



Integration of the BPM in the cryostat

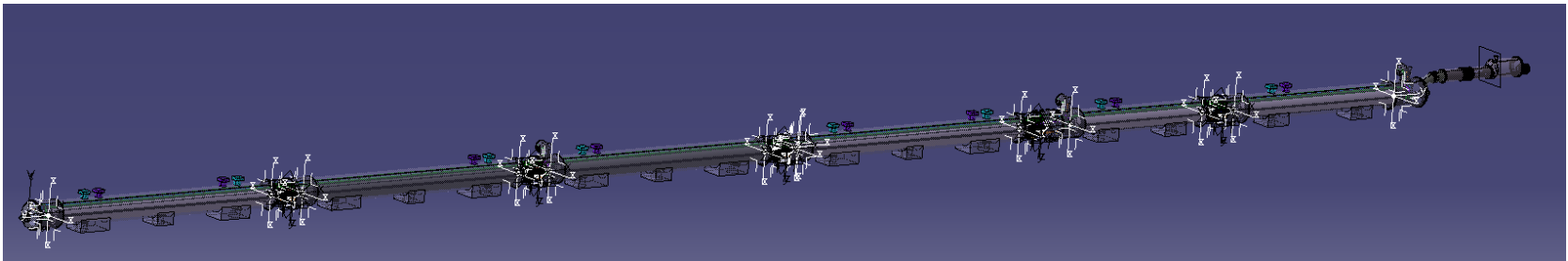
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BPM Review, 17th May 2018

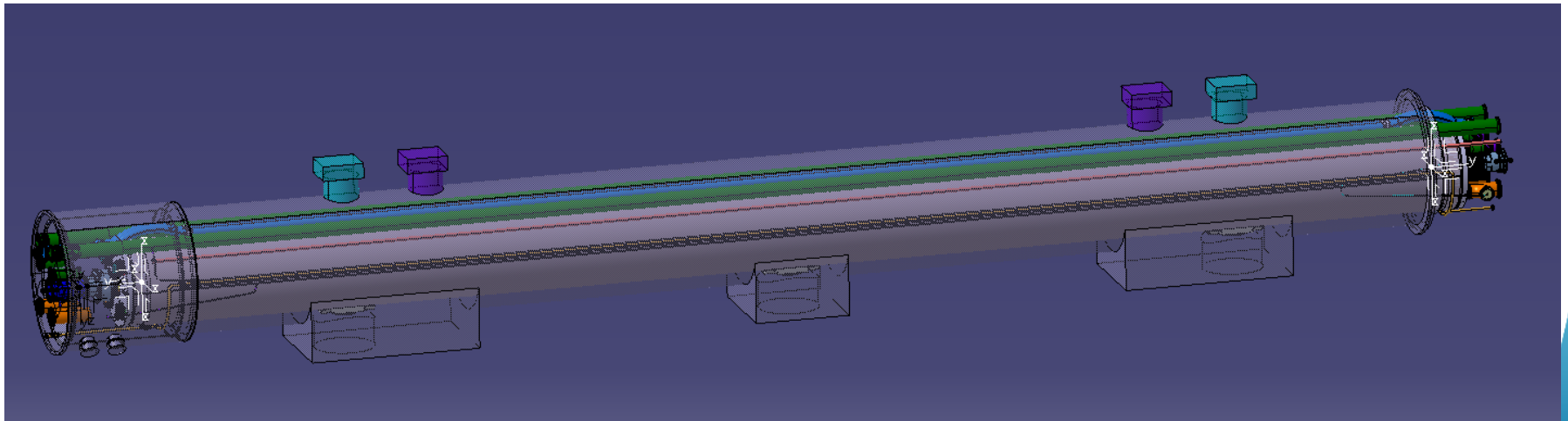
Integration inside the cryostat

- Integration model of 5R: ST0726478_01
- 5L being prepared with string test in mind
- The reference for number and position of BPM's is the integration layouts from WP15
- BPM is always on IP side
- Catia model very simplified in the standard section of the cryostats but with detailed pipe routing and diameters. It is meant to support design of components located at the end of the cold masses.



