Welcome to the December 2020 Beam Gas Curtain Collaboration Meeting!

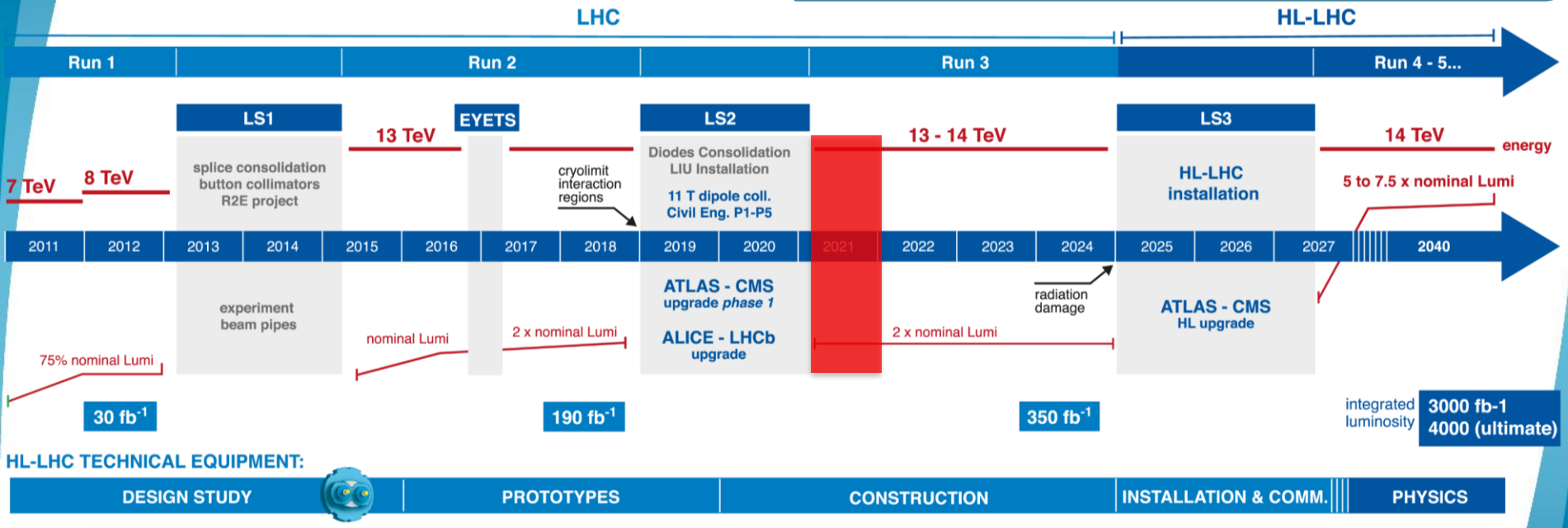
Status of the HL-LHC Project

Rhodri Jones

BGC Collaboration Meeting – 10th December 2020

LHC / HL-LHC Plan

After November 2019 retreat: CERN has decided, upon request of LHC Experiments Collaborations, to shift LS3 by 1 year, starting in 2025.

