Organisation Européenne pour la Recherche Nucléaire
European Organisation for Nuclear Research
Laboratoire Européen pour la Physique des Particules
European Laboratory for Particle Physics

CERN's Maintenance Management Project

MMP and Maintenance Framework Implementation Office (MFIO)

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Maintenance Management Project

AMMW2013
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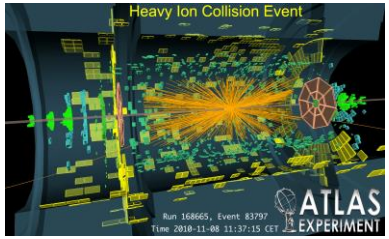
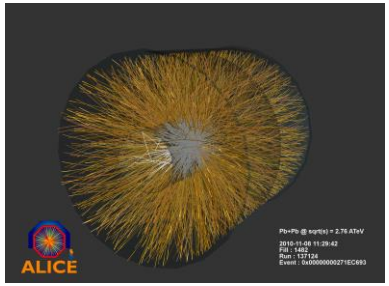
https://edms.cern.ch/document/1328742

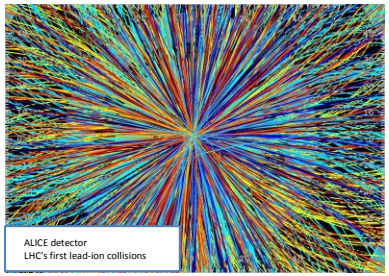
Agenda

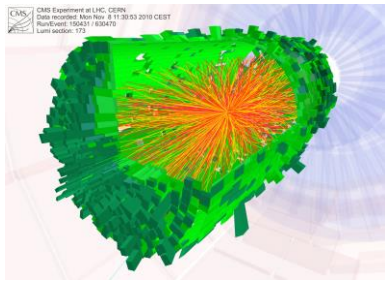
- Introduction
- Maintenance Management Project (MMP)
  - Launch of the Maintenance Management Project
  - Organizational structure of MMP/MFIO
  - Basic concepts
- MMP/MFIO activities uses cases
  - Maintenance documentation management
  - Part management
  - Framework integration with other systems

Introduction

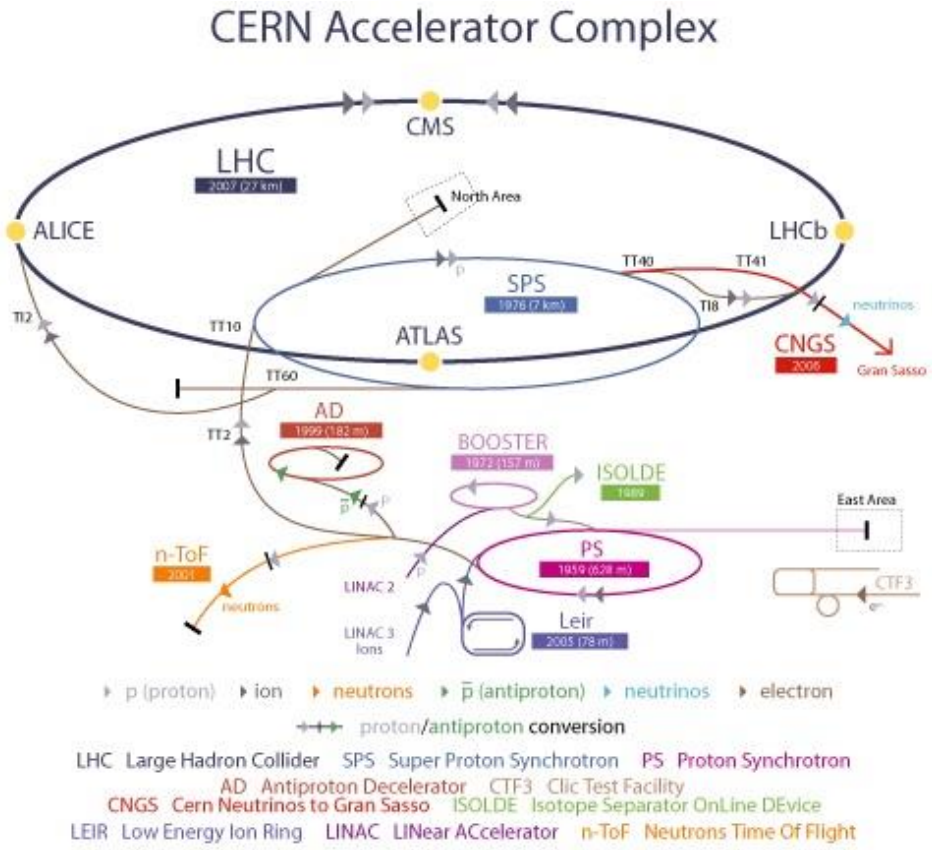








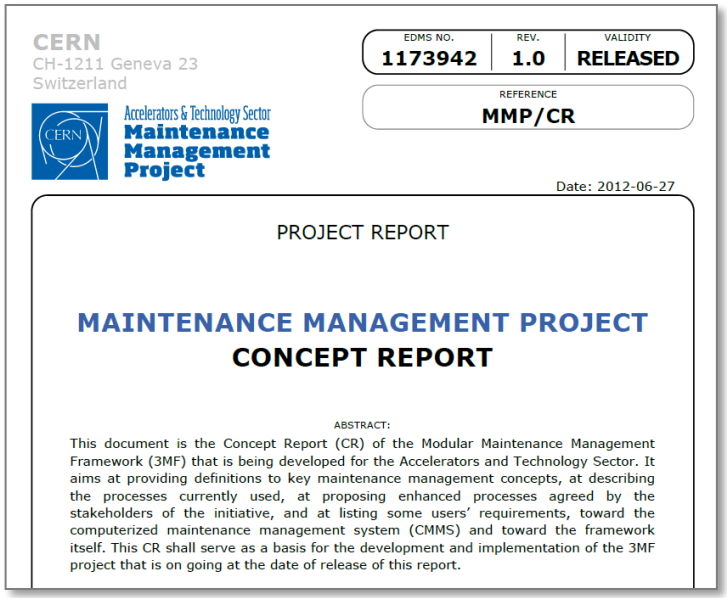
With the first collisions in the LHC, CERN completed a long period of development and entered the operating phase in 2010.



