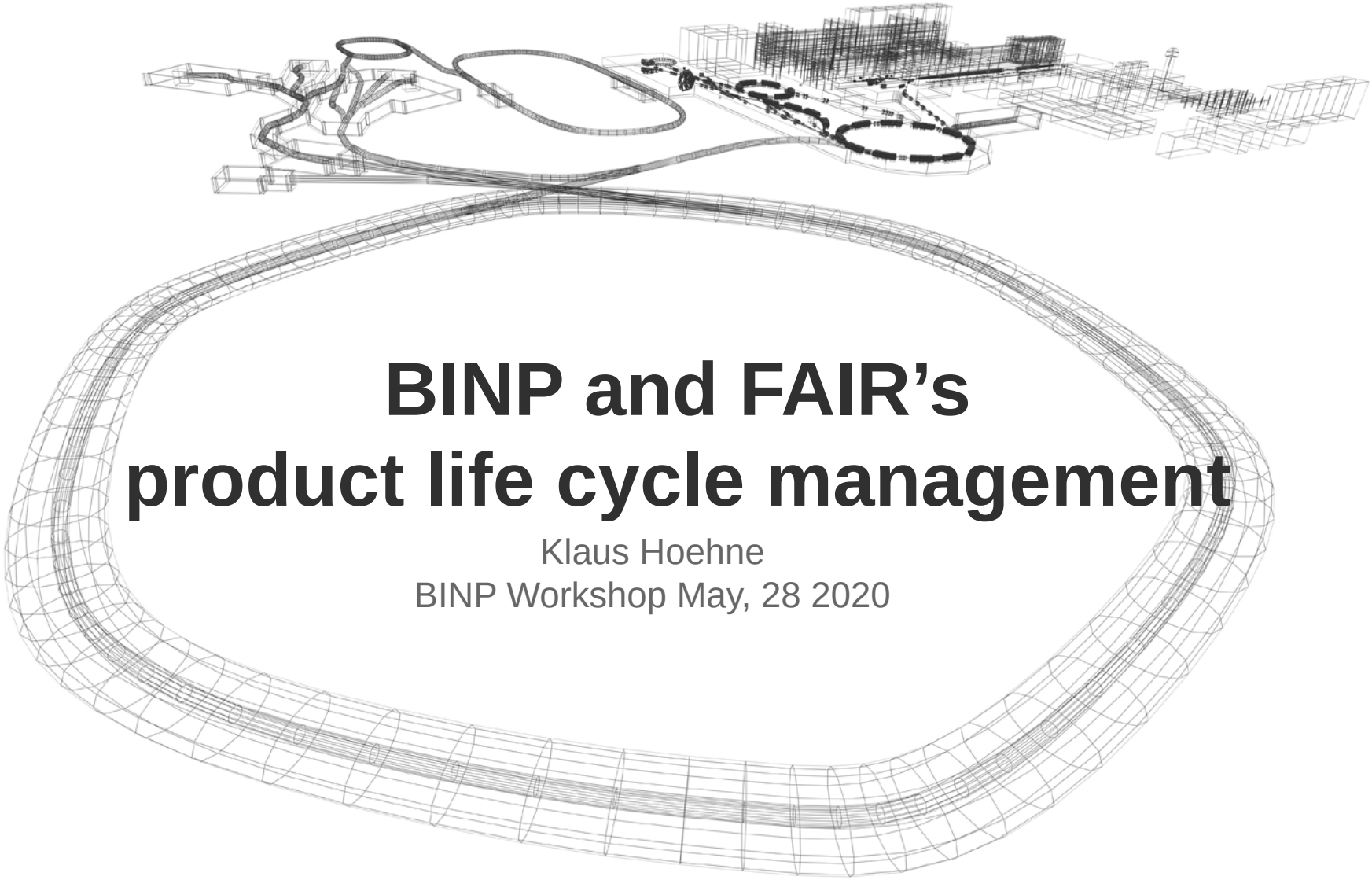

BINP and FAIR's product life cycle management

Klaus Hoehne

BINP Workshop May, 28 2020

Introduction

- BINP is a key partner for the construction of FAIR
- For managing your contributions to FAIR it is necessary
  - to define your deliverables in detail
  - to document your work
  - to coordinate all logistics process of your deliverables
- FAIR‘s product lifecycle management (PLM) will support this
- PLM concept and system have been presented by Konstantin Istomin last workshop
- Today: Why?

