

CERN'S GLOBAL EQUIPMENT DATA REPOSITORY

ICALEPCS'09 TUB004

Kobe, Japan

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Contents

- Vendors systems: Infor EAM, Agile PLM
- MTF Architecture: EDMS Common Layer
- MTF strengths: from design to installation
- MTF Web interface
- Conclusions
- Questions



Infor EAM

- CMMS* tool at CERN
- Manages:
 - Work orders: scheduling jobs, assigning resources, reserving materials, recording costs, permits...
 - Maintenance (corrective and preventive)
 - Asset management: equipment characteristics, measurements, warranties...
 - Asset tracking: historic of positions, interventions...

*Computerized Maintenance Management System



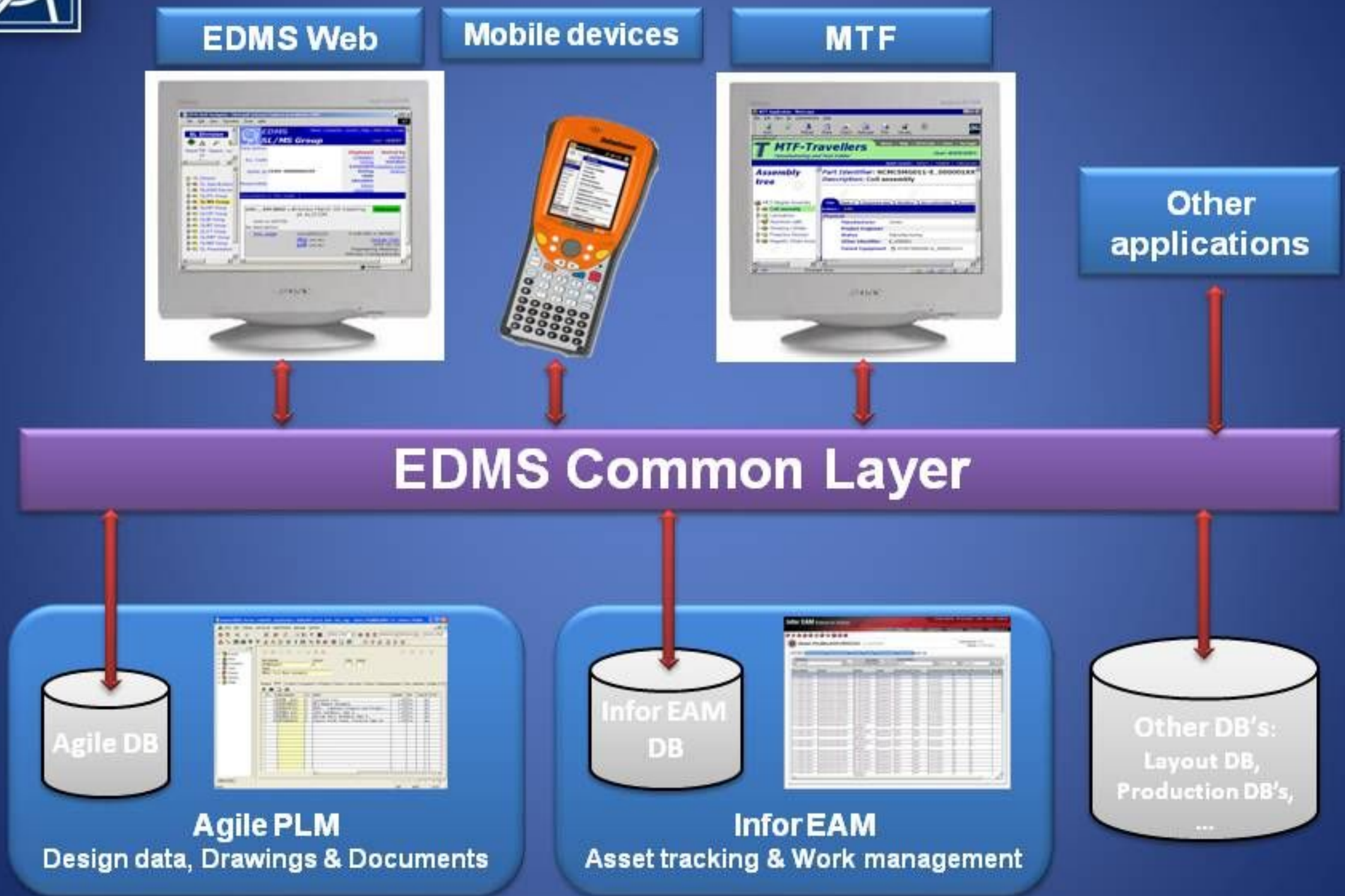
Agile PLM

- PLM* tool for LHC Project
- Supports the engineering business processes
- Manages:
 - Projects: PBS (project breakdown structures), documentation...
 - Items BOM (bill of material): versioning, lifecycle, variants, design drawings...
 - Documentation: versioning, approval process, access rights, distribution...