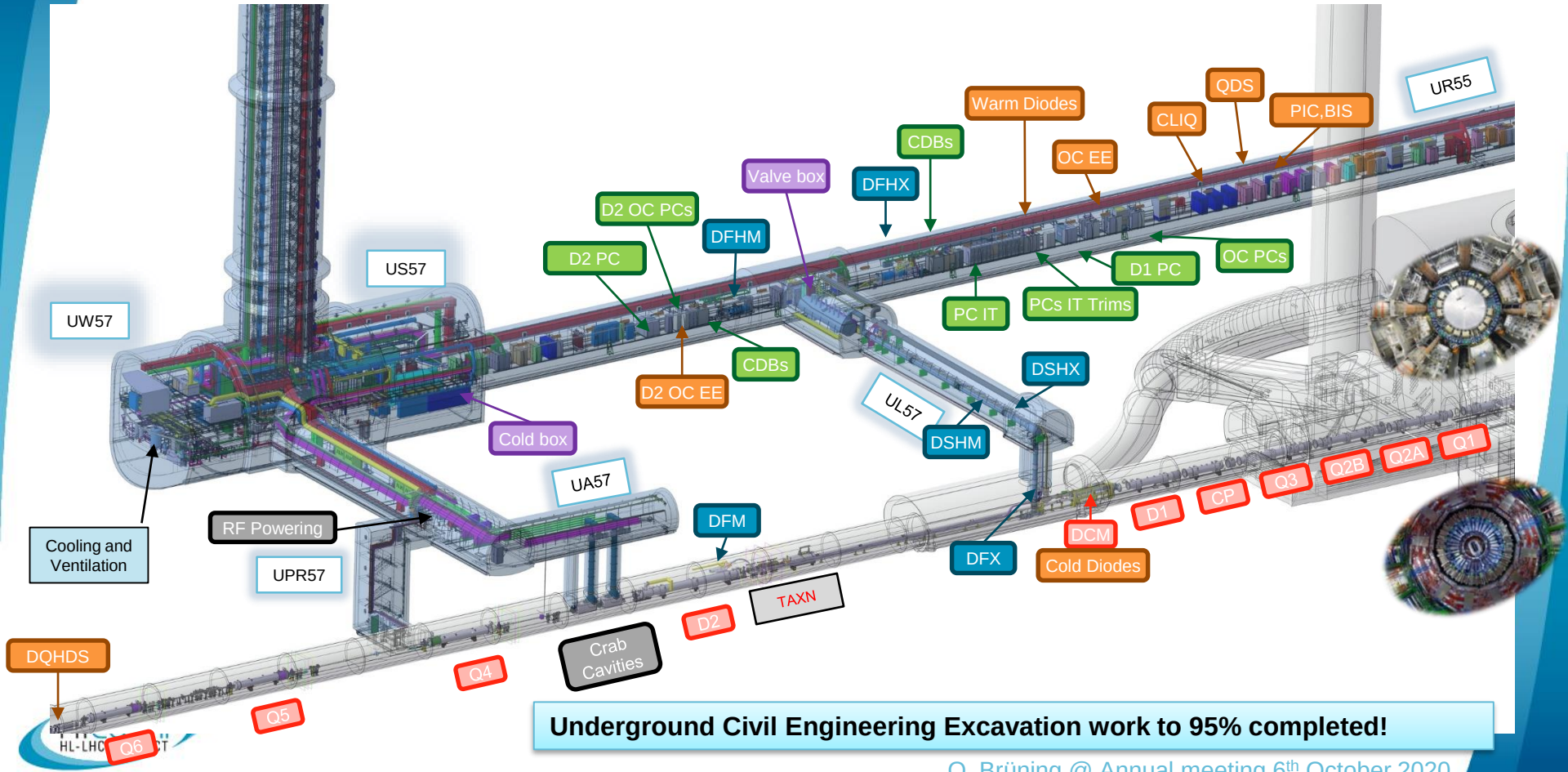


HL-LHC TECHNICAL EQUIPMENT:

DESIGN STUDY	PROTOTYPES	CONSTRUCTION	INSTALLATION & COMM.	PHYSICS

LS2 extended until start of 2022 driven by COVID related delays in Experimental collaborations
However LHC machine works completed & cooldown underway
2021 devoted to magnet training to 7TeV