Functional Location w/ (Article) BoM

Functional locations w/ (Article) **BoM define** in detail

- **your** deliverables
- **what is needed where**
- enable **installation planning**

Techn.Platz Strukturdarstellung: Strukturliste

Ebene n. o. | Aufr. gesamt | Materialklassen | Strukturvergleich

Technischer Platz	F.HR.HR09	Gültig ab 15.10.2018
Bezeichnung	HESR Section 09	

F.HR.HR09	HESR Section 09	
F.HR.HR09.0010		
AID:0000355	HESR Dipole	
F.HR.HR09.0020		
AID:0002095	Quadrupolmodul 4E	
AID:0002158	HR.Q1	
AID:0002157	HR.K1	
AID:0002157	HR.K1	
F.HR.HR09.0030		
AID:0000355	HESR Dipole	
F.HR.HR09.0040		
AID:0002096	Quadrupolmodul 5	
AID:0002158	HR.Q1	
AID:0002157	HR.K1	
AID:0002157	HR.K1	
F.HR.HR09.0050		
AID:0000355	HESR Dipole	L
F.HR.HR09.0060		
AID:0002091	Quadrupolmodul 2E	L
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AID:0002157	HR.K1	L
F.HR.HR09.0070		
AID:0000355	HESR Dipole	L
F.HR.HR09.0080		
AID:0002097	Quadrupolmodul 7E	L
AID:0002158	HR.Q1	L
AID:0002157	HR.K1	L
F.HR.HR09.0090		
AID:0000355	HESR Dipole	L
F.HR.HR09.0100		
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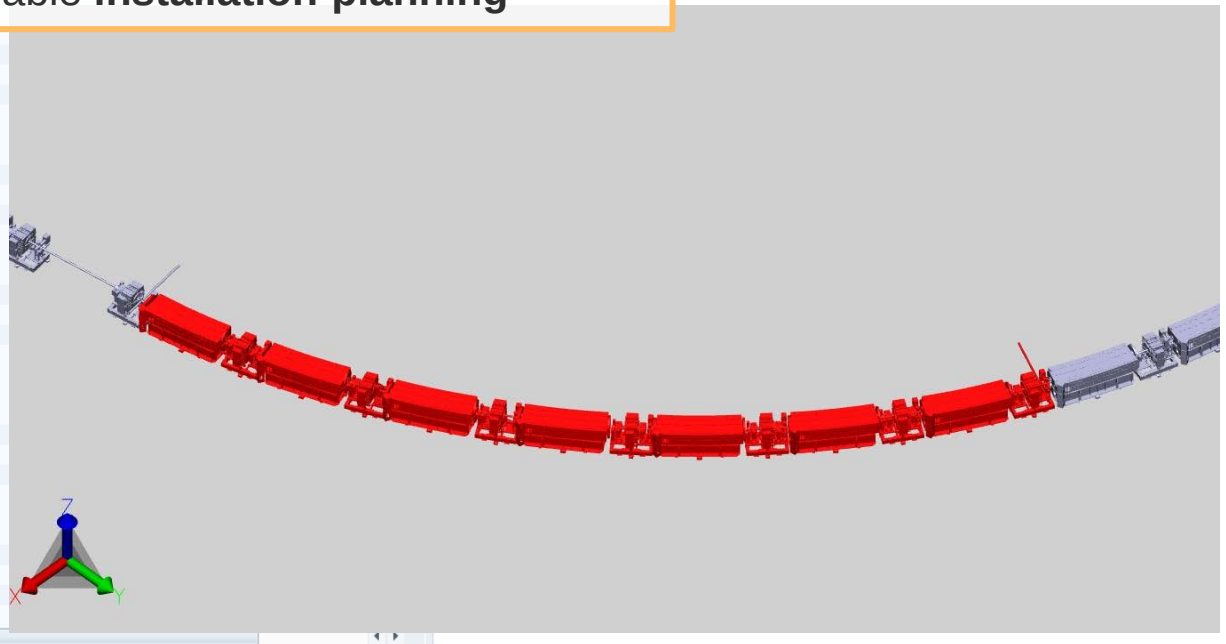
F.HR.HR09.0140		
AID:0002092	Quadrupolmodul 3	L