* Product Lifecycle Management



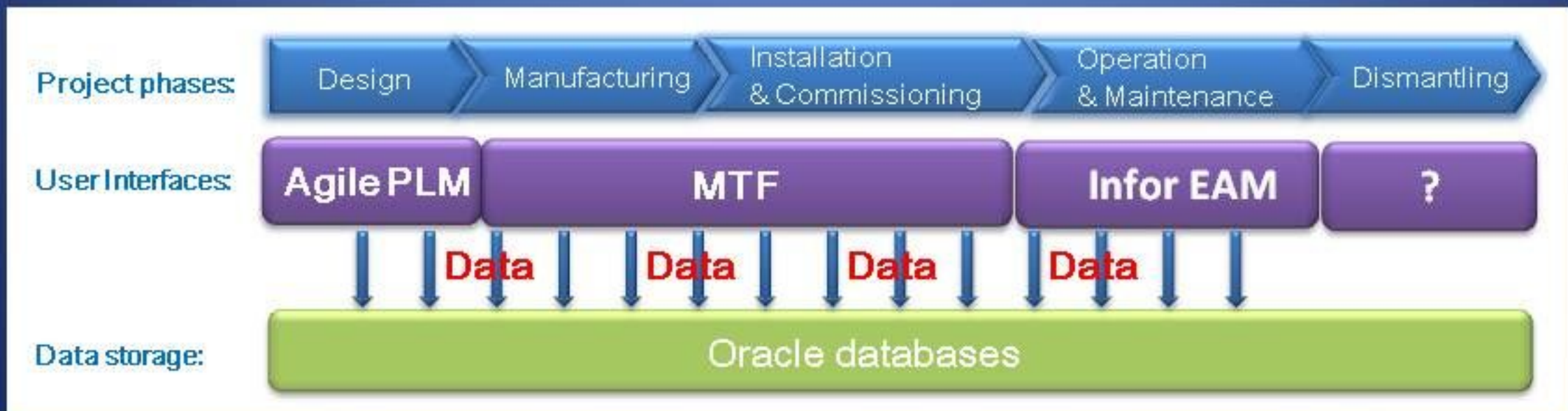
EDMS Common Layer





Project life cycle

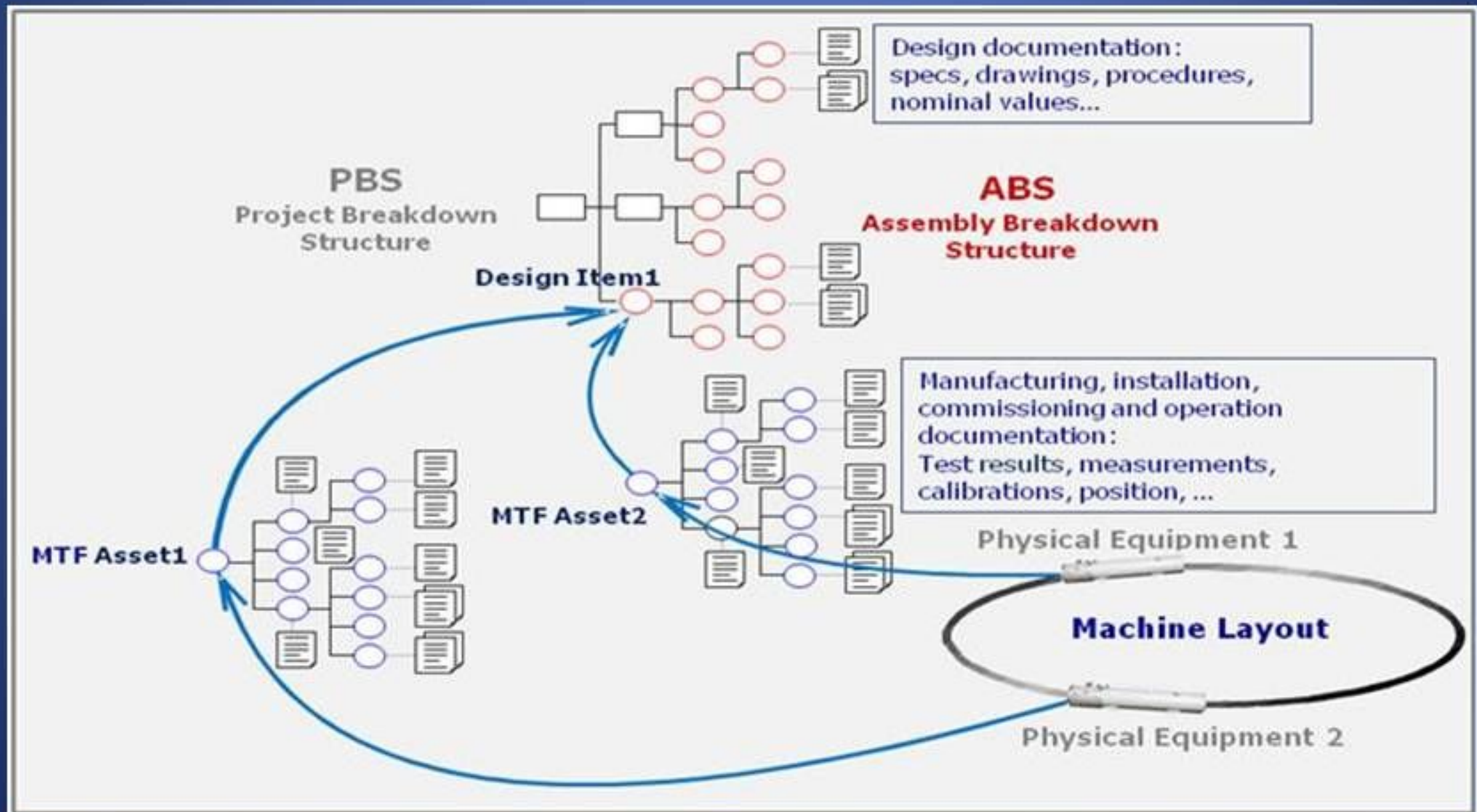
- Data is captured and shared during all the project phases
- Each phase uses the most adapted tool





MTF Strengths

- From design to manufacturing and installation and vice versa





MTF Web Application

MTF Application - Windows Internet Explorer

https://edms.cern.ch/asbuilt/plsq/mtf.home?cookie=8651001

File Edit View Favorites Tools Help

MTF Application

Home | Help | EDMS Portal | News | Login

User: SONIAM

Search: Equipment | Location | Slot | System

Welcome to the MTF Application Homepage

- EQUIPMENT**
 - Access Equipment Data
 - Register New Equipment
 - Generate Properties Report
 - Generate Slots Properties Report
 - Generate Steps Report (by part number)
 - Generate Steps Report (eqp. + structure)
 - Generate NCR Overview (by profile)
 - Delete Object
- INSTALLATION**
 - Find an LHC Location
 - Access Location Data
 - QRL Installation Dashboard
 - Magnet Installation Dashboard
 - LHC Circular Dashboard
- MY MTF**
 - My search and report criteria
 - My custom reports
- NEWS**
 - 2008-04-01
Version 4.0
New functionalities... [more](#)
 - 2007-08-23
Version 3.9.6
New functionalities... [more](#)
 - 2007-03-20
Version 3.9.5
New functionalities... [more](#)
- TOOLS**
 - Configure bench fixed equipment
 - Configure bench mobile equipment
- PRODUCTION SITES**
 - Access Production Sites Data
- MANAGEMENT**
 - Access Profiles Data
 - Create import request document

