

Infrastructure for LHCb Upgrade workshop

CAD integration

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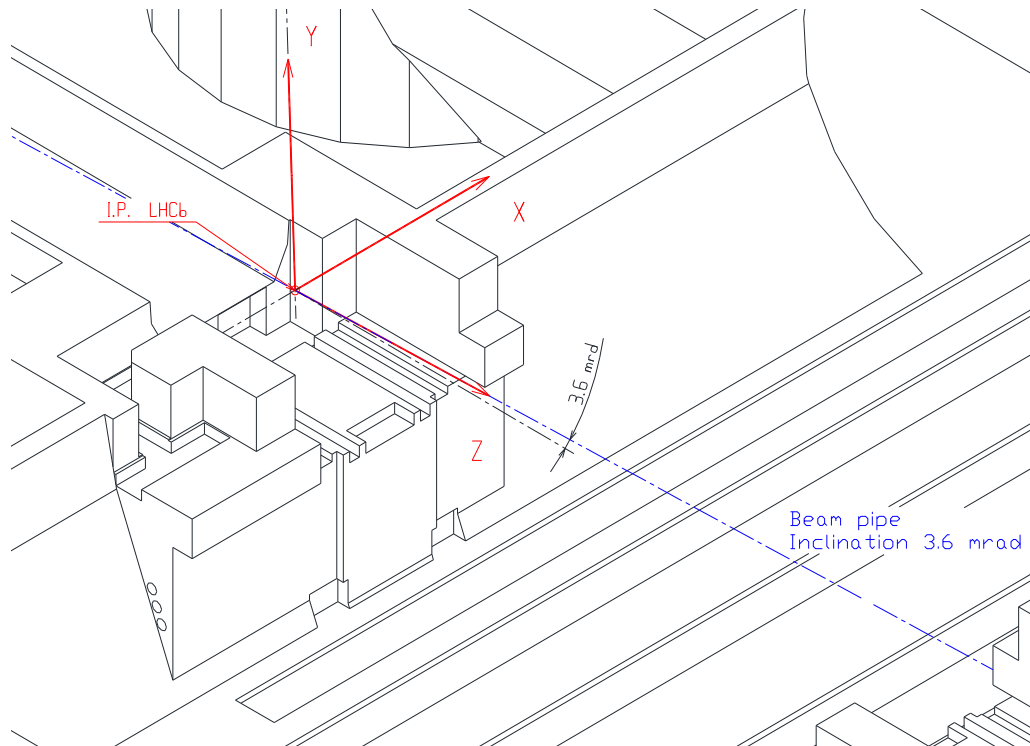
EDMS: 1478463