Launch of the Maintenance Management Project

At the end of 2011, the 3 Accelerator Sector departments have launched the MMP project with the target to :

1. Develop a central data system to share technical information
2. Define and formalize a global approach to manage the maintenance activities: Tools and Methods



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Accelerators & Technology Sector
Maintenance Management Project

EDMS NO.	REV.	VALIDITY
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REFERENCE
MMP/CR

Date: 2012-06-27

PROJECT REPORT

MAINTENANCE MANAGEMENT PROJECT
CONCEPT REPORT

ABSTRACT:

This document is the Concept Report (CR) of the Modular Maintenance Management Framework (3MF) that is being developed for the Accelerators and Technology Sector. It aims at providing definitions to key maintenance management concepts, at describing the processes currently used, at proposing enhanced processes agreed by the stakeholders of the initiative, and at listing some users' requirements, toward the computerized maintenance management system (CMMS) and toward the framework itself. This CR shall serve as a basis for the development and implementation of the 3MF project that is on going at the date of release of this report.

The Concept report defines the Modular Maintenance Management Framework.

3MF = Methods + Roles + IT tools

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Purpose, Objectives and Impact of the Project

Modular Maintenance Management Framework (MMF)

- Develop a **modular MMF** - time target **end of LS1**

Assets, critical assets, spare parts and documentation

- Manage **50%** of assets, spare parts & their documentation through the MMF
- Identify at least **95%** of the critical assets
- Review **maintenance requirements** for the identified critical assets

Key performance indicators (KPIs)

- Provide through the MMF KPIs for critical assets

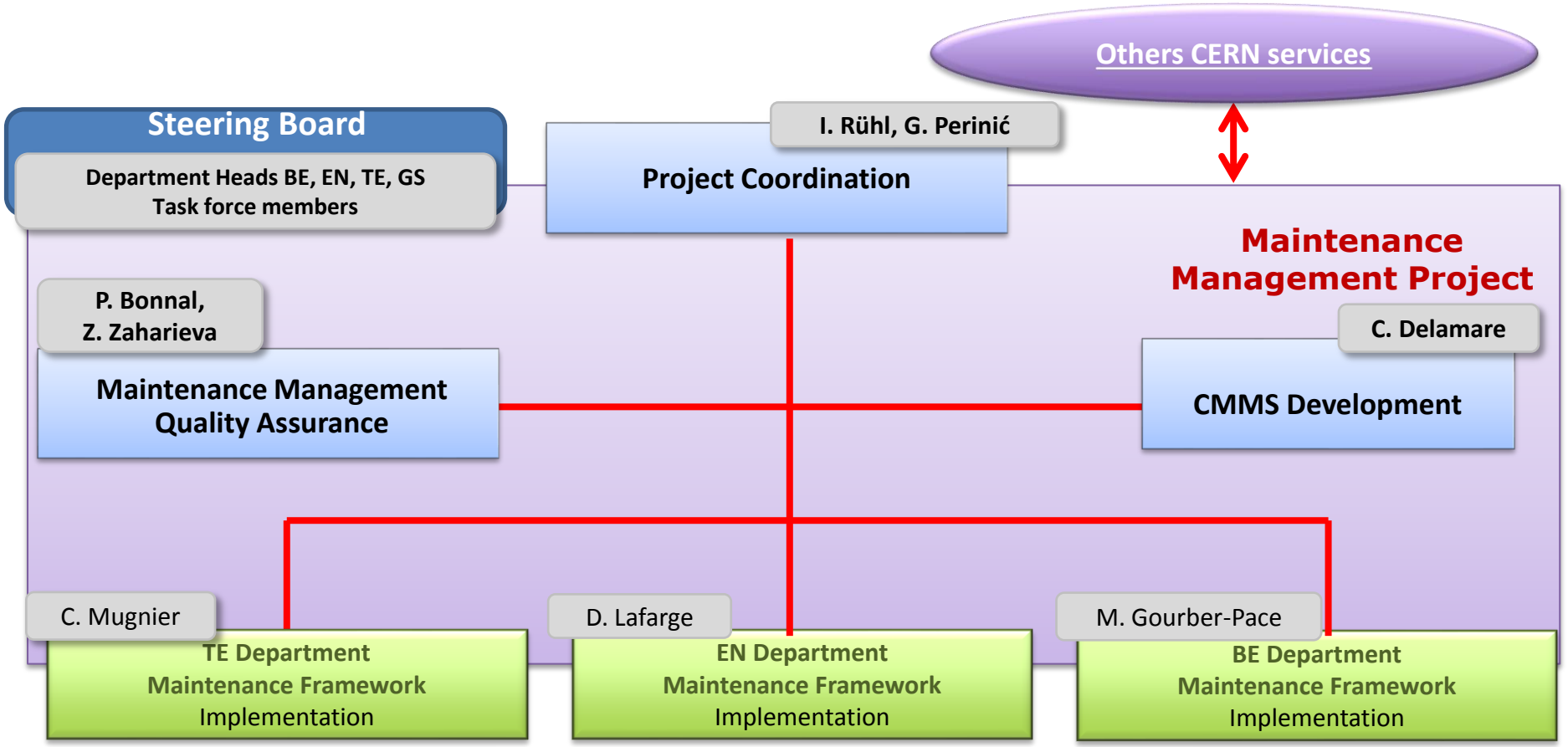
Maintenance management organization

- Design, develop and deploy an organization for addressing the **remaining assets**
- as from the end of LS1, and for **operating the MMF** on the longer term