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MTF Web Application II

MTF
Equipment Management Folder

Actions: Show NCR Report

Assembly Tree

- Arc Dipole LBALA
 - Cryo Dipole LBAL
 - Cold Mass MBAL
 - Collared Coil
 - Collars A Type 1
 - Collars A Type 2
 - Collars B Type 1
 - Collars B Type 2
 - Collars C Type 1
 - Collars C Type 2
 - Aperture (A1)
 - Pole (A1 upper)
 - Pole (A1 lower)
 - Inner Layer
 - SC Isolated Type 1
 - Cable Supra Type 1
 - Copper Wedge Type 1
 - Copper Wedge Type 2
 - Copper Wedge Type 3
 - Outer Layer
 - Quench Heater
 - Quench Heater
 - Quench Heater
 - Quench Heater
 - Aperture (A2)
 - Yoke assembly, type A

Top Assembly Folder : Main I

Top Assembly Identifier: HCLB4LA000
Other Identifier: None
Description: Arc Dipole LBA

Main	Made of	Equipment data	Manufacturing	Operation
Actions: View summary				
Physical				
Manufacturer				
Project Engineer				
Status		Manufacturing		
Other Identifier				
Parent Equipment				
Parent Slot		LBALA.2987		
Location		R39		
State		Good		
MRC		MTF1		
Comments				
Design				
Item in ABS		LBALA Arc Dipole Variant (ver.0)		
Audit				
Created on		2006-06-12		by DIPCOOR
Last modified on		2009-03-05		

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LHC Equipment Catalogue

Reset Set as Top Search Re-Login EDMSREPORT

- LHC Equipment Catalogue
 - Magnet Catalogue
 - Main Dipole
 - Separation Dipoles
 - Main Quadrupoles
 - MQ
 - Insertion Region Quadrupoles
 - Lattice Connectors
 - Multiple Connectors
 - Orbit Connectors
 - Experimental Magnets and Compensators
 - Septa
 - Kickers
 - Corrector Assemblies and Modules
 - Special Magnets
 - Cryo Magnets in Common Arc Cryostats
 - Cryo Dipoles in the Arcs and the Disperser
 - Variants configured for installation in:
 - HCLBARA000 LBARA Arc Dipole
 - HCLBARB000 LBARB Arc Dipole
 - HCLB4LA000 LBALA Arc Dipole**
 - HCLBAL000 Cryo Dipole Var
 - HCLMBALA001 MBAL Cold
 - HCLQBACA101 Cryostat Ar
 - HCLVSSBL001 Assembled bus
 - HCLBALB000 LBALB Arc Dipole
 - HCLBBLA000 LBBLA Arc Dipole
 - HCLBBLC000 LBBLC Arc Dipole
 - HCLBBLD000 LBBLD Arc Dipole
 - HCLBBRA000 LBBRA Arc Dipole
 - HCLBBRC000 LBBRC Arc Dipole
 - HCLBBRD000 LBBRD Arc Dipole

EDMS LBALA Arc Dipole Variant

EDMS Portal | Navigator | Search | Help | Cadder | Logout

Eq. Code: HCLB4LA
EDMS ID: HCLB4LA000 v.0

Responsible: 10%

1 - Common Parameters - for all the LHC elements in the catalogue to be transported. Weight given with a tolerance of 10%
Overall Length: 15.466±3 mm
Overall weight: 288±3 kg

2 - Dipole Cryostat - Interfaces
I PE Cooling Slots LHC480001544
Cables LHC480001320
Interface/locks LHC480001754
Interface Alignment LHC480001790
Zeta Resonance volumes LHC480001496
SPACEFLY SURVEY LHC480001897
Beam Screen LHC480001997