20 February 2015

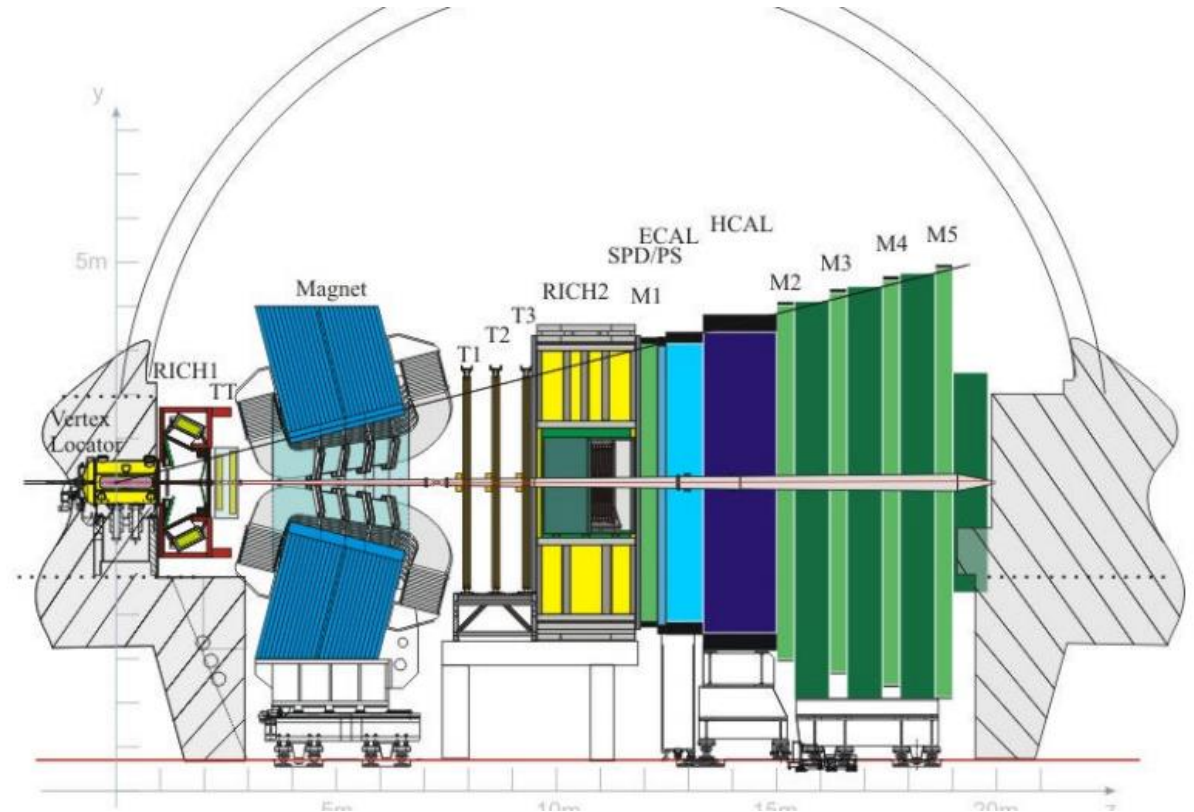
Contents

- LHCb CS & envelopes
- Envelope definition
- Procedure – Exchange of CAD models
 - CAD integration CS
 - Roles
 - Available 2D and 3D CAD files
 - Storage of CAD files
- Conclusion

LHCb CS & envelopes



CS: EDMS # [372642](#)