SAP live system

3DViewStation Webviewer (live)

Complete Documentation of Articles

Article (AID) and Component (CID) related documentation

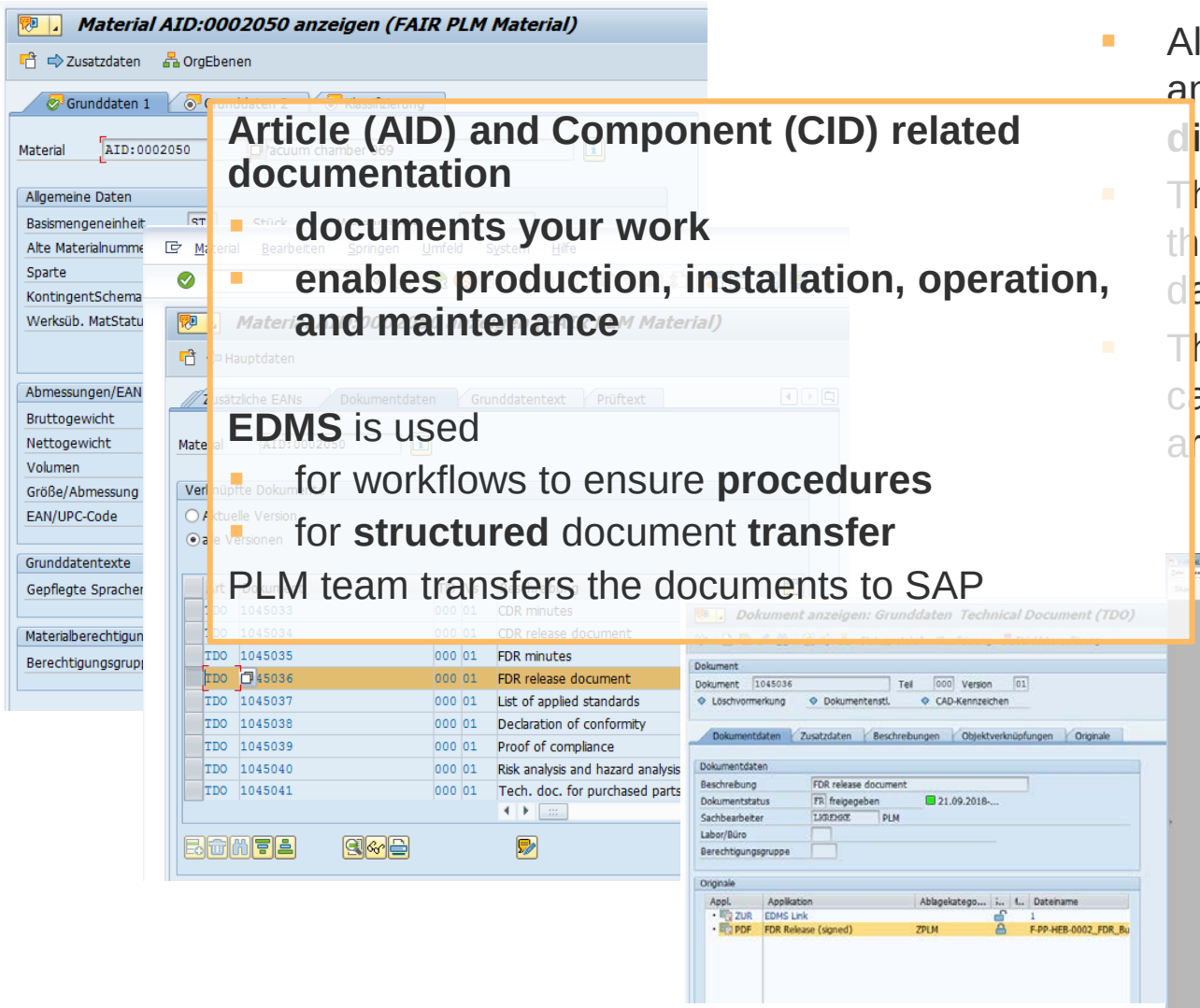
- **documents your work**
- **enables production, installation, operation, and maintenance**