- 16 groups of the 3 departments, are directly involved:
  - 4 groups already use the CMMS extensively and need new features
  - 12 groups have not or only partially implemented the CMMS

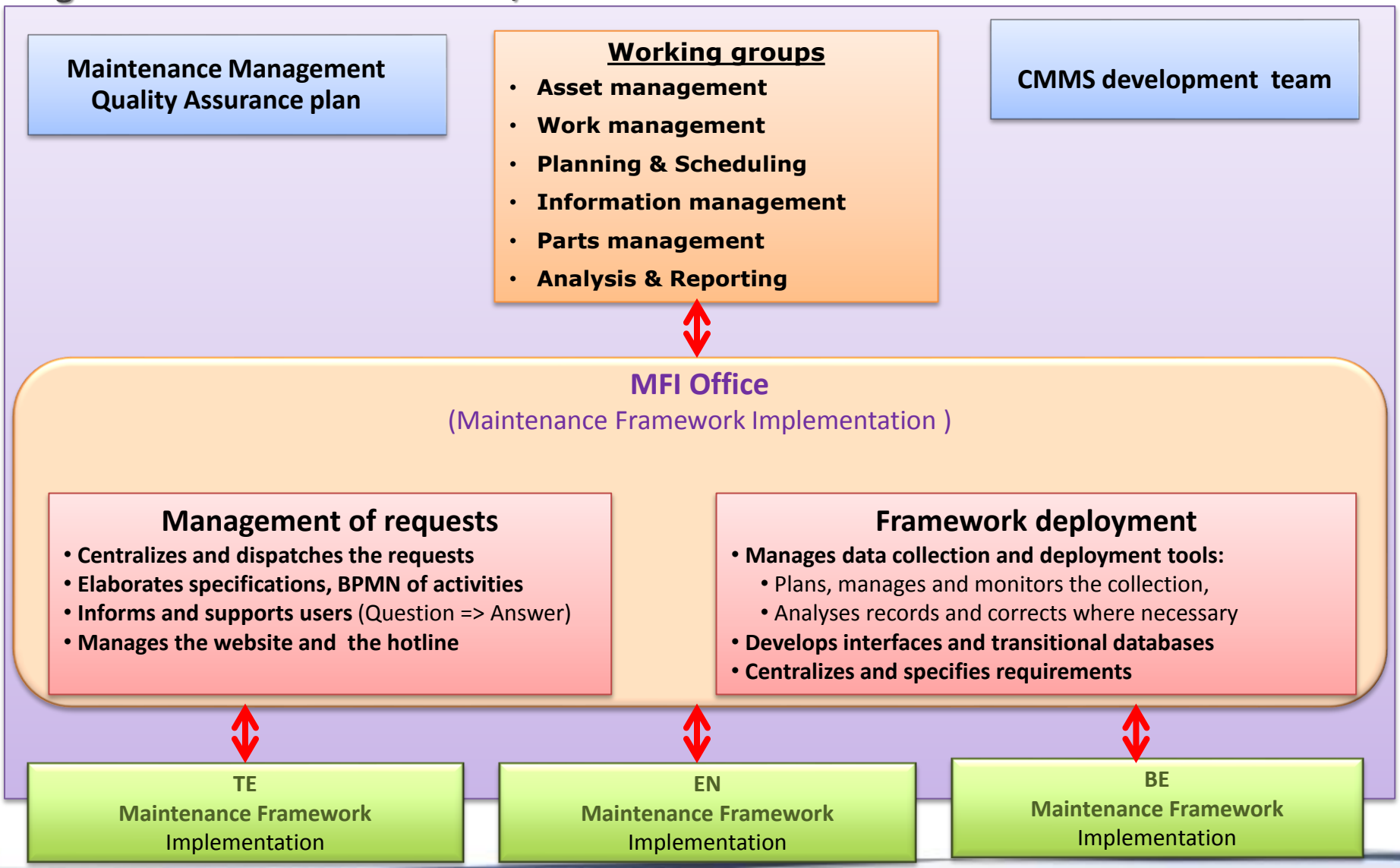
The MMP Project

Organizational Structure MMP/MFIO