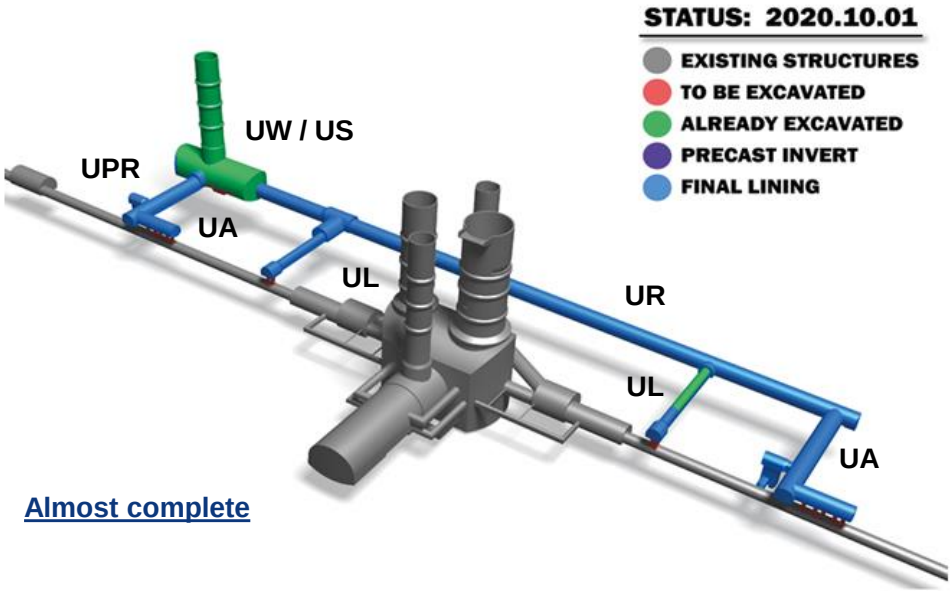
HL-LHC 1R and 5R Integration being Finalised



Underground Civil Engineering Excavation work to 95% completed!

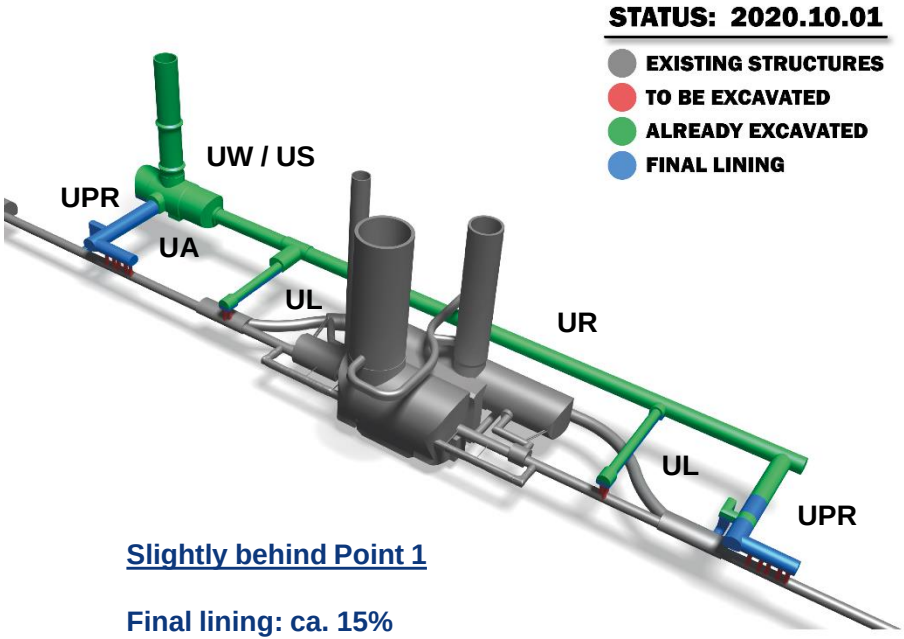
Underground Civil Engineering work essentially finished!