EDMS is used

- for workflows to ensure **procedures**
- for **structured** document **transfer**

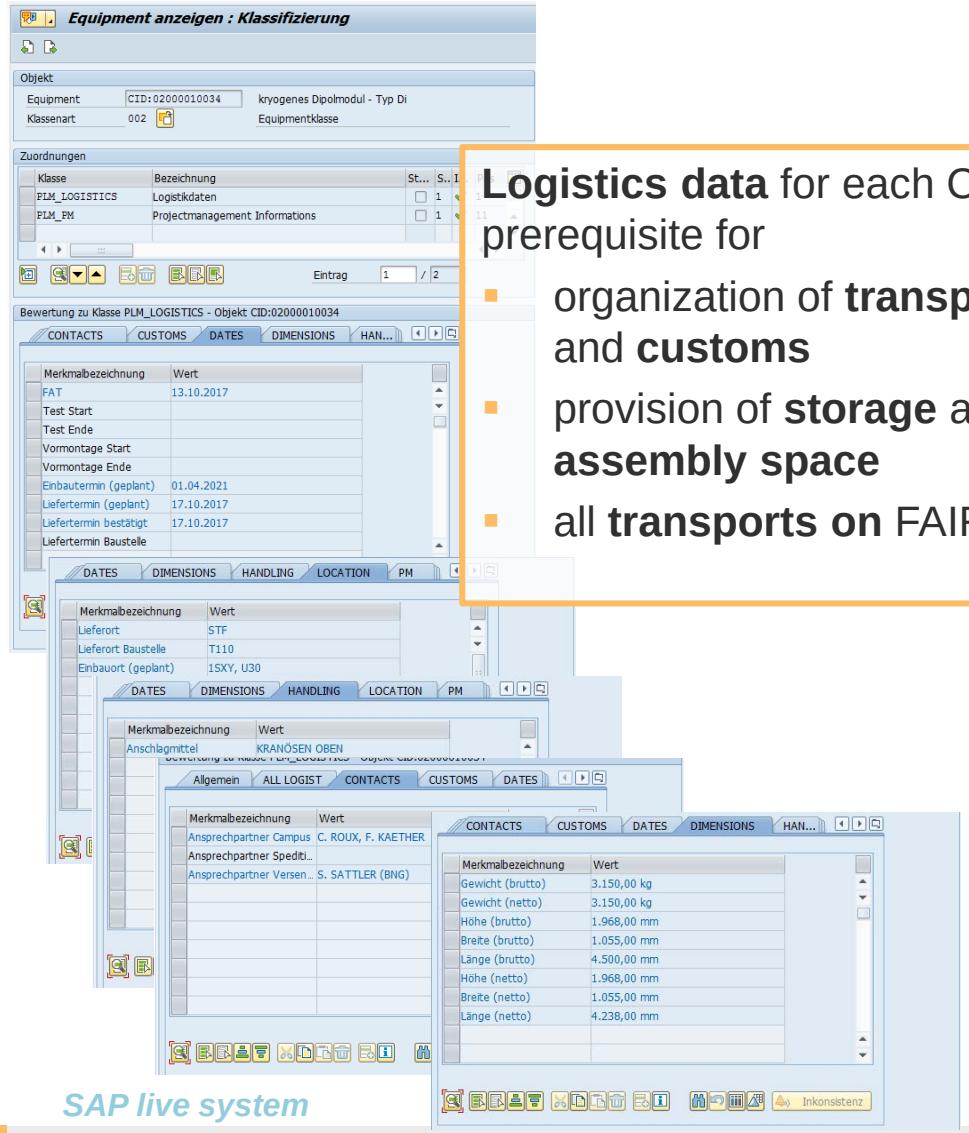
PLM team transfers the documents to SAP

- All **documentation** related to an article is **attached** to its **digital twin**, identified by **AID**
- The documents in SAP have the same structure and meta data as in EDMS
- The GSI CATIA documents can/will be attached to the article



