

High Luminosity LHC

HL-LHC Organization: Now and post HiLumi options for discussion

Oliver Brüning



The HiLumi LHC Design Study is included in the High Luminosity LHC project and is partly funded by the European Commission within the Framework Programme 7 Capacities Specific Programme, Grant Agreement 284404.



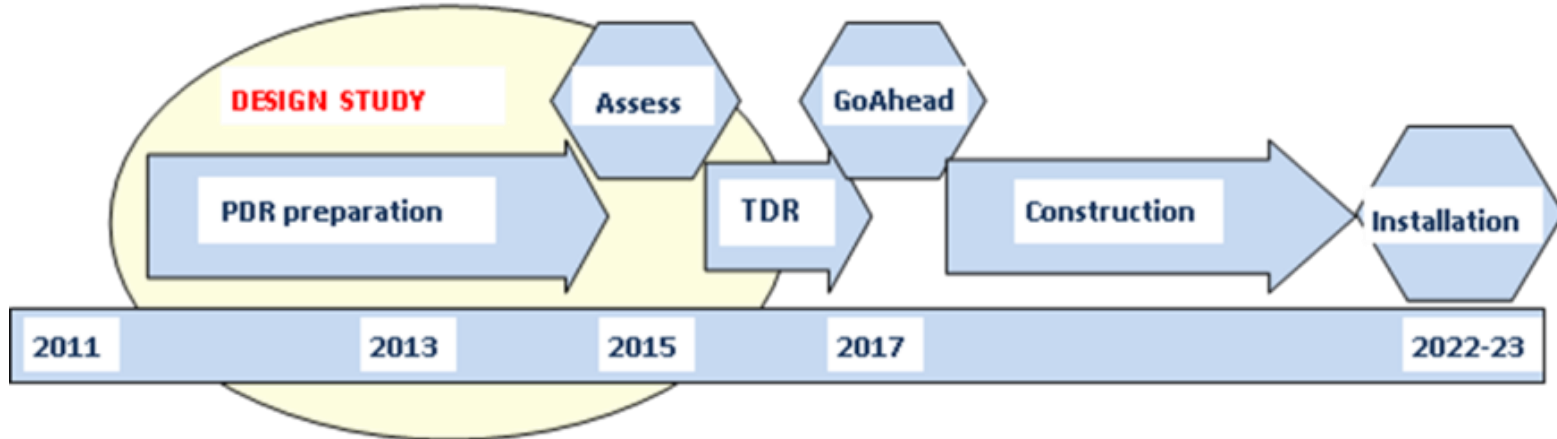
HL-LHC Organization: Now and post HiLumi

- Meant as a trigger for discussion
 - ➔ Summary of current organization
 - ➔ List of general questions
 - ➔ Presentation of some options for discussion
- Final organization needs to be settled after this meeting but in time for the end of the EU funded Design Study
 - ➔ Requires further discussion with CERN management
 - ➔ Requires input from all HL-LHC partners (to be triggered here but to be continued and collected after this meeting)
 - ➔ end of the year?

HiLumi Design Study:

**PDR (Preliminary Design Report) in 2014;
TDR (Technical Design Report) by 2015**

HL-LHC Installation : 2018-19 (LS2) and mainly in 2023-24 (LS3)



- 19 Work Packages with 6 WP under the EU funded HiLumi Design Study
- Integration started with vigor as well as Preliminary Technical Specifications and Quality Assurance
- **Several upgrades already in LS2: e.g. Cryo, SC link P7, Cryo-Collimators with 11 T , MoGr Coll's)**
- Proof of main hardware by 2016
- Final Prototypes to be tested by 2017-2018 (IT, D1, D2, LRBBwire, CC)
- **Start construction 2017/18 for IT, CC, other main hardware**
- **IT String test (integration) in 2019-20; Main Installation 2023-24**
- Though schedule, but – based on LHC experience – feasible; 6 months shift of LS2 and 1 y shift of LS3 of the new LHC schedule ease the task.
- **Cost: 750 MCHF (Material, CERN accounting)**



