Datastream 7i

Maintenance management with Datastream 7i at CERN.

An overview of current & future functionality

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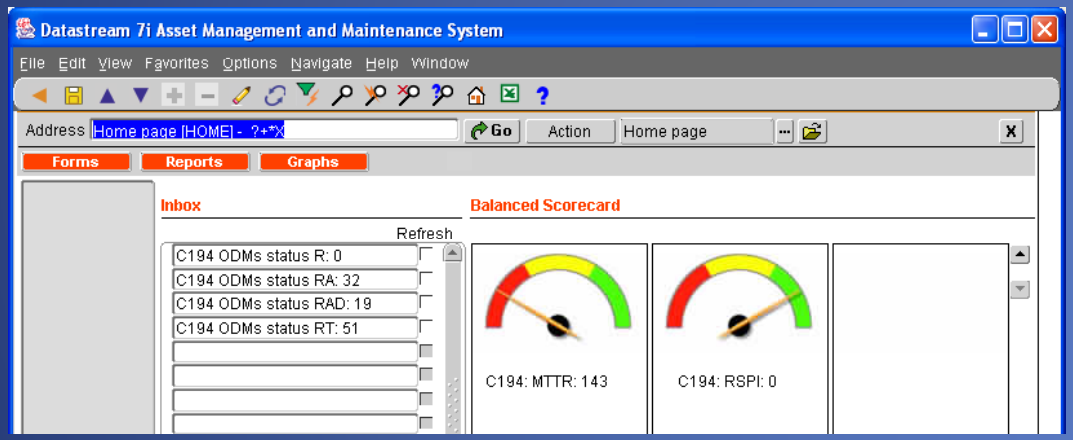
Agenda

1. What is Datastream 7i and why using it?
2. Overview of its main capabilities.
3. How can Datastream 7i improve your maintenance processes?
4. Auxiliary & Coming functionality.
5. Conclusions & Questions.

What is Datastream 7i?

- Maintenance management and asset tracking is never easy – especially not if having large and complex installations.
- That is why most companies and organizations are using information systems to facilitate and organize this work – so called CMMS (Computerized Maintenance Management Systems) or EAM (Enterprise Asset Management) Systems.
- At CERN the official and centrally supported CMMS for asset tracking and maintenance management is called Datastream 7i (D7i).



What is Datastream 7i?

- D7i is one of largest systems of its kind of the market and has been used in previous versions at CERN for almost 20 years.
- D7i is today used at CERN by:
  - Many groups in the TS Department (EL, ASE, CV, EL, FM, etc)
  - Some groups in the AT Department (ACR, ECR, etc).
  - Via the MTF application by even more groups in the TS, AT, AB, SC & PH Departments
- D7i at CERN manages currently information about over a million equipment entries (assets, systems, locations and functional positions).
- It is based on an Oracle database and the web-based user interfaced can be accessed from both inside and outside CERN.

Why using D7i?

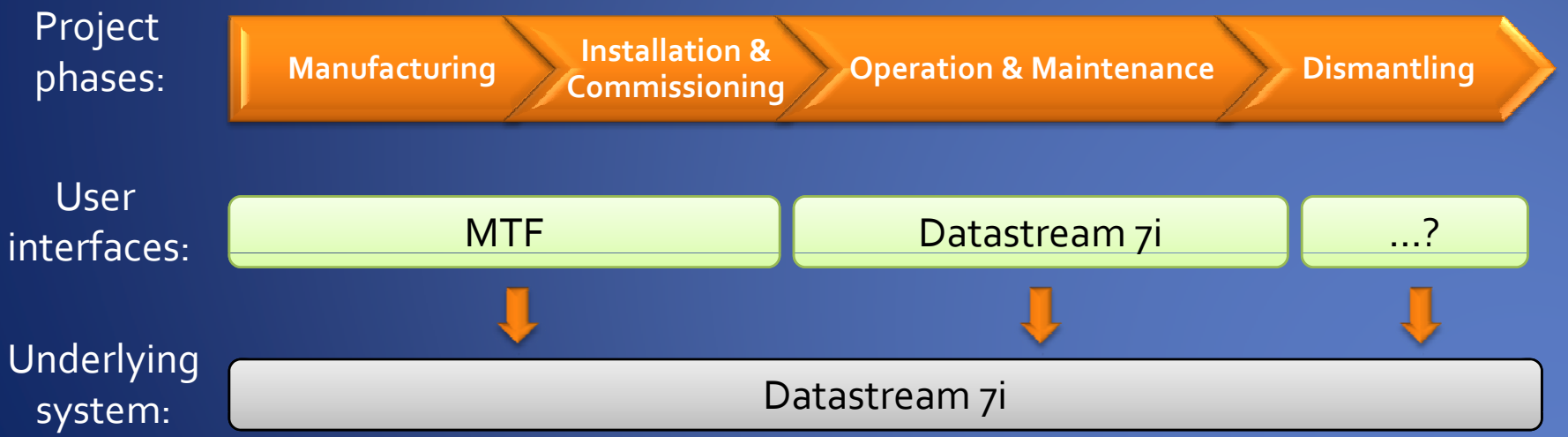
- Is D7i an intuitive tool that can be used without any training or initial instructions?
- Can I start using D7i without knowing what equipment to maintain or how to maintain it?
- Will D7i solve all my maintenance problems?

