Infor EAM: CERN’s Asset Management Platform – How it can help you!

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Asset & Maintenance Management
EN/ACE
Agenda

• Asset & Maintenance Management
• Infor EAM – our AMM Platform at CERN
• Infor EAM in practice
• Future possibilities & Conclusions
Asset & Maintenance Management

- Asset Management is the coordinated activity of an organisation to realize value from assets.
- An asset is an item, thing or entity that has potential or actual value to an organisation.
- Asset management is the systematic approach of deploying, operating, maintaining, upgrading, and disposing of assets cost-effectively.
- Enterprise Asset Management (EAM) tools are used to support these efforts.
Asset & Maintenance Management

- CERN’s has since 30 years a Enterprise Asset Management system from Infor, called Infor EAM.

- Infor EAM is however still considered as one of the leaders on the market.
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Our Asset Management Platform

- Manufacturing & Installation
  - MTF
    - Manufacturing & Test Folder

- Operation & Maintenance
  - Infor EAM
    - Enterprise Asset Management

- Disposal & Waste Management
  - TREC
    - Radioactive Traceability

- Reporting & BI
  - Business Intelligence / Reports

- Financial Depreciation
  - Plant, Property & Equipment
Infor EAM at CERN in numbers

CERN groups using / start to use Infor EAM
Infor EAM at CERN in numbers

2.5 M Equipment

240 k Work Orders / year

92 k Part References

1 M Attached Documents

3400 Users
Support Tickets vs Team..

- A growing number of support tickets.

We are doing our best but please bare with us until reinforcement is in place...

- The support team is not growing…
Different profiles – Different needs

Infor EAM
Full / Expert Web Interface

Infor EAM Mobile
Offline Tablet Application

EAM Light
Simplified / Limited Web Interface

Very wide range of user profiles
- Maintenance managers
- Engineers
- Equipment specialists
- Maintenance technicians (internal + contractors)
EAM Light: Open Source Project

- Following discussions with other Infor EAM customers, Infor and CERN Knowledge Transfer, we decided to publish EAM Light as Open Source.

More information: https://cern.ch/eam-opensource
Infor EAM at CERN: Offering

Infor EAM Full / Expert Web Interface

EAM Light Simplified Web Interface

Infor EAM Mobile Offline Tablet Application

User Interfaces

Equip. Management
- Technical Characteristics
- Structures & Relations
- Asset Inventory
- Equipment Configuration
- Meter Readings
- Warranty Management
- Linear Equipment
- Operator Checklists
- Financial Depreciation (PPE)
- SLM Management
- Replacement Forecasting
- History Log
- Etc...

Work Management
- Correction Maintenance
- Preventive Maintenance
- Predictive Maintenance
- Resource Management
- Inspections & Checklists
- Deferred Maintenance
- Reliability Calculations
- Scheduling & Load Balancing
- Project Management
- Maintenance Campaigns
- Contract/Rental Management

Part Management
- Materials Management
- Store Management
- Stock Replenishment
- Store Issues & Returns
- Physical Inventory Count
- Goods Receipt & Return
- Associated Material Lists
- Pick lists Generation
- Kit Management
- Material Analysis
- Purchase Order Generation
- Requisition Generation

Business Intelligence
- PDF Report Generation
- Interactive Reports
- KPI Calculations
- Dashboards
- Data Warehouse
- Alerts & Warnings
- Filtered Inboxes
- Item Analysis
- Performance Analysis
- Data mining
- Planning & Forecasting
- Compliance documents

System Integrations
- GIS & CERN Locations
- CCCC & Service Desk
- Layout DB
- TREC & RADOS
- MIF
- SCADA / PVSS
- IMPACT & Planbook
- EDH & AIS Foundation
- BAAAN
- ADAMS
- SAILOR
- CнесMAR
- EPAK

Document Management
- Leveraging the full EDMS/CDD Functionality & Data
- Equipment Documentation (Specifications, Drawings, Photos, ...)
- Work Order Documentation (Reports, Measurements, Photos, Videos, ...)
- Parts Documentation (Datasheets, Drawings, Specifications, Photos, ...)
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• **Infor EAM in practice**
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Managing Equipment

- Identify, track, locate and manage status.
- Associate technical characteristics and measured parameters.
- Link documentation and photos.
- Create structures and manage assembly configurations.
- Log meter readings, inspections and comments.
- Access a complete historical record, including location and status changes as well as all maintenance interventions.
Managing Equipment

- All equipment information can be easily accessed in EAM Light using the camera of a phone/tablet.
- Both 1D & 2D barcodes are supported.
- http://www.cern.ch/eam-light
Equipment: GIS map integration
Equipment Dependencies

- Possible to model and visualize dependencies between equipment.
- Dependencies can either be stored in Infor EAM or coming from sources.
Asset values & financial planning

- Infor EAM is since 2015 our official Property, Plant & Equipment register for financial depreciation of assets.
- Opens possibilities for asset managers; such as replacement budget forecasting or comparisons of maintenance costs versus replacement costs.
Work Order Management

Corrective
- Things break down - even at CERN!

