DT-CO, Detector Construction & Operations
Mandate and Members

- Provide
  - Mechanical design and prototyping,
  - and small scale production of particle detectors.
- Support
  - Operation and maintenance of CERN experiments.
- Members
  - 2 eng, 12 tech, 3 mech,
    1 fellow, 1 technical student
    Total: 19

EP-DT-CO Detector Construction & Operations	
	Didier ANSTETT
	Jérôme BENDOTTI
	Philippe BOUVIER
	Kamil CICHY
	Neil DIXON
	Raphael DUMPS
	Antonio GONCALVES
	Pieter IJZERMANS
	Alexandros KOLIATOS
	Luc KOTTELAT
	Robert KRISTIC
	Gregory LAHU
	Yannick LESENECHAL
	Robert LOOS
Section leader	Antti ONNELA
Deputy section leader	Francisco PEREZ
	Didier PIEDIGROSSI
	Jaap VAN BEELEN
	Maurice VERGAIN

Current main projects and activities (18 in total)

Unit 1:	
Jérôme BENDOTTI	**ATLAS Micromegas** module 0 production; **Microchannel** R&D support; **Workshop** 166 supervision
Neil DIXON	**Composites** prototyping and thermal characterisation
Francisco PEREZ	**ATLAS Micromegas** module 0 production; **Microchannel** R&D support
Maurice VERGAIN	**ATLAS Micromegas** module 0 production; **Microchannel** R&D support
Antonio GONCALVES	**NA62** maintenance and installations
Raphael DUMPS	**LHCb VELO** upgrade and **cooling** (CO2, microchannel); **Scintillators**
Robert KRISTIC	**LHCb SciFi** fibre production; **CLOUD** maintenance
Didier PIEDIGROSSI	**LHCb RICH** maintenance and upgrade and **TORCH** prototyping
Robert LOOS	**AEgIS** improvements; **CMS BRIL** upgrade and maintenance support
Kamil CICHY (fellow, on CMS quota)	**CMS Tracker** upgrade, design of support structures
Alexandros KOLIATOS (Tech st., on CMS)	**CMS Tracker** upgrade, design of modules
Luc KOTTELAT	**CMS Tracker** upgrade prototyping; **TOTEM** maintenance support
Antti ONNELA	**CMS Tracker** upgrade mechanics coordinator; **CLOUD** technical and resource coordination and safety
Unit 2 - ***ALICE, supervision by Corrado GARGIULO:***	
Didier ANSTETT	**ALICE P2** pit support, new storage and cleanrooms, and ALICE upgrades support
Philippe BOUVIER	**ALICE P2** pit support, new storage and cleanrooms, and ALICE upgrades support
Pieter IJZERMANS	**ALICE ITS** upgrade construction
Gregory LAHU	**ALICE ITS** upgrade construction; **Workshop** support to other DT projects
Yannick LESENECHAL	**ALICE** upgrade (**TPC** de/ re-installation and **ITS** construction), storage and cleanroom preparations
Jaap VAN BEELEN	**ALICE ITS** upgrade construction

