



## EDMS Support: First 10 years

EDMS Support over the LHC project lifecycle

E. Manola-Poggioli on behalf of the EDMS Team  
TS-CSE

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## EDMS Support: First 10 years

### First 10 years

- In 1995, EDMS Task Force started looking for the most qualified industrial tool to become the CERN EDMS.

# First 10 years



## EDMS Support: First 10 years

### A vision of an EDMS in 1995

- From the presentations of C.Hauviller et T.Pettersson 1995/1996:

Why? To manage data during **all duration of the project**, from the design, construction, installation phases to maintenance and even dismantling.

#### Implementation procedure

Avoid a global implementation. **Step by step** and convince with successful (somewhat independent) examples (ATLAS, CMS, LHC accelerator)

#### How far can/should we go?

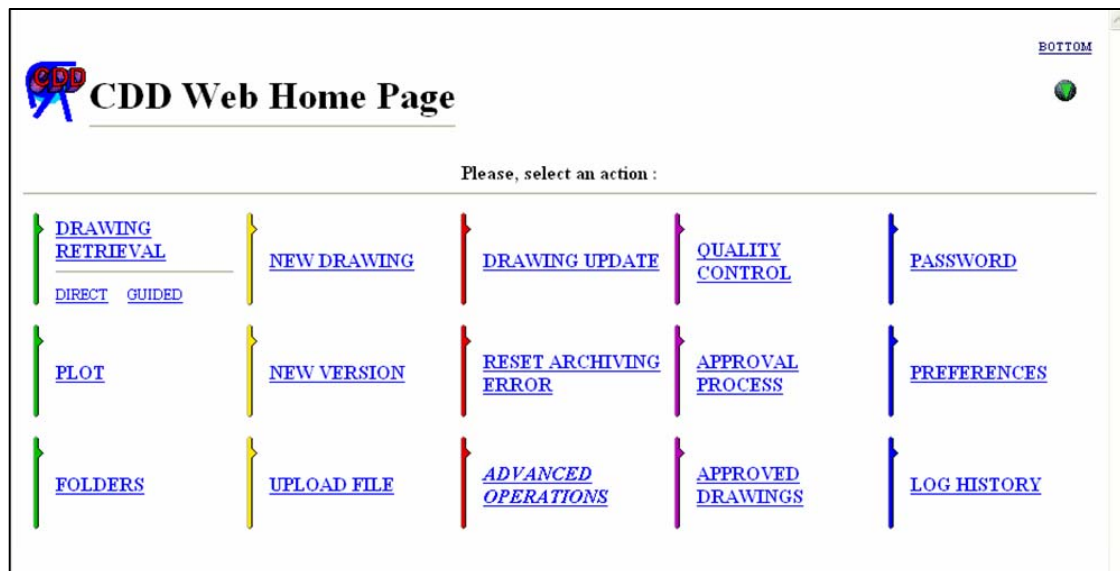
The reference visits (to the firms using EDMS) showed that:

- > It will lead inevitably to major changes in working habits
- > It will be a very long process (5 or more years and many men/year) with resistance from the users
- > a strong support from management is needed

# EDMS Support: First 10 years

## EDMS in 1996

- First release of CDD: CERN Drawing Directory (Ch.Delamare, S.Petit)
  - In-house drawing management tool
  - Oracle based and built to requirements of MT and ST Division
  - Replaced 5 existing drawing management systems!
  - Web interface and distributed approval process

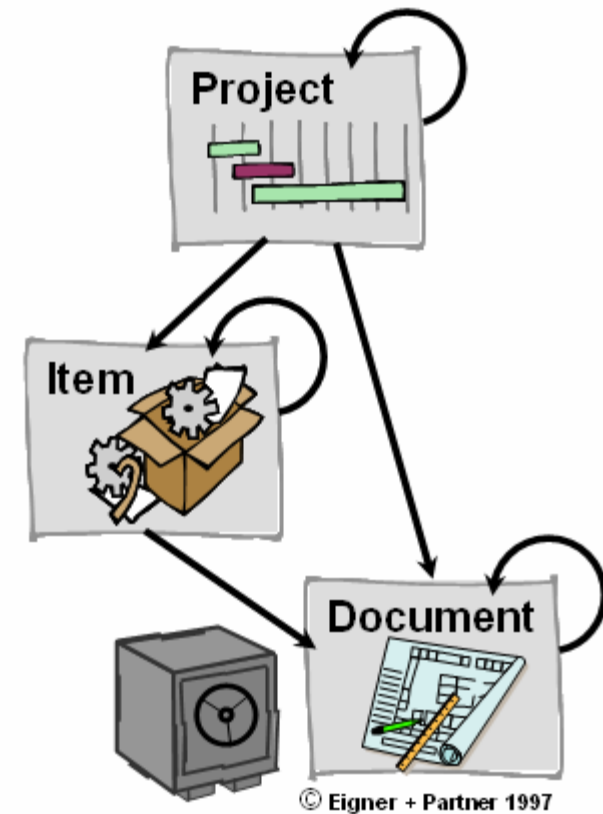


- EDMS pilot projects and field tests with different systems: CADIM, Matrix, TuoviWDM (standalone Web Document Mgt system built by HIP)

- CADIM/EDB was chosen as the main component of EDMS:
  - Oracle based commercial system
  - Management of documents and breakdown structures

but... without a Web interface rapidly available

- First objective: Document Management





## EDMS Support: First 10 years

1998-1999

- **Transitory solution: TuoviWDM as a Web portal to CADIM**
  - OK for READ access
  - WRITE functionality very limited -> making the EDMS introduction in experiments very difficult
- **Pioneers – not all with the same short term goal:**
  - LHC Hardware Baseline (Roberto Saban)
    - EDMS: supporting tool for the LHC QAP
    - Scope limited to the design baseline documents
    - Centralized and controlled write access
    - Unlimited READ access
  - CMS (A. Herve): Magnet, HCAL (Fermilab), MB-ME (Padova, Wisconsin)
  - ATLAS TRT (Fido Dittus, K.Pommès)
    - Federal structure -> more emphasis on write access
    - EDMS is expected to provide global document exchange solutions between collaborating institutions



# EDMS Support: First 10 years

## LHC Hardware Baseline (R.Saban)

- LHC Hardware Baseline Navigator and Document Search

The screenshot shows the EDMS Web Navigator interface in Microsoft Internet Explorer. The browser address bar shows the URL: [https://edms.cern.ch/cedar/plsql/navigation.go\\_to\\_tree?cookie=43281108p\\_top\\_id=150490006](https://edms.cern.ch/cedar/plsql/navigation.go_to_tree?cookie=43281108p_top_id=150490006). The interface is divided into several sections:

- LHC Hardware Baseline Navigator:** A tree view on the left side showing the hierarchy of the LHC Hardware Baseline. The root is "LHC Hardware Baseline", which includes sub-items like "Cryo Magnets in Common Arc Cryo", "Long Straight Sections", "Cryogenics", "Vacuum System", "DC Powering and Quench Protection", "Radiofrequency System", "Transfer Lines, Injections and Beam", "Other Machine Systems", "Civil Engineering Works and Infrastructure", "General Services", "Installation", and "LHC Specific Facilities".
- Search for Documents in Baseline:** A central panel with a search bar and buttons for "Search for Documents" and "Approval List". Below the search bar, there are buttons for "Search by Date", "Search by Type", "Search by Title, Number, Year & Author", "EDMS Web Advanced Search", "PBS Overview", "Project Structure", "Project Engineers", "Help", and "Guidelines for Document Creation".
- List Documents by Type:** A table on the right side listing document types and their status. The table has columns for the document type (AP, CI, CS, EC, ED, EI, EP) and their status (All, In Work or Under Approval, Released, Accepted, Rejected).