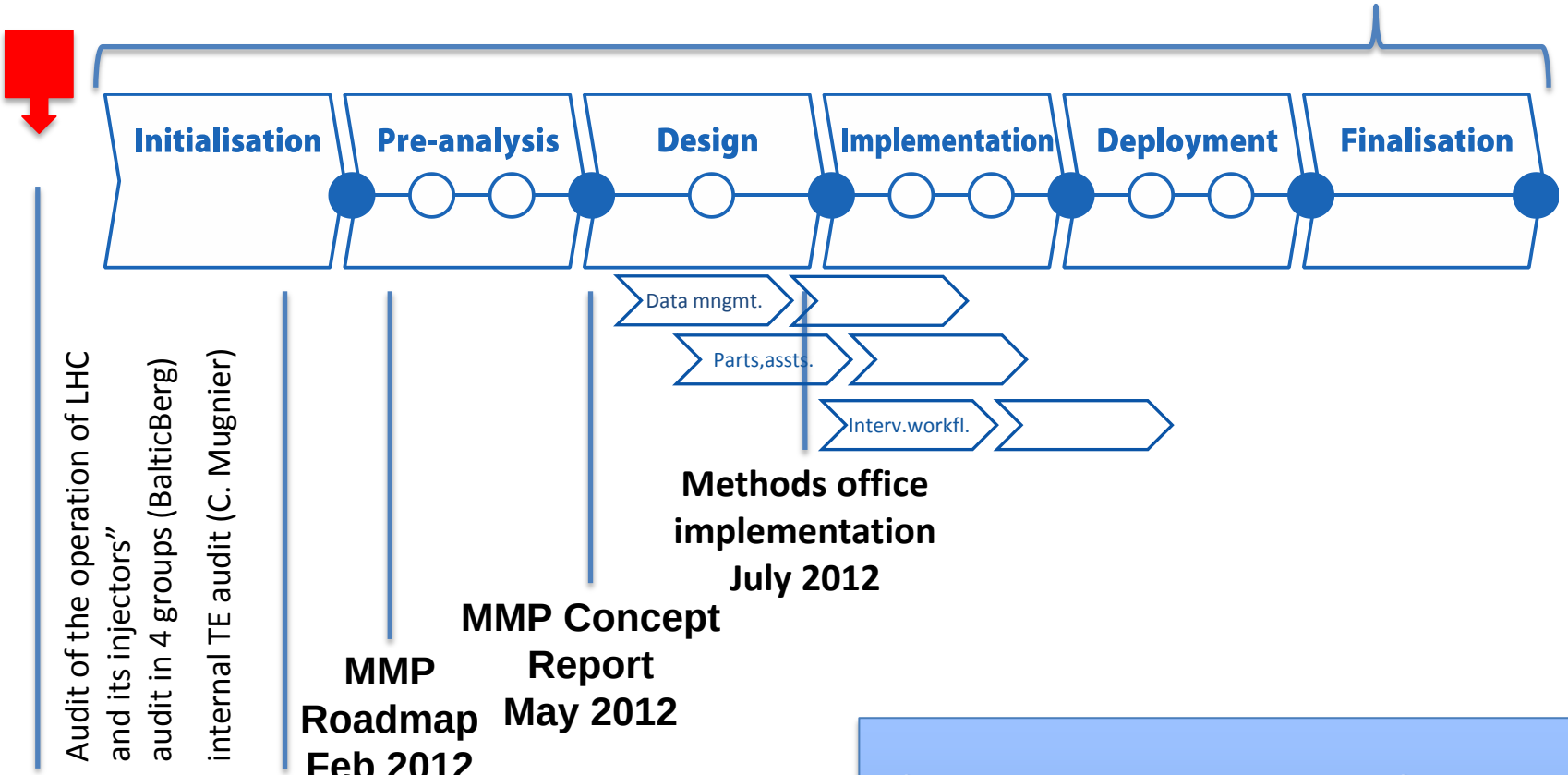
The MMP Project

Organizational Structure MMP/MFIO



The MMP project

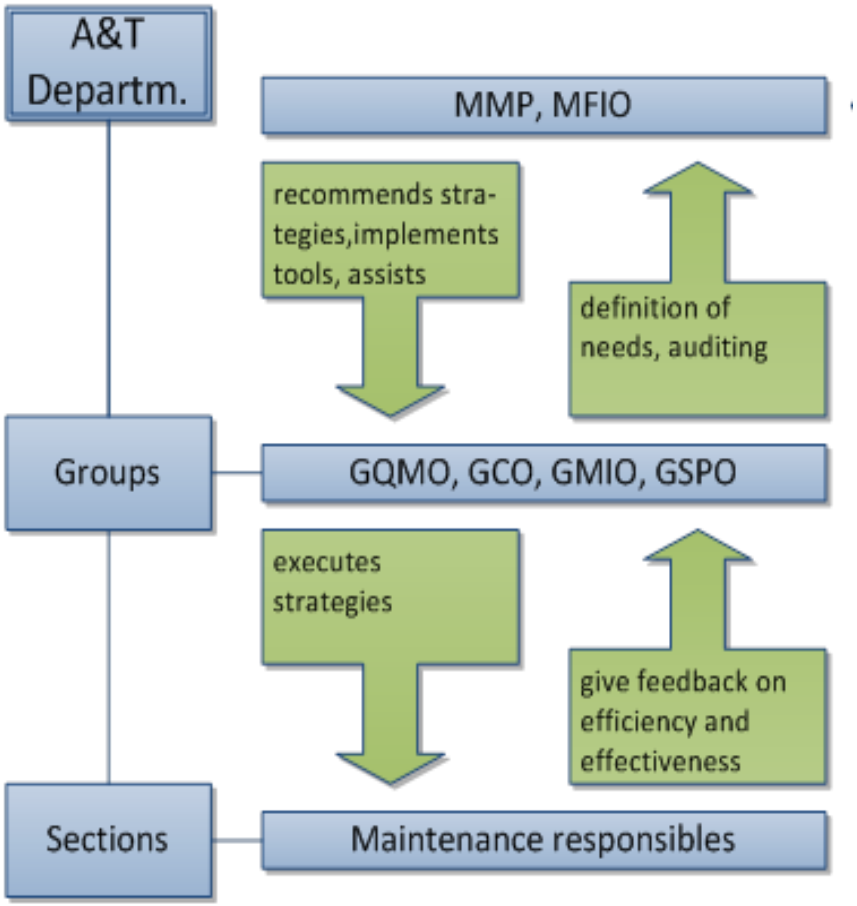
Hermes
project management method



Three Main activities currently in progress:

- Parts management
- Documentation Management
- 3MF interactions with existing systems