2016 main results and future outlook

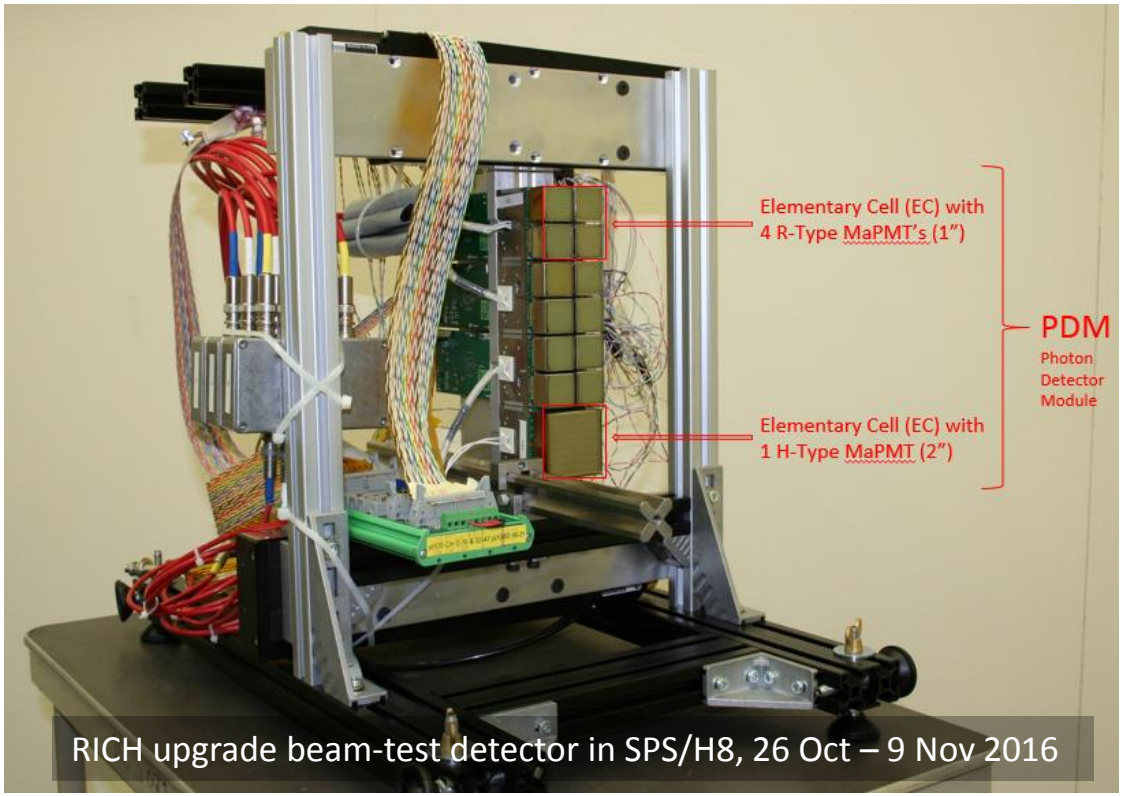
ATLAS Micromegas

- Main commitments close to completion
  - Module 0 soon ready (all parts made, final assembly and testing phase started)
  - Technology transfer to 2 production sites (Dubna, Thessaloniki) on-going, now fully equipped for panels production (tools and technical procedures).
  - Help in procurement of components for Module 0.5 production in the 2 production sites.

- Our commitment to Micromegas project terminates in 2016.
  DT experts remain available for consulting.

LHCb RICH and TORCH

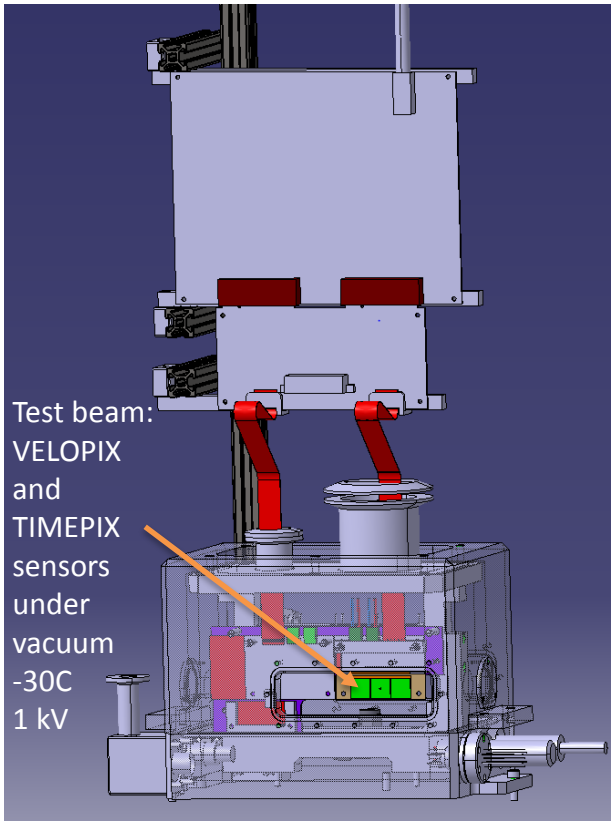
- RICH maintenance and operation
  - Hybrid Photo-Diode reprocessing and replacements. Maintenance of HV, LV, cooling.
  - Maintenance activities during EYETS 2016-2017 at LHCb pit.
- RICH upgrade and TORCH
  - Lab and beam-test support.
  - To be further pursued in 2017.