However, if I know what equipment to maintain and I know how to maintain it…

- Is D7i a powerful tool that after some initial training can help me organizing and documenting my maintenance work?
- Can D7i make the maintenance interventions more efficient by providing technical details and a complete technical history log for each individual component?
- Can D7i help me reducing MTTR and improve my spare parts management?

D7i and MTF

- D7i is the CMMS at CERN but it is also the foundation of the MTF application, which has been used for the manufacturing, installation and commissioning follow-up of LHC .
- This means that all equipment registered and followed-up with MTF are already registered in D7i and ready to benefit from the available maintenance management functionality.
- A complete equipment lifecycle follow-up can be provided – if required!



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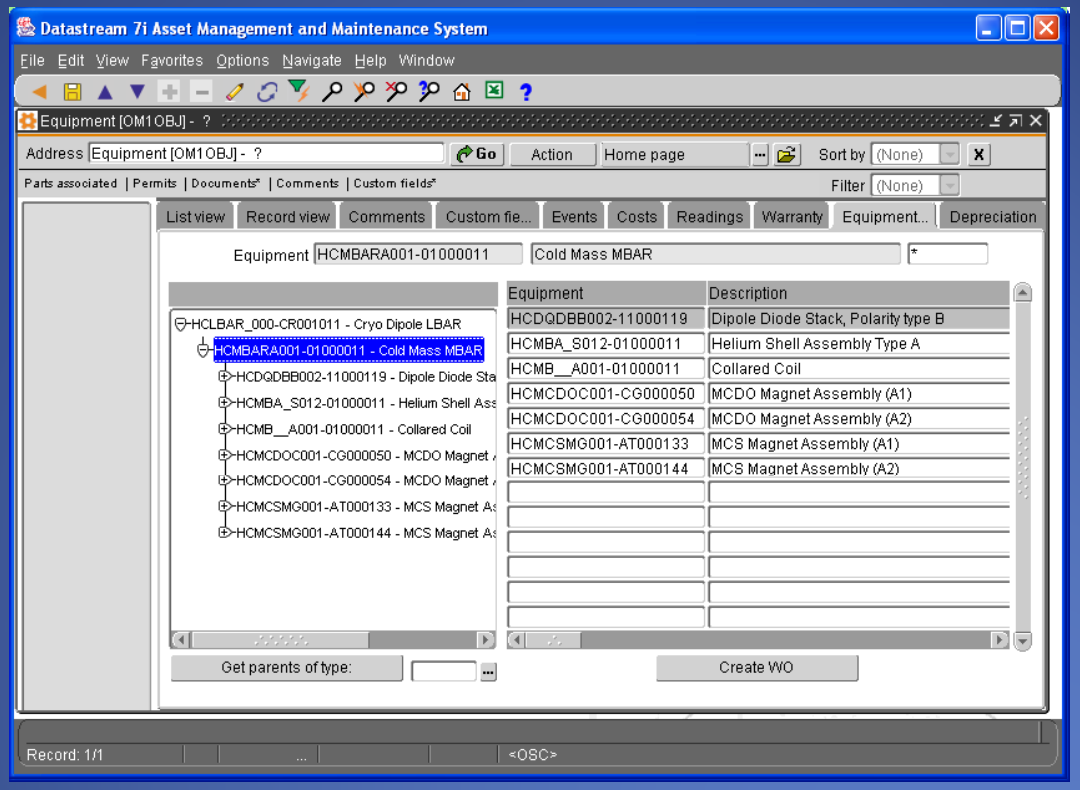
Asset management

D7i allows you to:

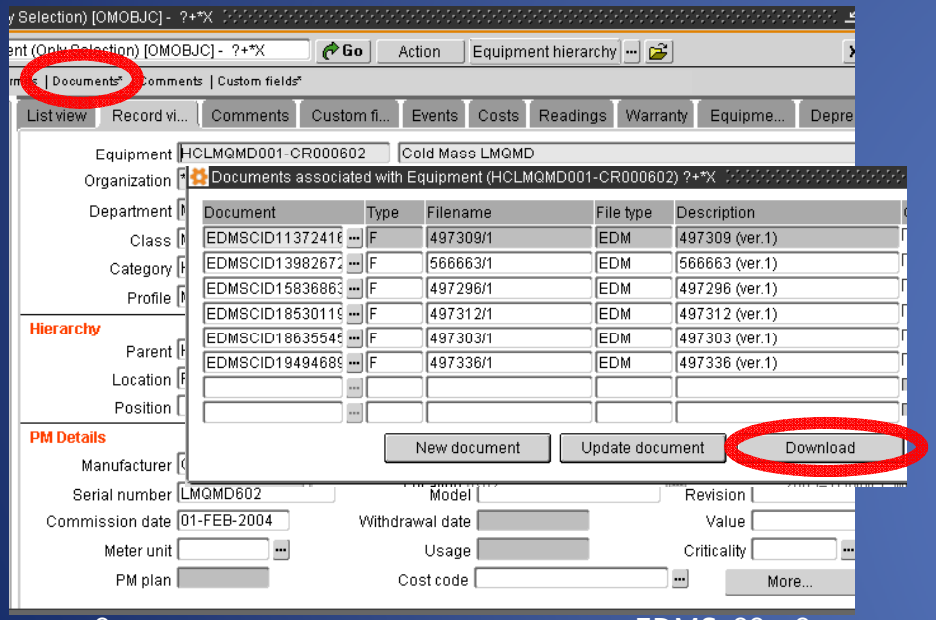
- Identify, track, locate and analyze performance of physical assets.
- Associate technical characteristics and measured parameters with assets.
- Create asset structures to track assembly configurations or to group assets by for example systems or locations.