SAP live system

Relevant Data of Articles/Components e.g. Attributes w.r.t. Logistics



SAP live system

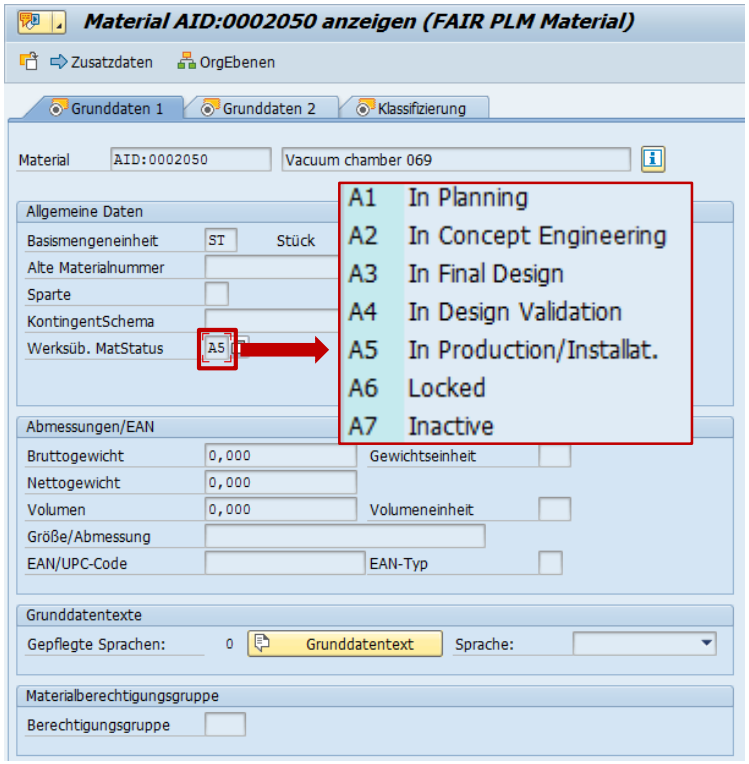
Logistics data for each CID are prerequisite for

- organization of **transport** to FAIR and **customs**
- provision of **storage** and **assembly space**
- all **transports on** FAIR **site**

- All **attributes** and their **values** related to an article/component is **attached** to the articles/ components **digital twin**, identified by **AID/CID**
- Articles/Components are **classified** by classes, i.e. groups of attributes
- Articles/components can be **found** by use of classes and/or attributes and their value
- E.g. the class PLM_LOGISTICS has all attributes defined by logistics team to handle logistics
  To be provided asap
  https://www.gsi.de/fileadmin/Project_Management_Office/PLM_Team/2._Documents/YYMMDD-PLM-Logistics-Template.xlsx
- Use of SAP standard classification system
- Information exchange (Excel) through PLM team