The roles concept for a modern maintenance organisation

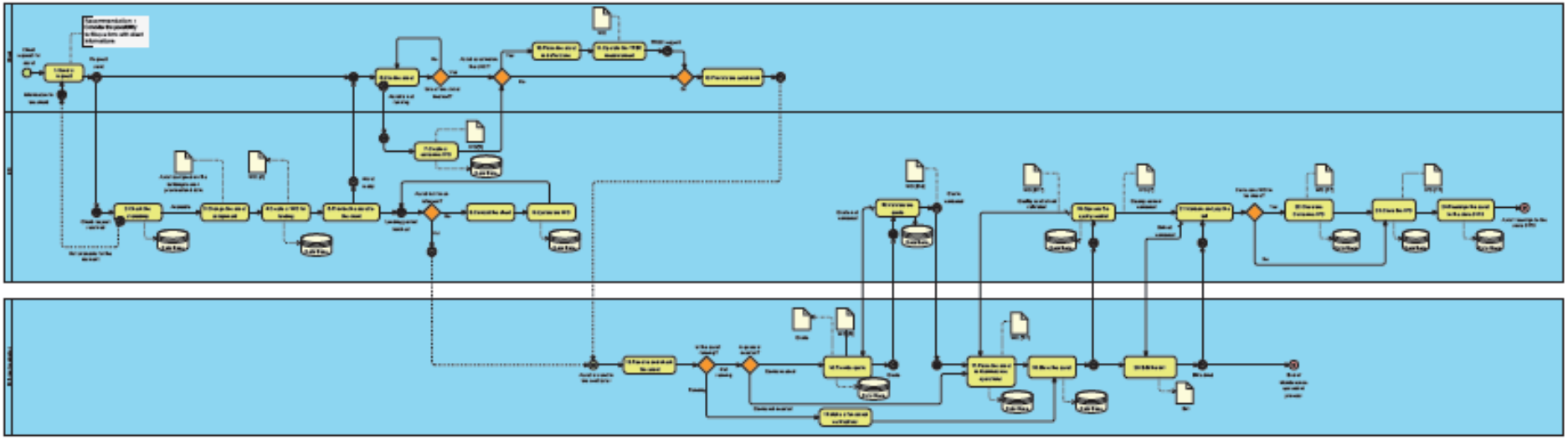


- A group **quality/methods officer** role (GQMO):
  - promoting policy, procedures and standards
  - implementing a QA system at group level
- A group **maintenance information officer** role (GMIO):
  - promoting good practices and guaranteeing coherent management of information and documentation
- A group **coding officer** role (GCO):
  - link person with naming service
  - promoting good practices and guaranteeing that coding is coherently implemented at group level
- A group **spare part officer** role (GSPO):
  - promoting good practices
  - providing support for managing spare part processes

Basic concept for the definition of processes

- Description of processes by BPMN:
  - All processes are described/documented by « Business Process Modelling Diagrams »

Business Process Diagram - WO traceability



Documentation

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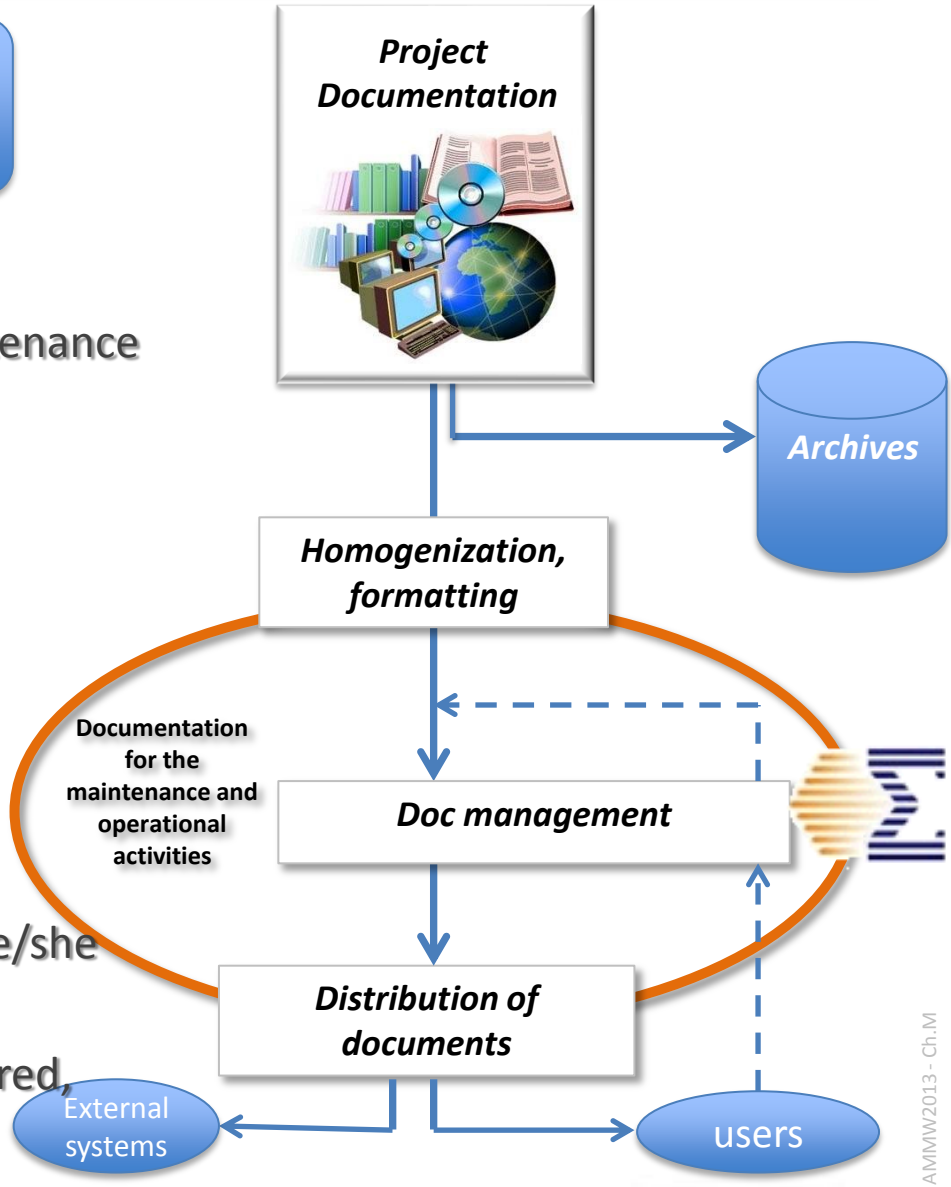
Maintenance Documentation Management

Documentation management: Strategy

Objective:
Constitute the maintenance documentation

- A well defined perimeter
  - Documentation mainly dedicated to maintenance activities
- Specific treatment