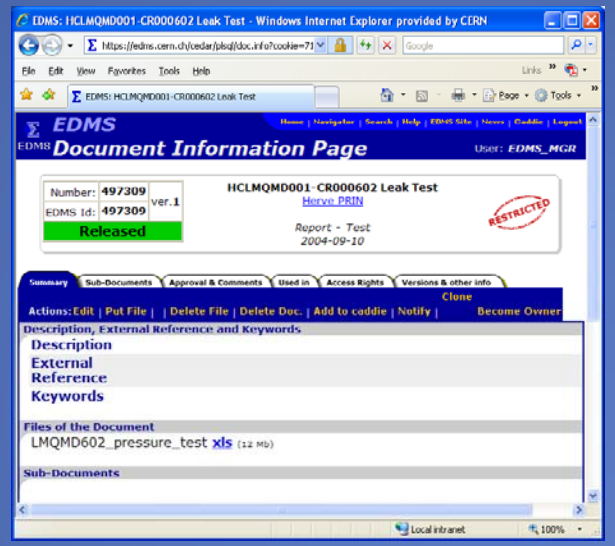


Asset management

D7i allows you for each asset to:

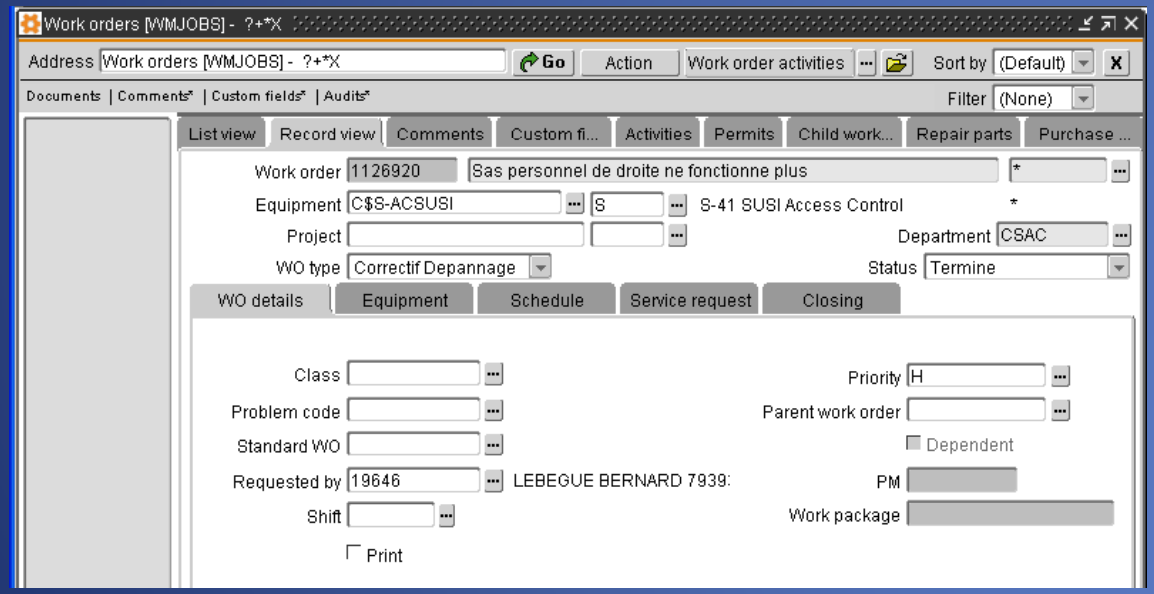
- Log meter readings, inspection notes and free-form comments.
- Access its complete historical record, including location and status changes as well as all maintenance interventions.
- Associate permits and documentation (e.g. EDMS or CVS) – especially interesting for equipment running software codes or requiring configuration files.