Preventive
- Time-based, meter-based or mixed PM Schedules.
- Can be grouped into Work Packages, Campaigns or Projects.
- SCADA integration available.

Condition-based / Predictive
- Checklists / Inspections
- SCADA integration available.
- Advanced analytics & Machine Learning.

Reliability Centered Maintenance (RCM) Module available to help determining the required level of maintenance.
Corrective Work Orders

- By integrating the control room with EAM, the operator can decide to transform an alarm to a Work Order with a single click.
- 10,000+ Corrective Work Orders created annually from the control center.
Preventive Work Orders

Checklists

- Checklists using EAM Light has proven to be extremely powerful and very easy to use.
- Used to replace paper processes in many groups.
- New checklists can be configured autonomously by key users in the equipment groups.
- Currently over 5000 checklist items are completed on average each day.
- (Checklists can also be used be used for repairs and in lock out-tag out processes.)
Checklists in the DISMAC Project
# Work Order Scheduling

![Work Order Scheduling screenshot](image)

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Material/Part management

- Allows management of parts and materials required for maintenance interventions.
- Allocates materials to Work Orders and generates pick lists.
- Identifies materials that need to be purchased based on existing stock levels, forecasts and current reservations.
- Integrated with EDH for creation of DAI and Material Requests to buy additional parts.
- The introduction of the EAM Store Kiosk simplified the usage significantly!
EAM Store Kiosk

15+ Kiosks currently in use

- “Registering a store transaction should be easier than the self-check-out at the supermarket.”
- Also accessible from tablet or smartphone.
EAM Store Kiosk

The FLEX building (947)

- 4700 store transaction since beginning of 2019.
- Intense use of the Infor EAM-EDH integration for creation of transport requests.
Spare parts management

Checking availability of spare parts and material should be easy

Example:

- Available quantity in stock
- In which store room?
- Verify other technical information & documentation.
TREC

- Used for traceability of (potentially) radioactive equipment at CERN.
- Dedicated web interface but fully based on Infor EAM.
- Currently providing 4 modules:
  - TREC Kiosks in buffer zones (50+ Kiosks)
  - RP measurement management tool and DB (41,000 measurements per year)
  - Radioactive Waste Management (replaced the commercial application ISRAM)
  - Analysis & Sampling (replacing paper processes in RP labs)
Reporting & Analytics
The service behind the tools

Assistance, Support & Consulting

- Weekly/monthly meetings with several equipment groups.
- CERN Infor EAM User Meetings 4-5 times per year with user presentations & system news.
- Service pages with documentation & manuals: www.cern.ch/cmms-service
- Support hotline: cmms.support@cern.ch

Training

- Maintenance Management:
  2.5 day course about maintenance management and its main principles for engineers and maintenance managers.
- Infor EAM introduction:
  Being revamped: 4 x 0.5 days modules covering the main functionality of Infor EAM.
- Pentaho reporting & data analysis
  Several courses available for both report consumers and report designers.
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For a long time we have collected lots of asset data without exploring its full potential.

By combining and correlating data from multiple data sources, we might discover hidden patterns and dependencies as well as identifying root-causes in complex systems.

We will receive free access to explore the possibilities of Infor’s AI and Machine Learning module, Coleman.
Improved system integrations

- Many asset & maintenance processes go across multiple IT systems.
- With our site license of Infor’s integration framework (Infor OS), we are able to leverage existing integrations between different Infor and non-Infor applications.
An Integrated Engineering Platform

• With more tightly integrated engineering tools and improved linking of data, we are aiming at managing the Digital Twin of our installations.
  • Seamless navigation between PLM and CAD data to EAM equipment.
  • Moving between the reality, virtual reality and augmented reality.
Conclusions

- CERN has been using Infor EAM for 3 decades, but the usage have really exploded during last 7-8 years.

- There is still a huge potential for equipment groups to improve their asset & maintenance management practices and to further expand their use of Infor EAM.

- Thanks to significantly improved tools combined with the equipment groups’ need to become more efficient, there is a strong and growing demand from all departments to advance with EAM.

- A main challenge now is to see how we can match these needs!

www.cern.ch/cmms-service cmms.support@cern.ch