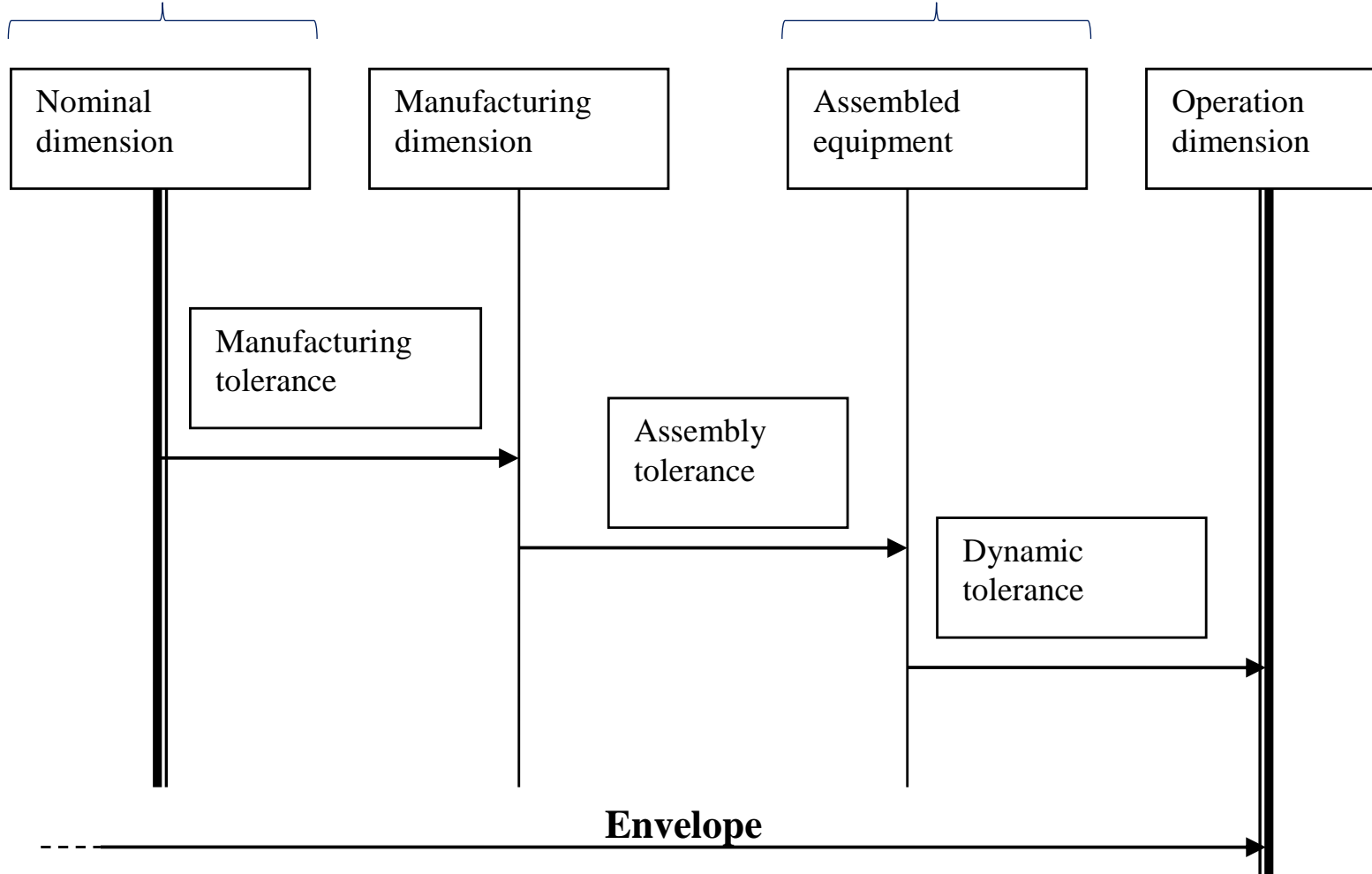


Sub-detector envelopes: EDMS # [330689](#)

Envelope definition: EDMS [386061](#)

Available 3D CAD models
(as designed **not as-built**)