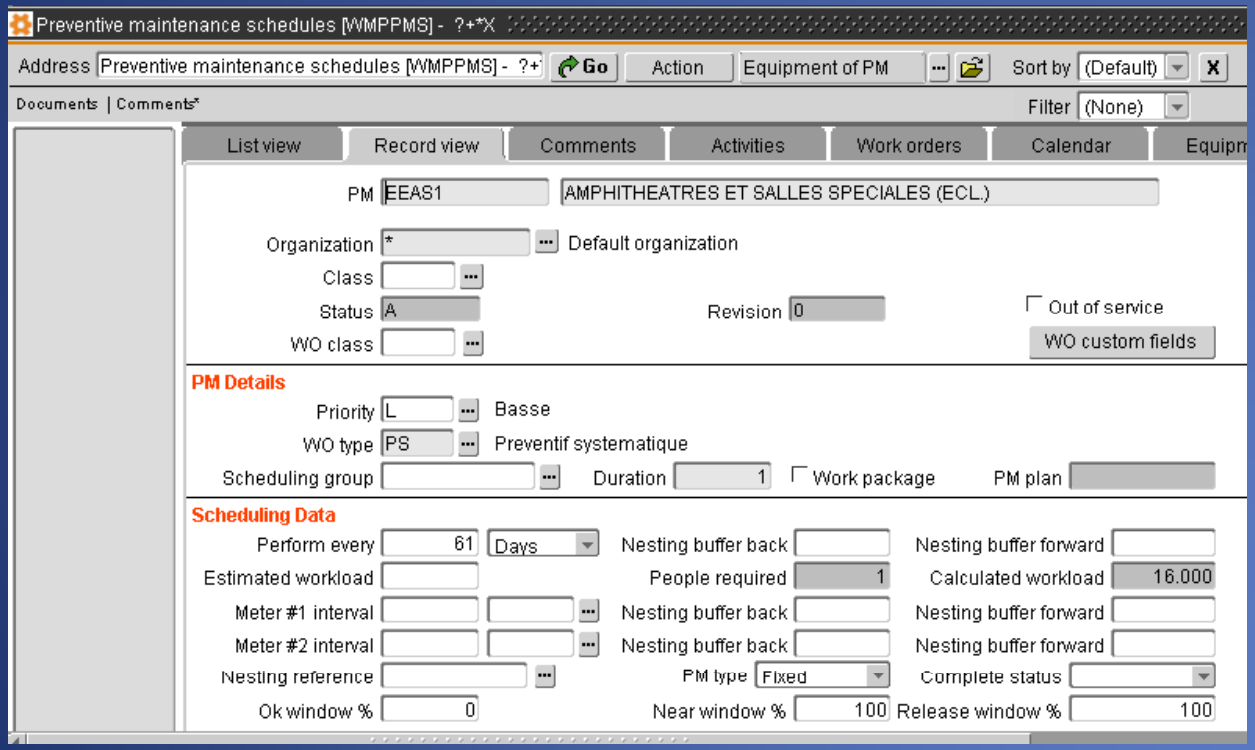
Work management

- Controls work order processes for routine, response and periodic preventive maintenance.
- Can manage, plan and monitor work and resources needed to complete work.
- Stores material and tasks lists in a library for easy reference and retrieval.
- Determines cause and effect relationships and provides a full range of diagnosis tests.



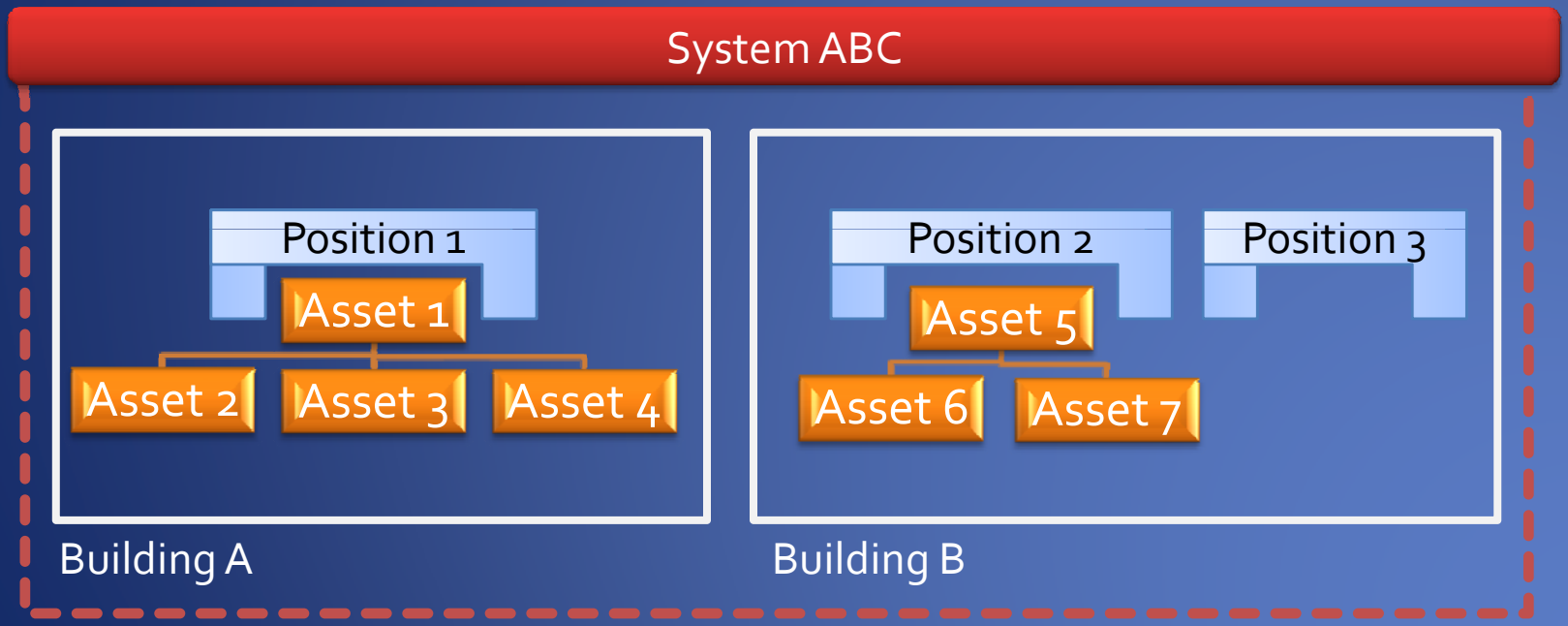
Work management

- The Preventive Maintenance (PM) management module can generate work orders based on fixed dates, time intervals or meter readings.
- It is also possible to create routes to group interventions for multiple assets that require identical PM tasks under a single work order.