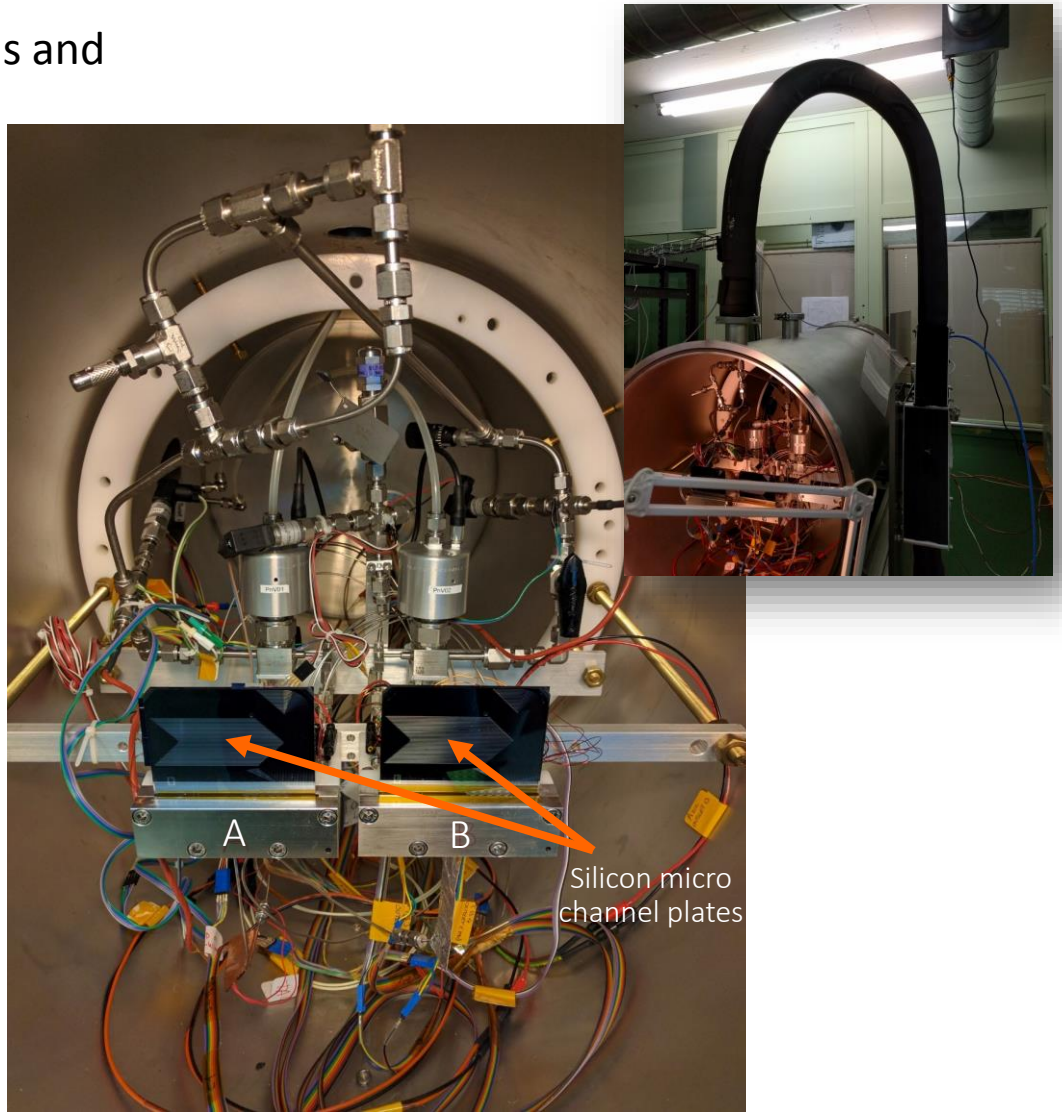


RICH upgrade beam-test detector in SPS/H8, 26 Oct – 9 Nov 2016

LHCb VELO upgrade

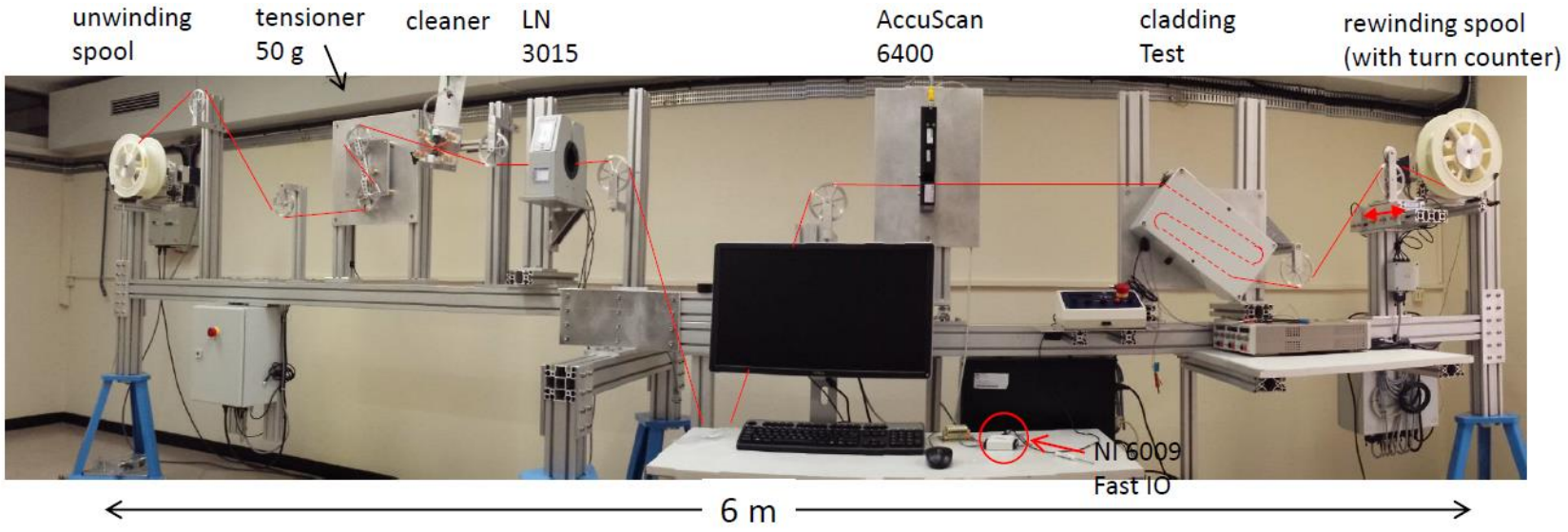
- Setup for developing safety systems and pressure drop measurements.
- Test beam setup.





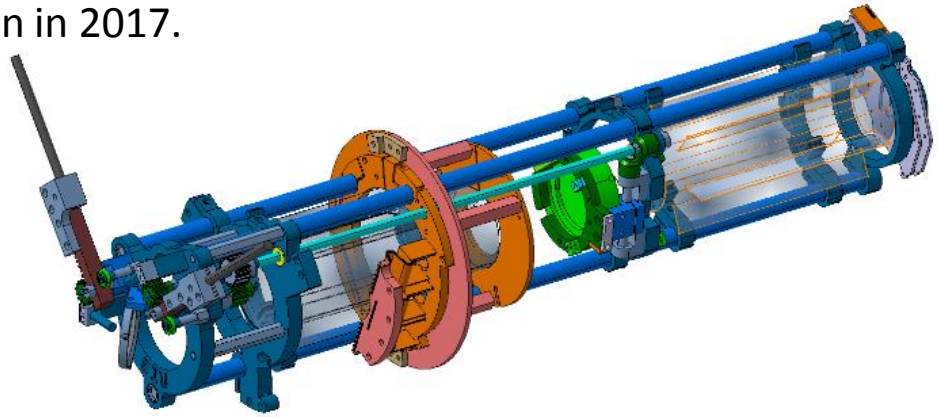
LHCb SciFi

- Fibre quality control
  - Help to completion of the Fibre scanning machine and lab