Document Type	Status
AP Assembly Procedure	All In Work or Under Approval Released
CI Technical Specification (IT or DO)	All In Work or Under Approval Released
CS Technical Description (MS)	All In Work or Under Approval Released
EC Engineering Change Request	All In Work or Under Approval Accepted Rejected
ED Engineering Drawing	All In Work or Under Approval Released
EI Illustration	All In Work or Under Approval Released
EP Engineering Parameters	All In Work or Under Approval Released



## EDMS Support: First 10 years

### Divisions

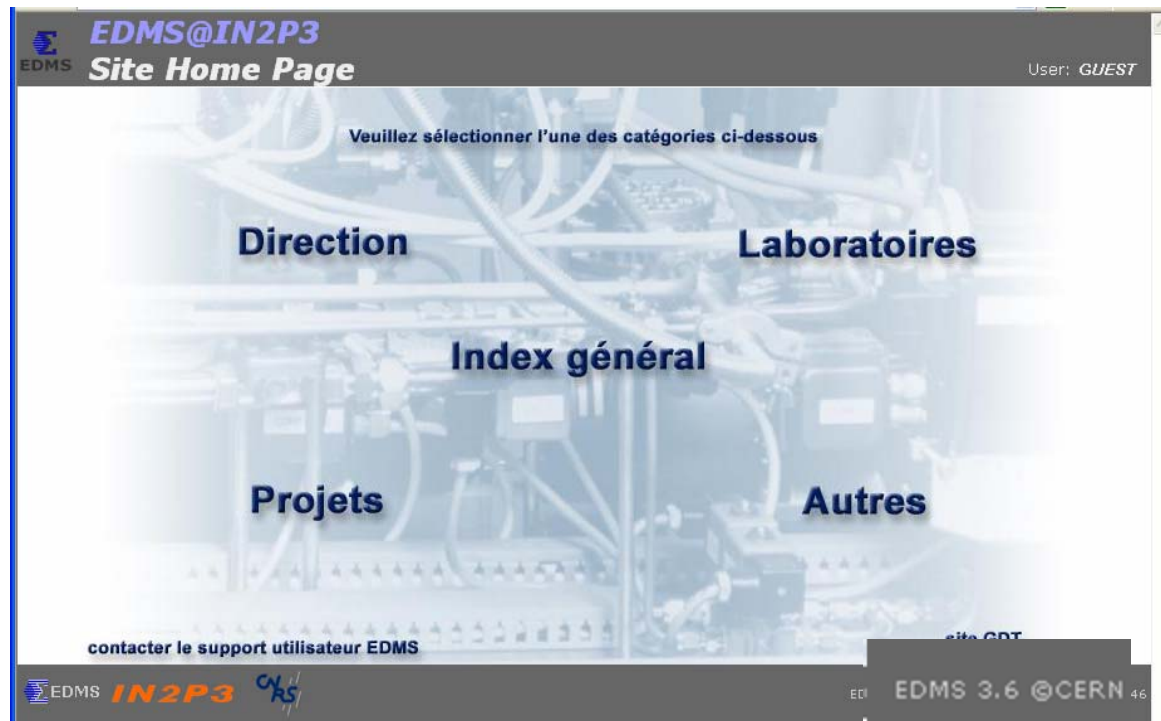
- mid-1999: first prototype modules of the future EDMS Web with direct URLs to documents and global document search
- 1999-2000 EDMS Web with comment collection and distributed approval process
- EDMS is starting to be used CERN-wide:
  - ST Division (I.Bejar)
  - PS and SL Division (R.Forrest, P.LeRoux)
  - EST, in particular EST-SU (J-Ch.Gayde, D.Missiaen)
  - TIS (A.Desirelli, Y.Donjoux)
  - LHC Division, in particular LHC-CRI (C.Laverriere)
- 2000: EDMS *Project* becomes EDMS *Service* for Accelerators, Divisions and approved experiments



# EDMS Support: First 10 years

## CERN EDMS 'clone' at IN2P3

- 2000: Pilot Project with IN2P3 (CNRS' Nuclear and Particle Physics Laboratories)
- Today: edms.in2p3.fr





## EDMS Support: First 10 years

1999-2000: From document mgt to MTF

- 1999: LHC is entering in the manufacturing phase
  - EDMS for the manufacturing follow-up?

**EDMS Web**



**Travellers Web application**



**EDMS Common Layer**

**CADIM & CDD**

Design data  
Drawings & Documents

**MP5 (now D7i)**

Asset tracking  
Work management



# EDMS Support: First 10 years

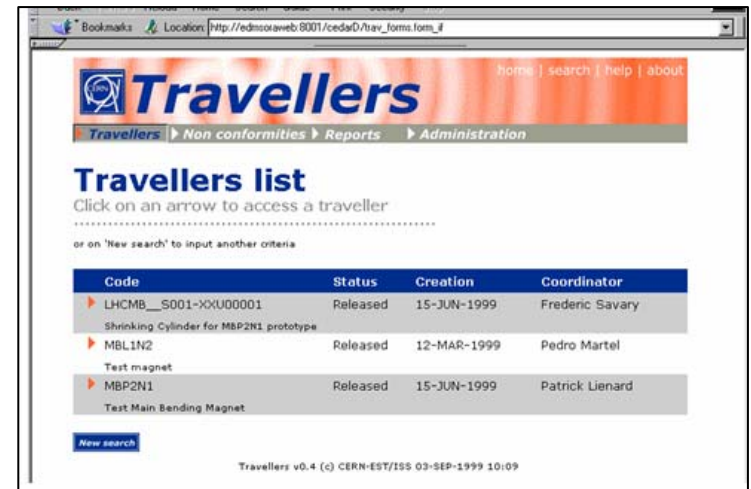
## 1999-2000: From document mgt to MTF

- Late 1999: LHC QAP Rules for Manufacturing follow-up
  - LHC Part identification (LHC-PM-QA-206 by R. Saban)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
MACHINE CODE		EQUIPMENT CODE				SEQ. NUMBER		SEPARATOR	PRODUCTION SITE	SEQUENTIAL NUMBER								
PREFIX CONTROLLED BY CERN								CONTROLLED BY SUPPLIER OR CERN		-	CONTROLLED BY CERN	CONTROLLED BY SUPPLIER						
PART NUMBER										-	SERIAL NUMBER							

- Manufacturing and Inspection of Equipment (LHC-PM-QA-309 by M.Mottier)
- Handling of Nonconforming Equipment (LHC-PM-QA-310 by M.Mottier)