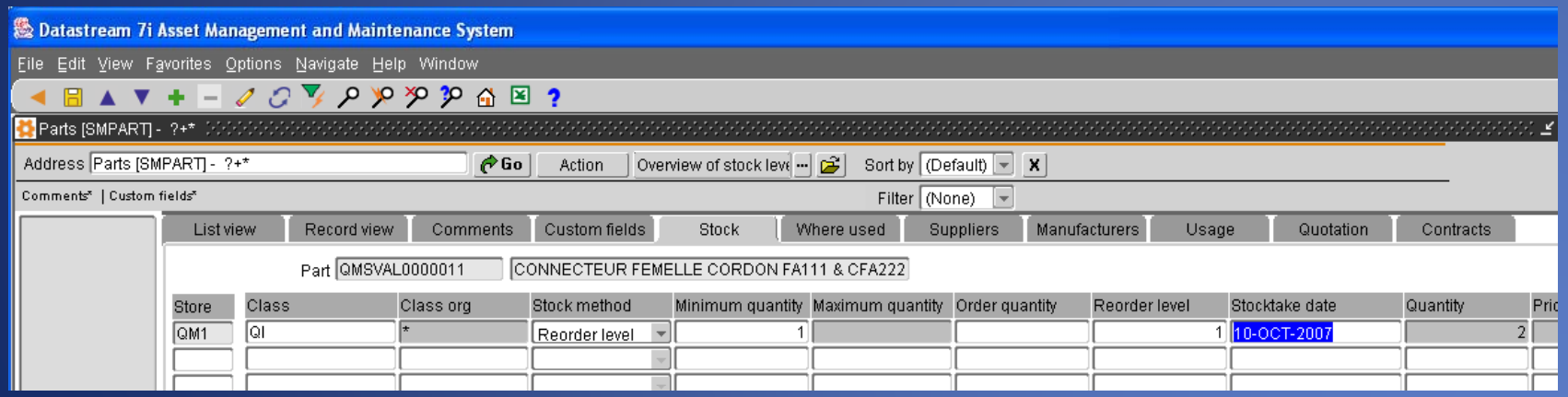
Analyzing performance of assets

- The work management module together with the advanced equipment structuring capabilities gives powerful possibilities of analyzing the performance of your assets – such as;
  - Maintenance costs (for example rolled-up into more general systems)
  - MTTR or MTBF (for example based on asset type, location or system, etc)



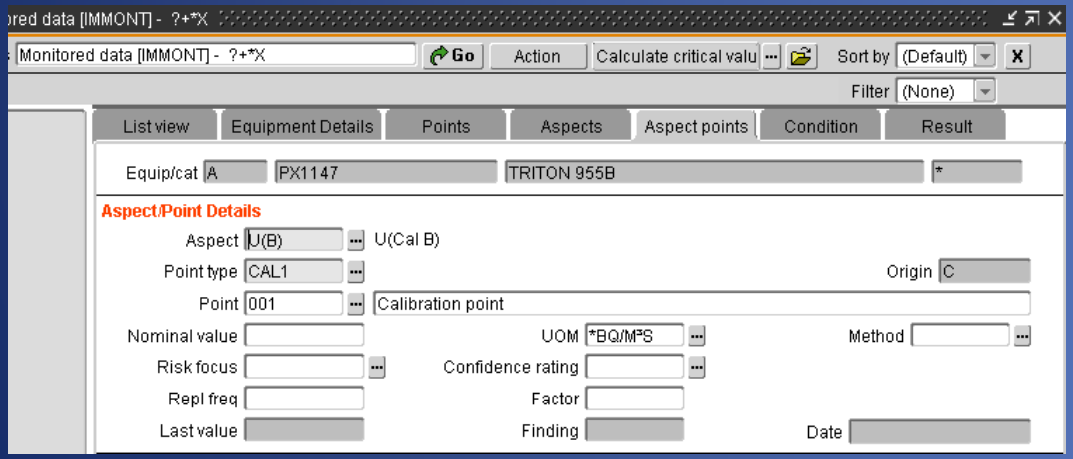
Materials management

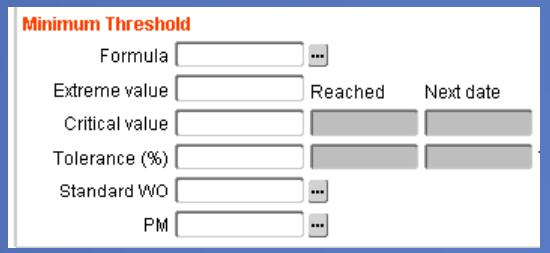
- Streamlines part and materials management by maintaining inventory and monitoring materials movements.
- Enables equipment groups to provide acceptable level of supplies (e.g. spares and consumables) to meet anticipated demand from maintenance.
- Allocates materials to Work Orders and generates pick lists for materials.
- Identifies materials that need to be purchased based on existing stock levels, forecasts and current reservations.