  - Participation to the fibre quality control work, done in two shifts from 7 am to 20 pm.
  - Fibre production phase spans to 2017 (10'000 km of fibres needed!)



AEgIS CMS BRIL

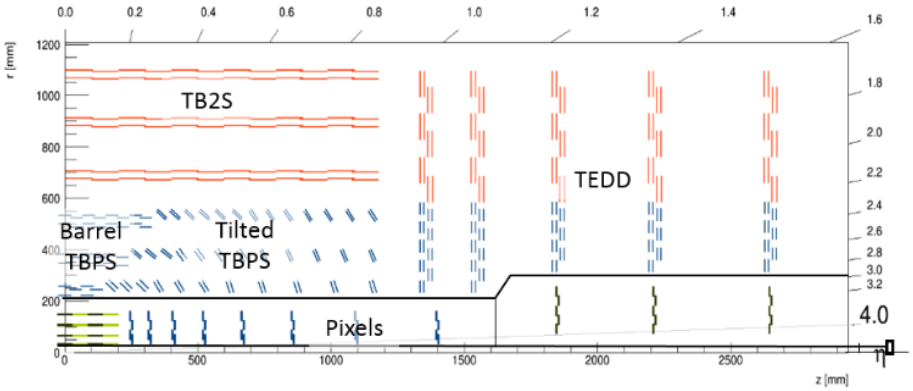
- AEgIS improvements
  - Complete redesign of the bellow region (shown here: Entrance Instrumentation Unit which holds mechanisms inside the bellow).
  - Now in production, installation in 2017.

