Introduction to Asset Management at CERN and Enforcing QA through the Naming Service

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- *Responsibility for the Asset Management at CERN*

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Enterprise Asset Management

- *The optimal management of the physical assets in order to:*
  - *reduce costs*
  - *reduce risks*
  - *improve decision making (KPIs)*
  - *improve availability of equipment*
  - *improve operational performance*
  - *compliance with required regulations*
  - *etc., etc....*

  ↪ *B. Todd – Thursday*
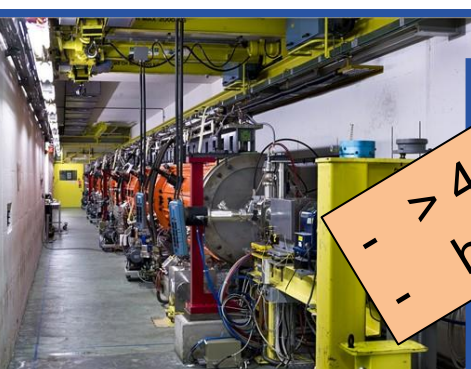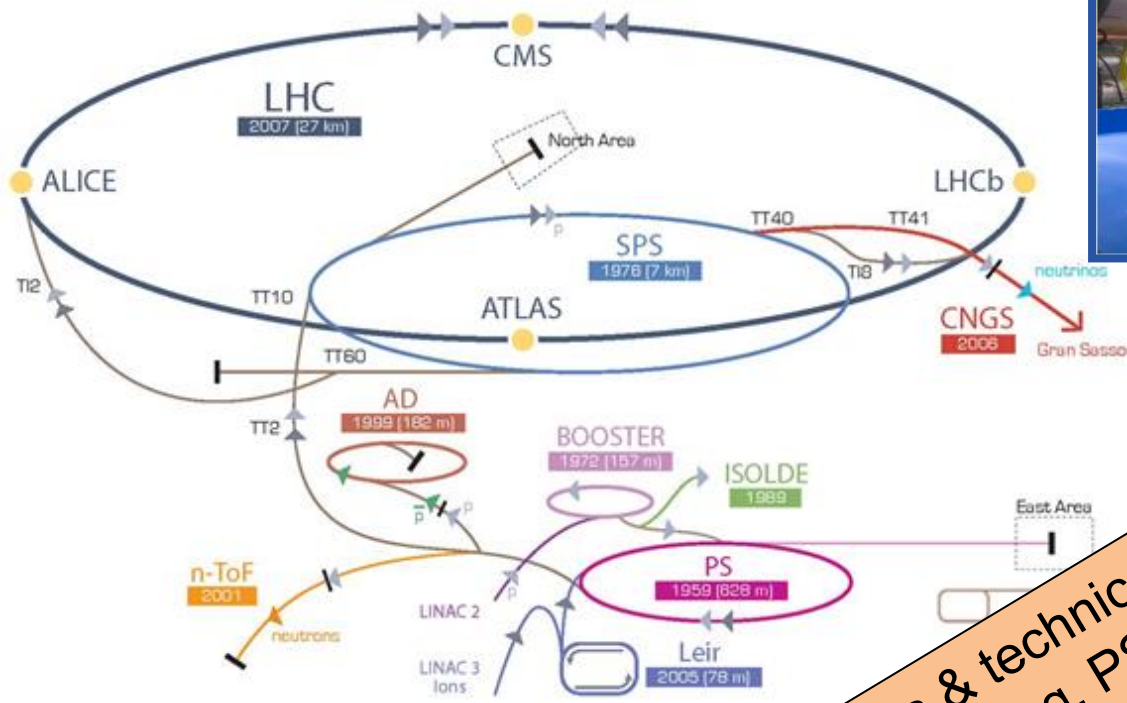 ↪ *M. Tavlet – Thursday*
  ↪ *L. Bruno– Thursday*

- *Need a strategy across the complete organization*
- *Covers the complete lifecycle of an asset*