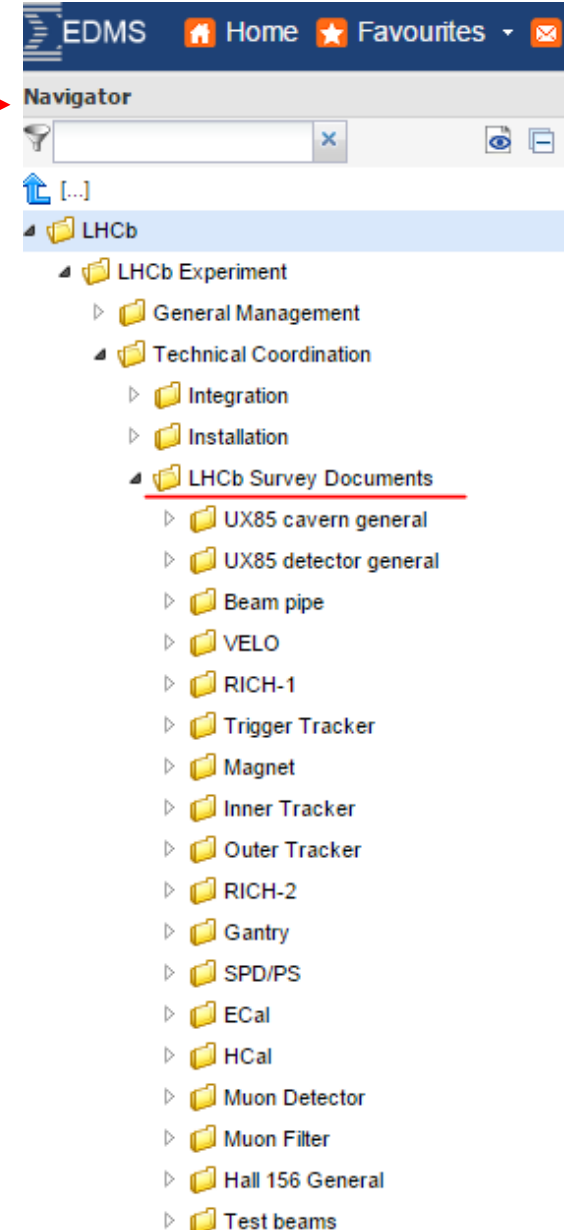
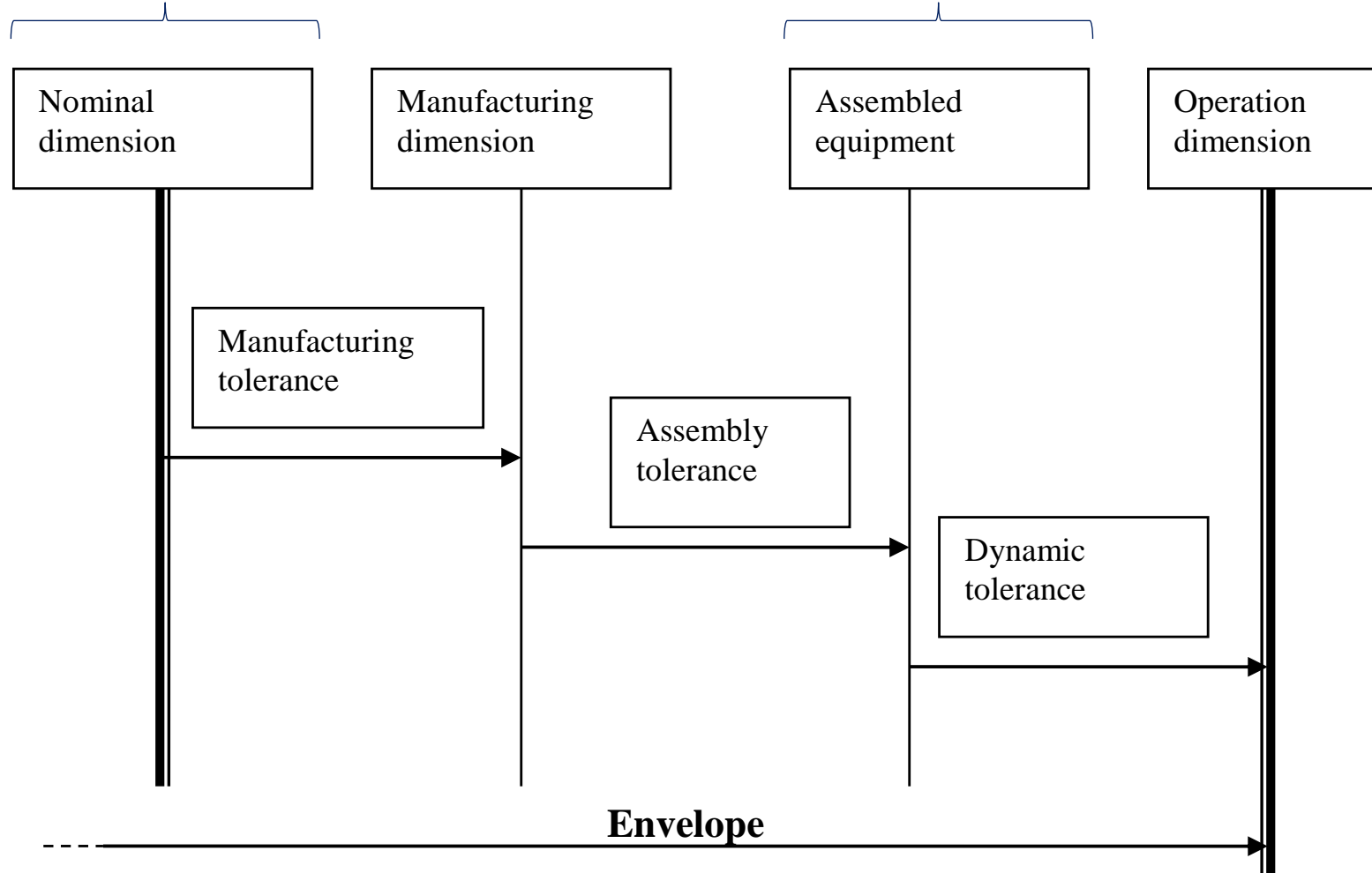
Available surveying reports



Envelope definition: EDMS 386061

Available 3D CAD models
(as designed **not as-built**)

Available surveying reports





CERN
CH-1211 Geneva 23
Switzerland

EDMS Document No.