  Documents and files are:
  - Formatted, clearly identifiable
  - Stored in EDMS with predefined keywords
- Documentation Management
  - GMIO* is in charge of the management, he/she disposes of the required IT tools
  - Documents and files are updated as required, easily accessible



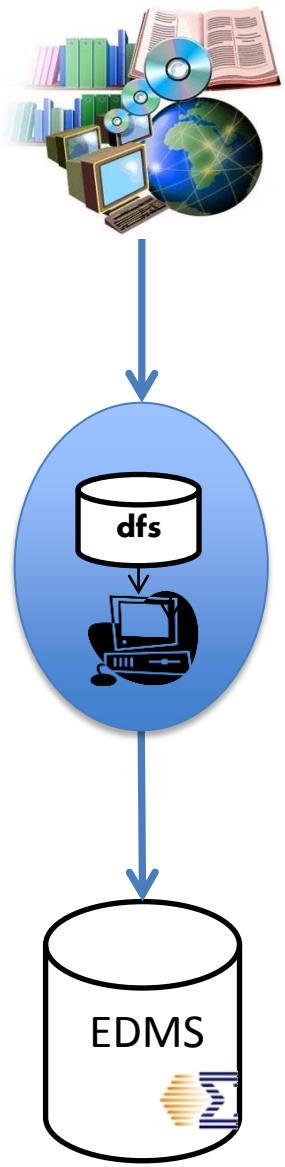
*Group Maintenance Information Officer

Documentation collection: Process

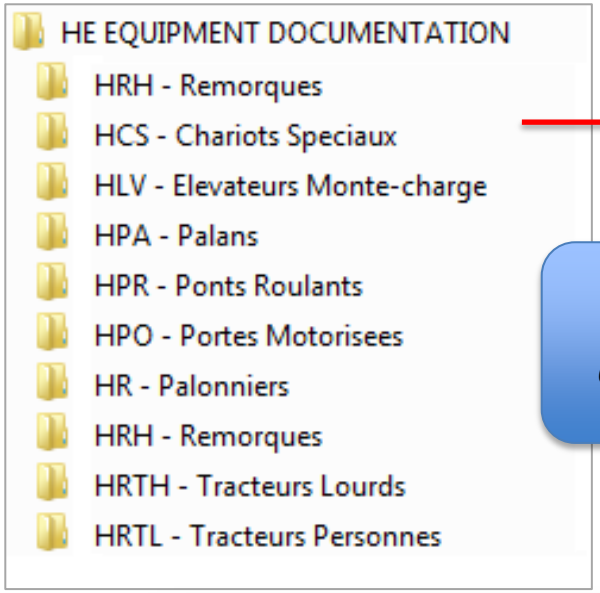
- Support provided by MFIO
  - A team of 2 experts to train and support the GMIO
  - A set of specific IT tools to treat documents
  - A set of methods and processes

- 1st : treatment of documentation in an external system
  - Collecting, sorting, cleaning, formatting of documents and files
  - Establishing the functional breakdown of the equipment (assemblies, parts, assets)
  - Classification, metadata filling and storage of documents uniformly in DFS

- 2nd : massive and automatic upload into EDMS
  - Creation of empty EDMS documents
  - Insertion of the EDMS number into the PDF file (stamp)
  - Upload of metadata and files into the prepared EDMS documents

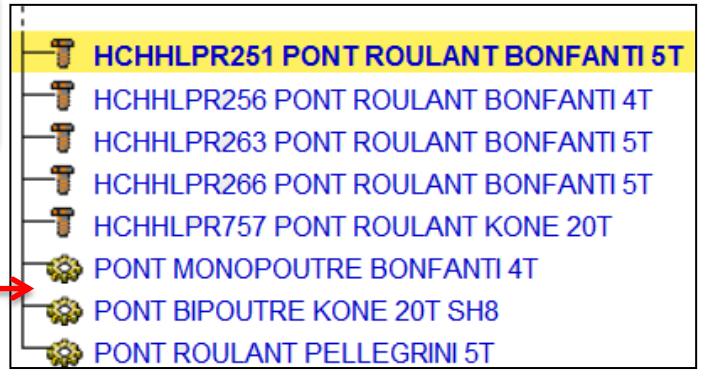


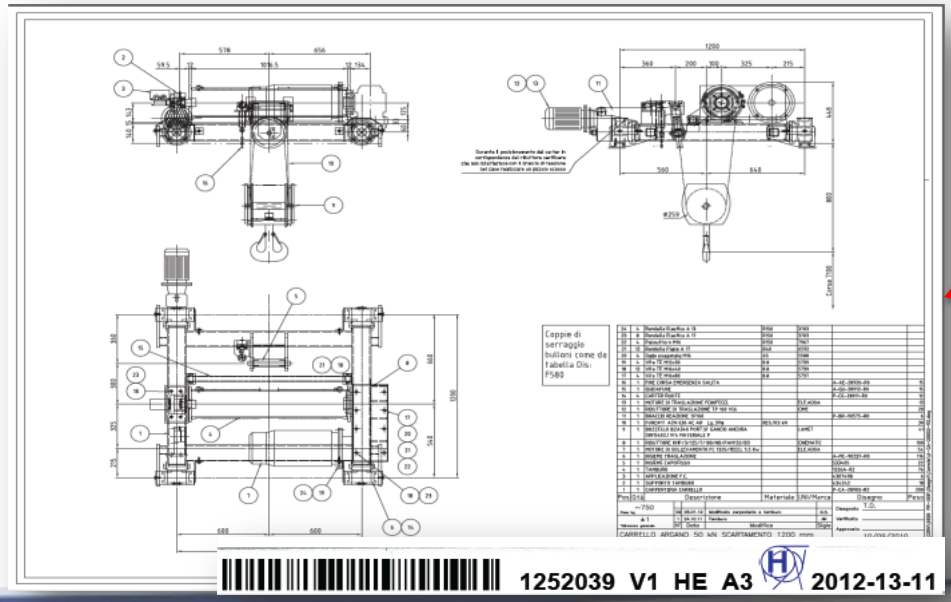
Documentation collection Process: e.g. EN-HE group