Progress at Point 1



Almost complete

Progress at Point 5



Slightly behind Point 1

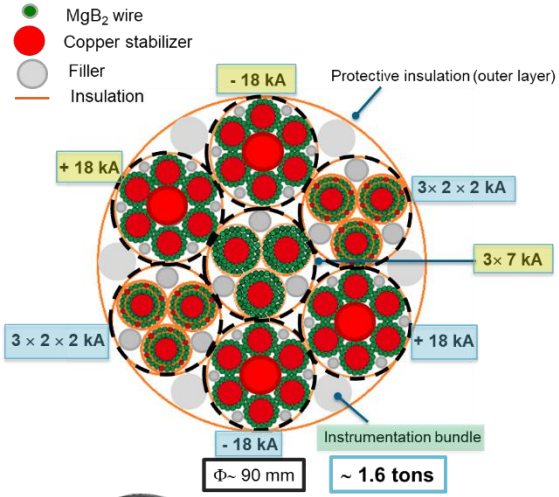
Final lining: ca. 15%

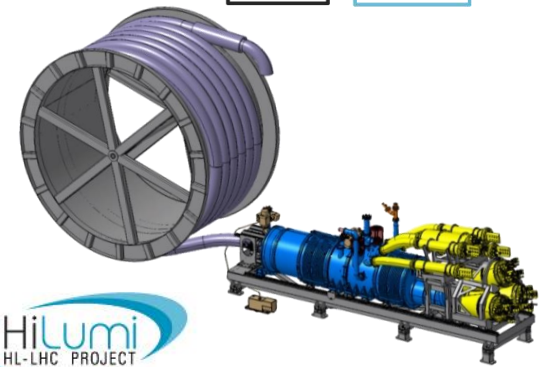
Point 1 Underground Works – UR15

Point 1 Underground Works – UA17

Point 1 Surface Works

Other major progress: Test of the Superconducting Link





Other major progress: Test of the first CERN Quadrupole Prototype (MQXFB)

Inner triplet prototype MXQFB (coil length: 7.2 m) was tested @ SM18

<u>Failed to reach nominal current</u>
<u>But Nonetheless some positive results!</u>

- First CERN Prototype
- First Horizontal MQXF cold-test
- First 7m long magnet test
- Reached 6.4 TeV equivalent without quench
- QLIQ worked as planned
- Stainless Steel shell around aluminum

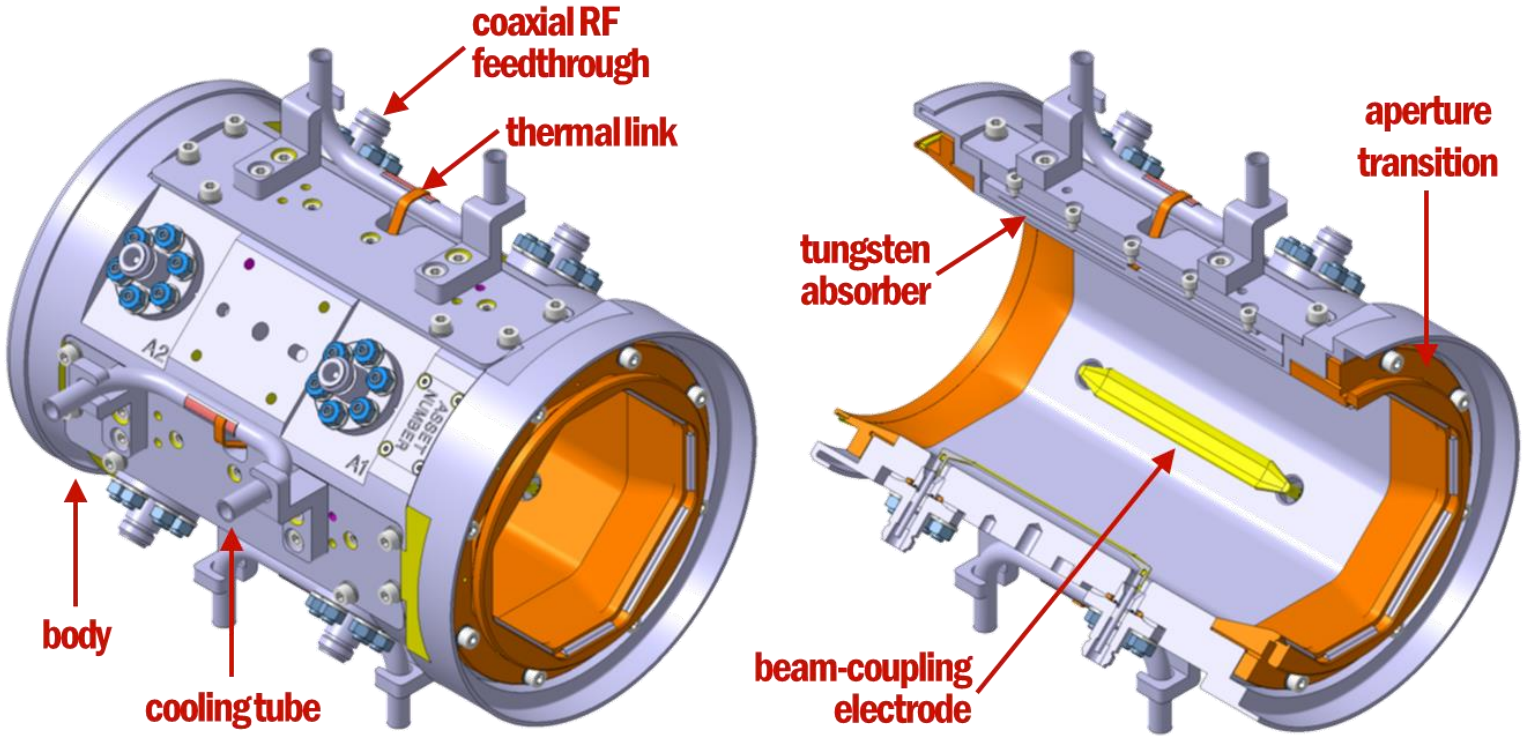
➔ All main concepts have been proven up to 15.15 kA!

