



Close out of HiLumi CM # 9

Lucio Rossi
HL- LHC Project Leader

Fermilab – 14 October 2019

A vertical poster for the 9th HL-LHC Collaboration Meeting. The poster is primarily blue and white. At the top left, there is a photograph of a modern building reflected in water. Below that is a photograph of a person in a white lab coat working in a laboratory. The central part of the poster features a large, detailed technical drawing of the LHC tunnel cross-section. To the right of this drawing, the text "14-16 October 2019" is written in a large, white, sans-serif font. Below the date, the text "9th HL-LHC Collaboration Meeting, Fermilab, Batavia, USA" is written in a smaller, white, sans-serif font. At the bottom of the poster, there is a photograph of a group of people standing in a tunnel, and a photograph of a large, cylindrical piece of equipment. The text "HIGH LUMINOSITY LHC" is written in a large, white, sans-serif font across the bottom of the poster. The text "9th HL-LHC Collaboration Meeting, Fermilab, Batavia, USA" is written in a smaller, white, sans-serif font below it. The text "The 9th HL-LHC Collaboration Meeting will be held at Fermilab, Batavia, USA from 14 to 16 October 2019." is written in a smaller, white, sans-serif font. The text "This meeting will see the participation of all main HL-LHC contributors from the US HL-LHC AUP, Japan, Italy, Spain, the UK, Sweden, China, Canada and Russia." is written in a smaller, white, sans-serif font. The text "The main objective will be to assess the readiness to review the first preliminary plan of de-installation and installation with particular care for the interfaces. The meeting will also focus on the preparation of the 4th Cost & Schedule Review planned at CERN in November 2019." is written in a smaller, white, sans-serif font. The text "FERMILAB - Local Organizing Committee: Giorgio Apollinari, Chairperson; Rodolfo Orlandi, Joy Powell, Madhu Saperstein" is written in a smaller, white, sans-serif font. The text "CERN - Organizing Committee: Lucio Rossi, Project Leader; Oliver Brüning, Denise Poizat, Project Leader; Cecilia March, Project Office" is written in a smaller, white, sans-serif font. The text "For more details and registration visit: www.lumi.ch conference@lumi.gov lumi.ch/cm9" is written in a smaller, white, sans-serif font. The logos for "HiLumi", "ALICE", and "Fermilab" are visible at the bottom left of the poster.

Goal of HL-LHC

From EC-FP7 HiLumi LHC Design Study application of 2010

The main objective of HiLumi LHC Design Study is to determine a hardware configuration and a set of beam parameters that will allow the LHC to reach the following targets:

A peak luminosity of $L_{\text{peak}} = 5 \times 10^{34} \text{ cm}^{-2}\text{s}^{-1}$ **with levelling**, allowing:

An integrated luminosity of **250 fb⁻¹ per year**, enabling the goal of

$L_{\text{int}} = 3000 \text{ fb}^{-1}$ twelve years after the upgrade.

This luminosity is more than ten times the luminosity reach of the first 10 years of the LHC lifetime.

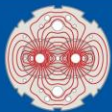
Ultimate performance established 2015-2016: with same hardware and same beam parameters: use of **engineering margins**:

$L_{\text{peak ult}} \cong 7.5 \cdot 10^{34} \text{ cm}^{-2}\text{s}^{-1}$ and **Ultimate Integrated** $L_{\text{int ult}} \sim 4000 \text{ fb}^{-1}$

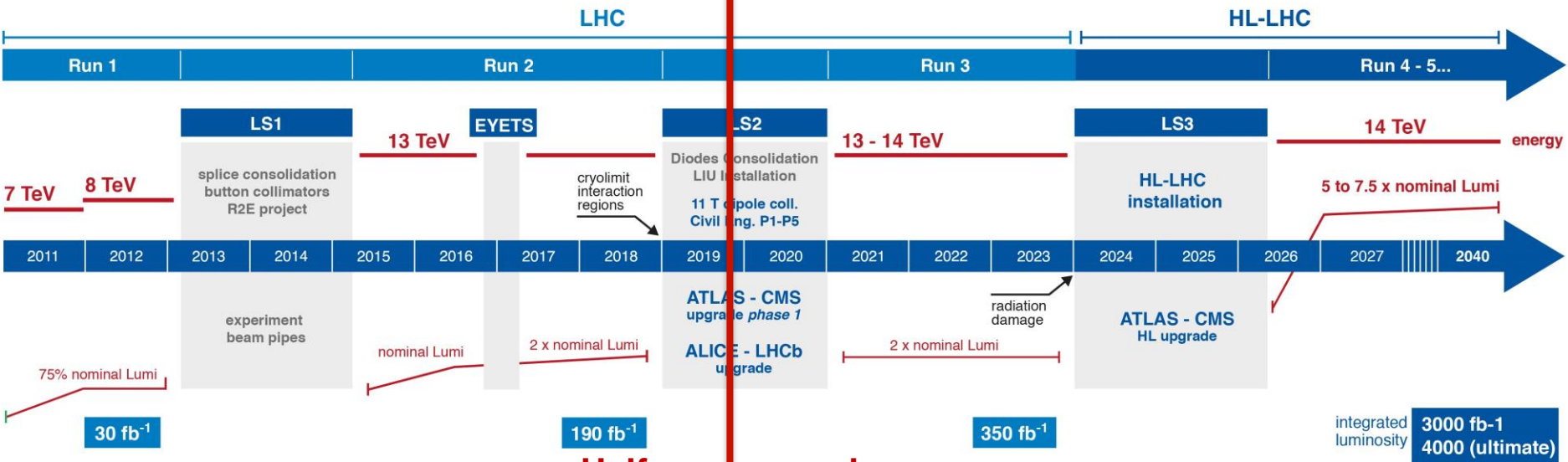
LHC should not be the limit, would Phys **Experiment are designing for this goal.**

be compatible with it!