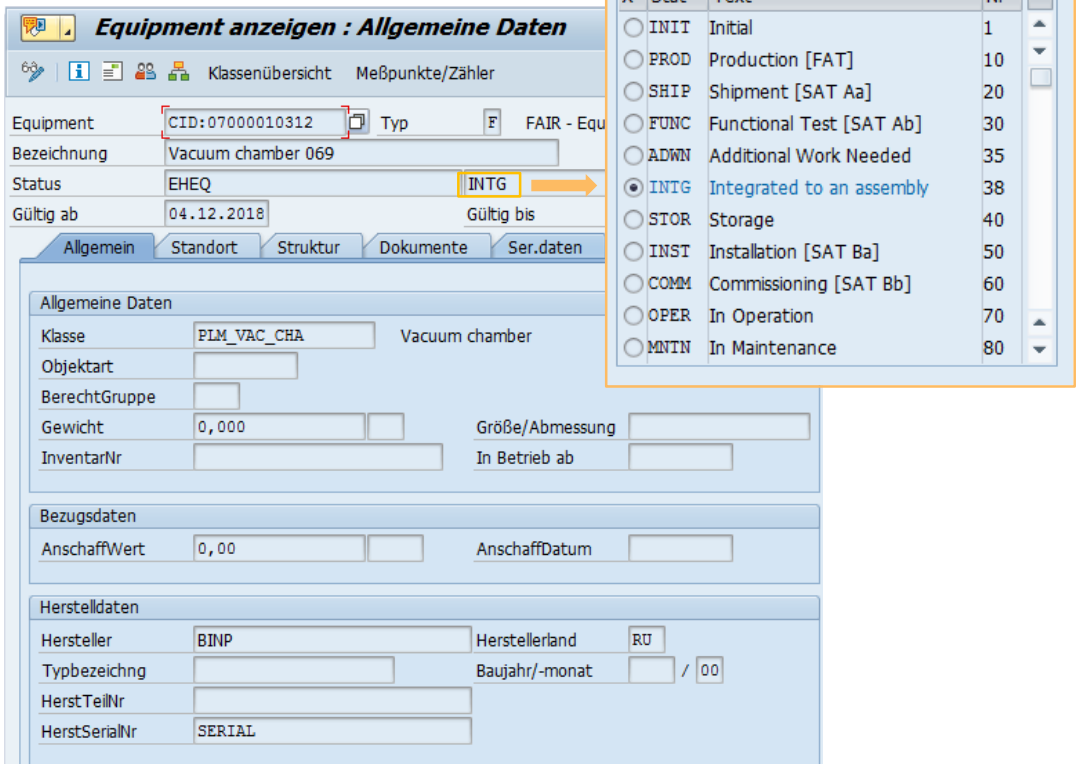
Status Tracking

Progress is **visualized** by status of articles (AID) and components (CID)



Of each article (AID) …

… and each component (CID)



SAP live system

Summary

- Provision of
  - functional locations and articles defines your and (y)our partner‘s deliverables
  - documentation documents your work and is indispensable for the following phases of FAIR's lifecycle
  - logistics data enables support by GSI‘s logistics team for transport, assembly and storage
  - status data visualizes your progress
- The data are a prerequisite for permission to ship

First steps have been made by you - thank you!

Let's make the next steps

Your Support

- We will support you
  - contact person: Konstantin Istomin
  - konstantin.istomin@fair-center.eu

- Service email adresses
  - PLM: plm-service@gsi.de
  - EDMS: edms-service@gsi.de
  - Logistics: logistik@gsi.de

Thank you for your attention!

BACKUP

Product Lifecycle Management at Accelerator Facilities

"Although the **introduction** of the CERN EDMS initially was marked by a certain **reluctance** and normal **resistance to change**, the **PLM** platform has **today** become an **integral part** of the Organization's engineering activities.