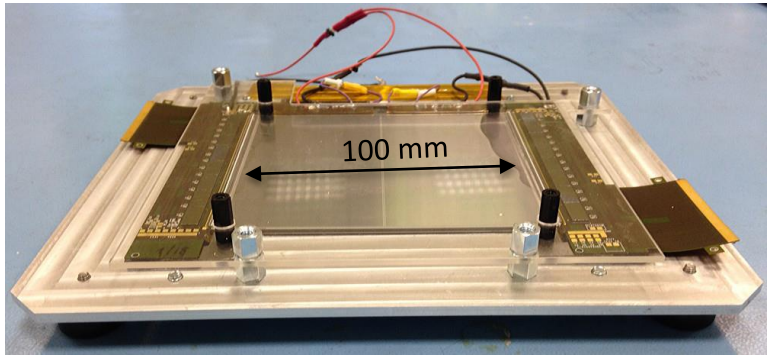


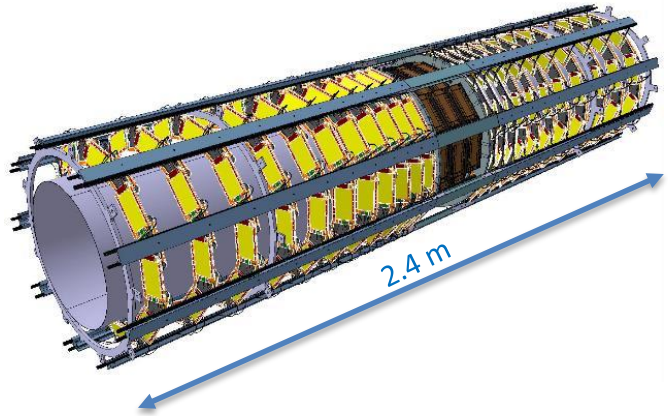
- CMS BRIL (Beam Radiation Instrumentation and Luminosity measurement)
  - Supports for sapphire and diamond sensors used in BRIL test beam (July 2016).
  - Design of the BCM (Beam Condition Monitor) version 2 with possibility to use both diamond and sapphire sensors on the same board. Now in production, installation in 1st quarter of 2017.
  - Removal and re-installation of the BRIL equipment in 2016-2017 EYETS to allow installation of the CMS Phase 1 Pixel detector.

CMS Tracker Upgrade

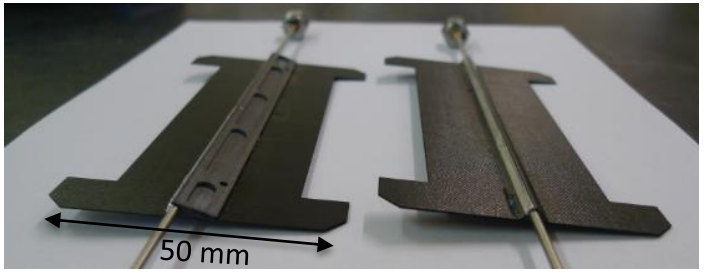
- Integration design
- Module design and prototyping
- Tilted TBPS design and prototyping







- Technical Design Report by May 2017
- Define and agree DT's long-term role and resources in the Tracker Upgrade (workpackage being prepared).

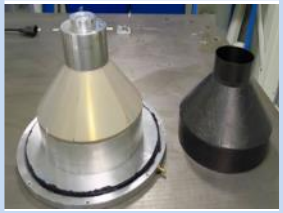


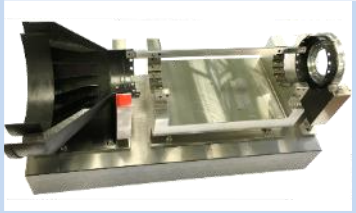
CLOUD

- Top platform extension and move of UV laser and lamps to top of CLOUD.
- Preparations and support for CLOUD11 run (Oct – Nov 2016)

- 2017-2018: Maintenance, minor modifications and one beam run/year.
- LS2 2019-2020: East Hall renovation, enlarge CLOUD beam-area. Runs without beam.