1417892

CERN Div./Group or Supplier/Contractor Document No.

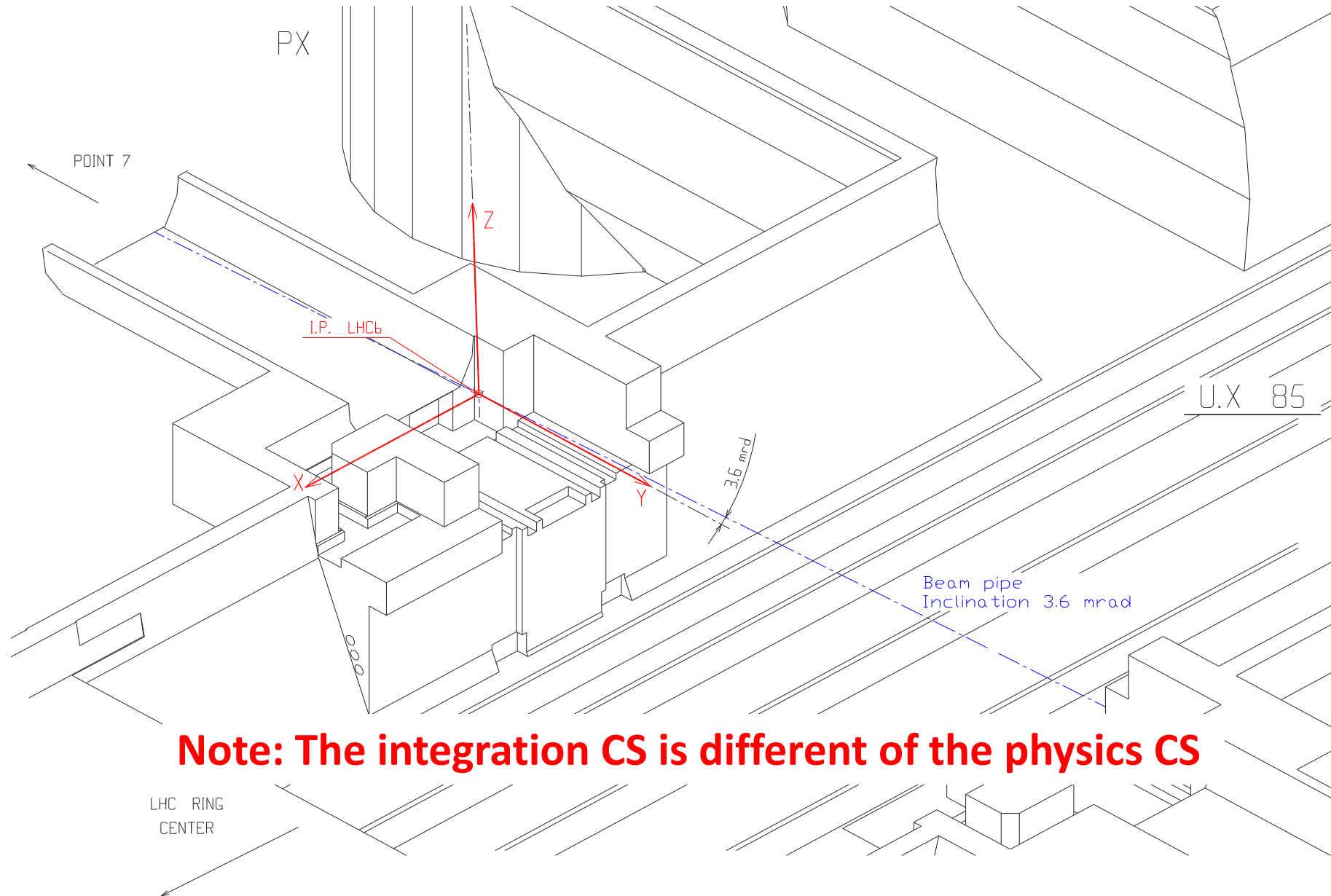
PH/DT/EO

EDMS # [1417892](#)