High Luminosity LHC Participants today:



Science & Technology Facilities Council



UNIVERSITY OF LIVERPOOL

LANCASTER UNIVERSITY



UNIVERSITY OF Southampton



Ciemat

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas



Istituto Nazionale di Fisica Nucleare



KEK



Project Governance: Managerial bodies

HL-LHC Collaboration Board



Top-level body for the HiLumi Collaboration
Has representatives of all HiLumi Partners
Meets at least once per year

HL-LHC Coordination Group



Forum for setting common and coherent set of goals, parameters & plans for the HL-LHC project,
Forum for official information transfer
Chaired by Project Leader, representatives of all Experiments (spokes persons); LIU, Research and A&T Directors; HL-LHC Technical coordinator

Project Coordination Office



Meets weekly:
PL and DPL, Technical Coordinator, Safety Officer, Budget and Resource Manager, Outreach, FP7 HiLumi Admin Manager, Integration Officer

HL-LHC Steering Committee



Forum for setting information exchange between the different Work Packages (1 / month)
All HL-LHC WP coordinators & USLARP represent.

Project Governance: Technical Bodies

HL-LHC TC



Defines the technical baseline of the project.
→ Technical Specification of the individual HL-LHC Components & Layout and Integration
→ Detailed technical discussions

HL-LHC PLC



The PLC establishes and maintains a coherent and dynamic list of parameters and the associated hardware lay-out for the HL-LHC
→ Official approval of Layout and Parameters

LMC



The central CERN LHC Committee:
Assures transfer of operational experience from LHC to the HL-LHC project and assures that LHC upgrades and modifications remain Compatible with the HL-LHC requirements.