Inspection management

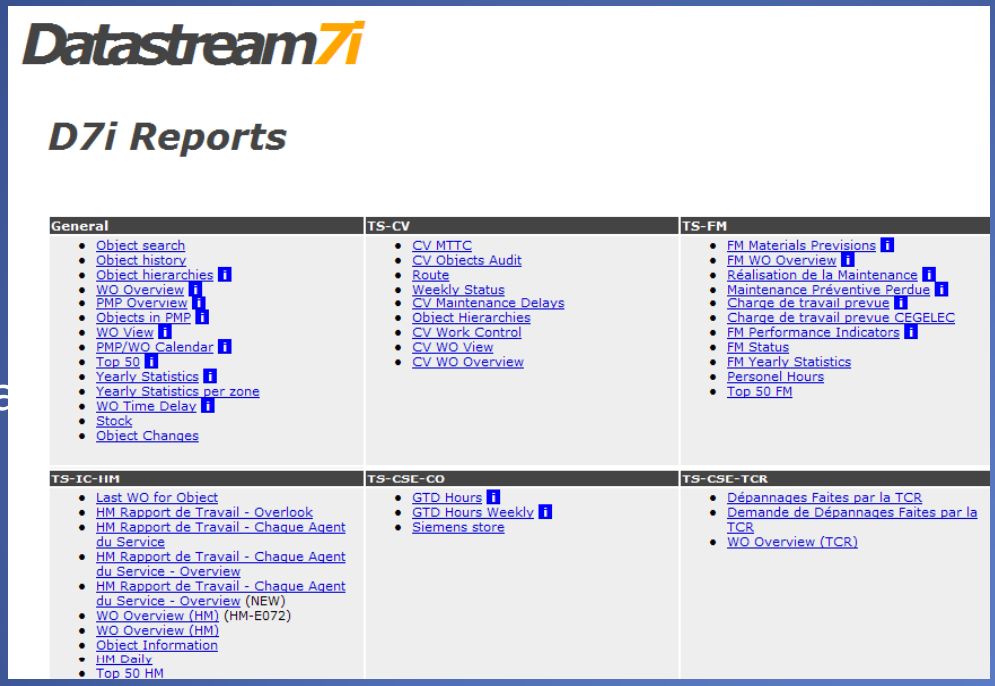
- Manages condition-based maintenance by defining inspection points belonging to one or several assets.
- Allows inspections ad hoc, triggered by time frequency, meter readings or based on previous inspection result (condition-based).
- Analyzes trends and predicts when certain thresholds will be reached – and launches preventive Work Orders based on this information.





Reporting & Views

- Over 100 predefined reports are available in D7i to analyze different aspects of the maintenance work and the performance of assets.
- In addition to this a large number of customized web reporting tools have been developed at CERN.
- For users with additional reporting needs, direct access to database views can be given.
- Fully customized reports ca then be created with for example Business Objects.



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Practical example of workflow

An alarm appears on a screen or a problem reported to CCC.

CCC registers a Work Order in D7i for the faulty equipment listing all known details of the reported problem.

D7i sends an automatic SMS notification (and email) to the concerned maintenance team – a subcontractor in this particular case.

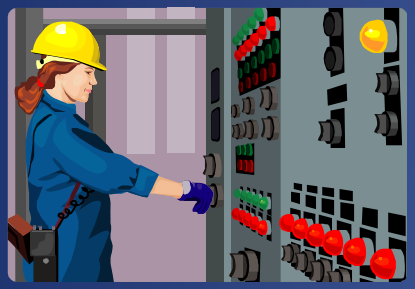
A maintenance technician at the subcontractor logs in to D7i, reads the Work Order details and acknowledge that this is a task for him.

He reads the history log for the faulty equipment and discovers that a similar problem was reported and corrected two years ago.

Practical example of workflow

The technician prints the Work Order containing problem details, information about equipment location as well a check list for this type of interventions.

Thanks to work log from earlier interventions and the check list, he manages quickly to restore the proper functioning of the equipment.



If the intervention took place in an area with wireless network coverage it would be possible to report the details about the resolution of the problem in D7i using a laptop. Otherwise it would have to be typed back in the office.

Practical example of workflow

As a final step, the completed Work Orders are then finally closed in D7i after a check and approval by the concerned equipment group at CERN.

Even for a simple problem like this many advantages of using D7i can be seen:

1. The contractor was notified instantly, the notification was recorded and thanks to the work log of earlier interventions the problem was quickly solved.
2. Statistics and trends about equipment, equipment types or locations can be generated and analyzed with D7i or its reporting tools.
3. Payment to the contractor can be based on D7i data.
4. More precise forecasting of required maintenance resources can be done with D7i reports.