Documents in this node: 23

Doc. name	Doc. type	Version	Author	Date
LHC-G-CS-0002 v.1 Geometrical Metrology of the LHC Cryo-magnets before their installation in the Tunnel	Released			
ms2080techdescription.pdf (303 kb)	0 sub-doc	2 version	Dominique MULLIASEN, Jean-François OUSSEL	2001-07-10 Market Survey
LHC-GI-EC-0001 v.0 Position and Number of the Alignment Targets on LHC Cryostats	Accepted			
0001 v.00326	Doc. name	Doc. type	0 sub-doc	2 version
LHC-GI-EC-0002-00-10 DOC (44 kb)				
lhc-gi-ec-0002-00-01d PDF (88 kb)				
LHC-GI-EC-0001-00-02D doc (177 kb)			Jean-François OUSSEL	1998-10-12 Engineering Change Request
lhc-gi-ec-0001-00-02d pdf (113 kb)				
LHC-GI-EC-0001-00-11 doc (80 kb) pdf (83 kb)				



MTF Web Application III

MTF
Equipment Management Folder

Actions: Show NCR Report Search: Equipment

Assembly Tree

- Arc Dipole LBALA
 - Cryo Dipole LBAL
 - Cold Mass MBAL
 - Collared Coil
 - Collars A Type 1
 - Collars A Type 2
 - Collars B Type 1
 - Collars B Type 2
 - Collars C Type 1
 - Collars C Type 2
 - Aperture (A1)
 - Pole (A1 upper)
 - Pole (A1 lower)
 - Inner Layer
 - SC Isolated Type 1
 - Cable Supra Type 1
 - Copper Wedge Type 1
 - Copper Wedge Type 2
 - Copper Wedge Type 3
 - Outer Layer
 - Quench Heater
 - Quench Heater
 - Quench Heater
 - Quench Heater
 - Aperture (A2)
 - Yoke assembly, type A

Top Assembly Folder : Main Info

Top Assembly Identifier: HCLBALA000-CR002
Other Identifier: None
Description: Arc Dipole LBALA

Step ID	Other name	Result	Not
60	WP09 BS cartography after final welding		
Done			
2007-04-13			

Comments
De la colle a été trouvée sur la coupelle au niveau de la surface de contact coupelle/boule. Cette colle devait être présente lors de la fiduciation mais a été enlevée avant les mesures de carto BS, d'où l'écart constaté. Lors de l'approbation par le MEB il sera préférable de prendre les paramètres des fiducielles du WP09

Property	Nominal Value	Value	Unit
Cartography			
dx_upstream_v1			mm
dz_upstream_v1			mm

EDMS
Document Information Page

Number: 980122
EDMS ID: 980122
ver. 1

WP09 BS cartography after final welding -
HCLBAL_001-20072342
EAGLE.BESTMAN

Report - Test
2008-12-02

RESTRICTED

Actions: Edit | Put File | Set reservation | Delete File | Delete Doc. | Add to cart | Notify | Close

Description, External Reference and Keywords

Description
External Reference
Keywords

Files of the Document
WP09_60_2342.xls (102 kb)
2342_60_cartoBS_final.zip (328 kb)

Sub-Documents

Associated URL (CDD Drawing Folder, Library...)

Context
What's next ? Change Status action expected from the originator, once all the files have been uploaded.
Context AT-MB-WP09: LHC Cryodipoles - WP09 Test and Non-Conformity Reports
Release Procedure **DOC-OWNER-MTF**: Procedure which allows the owner of the document to release it by himself.
Equipment Code -

EDMS Hyperlinks
This page <https://cdms.cern.ch/Document/980122/1>
File(s) WP09_60_2342.xls https://cdms.cern.ch/Doc/980122/1/WP09_60_2342.xls - Restricted access
2342_60_cartoBS_final.zip https://cdms.cern.ch/Doc/980122/1/2342_60_cartoBS_final.zip - Restricted access



MTF for control applications

- MTF on line web reports
- Oracle views
- Synchronization/check procedures
- API procedures
- Examples:
 - Cryogenic instrumentation and electronics
 - LHC Control System Layout
 - LHC Control devices configuration



Conclusions

- MTF contributes to improve quality by enforcing procedures, conventions and rules
- No system is better than its data!
- The system will only be useful if contains accurate and complete data
- Data must be captured as soon as possible: close to the moment it is generated



Questions

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