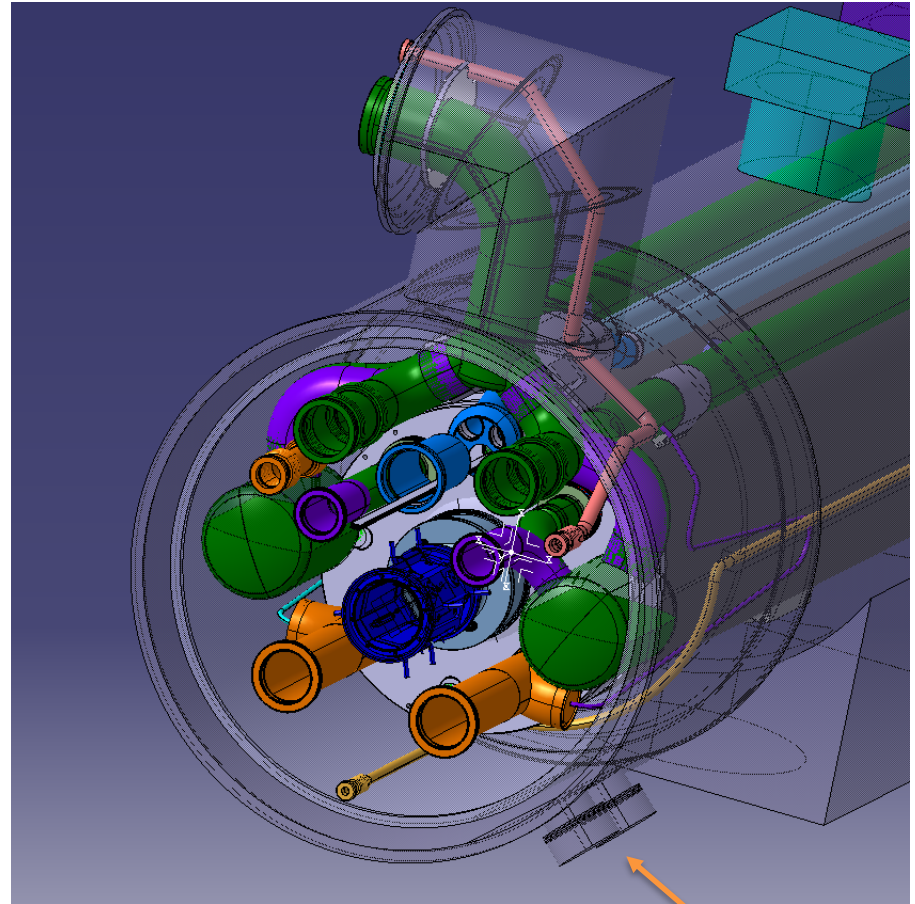
The cryostat

- Composed of a standard section and a service module as LHC SSS
- The service module has larger diameter to accommodate phase separators, piping manifolds, BPM cables, pumping port, etc.
- Service module assembled after insertion of the cold mass into the standard section. In some cases it includes a jumper to the cryogenic distribution line.
- US magnets: delivered cryostated and cold tested in a standard section configuration with pipe extensions. Service modules assembled by CERN.