➔ Limitation only in one coil and in one location [CERN plans 5 coils / magnet]

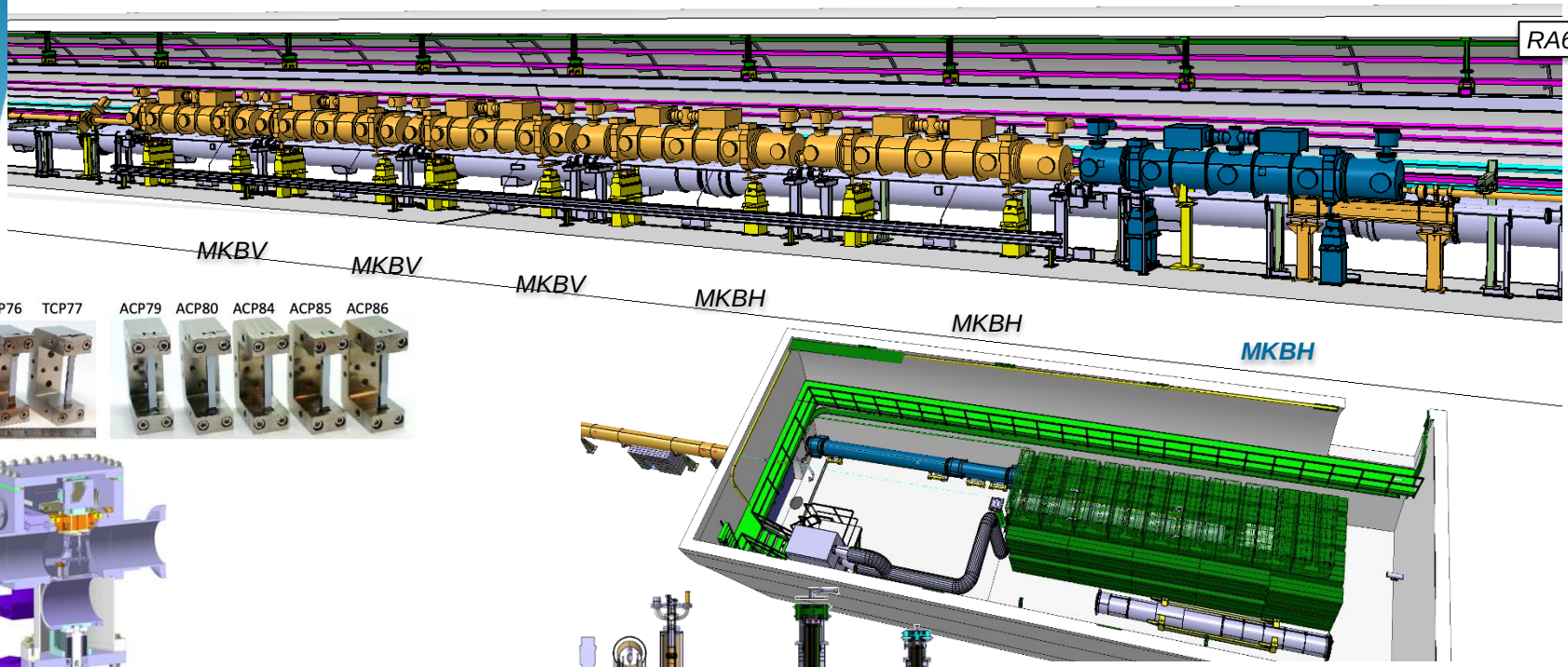
➔ Review assembly before 2nd prototype magnet construction