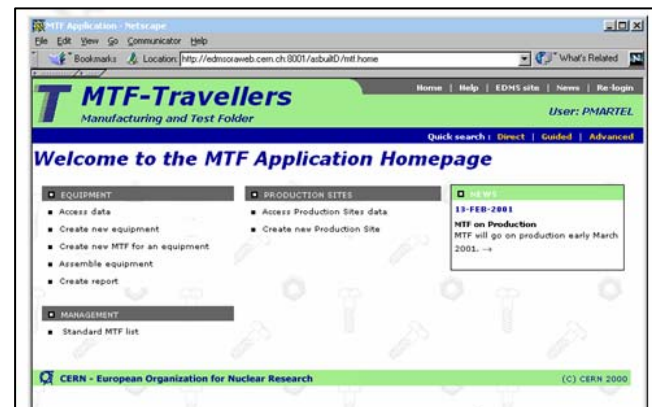
- In parallel – first *Travellers* prototype by P.Martel



## EDMS Support: First 10 years

2001: MTF on the scene

- *Travellers* becomes **MTF** in 2001, first presented officially at the LHC Production Databases Workshop March 2001 (P.Martel, S. Mallon Amerigo):



- Design based on the specifications and examples provided by R.Saban, P.Lienard, M.Struik, M.Allitt



## EDMS Support: First 10 years

### 2001: MTF on the scene

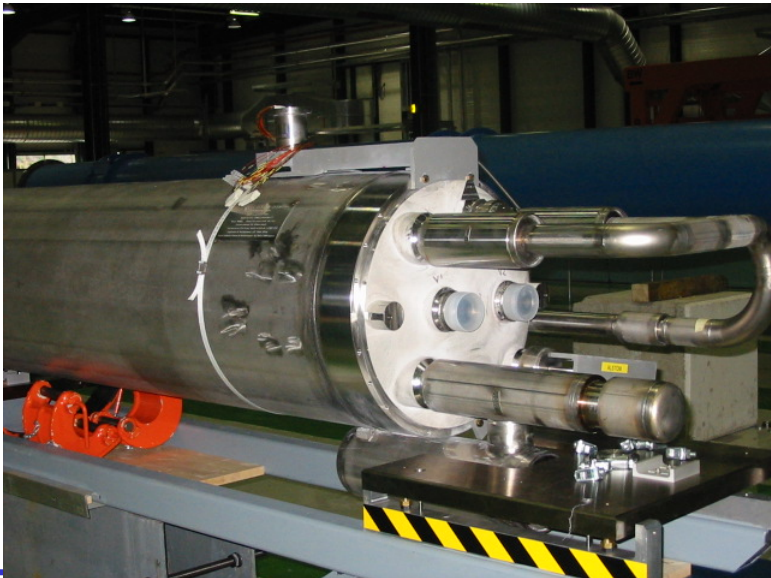
- Breaking the ice, summer 2001:
  - **P.Lienard** (dipole cold mass assembly), **M.Struik** (thermal shield bottom trays), **G.Schneider** (BPM), **F.Bourgeois-O.Desebe** (quench heaters)
  - MTF presentations group-by-group (MAS, VAC, ICP, CRI, ACR...)
- First cold mass in MTF (Alstom 2) in July 2001 (P.Lienard, S.Mallon, E.Manola-Poggioli)
- Strategy: Capturing data as close to the source as possible. Placing responsibilities at the right level: manufacturing data of an assembly component has to be provided by the Project Engineer responsible for the component.
- Technical limitations
  - MTF Web functionality is mainly limited to the read access
  - Data is collected with Excel based 'MTF transfer files" and imported in the MTF by the support team
  - "Archive" or Follow-up Tool?



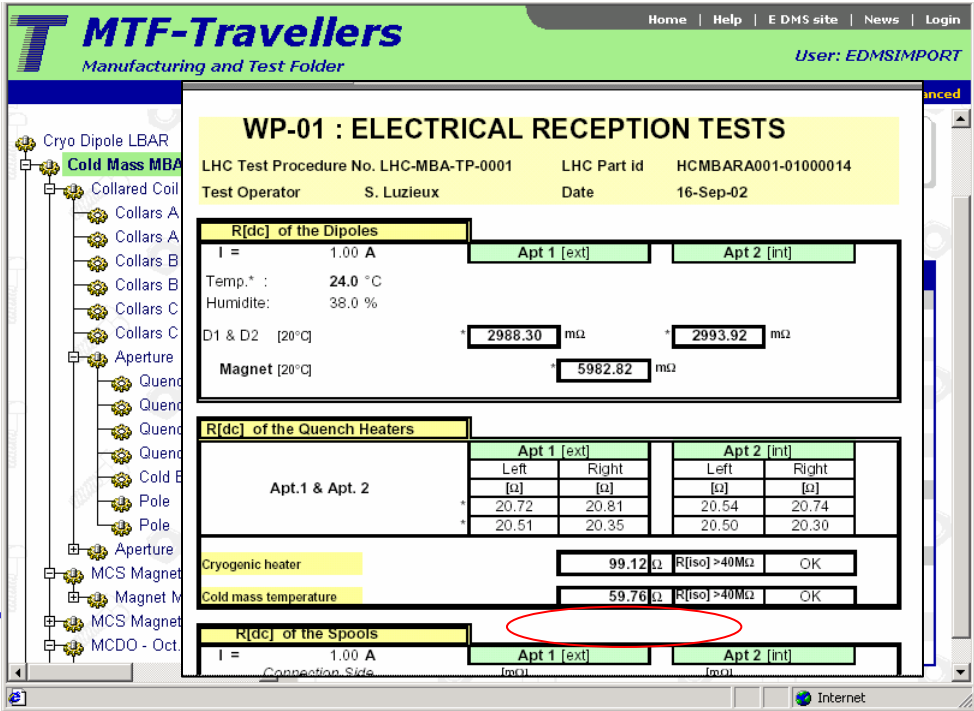
# EDMS Support: First 10 years

## 2002: Closer to the field

- D.Tommasini, dipole coordination: introducing MTF for follow-up of SM18-SMA18 activities:
  - Provides easy access to the manufacturing information (data results and non-conformities)
  - Supports cryodipole assembly, test and quality assurance coordination:
- responsible engineer and operators post Test Results and NCR Reports for the next 'user' of the equipment



E. Manola-Poggioli



**MTF-Travellers**  
Manufacturing and Test Folder

Home | Help | E DMS site | News | Login  
User: EDMSIMPORT

### WP-01 : ELECTRICAL RECEPTION TESTS

LHC Test Procedure No. LHC-MBA-TP-0001    LHC Part id    HCMBARA001-01000014  
 Test Operator    S. Luzieux    Date    16-Sep-02

R[dc] of the Dipoles	
I =	1.00 A
Temp.* :	24.0 °C
Humidite:	38.0 %
D1 & D2 [20°C]	2988.30 mΩ
Magnet [20°C]	5982.82 mΩ

R[dc] of the Quench Heaters				
Apt.1 & Apt. 2	Apt 1 [ext]	Apt 2 [int]		
	Left [Ω]	Right [Ω]	Left [Ω]	Right [Ω]
	20.72	20.81	20.54	20.74
	20.51	20.35	20.50	20.30

Cryogenic heater	99.12 Ω	R[iso] >40MΩ	OK
Cold mass temperature	59.76 Ω	R[iso] >40MΩ	OK

R[dc] of the Spools	
I =	1.00 A
Connection Side	Apt 1 [ext]    Apt 2 [int]



## EDMS Support: First 10 years

### 2002: Closer to the field

- Important argument: EDMS document management tools are integrated with MTF
  - example: comment on corrective actions on an Non-Conformity Report