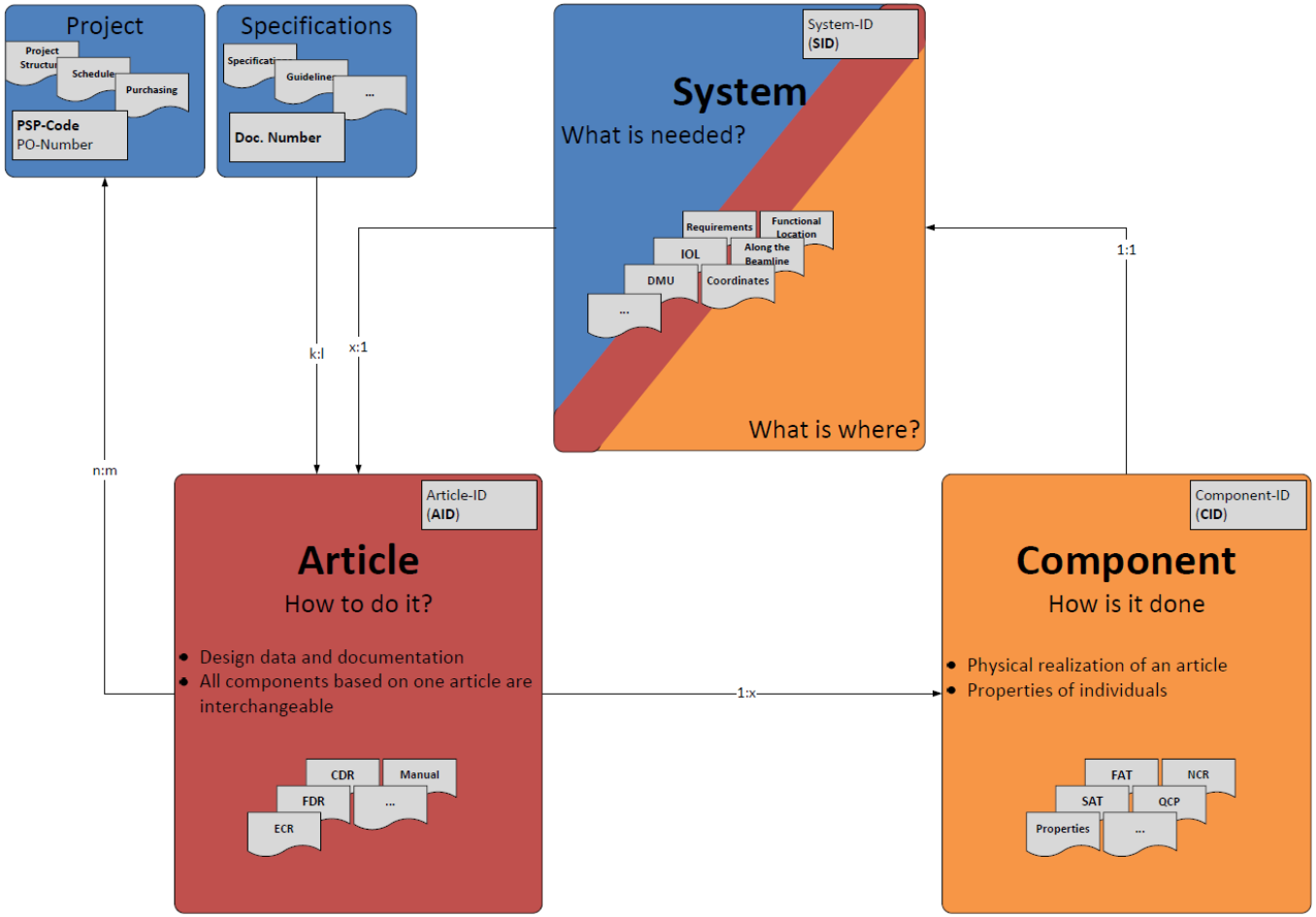
Quality assurance methodology and advanced management tools for engineering have **proven their worth to** both project **managers and** project **engineers**.

A key factor in achieving this success was the very close collaboration between the EDMS Service team, the LHC project management and the main LHC equipment groups."

D. Widegren, PLM at CERN – A True Challenge, CERN, 2008

PLM Concept:
Data Model & Life Cycle

Planning | Design | Production | Installation | Operation | Dismantling

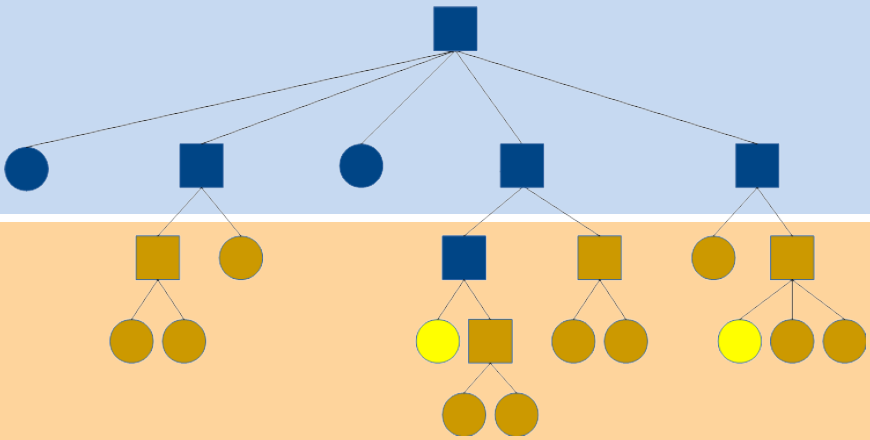


PLM Concept: Product Structure

A **component** is an assembly or a part which has to be **tracked by PLM** due to technical, commercial, legal, safety, or operating reasons.