1) The functional breakdown is set-up in DFS

2) EDMS functional breakdown is automatically created from DFS





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Documentation collection: Feedback

- Activities carried out

  Creation of new documents and Sub documents EDMS trees, link to projects, items, and asset class with document utilities

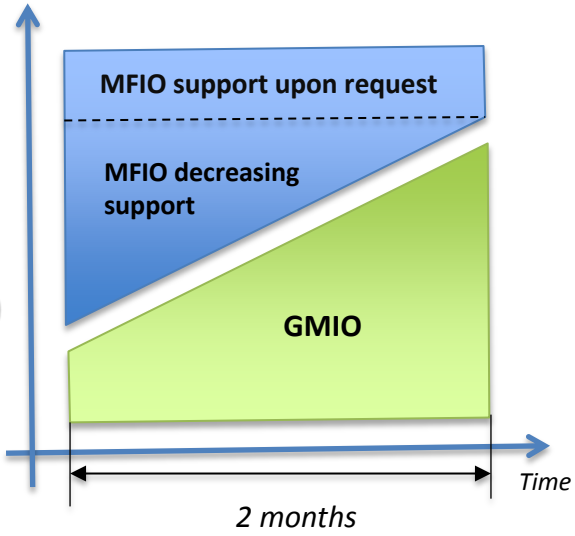
  - MFIO is working with 9 equipment groups

= 5425 new docs
(~ 2000 docs since June 2013)
and
~ 6000 refurbishment of existing docs

- TE-CRG and EN-HE experiment

  in both cases:

  - After 2 months of strong support from MFIO*, the GMIOs* have become autonomous
  - The GMIOs are satisfied of the efficient IT tools. (>1000 doc per day could be treated and recorded)
  - The GMIOs continue autonomously
  - The MFIO continues to support upon request



*Maintenance Framework Implementation Office
*GMIO: Group Maintenance Information Officer

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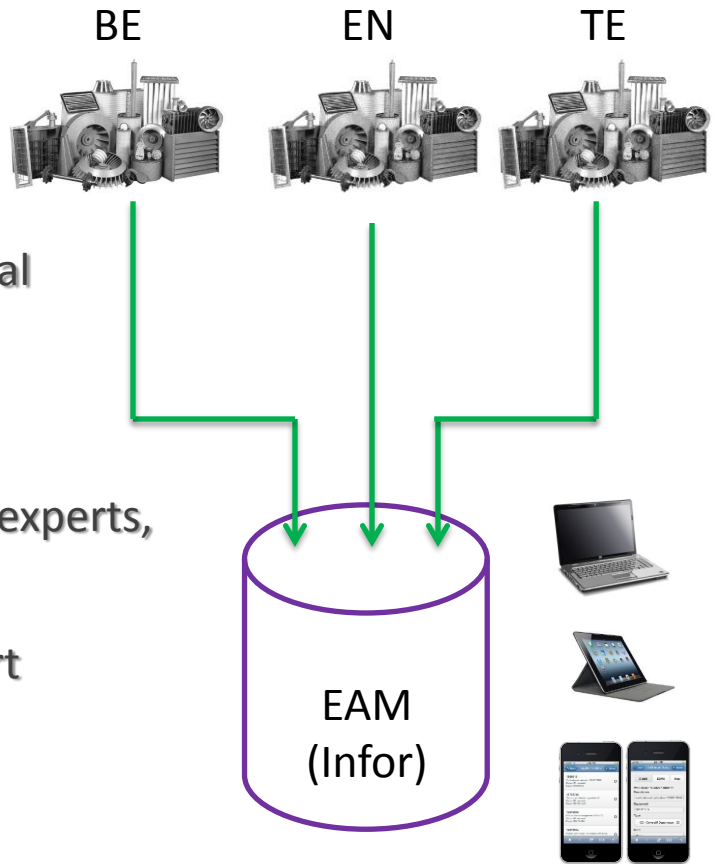
Parts management

Parts management: Strategy

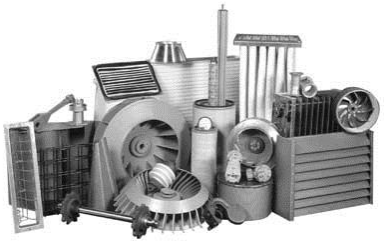
Objective:
Constitute a global catalogue of parts across departments



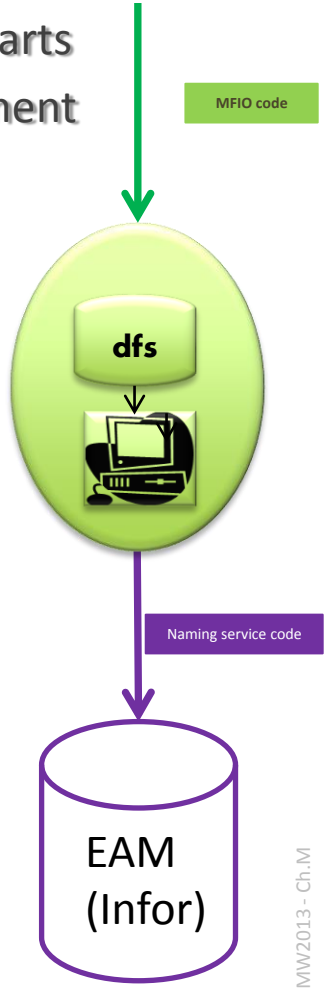
- Perimeter
  - BE/TE/EN global rules and codification, to allow a global view across department and groups
- Specific treatment of data
  - Classes and customs fields are proposed by a panel of experts,
  - Collection process is unified and well defined (BPMN)
  - All records are validated (by automatic means or expert checking)
- Part Management
  - GCO* and GSPO* roles are essential to manage parts at group level
  - EAM provides functionalities and specific user interfaces to manage stores and to guarantees the part traceability.