C-MAC

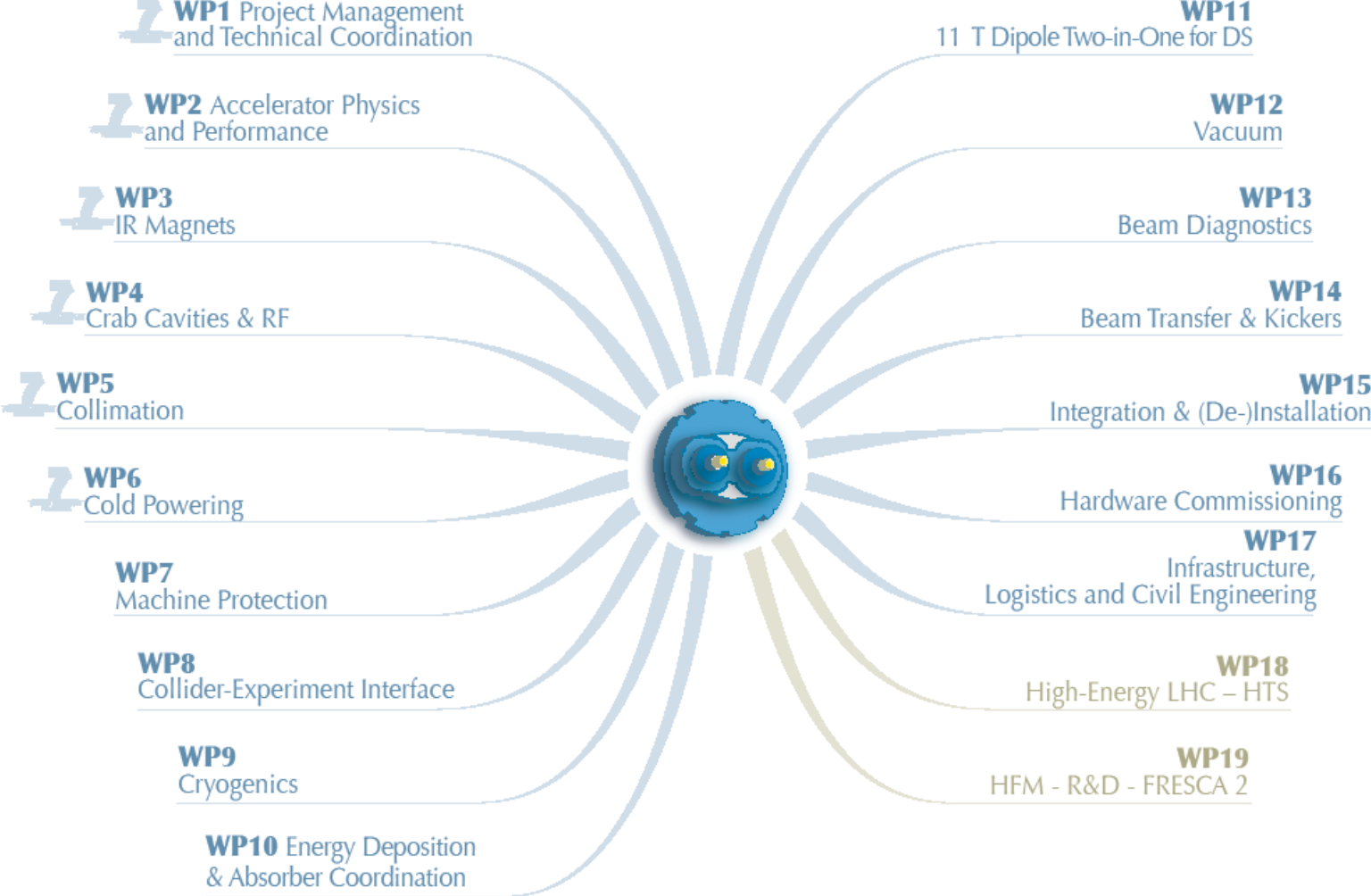


External Scientific Advisory board.
Looks after all of CERN's accelerator facilities.

Project Governance: Current Organization



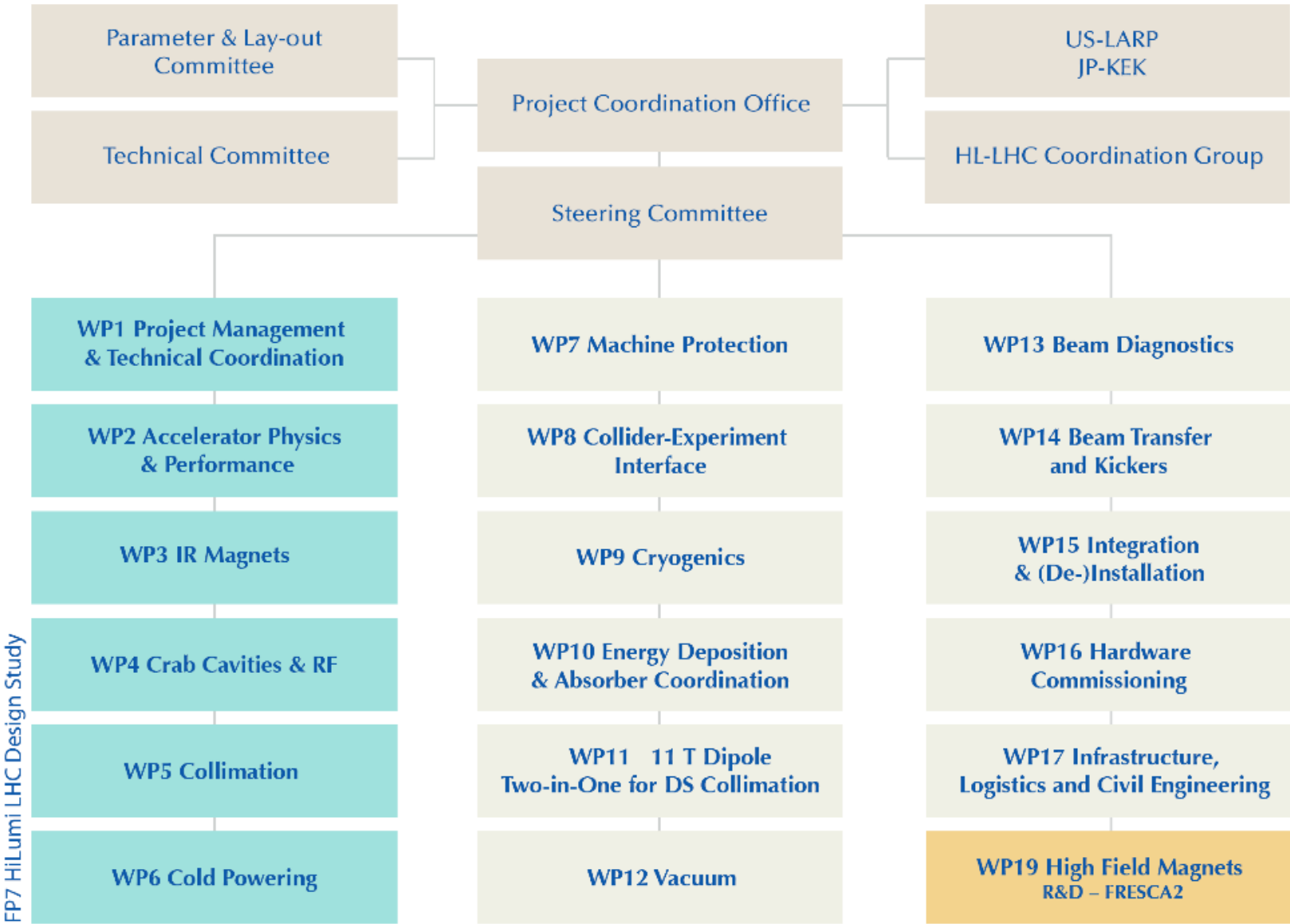
HL-LHC Work Packages:



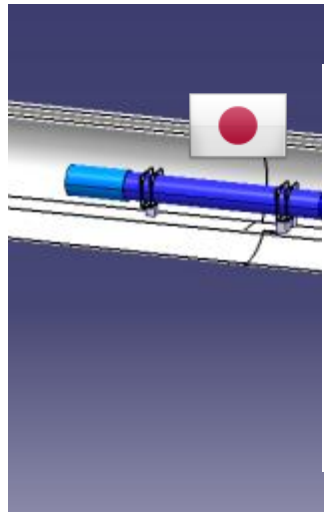
19 Work packages with 6 WP under the HiLumi organization



High Luminosity WP Coordination:

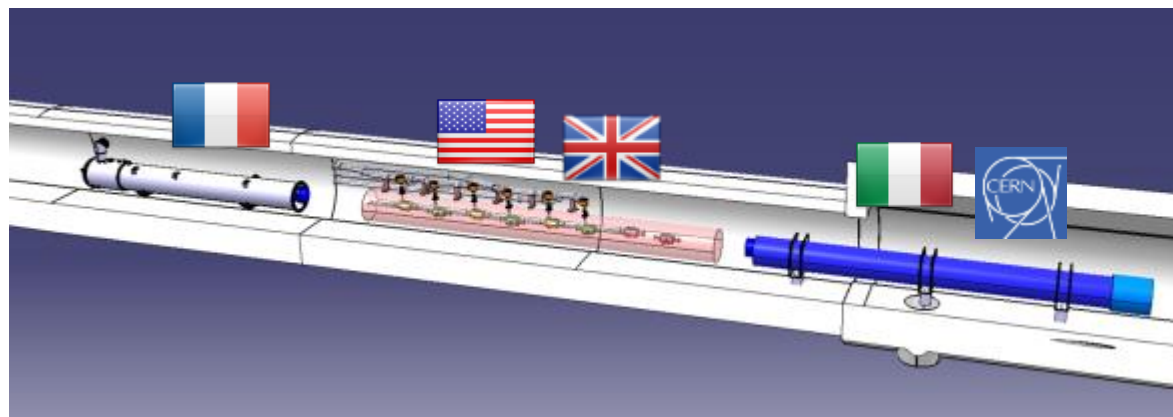
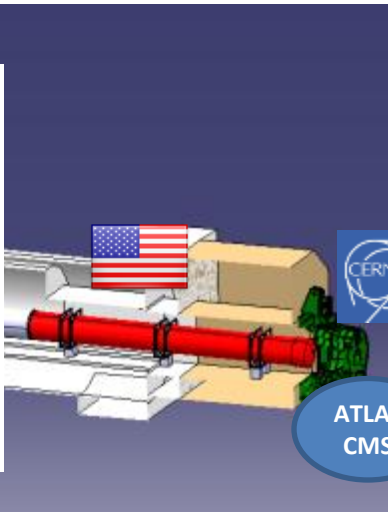