✓	Jean-Philippe <b>TOCK</b> on 2004-02-17, 08:40 said: OK after line N is put in conformity	Accept ✓
■	Jos <b>VLOGAERT</b> on 2004-02-17, 09:10 said: ok	Seen ■
✓	Marta <b>BAJKO</b> on 2004-02-17, 09:29 said: Regarding the tolerances of the shape: the actual tolerance is not anymore applied in the industry on the radial deviation but separately in the vertical and horizontal plane. Vertically is +/-0.85mm and +/-1.5mm horizontally. At WP08 ( in MTF) the vertical shape has its max. error of 0.74mm for the 0.75mm tolerance and the horizontal less than 1mm. Regardin the N line: on WP01( MTF) the dimension of 310mm was within the tolerance of +/-2mm and after WP08 the end cover moved max. 0.3mm horizontally on the Lyra side and only on the lyra side, which is not explaining the dimension of 315mm.	Accept ✓
■	Patrick <b>LEPEULE</b> on 2004-02-17, 12:03 said:  OK for vac components integration. Comment/proposal:would it be possible to bring back the 2 "out of tolerance" points within the race track tolerance with a dedicated alignment from extremities?	Seen ■
■	Dominique <b>MISSIAEN</b> on 2004-02-23, 10:01 said: I don't agree with the comment of Marta telling us that the tolerance of hor. and vert are completely decoupled. This is not what was decided in the WGA. We will continue opening NC when the r_body values will exceed 0.75 mm as decided by WGA. This value is also useb by MEB	Seen ■



# EDMS Support: First 10 years

## Bootstrapping

- 2003: First MTF Workshop, with rich inventory of good examples:

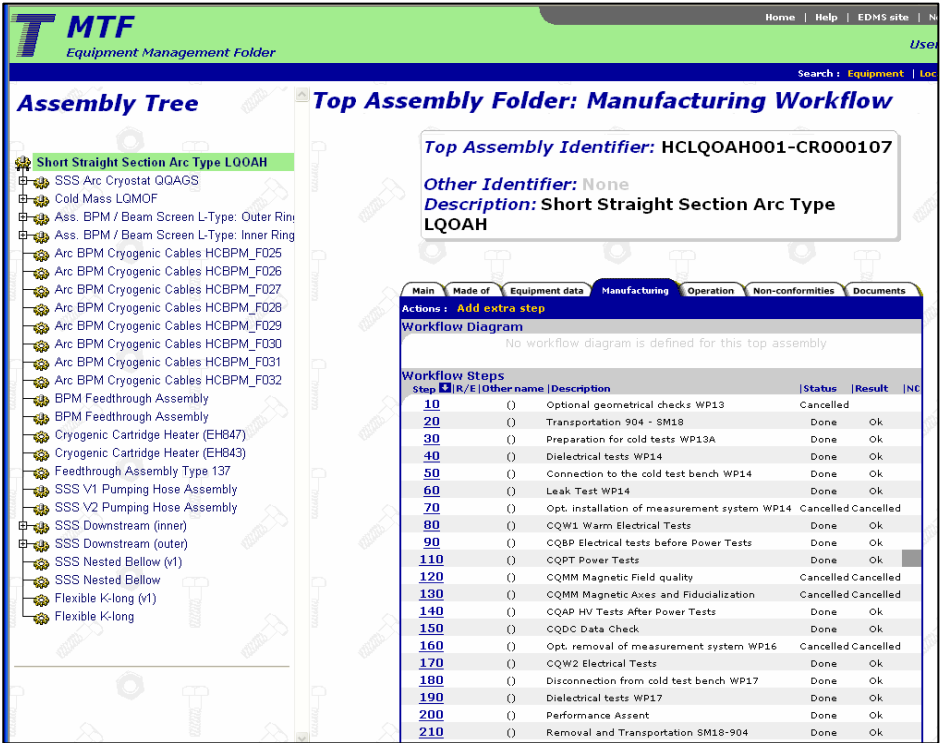
<b>378751 v.1</b>	Presentaitons given at the MTF Workshop - 18.03.2002	<b>Released</b>
<i>EDMS Id 378751</i>		
No description		
<a href="#">Doc. page</a>	OlivierDesebe <a href="#">ppt</a> (195 Kb)	0 sub-doc 1 version
	OlivierHousiaux <a href="#">ppt</a> (2 Mb)	
	JeromeBeauquis <a href="#">ppt</a> (239 Kb)	
	JuanraKnaster-AlexisVidal <a href="#">ppt</a> (2 Mb)	<a href="#">Elena MANOLA-POGGIOLI</a>
	GerhardSchneider <a href="#">ppt</a> (583 Kb)	2003-04-03 Presentation / Publication - Assembly Engineering Fabrication Quality
	DominiqueMissiaen <a href="#">ppt</a> (1 Mb)	
	PatrickLienard <a href="#">ppt</a> (1 Mb)	
	DavideTommasini <a href="#">ppt</a> (2 Mb)	
	LarsNielsen <a href="#">ppt</a> (6 Mb)	
	LaurentDeniauExtDbs <a href="#">pdf</a> (38 Kb)	
	LaurentDeinauMTFUsers <a href="#">pdf</a> (36 Kb)	
	ChristophBalle <a href="#">pdf</a> (4 Mb)	
	CristianoLanza <a href="#">ppt</a> (2 Mb)	

- Definition of minimum data required in MTF, procedures to verify the quality of data, need for training
- Conclusions of the Workshop endorsed by TCC
- End 2003-beginning 2004: direct use of MTF Web from the three dipole CMA sites (France, Germany, Italy)

# EDMS Support: First 10 years

## From dipoles to SSS, QRL,...

- SSS are following the dipole example (P.Rohmig, M.Modena):



**Assembly Tree**

- Short Straight Section Arc Type LQOAH
  - SSS Arc Cryostat QQAGS
  - Cold Mass LQMOP
  - Ass. BPM / Beam Screen L-Type: Outer Ring
  - Ass. BPM / Beam Screen L-Type: Inner Ring
  - Arc BPM Cryogenic Cables HCBPM\_F025
  - Arc BPM Cryogenic Cables HCBPM\_F026
  - Arc BPM Cryogenic Cables HCBPM\_F027
  - Arc BPM Cryogenic Cables HCBPM\_F028
  - Arc BPM Cryogenic Cables HCBPM\_F029
  - Arc BPM Cryogenic Cables HCBPM\_F030
  - Arc BPM Cryogenic Cables HCBPM\_F031
  - Arc BPM Cryogenic Cables HCBPM\_F032
  - BPM Feedthrough Assembly
  - BPM Feedthrough Assembly
  - Cryogenic Cartridge Heater (EH847)
  - Cryogenic Cartridge Heater (EH843)
  - Feedthrough Assembly Type 137
  - SSS V1 Pumping Hose Assembly
  - SSS V2 Pumping Hose Assembly
  - SSS Downstream (inner)
  - SSS Downstream (outer)
  - SSS Nested Bellow (v1)
  - SSS Nested Bellow
  - Flexible K-long (v1)
  - Flexible K-long