A component can be part of another component.

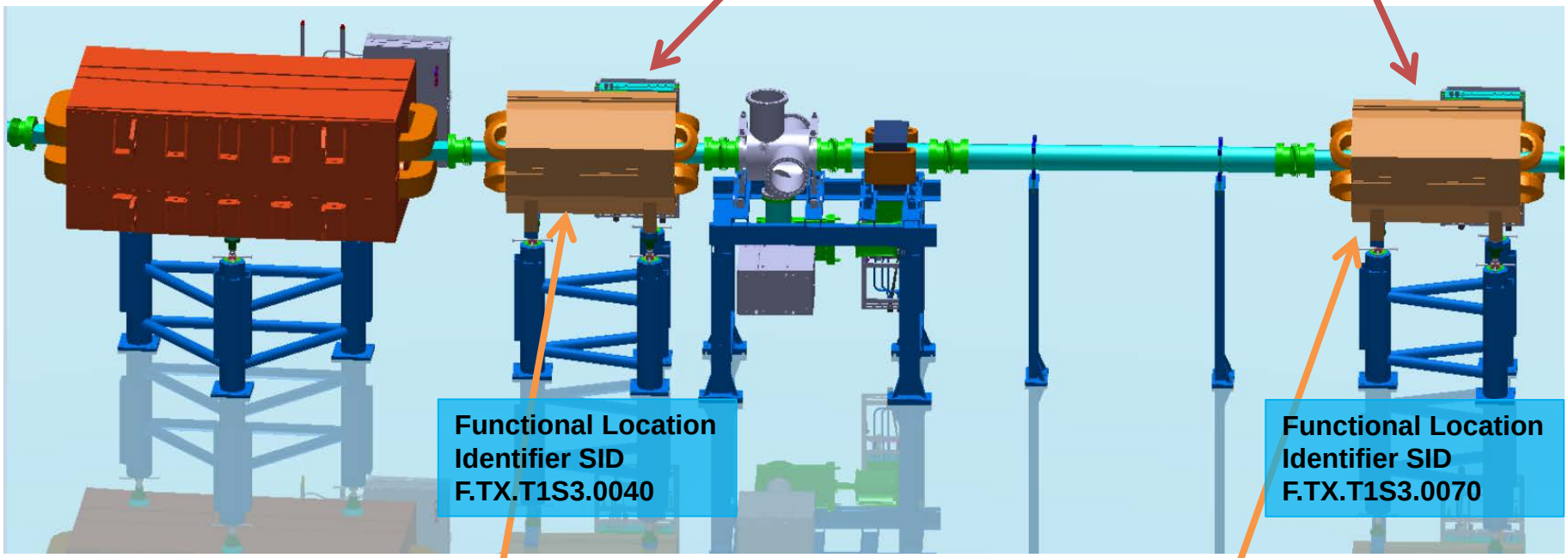
Virtual components, e.g. dipole strings are possible.



Critical part is a part of the component's BOM*, which needs special attention, e.g. replacement after a limited number of operating hours, high impact when cannot be replaced immediately.

* BOM: bill of material

Article
Identifier AID (AID:0000073)
Data/Documentation Quadrupole Type A
parameters, specification, design data, BOM, risk analysis, CDR, FDR, engineering change request, ...



Functional Location
Identifier SID
F.TX.T1S3.0040

Functional Location
Identifier SID
F.TX.T1S3.0070

Individual Component
Identifier CID (CID:18000009107)
Data/Documentation 1. Quadrupole of Type A
FAT, SAT A, SAT B, NCR, measurements, ...

Individual Component
Identifier CID (CID:18000009162)
Data/Documentation 2. Quadrupole of Type A
FAT, SAT A, SAT B, NCR, measurements, ...

Data/Documentation Transfer

Interface to external partners

Input by provider

1:1 mapping

Released

by responsible person

Internal product lifecycle management system

FAIR PLM