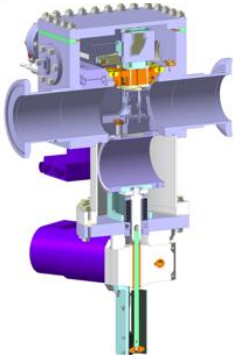
HiLumi HL-LHC PROJECT

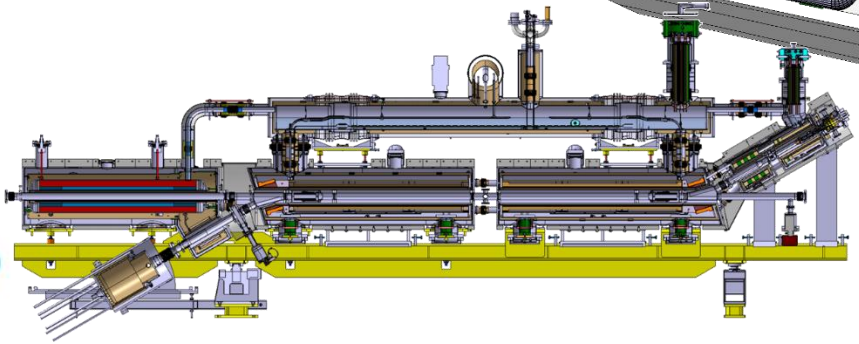
Other major progress: Cryogenic BPM Design Complete