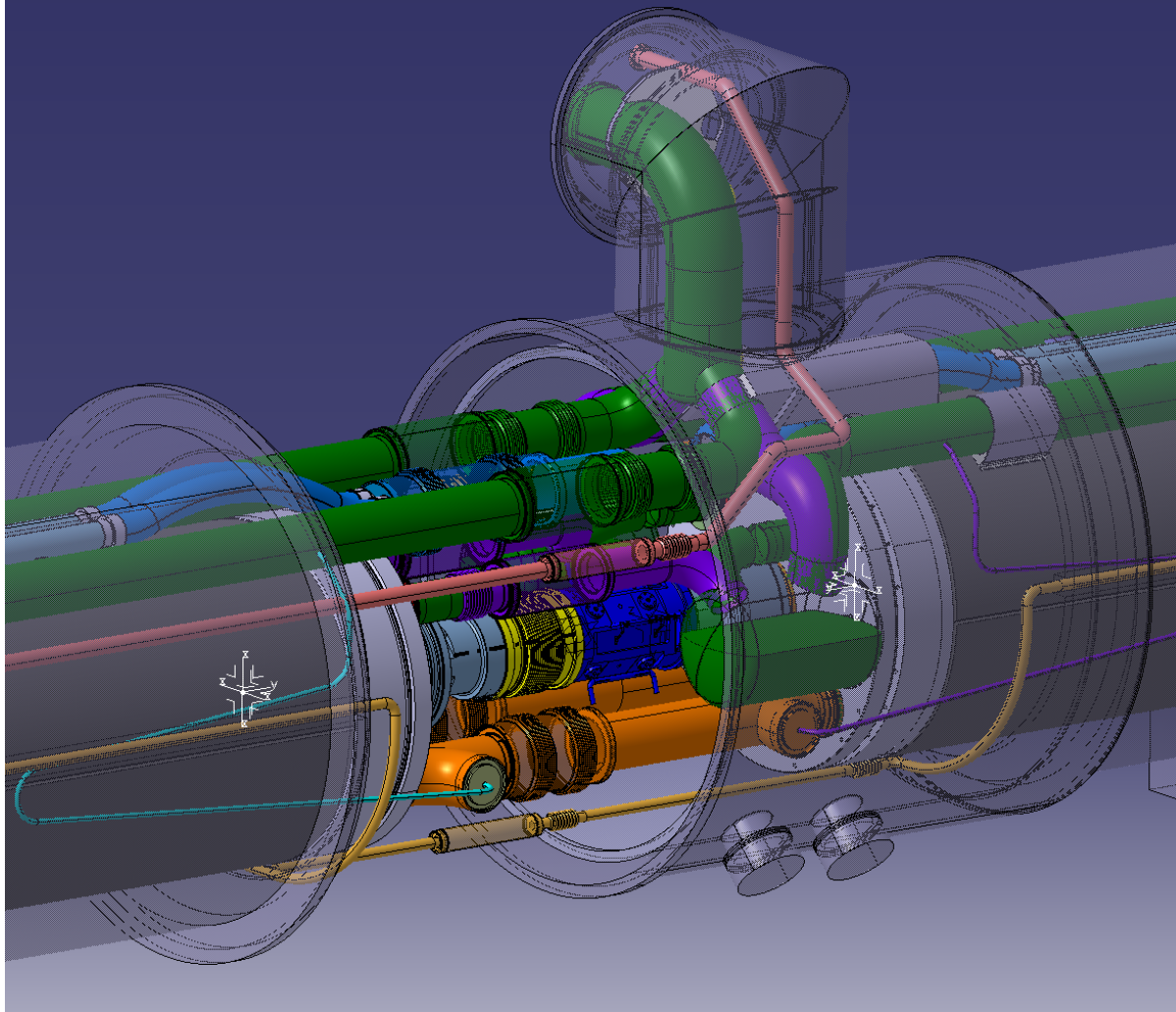
Constraints

- LHC SSS: beamscreen and BPM installed after service module assembly
- Very tight integration: two phase separators, larger pumping lines, larger beamscreen and BPM, same cryostat diameter
- Sequence of assembly can be discussed



BPM Cable
feedthroughs

Interconnect



Assembly sequence

- LHC SSS:
 - Straight section
 - Service module
 - Cold testing
 - Stripping
 - Fiducialization
 - Beamscreen
 - BPM
- An alternative for HL-LHC triplet
 - Straight section
 - Cold testing
 - Stripping
 - Fiducialization
 - Beamscreen
 - BPM
 - Service module
 - + More accessibility to the beam line and space for welding machines
 - More transports between buildings
 - Significant amount of work done after cold testing
 - Additional pressure test

How to proceed

- Integration models available in smarteam, managed by Cedric Eymin
- BPM and beam line designers can work in the context of this integration models
- Designs and assembly sequence are then given to Cedric for validation in the integration model
- Approval of interfaces with cryostat at Cryostat Interface Meetings