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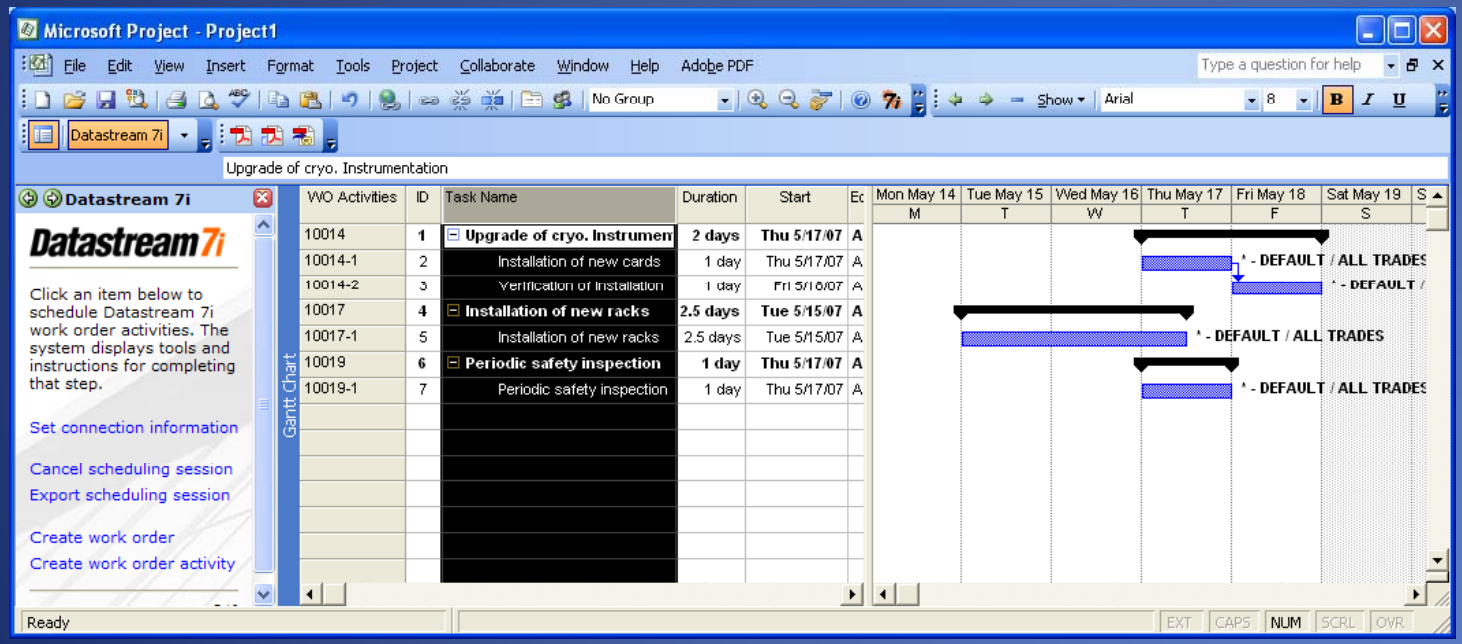
MS Project integration

- The two-way integration between Datastream 7i and Microsoft Project (2003) has recently been installed at CERN.
- It allows easy visualization and modification of planned interventions.
- Very useful for scheduling of jobs planned for machine shutdown periods.

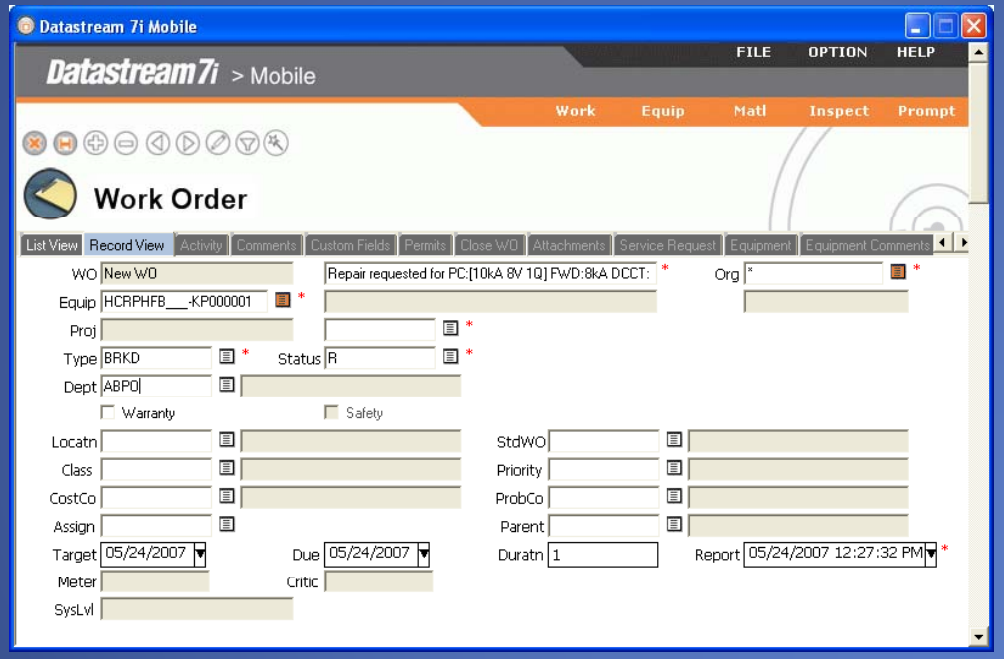


Datastream 7i Mobile

- Tests are also being done on the mobile version of D7i which opens many new possibilities;
  - Possible to record information directly in the field – no need for re-typing information back in the office.
  - Possible to work with Datastream 7i in places without network connectivity – i.e. in undergrounds areas or in workshops.
  - Possible to simplify data entries by using barcode or RFID scanner.
  - Possible to provide equipment and job details to technicians in the field.

Datastream 7i Mobile

- The two versions exist and are now tested at CERN;
  - Version for hand-held PocketPC devices.
  - Full-VGA version for normal PC laptops.
- If the current feasibility testing turns out positive and user requests exist we will purchase this software module – and charge the clients!