Added to the Scope



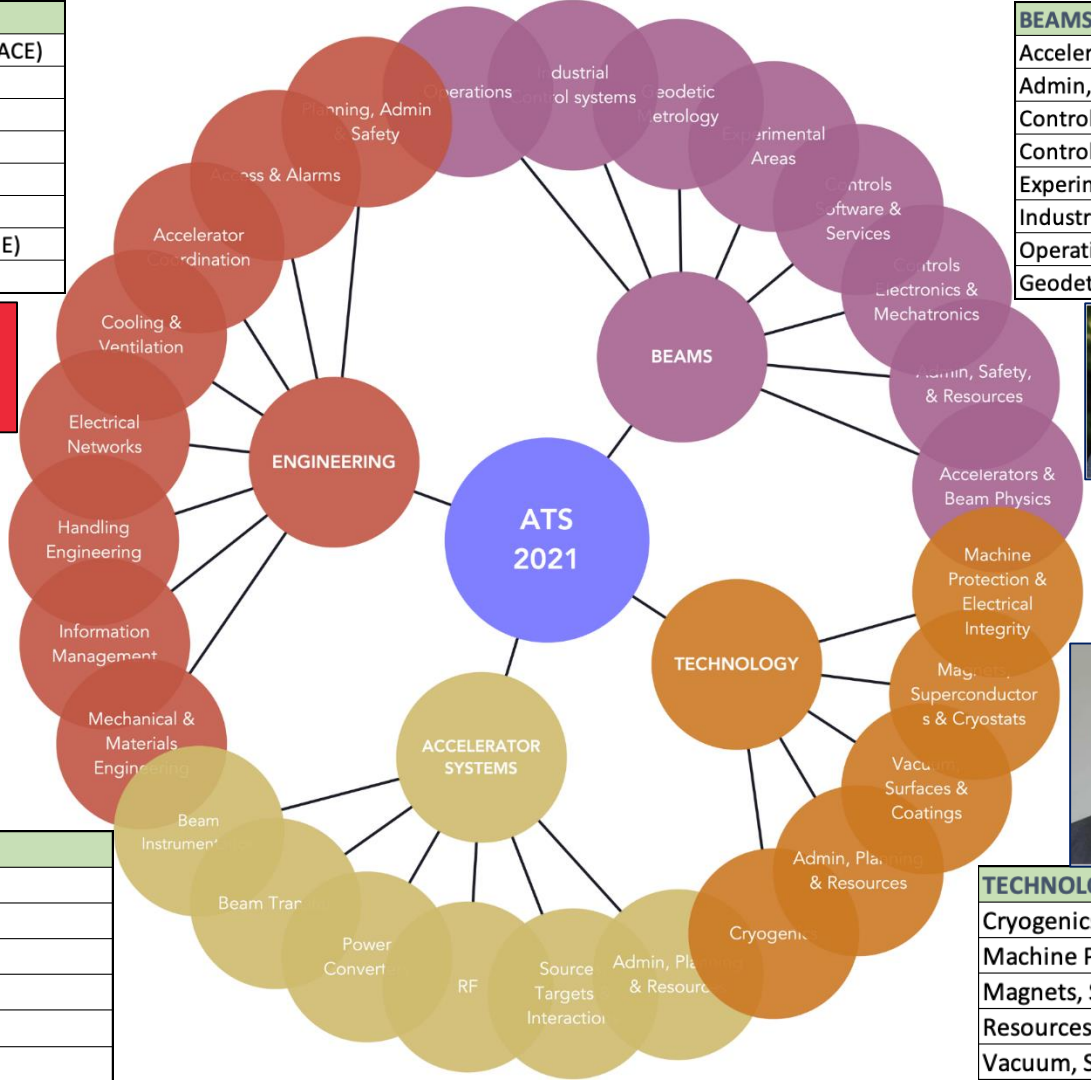




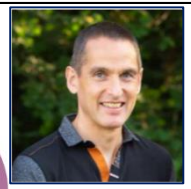
HiLumi HL-LHC PROJECT

ENGINEERING (EN)
Accelerator Coordination & Engineering (ACE)
Access & Alarms (AA)
Cooling & Ventilation (CV)
Electrical Networks (EL)
Handling Engineering (HE)
Information Management (IM)
Mechanical & Materials Engineering (MME)
Planning, Admin & Safety (PAS)

ACCELERATOR SYSTEMS (SY)
Admin, Planning and Resources (APR)
Beam Transfer (ABT)
Beam Instrumentation (BI)
Electrical Power Converters (EPC)
Radio Frequency (RF)
Sources, Targets & Interactions (STI)



BEAMS (BE)
Accelerators & Beam Physics (ABP)
Admin, Safety & Resources (ASR)
Controls Electronics & Mechatronics (CEM)
Controls Software & Services (CSS)
Experimental Areas (EA)
Industrial Control Systems (ICS)
Operations (OP)
Geodetic Metrology (GM)



TECHNOLOGY (TE)
Cryogenics (CRG)
Machine Protection & Electrical Integrity (MPE)
Magnets, Superconductors & Cryostats (MSC)
Resources, Apprentices & Safety (RAS)
Vacuum, Surfaces & Coatings (VSC)

As this is my last meeting in charge of WP13 I would like to take this opportunity to thank you for all the hard work put into this collaboration

It has become a model for other collaborations, with the results to date impressive and pointing to a bright future for such a diagnostic in the HL-LHC

Enjoy the workshop!