PROCEDURE

***EXCHANGE OF CAD MODELS WITHIN THE LHC
COLLABORATION***

Procedure contents – CAD Integration CS



Procedure contents- Roles

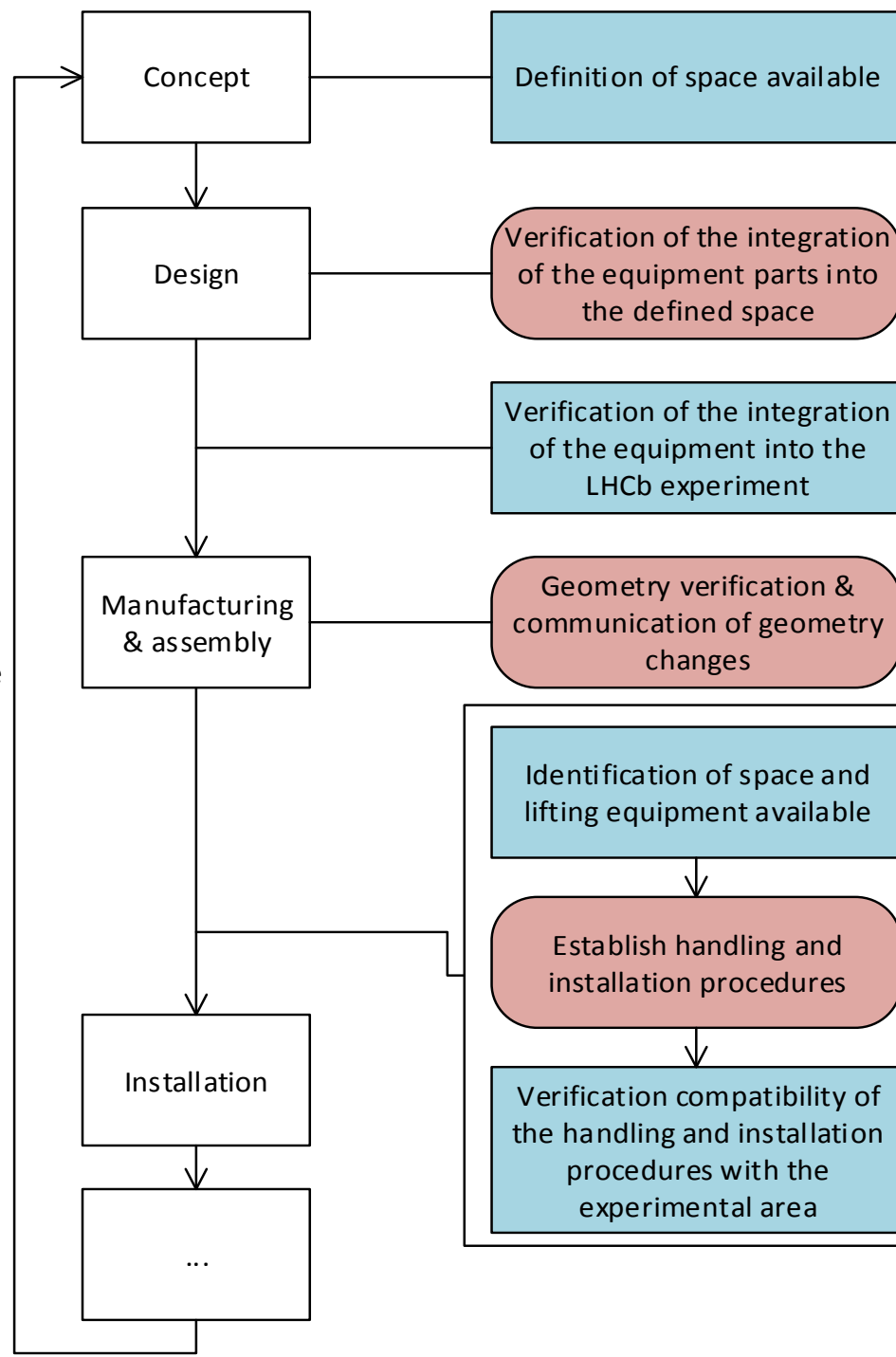
Legend

Task assigned to:

LHCb Technical coordination team

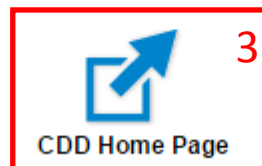
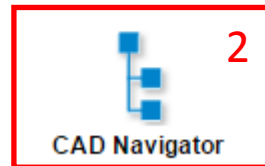
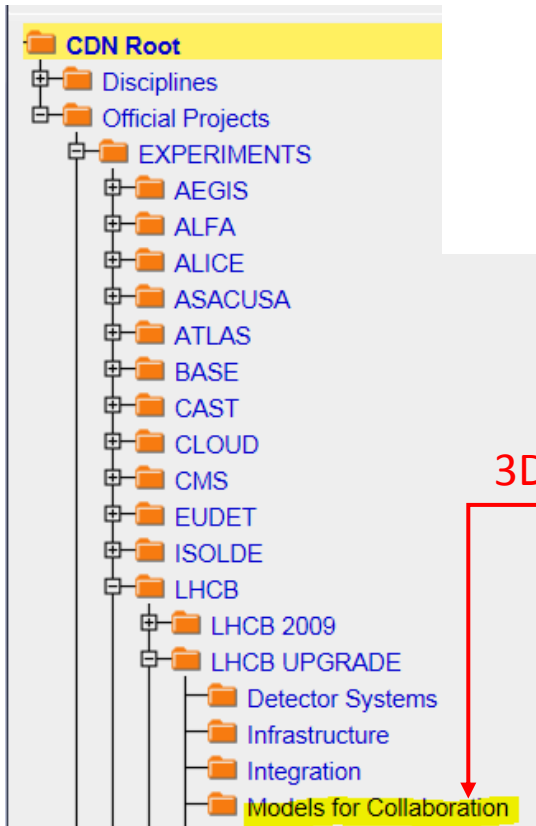
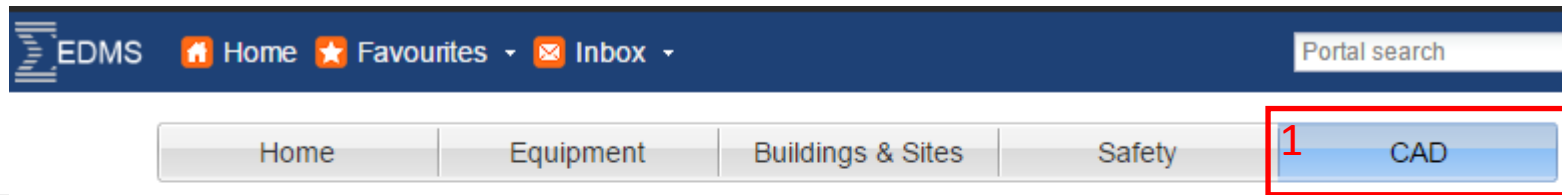
LHCb project leader

Upgrade



Procedure contents – Exchanging CAD files

- LHCb 2d drawings & 3D models are available through EDMS



DRAWING RETRIEVAL 3.1

[DIRECT](#) [GUIDED](#)

- [LHC Machine](#)
- [LHC Experiments 3.2](#)
- [Accelerators and Machines \(ES1 + LEP\)](#)
- [Civil Engineering \(ST-CE\)](#)
- [Cooling & Ventilation \(ST-CV\)](#)
- [Patrimony by Site or by Building](#)
- [Neutron Time Of Flight \(TOF\)](#)
- [CERN Neutrino \(Gran Sasso\)](#)