Design and Planning	→	Construction and Commissioning	→	Operation	→	Disposal

- ***Maintenance Management is part of Asset Management***

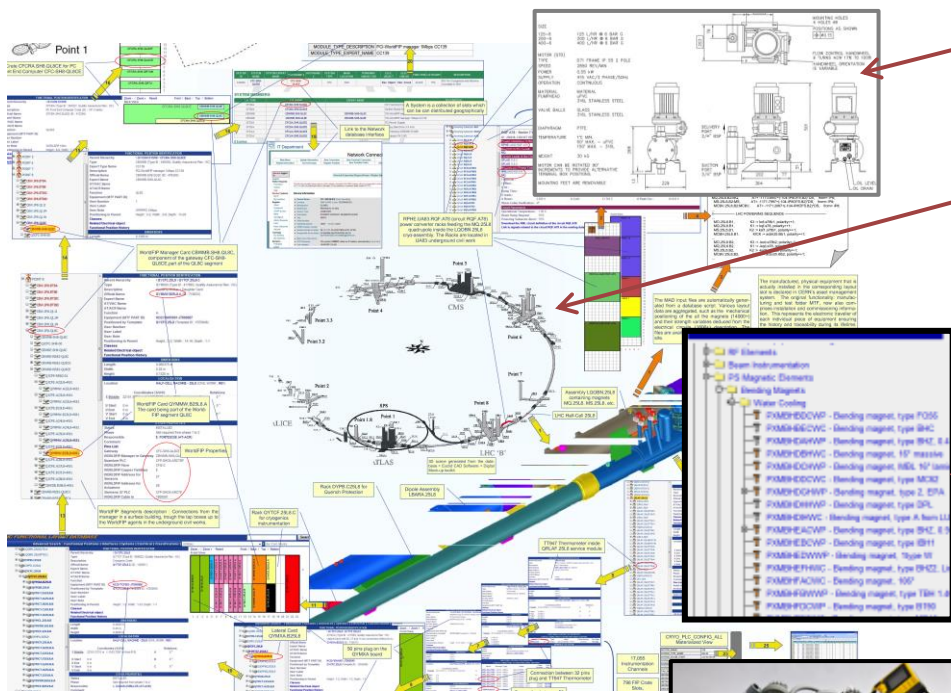# Which are the assets managed at CERN?

- > 40 km of beam facilities & technical infrastructure
- history of the accelerators, e.g. PS - 55 years old

Assets Management – What needs to be managed?

Drawings / reference documentation

Layout functional positions
Which is the place where an asset will be installed in order to perform a specific function?

Items (equipment types)
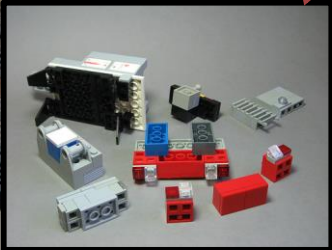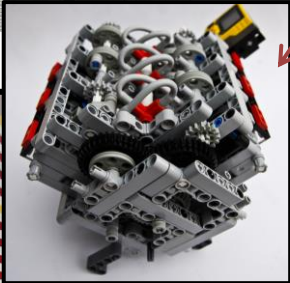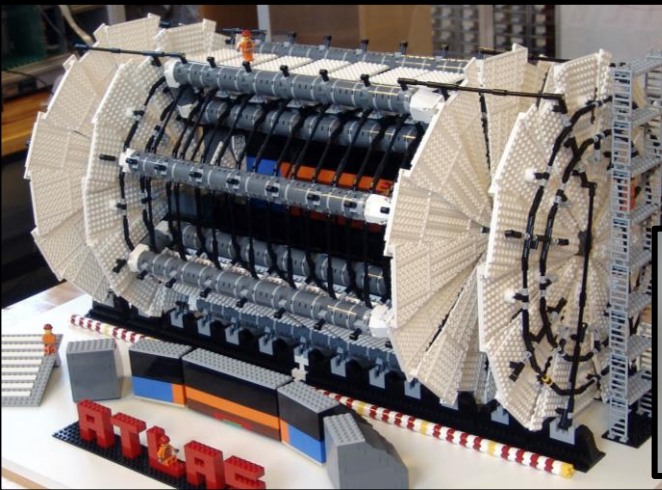What equipment type is required to deliver a requested function?

Assets
What shall be managed once bought/manufactured?

Spare parts
What is kept in stores?

An incredible amount of relations:
dependencies, breakdown structures, etc.