**Top Assembly Folder: Manufacturing Workflow**

Top Assembly Identifier: HCLQOAH001-CR000107

Other Identifier: None

Description: Short Straight Section Arc Type LQOAH

**Workflow Diagram**

No workflow diagram is defined for this top assembly

**Workflow Steps**

Step	R/E	Other name	Description	Status	Result	INC
10			Optional geometrical checks WP13	Cancelled		
20			Transportation 904 - SM18	Done	Ok	
30			Preparation for cold tests WP13A	Done	Ok	
40			Dielectrical tests WP14	Done	Ok	
50			Connection to the cold test bench WP14	Done	Ok	
60			Leak Test WP14	Done	Ok	
70			Opt. installation of measurement system WP14	Cancelled	Cancelled	
80			CQW1 Warm Electrical Tests	Done	Ok	
90			CQBP Electrical tests before Power Tests	Done	Ok	
110			CQPT Power Tests	Done	Ok	
120			CQMM Magnetic Field quality	Cancelled	Cancelled	
130			CQMM Magnetic Axes and Fiducialization	Cancelled	Cancelled	
140			CQAP HV Tests After Power Tests	Done	Ok	
150			CQDC Data Check	Done	Ok	
160			Opt. removal of measurement system WP16	Cancelled	Cancelled	
170			CQW2 Electrical Tests	Done	Ok	
180			Disconnection from cold test bench WP17	Done	Ok	
190			Dielectrical tests WP17	Done	Ok	
200			Performance Assent	Done	Ok	
210			Removal and Transportation SM18-904	Done	Ok	

- From autumn 2004, MTF is used from the workshop floor at AirLiquide and all its subcontractors sites Tuboplan, 2C, Felguera, Simic (G.Riddone, P.Lienard)



# EDMS Support: First 10 years

## ATLAS

### More than 57000 equipment in MTF:

- TRT Integration
- LArg Calorimeter
- Tile Calorimeter
- Toroid Magnets
- Muon Stations
- Barrel Rail System
- Support Structures
- Barrel Movement Support Structures
- Rack equipments

### Atlas Equipment Passport

<b>Equipment ID:</b>	<b>20HBCER0000001</b>		
<b>Description:</b>	<b>Bedplate</b>		
<b>Slot</b>	<b>HBB/A12.XB</b>	<b>Installation Status</b>	<b>Installed</b>
<b>Other ID</b>	IZ 1502.98.01.100	<b>Installation Date</b>	2003-09-20
<b>Location</b>	Building 3126 (UX15)		
<b>Location details</b>			
<b>Part ID</b>	ATL-0000008162	<b>Equipment Code</b>	ATLHBB
<b>Manufacturer</b>	IZHO		
<b>Project Engineer</b>	B. Nicquevert		
<b>Physical Properties</b>			
<b>Length</b>	8570	<b>mm</b>	<b>Dimension Survey</b> yes
<b>Width</b>	1760	<b>mm</b>	<b>Tests</b> no
<b>Height</b>	478	<b>mm</b>	<b>Commissioning</b> no
<b>Weight</b>	13335	<b>kg</b>	<b>Maintenance</b> no
			<b>Production Data</b> no
<b>Composition (INB)</b>			
<b>Material</b>	<b>Description</b>	<b>Percentage</b>	
Stainless Steel		100 %	
<b>Documents</b>			
▶ ATL-HB-ES-0008 (ver.5): Specification for the material for the ATLAS HBB bedplates			
▶ ATL-HB-QC-0001 (ver.2): Certificates of stainless steel for bedplates			
▶ ATLHBB__0007 (ver.AE): EXTREMITY BEDPLATE A12 - DETAIL DRAWING			



# EDMS Support: First 10 years

## Installation Follow-up

- Installation day Nov 2003, vision:
  - Traceability (equipment -> installation slot)
  - Installation workflow follow-up (with reports and NCRs)
  - Dashboard reporting tools

**Slot Identifier:** QRLLB.A9R7  
**Description:** Pipe element QRLLB

Main Installation Documents

Actions : **Edit**

Slot main data

DCUM\_start 20284.55032 DCUM\_end 20295.29798

Other Identifier

Parent slot

Installation data

Design item ▶ HCQRLLB000 (pipe element)

Installed equipment ▶ **HCQRLLB000-CC000026**

**Slot Identifier:** QRIOA.B11R7  
**Description:** QRL interconnection

Main Installation Documents

Actions : **Create Job**

Job Id	Status	Description	Started	Ended
<a href="#">10129456</a>	Done	Welds of the inner header		2003-09-29
<a href="#">10129462</a>	Done	He test of the welds of inner headers		2003-09-29
<a href="#">10129467</a>	Done	Radiography of the welds		2003-10-06
<a href="#">10129472</a>	Pending	Mounting of the MLI and thermal shield		
<a href="#">10129477</a>	Pending	Welds of the vacuum jacket		



# EDMS Support: First 10 years

## 2005: Installation Follow-up

- Becomes reality in early 2005 (AT-ACR, AT-CRI, TS, Air Liquide):
  - QRL repair
  - QRL installation
  - Magnet installation and interconnections
  
- Magnet Installation and Interconnection dashboard

SLOT	Activity	QBB1.B24R8	LQOAH.24R8	QBQ1.24R8	LBBLA.25R8	QQBI.24R8	LBALA.25R8	QBB1.A25R8	LBBLD.25R8	QBB1.B25R8	LQOAO.25R8	QBQ1.25R8	LBALA.26R8	QQBI.25R8	LBBLA.26R8	QBB1.A26R8	LBALB.26R8	QBB1.B26R8	LQOAH.26R8	QBQ1.26R8	LBBLA.27R8	QQBI.26R8	LBALA.27R8	QBB1.A27R8	LBBLD.27R8	QBB1.B27R8
	IN010. Initial alignment	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IN020. Smoothing	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	Interconnection check before starting	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP01.010 Plugin module installation	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP01.020 Main superconduct. cables soldering	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP01.030 Spool pieces busbars welding	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP01.040 Electrical tests	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP01.050 TIG welding (M1-M2-M3-X-E-C'-K1-K2)	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP01.060 Review	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP02.010 Connection box assembly	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP02.020 Electrical Tests before welding	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP02.030 Busbars welding	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP02.040 Electrical test after welding	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP02.050 Electrical test after insulation	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP02.060 TIG welding (N, M2N)	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP02.070 Review	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP03.010 Thermal sh. & radiative sc. instal.	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	IWP03.020 Review	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█