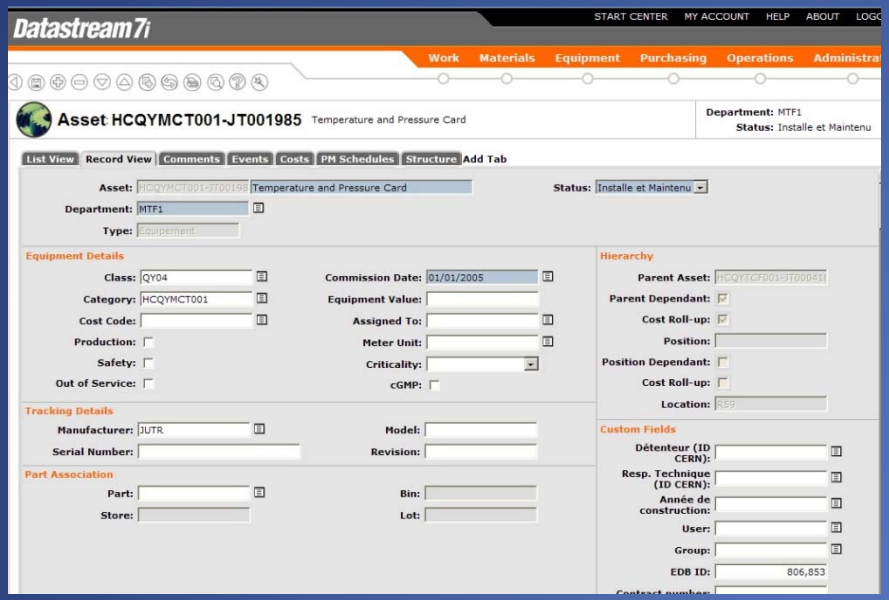


Barcode label printing service

- A central barcode label printing service is today available for all users with equipment registered in the D7i or MTF tools:
  - Quick and easy identification of equipment is essential for an efficient equipment management.
  - Three standard label sizes are proposed.
  - The cost for the labels is charged internally to clients every 6 months or earlier if amount exceeds 500 CHF.
- Examples of clients so far;
  HwC Team, AB/CO, AB/BI, AB/PO, TS/CV, AT/ACR
- More information about label material and other technical details:
  http://edms.cern.ch/nav/ST-003199

Coming functionality

- A new version of D7i (D7i Extended) with a simplified and more user-friendly interface will be installed during 2008. (Date still depending on Oracle database upgrades in IT.)



- Several new and simplified facilities for massive imports of Work Order data will be provided during 2008. (User needs still being collected.)

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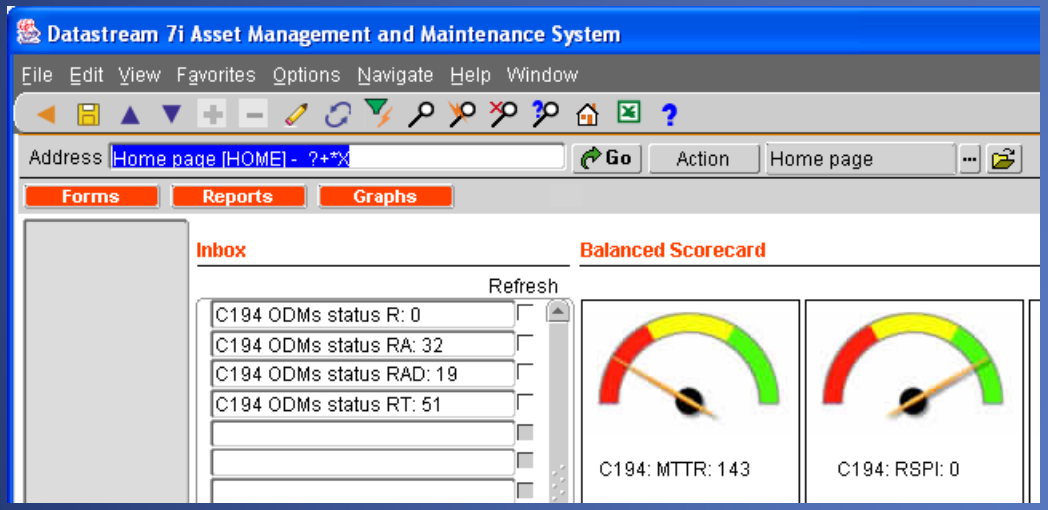
Conclusions

- D7i has proven to be a very useful tool for improving, automating formalizing and documenting maintenance processes at CERN.
- Significant amounts of time, money and frustration (not finding documentation etc) can be saved if using D7i to organizing the maintenance work.
- D7i is integrated with the EDMS-MTF applications and provides this way a complete platform for managing and tracing information about your equipment throughout their entire lifecycle.



Conclusions

- However, a significant initial effort is required to get started;
  - Your assets needs to be identified
  - Your overall maintenance policy must be defined
  - You and your colleagues would require some initial D7i training.
- The CAMMS support team is there to help you with system-related issues like;
  - D7i training & consulting
  - Data imports & (limited) reporting support
  - Standard system customization, etc.
- D7i can help you to organize and streamline your maintenance work – but it will not do it for you!

Questions?

Help to get started – contact:
cmms.support@cern.ch