Specific functionalities for the Controls and Operation of the accelerators

Asset Management Responsibility Strategy

- *Every equipment group is responsible for the management of their own asset (responsibility split by functional systems – e.g. Vacuum, RF, Power Converters, etc.)*

- *The equipment groups need to comply to the CERN-wide standards and QA best practices established for the different areas of asset management*
  - *The MMP project is working on improving certain aspects within the Maintenance Management*

- *The equipment groups should use the CERN standard tools in each area and put their data in the central databases*

➲ *F. Antoniotti (Vacuum) – Thursday;* ➲ *C. Dehavay (Controls) – Thursday*

"The needs of the many outweigh the needs of the few or the one"

Asset Management Information Systems Strategy

- *Dedicated, integrated information systems for each one of the different areas of asset management*

- *Clear scope separation between the services, based on the functionality they provide*

  - **CDD & SmarTeam** – *CERN Drawings Directory*

  - **EDMS** – *Documentation Management*

  - **Infor EAM (MTF)** – *Maintenance Management*   ⮩ *D. Widegren - Friday*

  - **Layout Service** – *Management of the Accelerators Topology*   ⮩ *E Fortescue-Beck – Thursday*

  - **Controls Configuration Service -** *Configuration Management of the Accelerators Controls System*
    - *Configuration and generation of controls computers (~4000) Start-up Sequences, Drivers, etc., Controls Devices (90 000) & properties (8 000 000); configuration of alarms, diagnostics and monitoring definitions, etc.*

  - **Alarms** – *CERN Alarms System, 300 000 pre-defined alarm states*

  - **DIAMON** – *Diagnostics and Monitoring of the Controls Equipment*

  - **Logging** - *Accelerators Feedback – logging of signals – 170TB of data*

  - **etc. …**

Specific to the Accelerators Controls and Operation

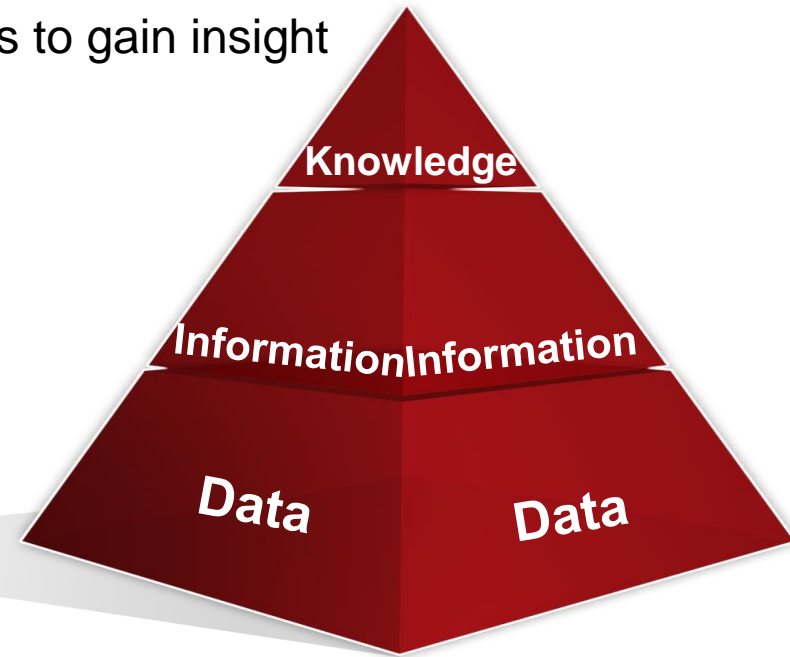# Distributed Information Systems supporting the Asset Management

Objective:
Integrated data management across different Information Systems

- Consistent Processes
- Consistent Vocabulary
- Coherent Naming

•Correlate data across domains to gain insight

Knowledge

InformationInformation

Data

Data

| CDD / SmarTeam | EDMS | Infor EAM / MTF | Layout | Controls Configuration | ... |

Naming Service

Example integrating the Information Systems across some of the Asset Management domains