# EDMS Support: First 10 years

## Installation Follow-up

- Magnet-slot assignment/installation traceability

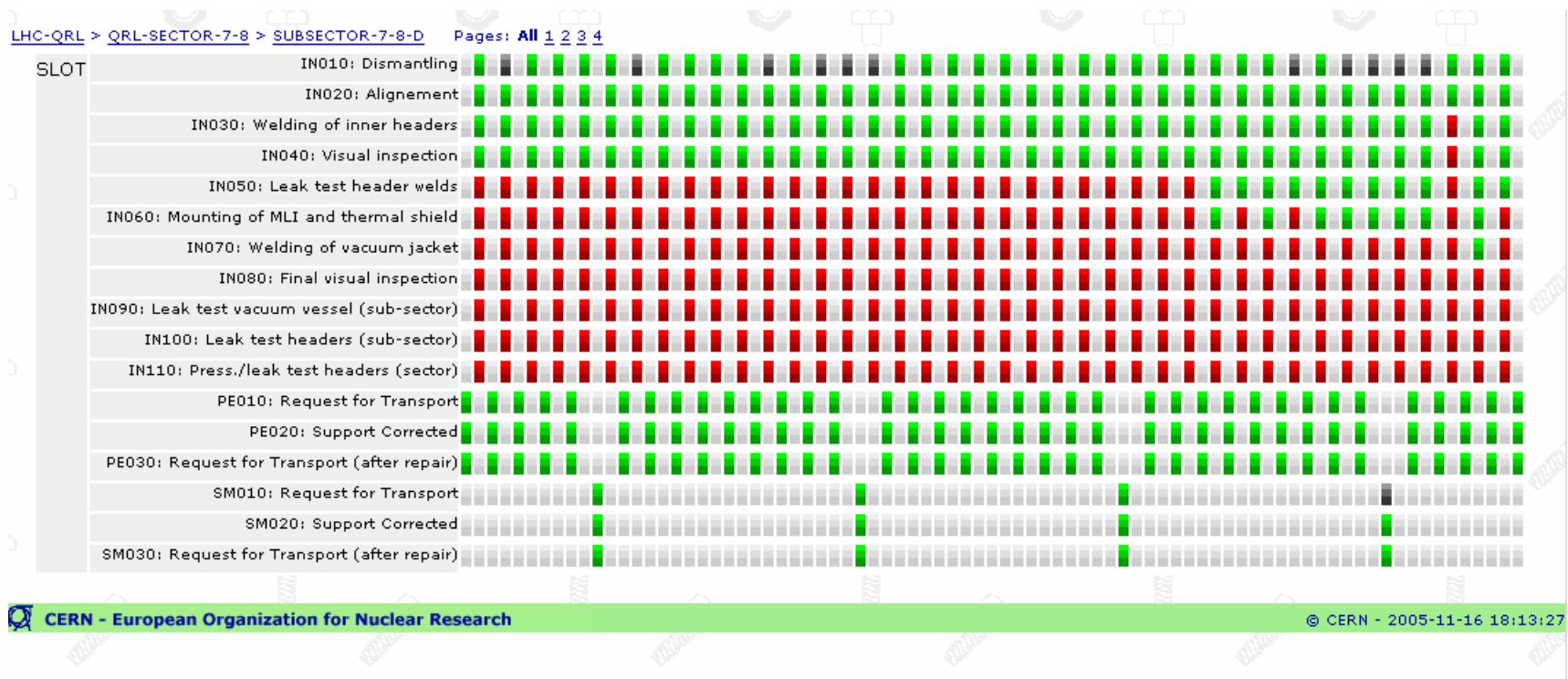
LBALA.21L1	25690.5725			<a href="#">HCLBALA000-IN003148</a> (Installed)	
LBBLA.21L1	25706.2325			<a href="#">HCLBBLA000-IN001149</a> (Installed)	
LBALB.21L1	25721.8925			<a href="#">HCLBALB000-IN001060</a> (Installed)	
LQATI.20L1	25737.5525	Q20L1		<a href="#">HCLQATI001-CR000073</a> (Installed)	
LBBLA.20L1	25744.0225			<a href="#">HCLBBLA000-IN001121</a> (Installed)	
LBALA.20L1	25759.6825			<a href="#">HCLBALA000-IN001090</a> (Installed)	
LBBLD.20L1	25775.3425			<a href="#">HCLBBLD000-IN001047</a> (Installed)	
LQATN.19L1	25791.0025	Q19L1	YES		
LBALA.19L1	25797.4725			<a href="#">HCLBALA000-IN001157</a> (Installed)	
LBBLA.19L1	25813.1325			<a href="#">HCLBBLA000-IN001123</a> (Installed)	
LBALB.19L1	25828.7925			<a href="#">HCLBALB000-IN001067</a> (Installed)	
LQATI.18L1	25844.4525	Q18L1		<a href="#">HCLQATI001-CR000062</a> (Installed)	
LBBLA.18L1	25850.9225			<a href="#">HCLBBLA000-IN003068</a> (Installed)	
LBALA.18L1	25866.5825			<a href="#">HCLBALA000-IN001073</a> (Installed)	
LBBLD.18L1	25882.2425			<a href="#">HCLBBLD000-IN001043</a> (Installed)	
LQATJ.17L1	25897.9025	Q17L1	YES	<a href="#">HCLQATJ001-CR000098#*</a> (Reserved)	
LBALA.17L1	25904.3725			<a href="#">HCLBALA000-IN002128</a> (Installed)	
LBBLA.17L1	25920.0325			<a href="#">HCLBBLA000-IN003163</a> (Installed)	
LBALB.17L1	25935.6925			<a href="#">HCLBALB000-IN001174</a> (Installed)	
LQATI.16L1	25951.3525	Q16L1		<a href="#">HCLQATI001-CR000061#*</a> (Reserved)	
LBBLA.16L1	25957.8225			<a href="#">HCLBBLA000-IN003078#*</a> (Reserved)	
LBALA.16L1	25973.4825			<a href="#">HCLBALA000-IN001179</a> (Installed)	
LBBLD.16L1	25989.1425			<a href="#">HCLBBLD000-IN001114#*</a> (Reserved)	



# EDMS Support: First 10 years

## 2005: Installation Follow-up

- QRL installation dashboard, Sector 7-8



# EDMS Support: First 10 years

## Follow-up of general service installation NCRs



<a href="#">UJ14</a>	▶ 451020 (ver. 1)	INC Ventilation	use as is	Initiated	Gaine de ventilation(photo 1) et gai
<a href="#">UJ14</a>	▶ 451021 (ver. 1)	INC Charpente	use as is	Initiated	Manque dans modèle 3D ouverture c
<a href="#">UL14</a>	▶ 451022 (ver. 1)	INC Transport	use as is	Initiated	Manque dans modèle 3D, les 2 monc
<a href="#">L2</a>	▶ 459285 (ver. 1)	INC Cable rayonnant arc 2-3	critical	Action Plan	Le câble rayonnant dans le tunnel R
<a href="#">L2</a>	▶ 460078 (ver. 1)	INC Tuyauterie Secteur 2-3	critical	Initiated	The screwed endcaps are missing o
<a href="#">L2</a>	▶ 460080 (ver. 1)	INC Tuyauterie Secteur 2-3	critical	Initiated	There are flanges installed on the (1
<a href="#">L2</a>	▶ 460911 (ver. 1)	INC Sécurité RE28	critical	Action Plan	Suite à la mise en place d'une porte
<a href="#">RB26</a>	▶ 455444 (ver. 1)	INC Electricité RB26	critical	Action Plan	Boitier de commande porte mobile b
<a href="#">RB26</a>	▶ 455817 (ver. 1)	INC Electricite RB26	critical	Closed	Coffret électrique en plein milieu du
<a href="#">UJ26</a>	▶ 455477 (ver. 1)	INC Charpente UJ26	critical	Closed	Supprimer 1 tablette + barreaux sup
<a href="#">UJ26</a>	▶ 455478 (ver. 1)	INC Charpente UJ26	critical	Initiated	Manque ouverture dans caillebotis p
<a href="#">UJ26</a>	▶ 455480 (ver. 1)	INC Electricité UJ26	critical	Action Plan	Echelle à cables L01B ES (échelle LE
<a href="#">UJ26</a>	▶ 455484 (ver. 1)	INC Tuyauterie UJ26	critical	Initiated	Support Fhe Re marqué et non modi
<a href="#">UJ26</a>	▶ 455474 (ver. 1)	INC Cable Rayonnant	use as is	Initiated	Cheminement du cable rayonnant: u
<a href="#">UJ26</a>	▶ 455470 (ver. 1)	INC Charpente	use as is	Initiated	Manque garde-corps dans modèle c

# EDMS Support: First 10 years

## Installation follow-up support: Interfaces

- LHC layout (S.Chemli)
  - Definition of slots and layout configuration management
  
- EDH (V.Engmark, E.Sanchez, J.Purvis)



**Top Assembly Folder: Manufacturing Step Deta**

**Top Assembly Identifier: HCLBBLA000-IN001164**  
**Other Identifier: None**  
**Description: Arc Dipole LBBLA**

Step ID	90	Other name	
Description	Availability for transportation to the tunnel		
Status	Done	Result	Ok
Completed on	2005-07-22		
Provided by		Expected by	
Responsible		Executed by	Guy Fievez

**Comments**

**Step Documents**

- Applicable Standard
- Results

**Internal Transport / Handling Request**  
1931289

Fields with asterisks (\*) are obligatory and must be filled in.