In-kind contribution and Collaboration for HW design and prototypes



HL-LHC is in the process of preparing a list of items for potential additional in-kind Contributions

e.g.: hollow electron lens, TANX, etc.



Q1-Q3 : R&D, Design, Prototypes and in-kind **USA**
D1 : R&D, Design, Prototypes and in-kind **JP**
MCBX : Design and Prototype **ES**
HO Correctors: Design and Prototypes **IT**
Q4 : Design and Prototype **FR**

CC : R&D, Design and in-kind **USA**

CC : R&D and Design **UK**

Post Design Study Questions I:

- The HiLumi Design Study will evolve from a Design Study into:
 1. Hardware Validation project
 2. Construction project
 3. Installation project
 4. Commissioning preparation project
- ➔ Do we need the PLC and TC once the HL-LHC TDR is finished?
 - ➔ Probably not in the current forms.
 - ➔ But we certainly need a Technical Coordination Committee for following up on the technical validations (e.g. CC in the SPS and Triplet String test) and installation preparation.

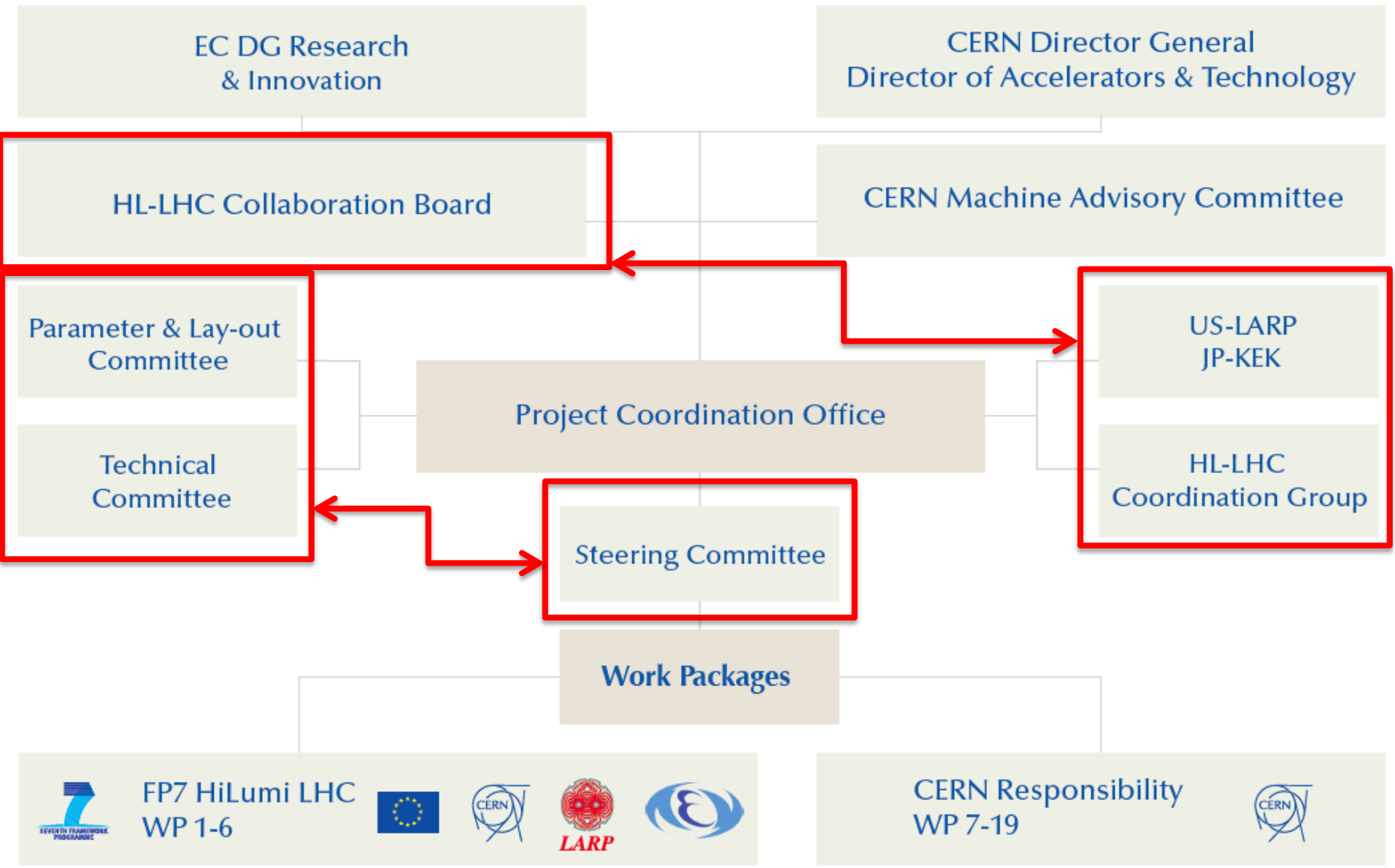
Post Design Study Questions II:

- Do we still need a Collaboration Board?
 - ➔ Probably Yes!
 - ➔ But composition should be re-assessed based on the in-kind contributions and involvement in the post FP7 HL-LHC studies.
- Do we still need a Steering Committee once TDR has been delivered?
 - ➔ Yes, but Probably not in the current form!
 - ➔ Technical Coordination Committee!
- Do we still need a Coordination Group once the HL-LHC has delivered the TDR and once the schedule has been fixed?

Post Design Study Questions III:

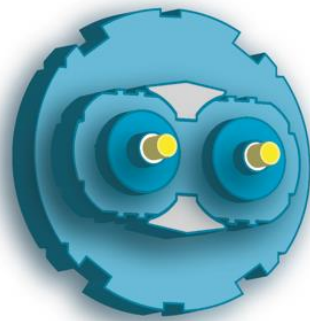
- Coordination with the LHC Injector Upgrade Project LIU:
 - ➔ So far this is mainly done via the annual Chamonix meetings and dedicated workshops (e.g. RLIUP) and the related preparations
 - ➔ Do we need a more formal and regular coordination between the HL-LHC and the LIU projects? ➔ Probably Yes!
- The HL-LHC project will look after several 100s MCHF worth of equipment:
 - ➔ Do we need a closer integration of the project into the CERN departmental structures? ➔ Probably Yes!

Project Governance during FP7 DS:



Project Governance: Proposal for Discussion





High Luminosity LHC

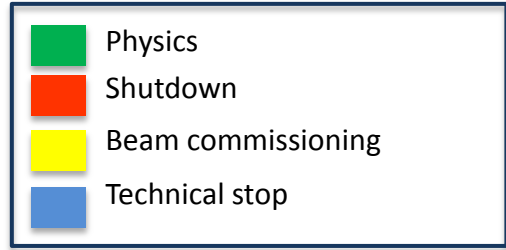


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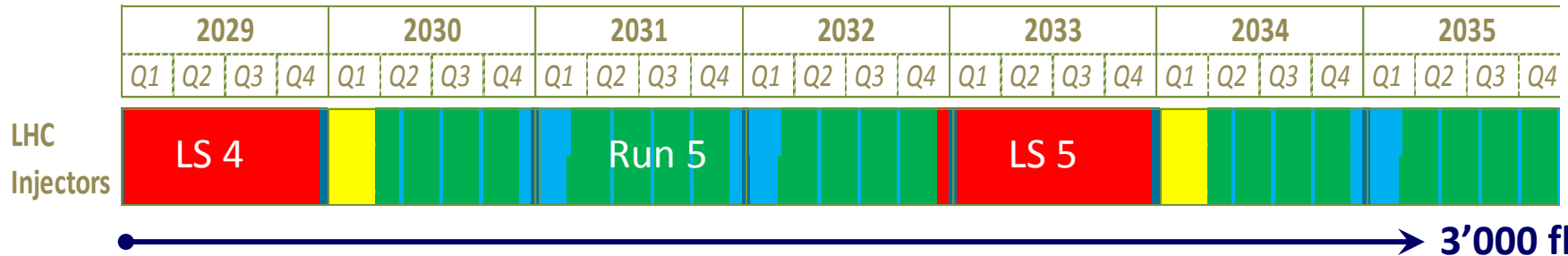
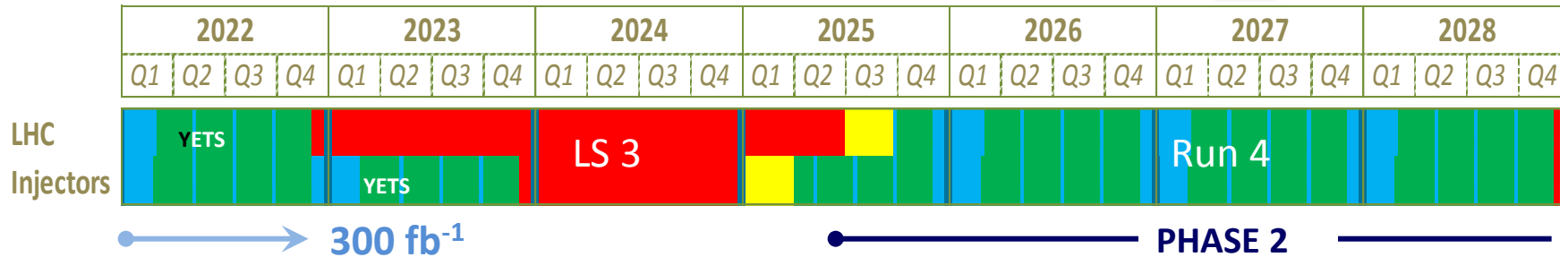
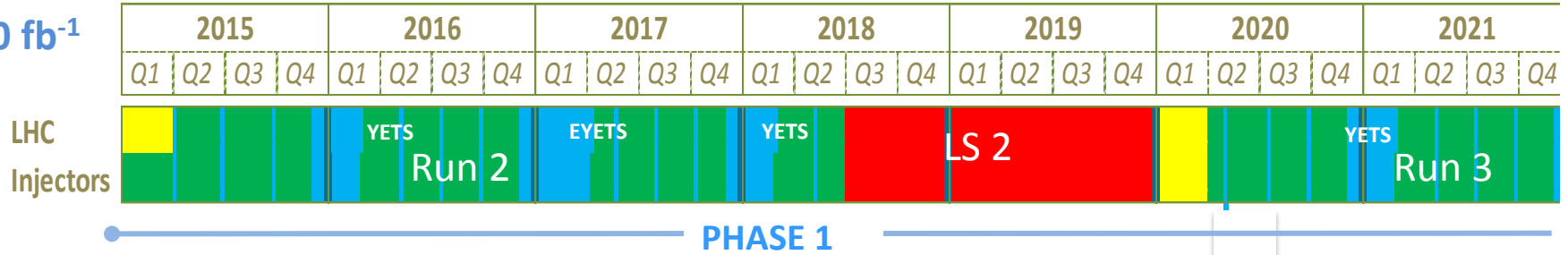
LHC roadmap: schedule beyond LS1

LS2 starting in 2018 (July) => 18 months + 3 months BC
 LS3 LHC: starting in 2023 => 30 months + 3 months BC
 Injectors: in 2024 => 13 months + 3 months BC



(Extended) Year End Technical Stop: (E)YETS

30 fb⁻¹



3'000 fb⁻¹