*Group Coding Officer
*Group Part Officer

Parts collection: Process



- Support provided by MFIO
  - A team of 2 people to support and train the Group Part Officer (GSPO)
  - A set of specific IT tools to define classes and custom fields and to record parts
  - Methods and processes well defined for part recording and store management
- 1st : treatment of records in an external system
  - Predefining and formatting classes and custom fields
- 2nd : in the field
  - Collecting, sorting parts and record the characteristics and pictures in the external system
  - Attribution of MFIO temporary codes for provisional labelling
- 3rd : setting up store management with EAM
  - Formal code attribution by Naming Service
  - Massive upload into EAM by the means of web services
  - Implementation of an EAM integrated solution for store management, labelling and traceability



Part collection process: e.g. EN-HE store management

Part collection process: e.g. EN-HE store management

- *More than 3500!! parts have been registered and labelled with the MFIO code*
- *Old codes have been included*
- *More than 15000 pictures have been taken and are now available*
- *More than 500 bins have been created*
- *Manpower invested – 3 man-month*

All parts have been counted which means that there is a trustable and updated understanding of the stock inventory.





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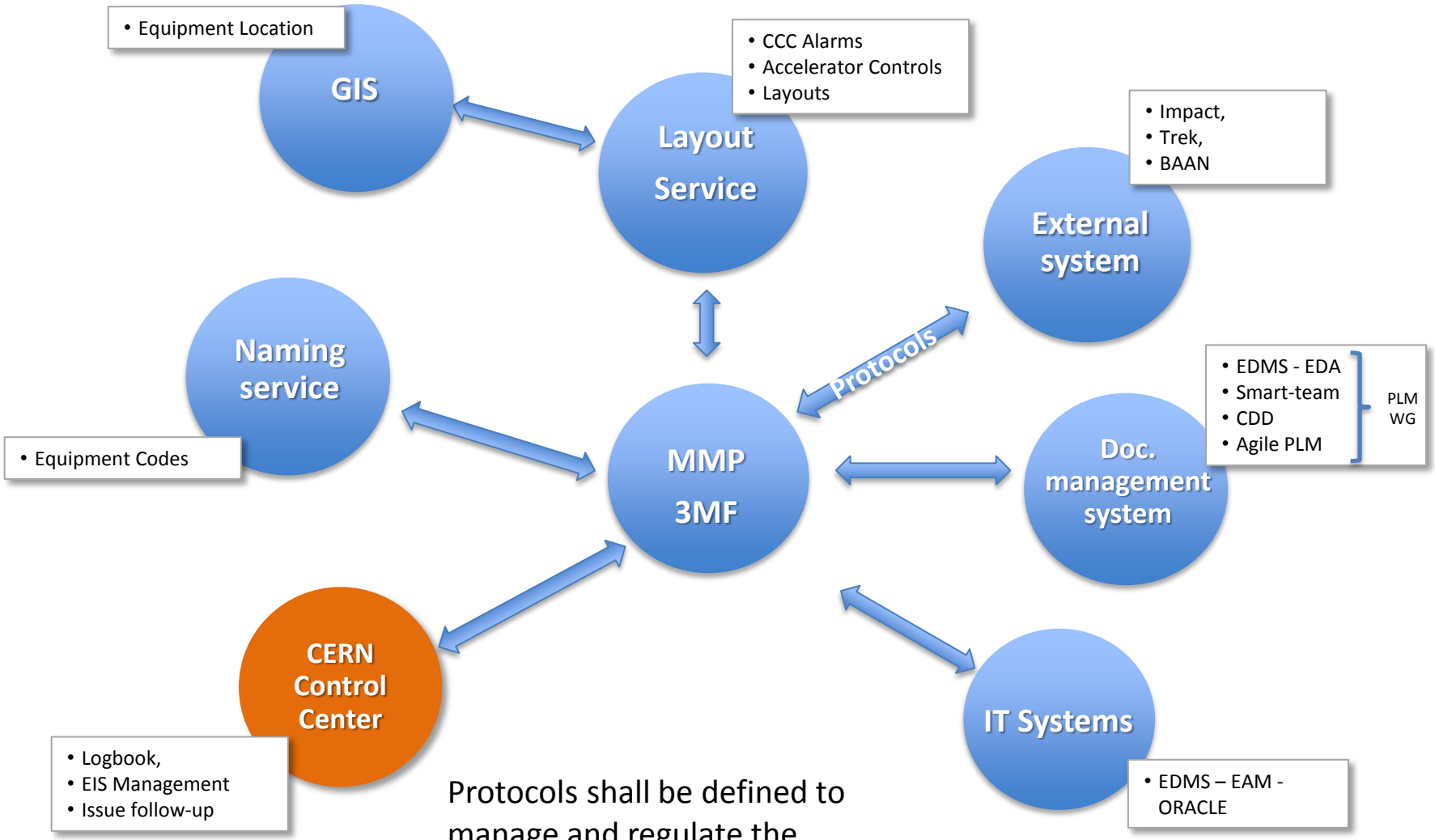
3MF Integration with other system

Interactions of the 3 MF with other systems



Protocols shall be defined to manage and regulate the exchange of data between services.

Infor EAM Integration

EAM Light

Control room (TI-OP Logbooks)

EDMS

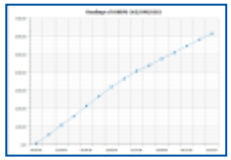
Manufacturing & Tests

Accelerators Layout DB

IMPACT

CERN EAM Mobile

Reporting tools



TREC

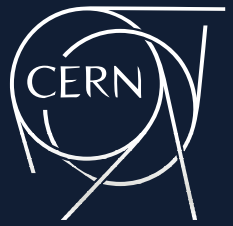
GIS

GESMAR

ERP
(BAAN)

Slide provided by D.Widegren

Thank you for your attention



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