- **Naming**

- **Design**

- **Manufacturing**

- **Installation & Commissioning**

- **Operation &**
- **Maintenance**
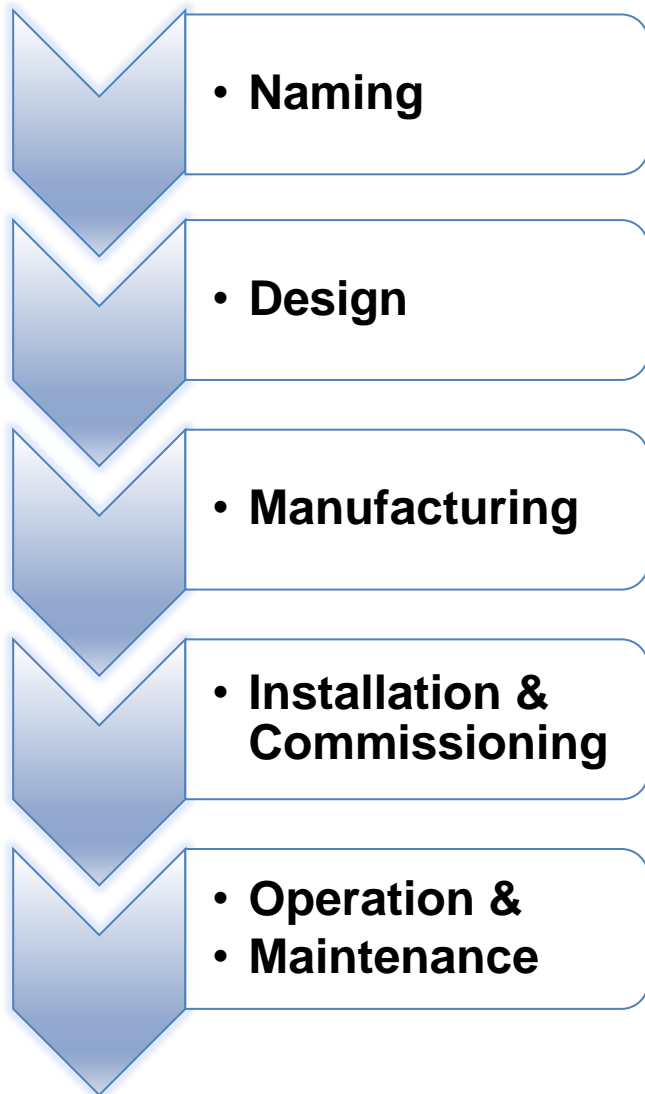
Naming Portal

CDD and EDMS

Accelerators Layout

MTF

MTF

Infor EAM

Naming throughout the different Information Systems

Operation (Alarms, Logging Diagnostiocs and Monitoring)

Layouts (functional positions)

EDMS (equipment types & documentation)

Controls Configuration (Controls Devices)

Infor / MTF (assets labeling)

➲ T. Birtwistle – Thursday

Unique Identification

Drawings (CDD)

Coding – Naming Service

Coherent naming coding references

- Part of the Quality Assurance Plans (QAP) of:
  - LHC
  - SPS
  - PS Complex

Coding – Naming Service

- Accelerators Entities Naming Service – responsible for the attribution of codes, their publication on a central portal and QA questions related to Coding
    - Naming Portal: https://cern.ch/service-acc-naming
    - > 10 000 distinct equipment types identified and equipment codes assigned (not counting the variants of the equipment types)

- Hide the complexity of the Coding from the users and serve as a unique point of reference (dictionary for the codes used throughout other systems)

- Common naming reference - prerequisite for a harmonized Asset Management
    - A lot of considerations behind the assignment of an equipment codes

Group Coding Officer (GCO)

- Work in close collaboration with the Naming Service

- Serve as a link between the Equipment Groups (responsible for the equipment) and the Naming Service

- Helpful functionalities on the Naming Portal
  - Common codes search across information systems - covering Naming, Layout, CDD, EDMS, MTF/Infor EAM, Controls Configuration, Alarms (Laser)

QA & Naming Service

Jam today   vs   Jam tomorrow

Conclusion

- *Due to the number of equipment to be followed and their complexity, each equipment group is managing their own assets*
  - *QA rules and best practises exist, however they are not yet fully adopted by all groups*

- *The approach is to use dedicated & integrated Information Systems throughout the Asset Management domains*
  - *Efforts are put to further integrate the Information Systems in order to facilitate the users*

- *The Naming Service is an integral part of the Asset Management*
  - *It is used as a dictionary for providing data coherency checks for other systems.*

Thank you for your attention!