3D STEP files

2D files (HPGL & PDF)



Please, select a PBS code :

- [CEDT](#) : LHCb CALO - ECAL - DETECTOR - TOOLING
- [CED](#) : LHCb CALO ECAL DETECTOR
- [CEM](#) : LHCb CALORIMETERS - ECAL - MECH_SUPPORT
- [CHDT](#) : LHCb CALO HCAL DETECTOR - Tooling
- [CHD](#) : LHCb CALO HCAL DETECTOR
- [CHM](#) : LHCb CALORIMETERS - HCAL - MECH_SUPPORT
- [CI](#) : LHCb CALORIMETERS - INTEGRATION
- [CP](#) : LHCb CALORIMETERS - PS / SPD
- [IECU](#) : LHCb INFRASTRUCTURE - EXPT AREA - Civ. Eng. RB84
- [IEEC](#) : LHCb INFRASTRUCTURE - EXPT AREA - Cabling

Procedure contents – Exchanging CAD files

- Members of the LHCb collaboration can store 2d drawings & 3D models in EDMS

The screenshot displays the EDMS (Expert Data Management System) interface. At the top, there is a navigation bar with tabs: 1 Home, Equipment, Buildings & Sites, Safety, and CAD. Below the navigation bar are icons for 'Browse' and 'Search'. The main content area is titled 'Project Selection' and contains a list of project categories and sub-categories. A red '2' is next to 'Experiments'. A red '3' is next to 'LHCb'. A red '4' is next to 'LHCb Experiment Upgrade'. A red '5' is next to 'Technical Coordination'. To the right of the main interface, a file explorer window is shown, highlighting the path: Technical Coordination > Integration > CAD files. A red arrow points from the 'CAD files' folder in the file explorer to the 'CAD files' folder in the main interface.

1 Home Equipment Buildings & Sites Safety CAD

Browse Search

Project Selection

Accelerators	ATRAP Experiment	LHCb Experiment	General Management
CERN Departments	BASE	LHCb Baseline Detector	Technical Coordination 5
Computing	CAST Experiment	LHCb Experiment Upgrade 4	Resource Coordination
Design & Equip. Catalogues	CLOUD Experiment		Infrastructure
EU Projects	CMS		RICH Detectors
Experiments 2	Chervenkov Telescope Array - P...		Magnet
LHC Machine	CTF3 (Clic Test Facility) Project		Calorimeters
HL LHC - High Luminosity LHC	EURISOL		Common Electronics
LIU - LHC Injectors Upgrade	ISOLDE		Trigger
Management & Committees	LHCb 3		Data Handling
Operation	Linear Collider Detector Project		Offline
Health, Safety & Environment	MERIT Experiment		Vertex Locator
External Collaborations	NA49-EXPERIMENT		Outer Tracker
Others	NA58-COMPASS		Trigger Tracker

File Explorer Path: Technical Coordination > Integration > CAD files

Procedure contents – Exchanging CAD files

- Storage of CAD files in EDMS
 - For integration purposes we need both the native CAD file & STEP file
- EDMS can also be used as a tool to share models

Storage in EDMS of:	Native CAD file	“transformed” cad file
3D CAD models	Native CAD file (or compressed folder) uploaded in EDMS with maximum size of 480 MB.	STEP version of the 3D model (compressed if needed) uploaded in EDMS with maximum size of 480 MB.
2D CAD drawings	Design, manufacturing and installation 2D drawings can also be uploaded in EDMS.	The 2D CAD drawings should also be available in the PDF format.

Conclusion

- Available documents:
 - Envelope and clearance definition (EDMS # [386061](#))
 - LHCb coordinate system (EDMS # [372642](#))
 - Detector geometry database (EDMS # [330689](#))
 - [Procedure](#) – exchange of CAD models within LHCb collaboration (# [1417892](#))
- Available 3D models as designed (surveying reports as-built)
- 3D models & 2D drawings can be accessed and stored in EDMS
- Questions: Olivier.Jamet@cern.ch (Joao.Carlos.Batista.Lopes@cern.ch)