ALICE ITS (Inner Tracking System) upgrade



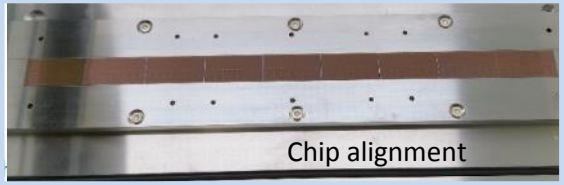

OB coldplate

IB barrel

IB spaceframe

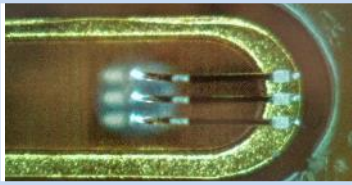
- Interconnection Chip to FPC and cold-plate gluing
- Spaceframe and cold-plate pre-series production advanced
- Barrel structures prototypes produced and assembled
- Series production next

OB stave

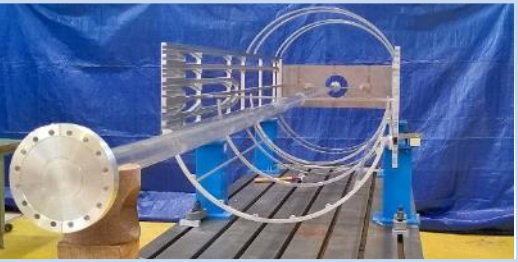



Chip alignment

FPC

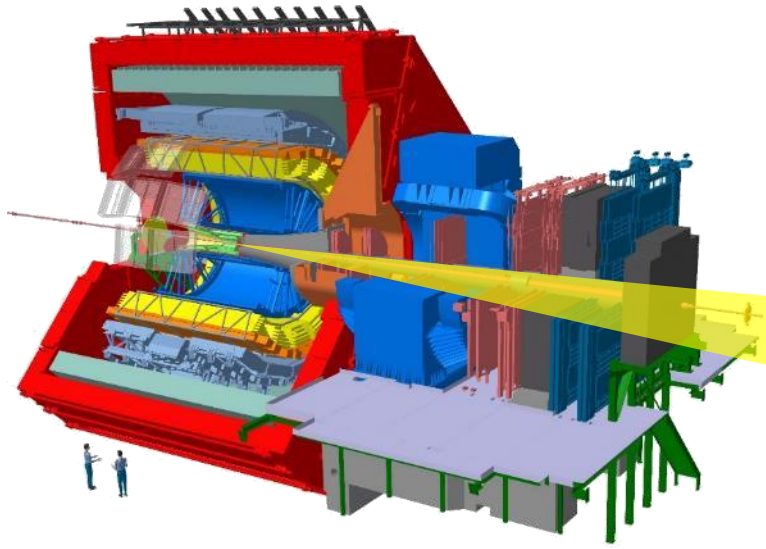


ALICE LS2 Upgrade preparation

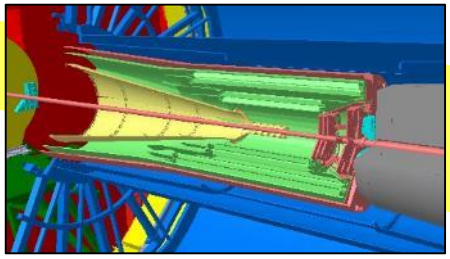


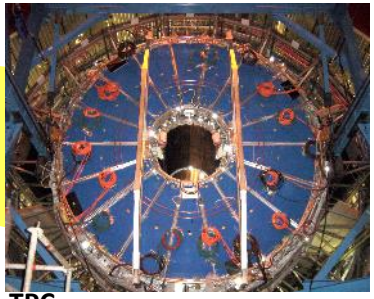


LS2 Central Detector and Beam pipe mockup



- Central Detectors, ITS, MFT, FIT installation mock-up
- TPC de/installation procedure development
- LS2 installation jig and tools under qualification
- Clean rooms preparation for LS2 Upgrade ongoing


Central detector


TPC


TPC Jiig


qualification



TPC rework


clean room preparation

Current / next areas of development

- Improvements to CAD/CAM programming of our CNC machines.
  - In alignment with software choice (WorkNC) done in the DT Engineering Office.
- Further develop our competencies on the composites and adhesives, in particular manufacturing, material and product qualification.
- Upgrade and modernization of equipment (not specific only to CO section), e.g.:
  - 3D printer – being procured now
  - Automatic saw – being procured now
  - Microscope for quality control – under study and discussion, not sure.
  - In mid-term: CNC milling machine
- Improvements to material and equipment storages.