important work supported by GenAI

| SAP Plan | ning and Dispat | ching ~ | | | | | Preview | 6 ⁹⁹ 🛞 | | | |
|------------------------------|-----------------|--|---|----------------------------------|--|--------------------------------|--|-------------------|--|--|--|
| Dispatching Board | Disp | atching Board | | | | | | С | | | |
| Service Map | Selec | : View 🗸 11 Entries F | ilter By 🗸 | | | | *** | Q @ | | | |
| Work Orders | < | < Today > 08/15/2024 2 Days - Q, Q, | | | | | | | | | |
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| | • | Dliver Knaufer | | Sm Sma | Trim trees near lines Smort Solutions Inc | install James Ol M | Pump Repair Smart Solutions Inc | | | | |
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| | | Work Order | Priority | show me all emerg | gency priority service calls | × | SC Due Date | Equipmen | | | |
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| | | (i) 485 | Low | show me att emerg | gency priority service caus requiring the skill serior technician | <u>^</u> | August 15, 2024 11: | Door 12 | | | |
| | | () 483 | (Emergency) | show me all emerg | gency priority service calls for customer Smart Solutions | × | August 13, 2024 11: | Pigging St | | | |
| | | 482 | Medium | 1984 | Substation PM | Maintenance | August 13, 2024 11: | Naperville | | | |
| | | () 481 | Medium | 1983 | Calibration and Diagnostics Testing | Maintenance | August 13, 2024 11: | Circuit Bre | | | |
| | | (i) 480 | Low | 1982 | Preventative Maintenance | Maintenance | August 13, 2024 11: | (+) ^R | | | |
| | Rows p | • er Page: 200 ~ 1-92 of | 92 < > | | | | | | | | |

CHALLENGE

Dispatchers struggle with time-consuming and error-prone service order search, hindering efficient task assignment.

SOLUTION

SAP Business AI

- Dispatchers use natural language filters for intuitive and swift searches, beyond traditional parameters, getting real-time feedback.
- Efficient order search, reduced errors, and enhanced user experience, leading to quicker service planning and execution.

OUTCOMES

Save up to 1 hour

per dispatcher a day by reducing average search time.

Errors reduced by 15%

leads to cost savings and improved customer satisfaction.

Activity Summary

Quickly access past resolutions for similar issues, enhancing repair planning and efficiency

| SAP | Planning and Dispatching 🗸 | E | configuration Mode | Preview 🖉 🍪 |
|--|--|--|--|---|
| Dispatching ? Service Map | Service Call 305 / Activity 1152 🖁 Meter Swap | | | a |
| Work Orders Activities Time and Ma Journal | Customer Smart Solutions Inc Code C0002 Contact Person Lou Daly General Information Skills Tools Res | Status Workflow Step Closed Close | Signal Word | |
| | Original time zone of the activity: (UTC -4:00 | I) America/Toronto | | Insights Cenerate Construction |
| | General Information | | Edit | Generated Activity Summary Created on August 17, 2024 3:49 PM |
| l | Details Subject Meter Swap Activity Sequence Signal Word CAUTION | Equipment Name Smart Meter Manufactures Serial No. 82726183 Serial No. METCOD123 | Notes Remarks (for Technician) Please installal meter and complete Simaritorm. Equipment Insights | Action y 1153 are necessed by fluid allow on the disk of Way 2000. The task involved installing a meter and comparing a structure. Twenties to include clean is such that installation ID, meter ID, and serial number. It also write of the nucleon y and accuracy on them. Installation ID, meter ID, and serial number. It also write of the nucleon y and accuracy on the matchmodel. Reserved materials included 2 matchmodel. Reserved matchmodel. Reserved matchmodel. Reserved matchmodel. Reserved |
| | Dispatching Earliest Start Date May 3, 2023 9:26 AM May 2, 2023 9:26 PM (UTC -4:00) Planned Start Date | Due Date May 5, 2023 7:59 AM May 4, 2023 11:59 PM (UTC -4:00) Planned End Date | Assignments Responsible Raul Johns | 3rd of May 2023 at 12:00. |
| | May 3, 2023 4:00 PM | May 3, 2023 6:00 PM | | Created with A). Consider verifying results. |
| | May 3, 2023 8:00 AM (UTC -4:00) | May 3, 2023 10:00 AM (UTC -6:00) | | Close Construction Contract Co |

CHALLENGE

Field service teams often struggle with gaining quick access to contextualized summaries of activities, requiring them to navigate through multiple documents, checklists, and operations. This process is time-consuming and inefficient.

SOLUTION

SAP Business AI

- Field service teams seamlessly integrate detailed service records into their workflow providing insights into how similar activities were resolved.
- Dispatchers and technicians leverage the comprehensive service history and selfdiagnostic capabilities and use the info to plan more effectively the repair process for the ongoing problem.

OUTCOMES

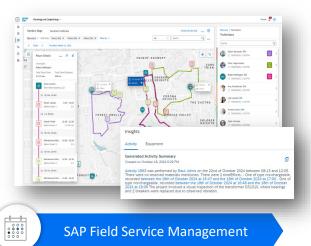
Faster time to complete & close jobs

after providing easy access to activity summary.

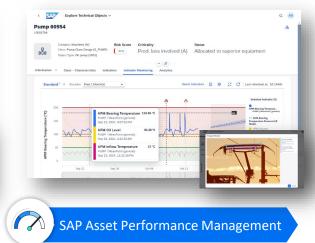
(FSM) Feature of SAP Field Service Manage mobile app

*Roadmap item

Artificial Intelligence in DSC Operate – Current and Planned Scenarios



- AI-based scheduling
- Predictive routing
- Intelligent filtering and natural language search
- Job prediction duration
- Equipment insights
- Activity summary
- AI based assistance for screen configurations*
- Generative AI for Admin*
- Simulate and compare changes in scheduling policies*



- Estimate time to failure and probability of failure based on Weibull analysis
- Detect anomalies and create alerts
- Al enabled visual inspection for condition monitoring (beta)
- Custom AI models and algorithms*
- Intelligent support for assessments and smart recommendations*



- Schedule orders/operations automatically
- Intelligent maintenance order recommendation*
- Smart work order completion using text mining to propose object part and damage codes*
- Predict schedule attainment*



- Al driven maintenance execution: *
 - Voice recognition and voice to text functionality*
 - Completion work screen*
- Incorporating Joule Assistant* (FSM)
- AI-assisted browsing of knowledge bases*
- Voice recognition and voice to text functionality* (FSM)
- Equipment & activity summary report* (FSM)
- Incorporating Joule Assistant* (FSI
- Al generated report indicating state of equipment (FSM)

Joule Assistant

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BEDANKT VOOR JE AANDACHT!

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Bedankt voor je aandacht!