Created by : **Pascal PONSOT (T.S.I.C)** Tel: 72345 160458  
 Creation date : 22.07.2005  
 Nature : Transport & Handling  
 General Description : Cryodipole 1164 du SDI2 au secteur 8-1  
 Contact \* : **Pascal PONSOT (T.S.I.C)** Tel: 72345 160458  
 INB Traceability : **Not Applicable** Warning: One of the locations specified is an INB Location, or INB material is specified for transport.

Do not complete this document if you have already completed a shipping request for the same goods.

**Transport**

Recipient :  
 From \* : **bidg 3192 (SDI2)** (Conventional INB Location) To \* : **2849-C.30R8 (R89)** (Radioactive INB Location)  
 Desired Date \* : 22.07.2005 Desired Time :  
 Latest Date :

Item	Quantity	Description
1	1	LHC Cryodipole <small>'Availability for transportation to the tunnel' was closed to create this document            Quantity: 1. Unit: Piece, Dangers : <b>Non Hazardous Material</b>, Fragile : <b>Fragile</b>, Unit Weight : 35,000.00, Dimensions (cm) : 1600 x 110 x 110, Particular Transport/Handling &amp; Instructions : Transport du cryodipole 1164 du SDI2 a son emplacement final dans le secteur 8-1; DCUM debut = 24744, DCUM fin = 24760, position = LBBLA.30R8, quantity = 1, unit = piece, dangers = non hazardous material, fragile = fragile, unit weight = 35000, dimensions L x W x H (cm) = 1600 x 110 x 110..</small>

All Transport & Handling Activities are insured up to SFr. 2,000,000.00 It is possible to subscribe to a supplementary insurance for goods above this value.

**Insurance**

Value of Goods (CHF)\* : 1000000  
 Supplementary Insurance : I decline the offer of supplementary insurance



# EDMS Support: First 10 years

## 2005: Hardware Commissioning

- Coordinated by R.Saban, E.Barbero, F.Rodriguez

**Slot Folder: Installation Jobs**

Slot Identifier: RPMBB.UA83.RCBXH1.L8  
Description: Cold Power C...

Job Id	Status	Description
12454089	Done	HCA PCSCT-PT Converter Conne
12454218	Cancelled	HCA PCSCT-PT Interlock Loop. P
12454347	Cancelled	HCA PCSCT-PT Fast Power Abort
12454476	Cancelled	HCA PCSCT-PT Loss of Cooling
12454605	Done	HCA PCSCT-PT Converter on & C
12454734	Pending	HCA PCSCT-PT PC Remote Ope
12454863	Pending	HCA PCSCT-PT 8-Hour Heat Run
12454992	Pending	HCA PCSCT-CII FGC Communic
12455121	Pending	HCA PCSCT-CII Interlocks Powe
12455250	Pending	HCA PCSCT-HR 24 H Turn on Pd
12455379	Pending	HCA PCSCT-HR 24 H Ramp Pow
12455508	Pending	HCA PCSCT-HR 24 H Monitoring
12455637	Pending	HCA PCSCT-HR 24 H Turn off C

Conclusion  
Tests OK  
FGC not configured for the magnet  
Hardware current limitation not configured for the magnet (Output Level Range = 600A)  
No Comments



# EDMS Support: First 10 years

## MP5 to D7i migration

- Also in 2005: MP5 to D7i migration (P.Martel): major intervention, remained completely transparent for users!

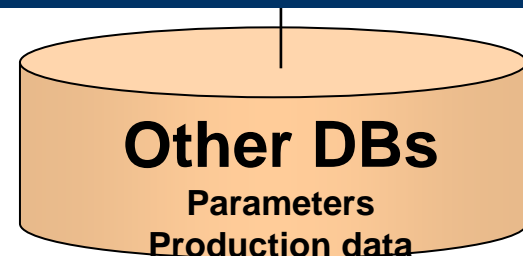
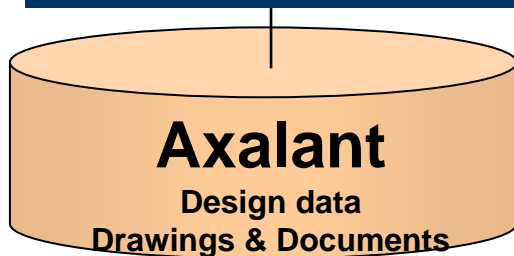
### EDMS Web



### MTF - Travellers



## The CERN EDMS

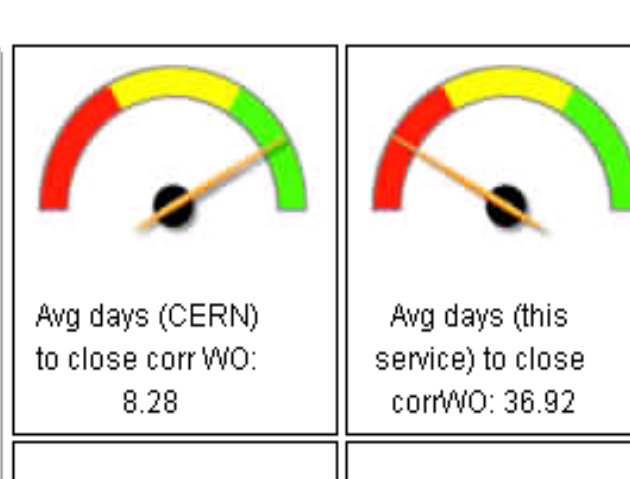


- The EDMS is fully integrated with CERN's maintenance management system D7i
  - Advanced management of work orders
  - Scheduling and logging of both preventive maintenance and corrective maintenance tasks

### Inbox

	Refresh
Open requests: 715	<input type="checkbox"/>
Open corrective requests: 223	<input type="checkbox"/>
-----	<input type="checkbox"/>
Max days corr WO open: 408	<input type="checkbox"/>
	<input type="checkbox"/>
	<input type="checkbox"/>
	<input type="checkbox"/>
	<input type="checkbox"/>
	<input type="checkbox"/>

### Balanced Scorecard





# EDMS Support: First 10 years

## Safety inspections

- Management of Safety Inspections (equipment, buildings, installations) has been integrated in the common EDMS-D7i framework:

The screenshot displays the EDMS interface for safety inspections. It includes a navigation menu with tabs for Main, Sub locations, Installation, Operation, Slots, and Documents. A table lists inspection jobs with columns for Job Id, Type, Description, Date Reported, Status, and Result. Two jobs are highlighted: 632134 (Correctif Depannage) and 1137696 (Sécurité Périodique). Below the table, a 'Document Information Page' is shown for the inspection report 'Inspection de Sécurité Périodique sur Bâtiment 375'. The page includes a 'RESTRICTED' stamp, a 'Signée et Distribuée' status, and a detailed description of the inspection process. A 'Points vérifiés' section lists various safety aspects like Chime, Généralités, Incendie, Locaux et lieux de travail, Mécanique, and Rayonnement, each with a status indicator. The 'Conclusion' states 'Pas de remarques de sécurité'.

Job Id	Type	Description	Date Reported	Status	Result
<a href="#">632134</a>	Correctif Depannage	Batiment sans eclaireage	2002-07-16	Done	
<a href="#">1137696</a>	Sécurité Périodique	Inspection de Sécurité Périodique	2005-11-08	Signée et Distribuée	

**Document Information Page**  
Number: 679140 | Ver.1 | Inspection de Sécurité Périodique sur Bâtiment 375  
EDMS Id: 679140 | Ver.1 | EMMANUELLE VALERIE AVEDIAN  
Signée et Distribuée | Inspection de Sécurité | 2005-11-08 | RESTRICTED

**Inspection de Sécurité Périodique sur Bâtiment 375**  
Référence: EDMS 679140 v.1 | Date: 2005-11-08  
Site: MEYR | Localisation: 375 | Description: ANNEAU DE STOCKAGE ISR  
Date visita: 2005-11-08 | Exécutée par: EMMANUELLE VALERIE AVEDIAN | Valable jusqu'à: 2006-11-08  
A: WOLFGANG WEINGARTEN | DSO: THOMAS OTTO  
Distribué à: Didier ALBERTO, Yvon ALDOET, Ana-Paula BERNARDES, Thomas OTTO, Ralf TRANT, Wolfgang WEINGARTEN  
But de l'Inspection: Les inspections annuelles de sécurité permettent d'établir une évaluation d'ensemble des conditions de sécurité dans les ouvrages mais n'ont pas pour objet de vérifier dans le détail le respect des règlements de sécurité. (Source IS4 Rév.)  
Commentaire: Les mesures éventuelles à prendre mentionnées ci-dessous sont exécutoires. Le TSO est prié d'aviser l'auteur de la bonne exécution des travaux mentionnés ou des raisons de leur non-exécution.  
Points vérifiés:  
[0] Chime [0] Electricité  
[0] Généralités [0] Incendie  
[0] Locaux et lieux de travail [0] Mécanique  
[0] Rayonnement  
Conclusion: Pas de remarques de sécurité



# EDMS Support: First 10 years

Conclusions





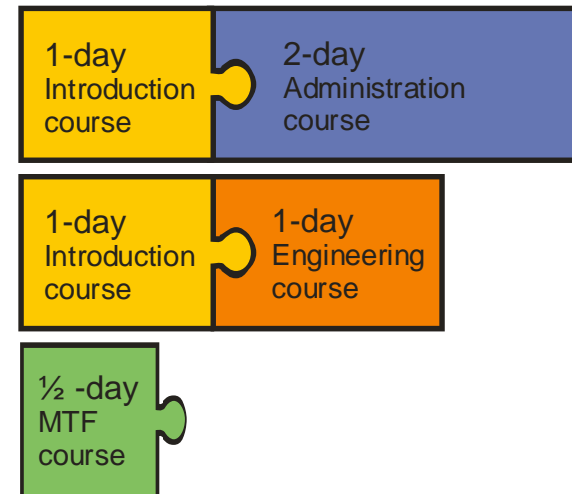
# EDMS Support: First 10 years

## Statistics

- Statistics
  - >630.000 documents & drawings.
  - ~20.000 new documents/month.
  - ~400.000 registered LHC components:
    - 11 in June 2001
    - 3 000 in March 2002
    - 30 000 in March 2003
  - ~20.000 new equipment are registered/month.
  - ~5.000 registered users.
  - >70.000 file downloads/month.

- Training:
  - Over 800 persons have so far followed one or several EDMS courses at CERN.

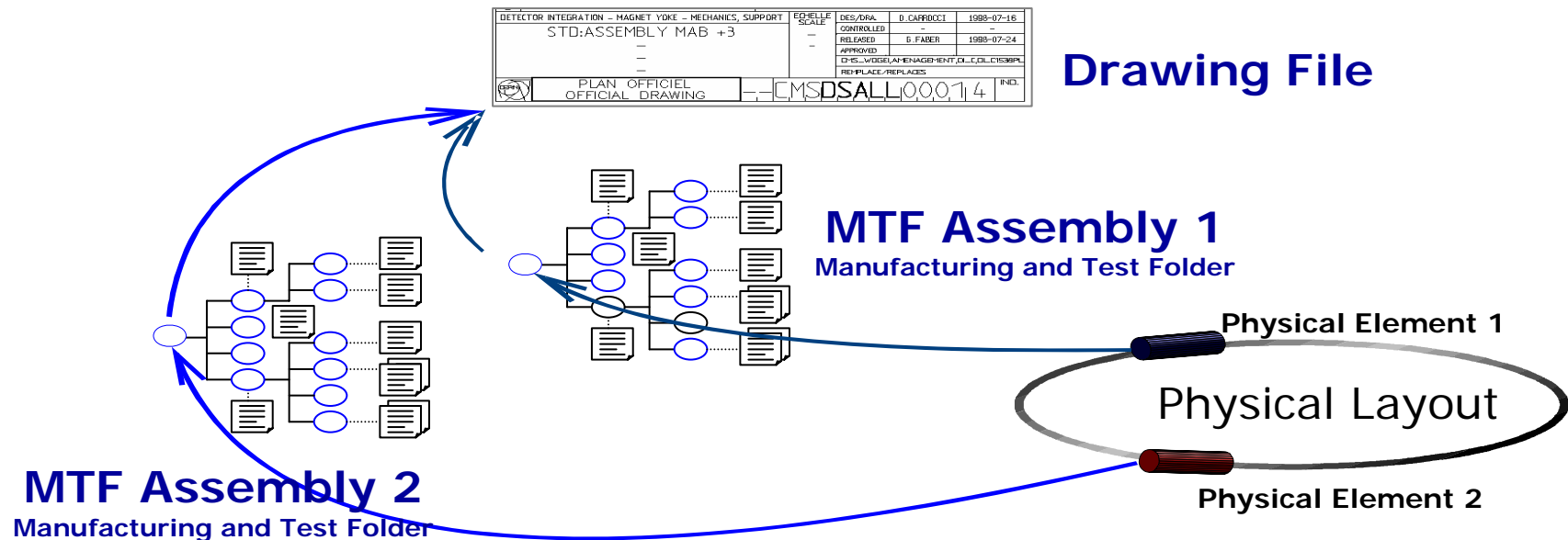
- Hotline:
  - >100 requests/week



# EDMS Support: First 10 years

## Next years

- The accelerator should be properly documented before the start of operation. Provide support for knowledge transfer.



- Provide the support in the operation and maintenance phase



# EDMS Support: First 10 years

## EDMS Team Today



...without forgetting the contribution of Johannes Muller and Randi Evensen.



# EDMS Support: First 10 years

Thank you for your attention!