Project approved by CERN Council in June 2016



LHC / HL-LHC Plan



Half way passed

HL-LHC TECHNICAL EQUIPMENT:

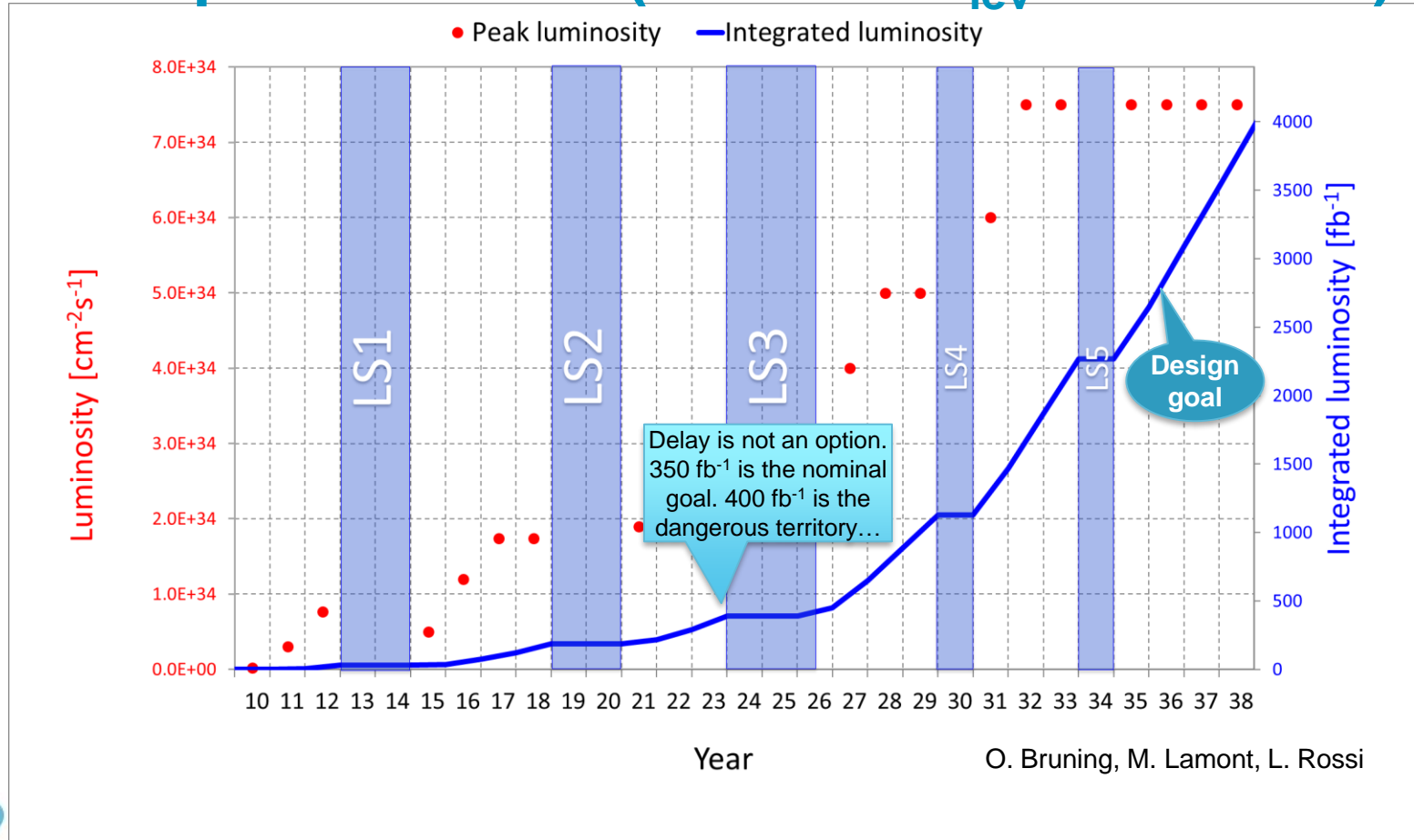


HL-LHC CIVIL ENGINEERING:



integrated luminosity **3000 fb⁻¹**
4000 (ultimate)

HL-LHC performance (ultimate L_{lev} from 2032)



O. Bruning, M. Lamont, L. Rossi



What we bring home from this meeting

- The cost optimization exercise has been digested.
- We have a few deliverable for LS2, among them the first **11 T dipole, TLCB, TDIS, TAN,...**
- Most of the issues of last year have been solved or mitigated: but not all. The effort will continue:
“Yogi Berra: It ain’t over till it’s over.” Bruce dixit...
 - Needs to have first MQXFA/B at nominal and above...
 - Need to have a CC cryomodule full working...
 - In general, transition to construction is longer than anticipated
- Preparing the next C&SR4: this time schedule is critical as cost
- **IF there is a shift of LS3, we must strive to keep our schedule!!**

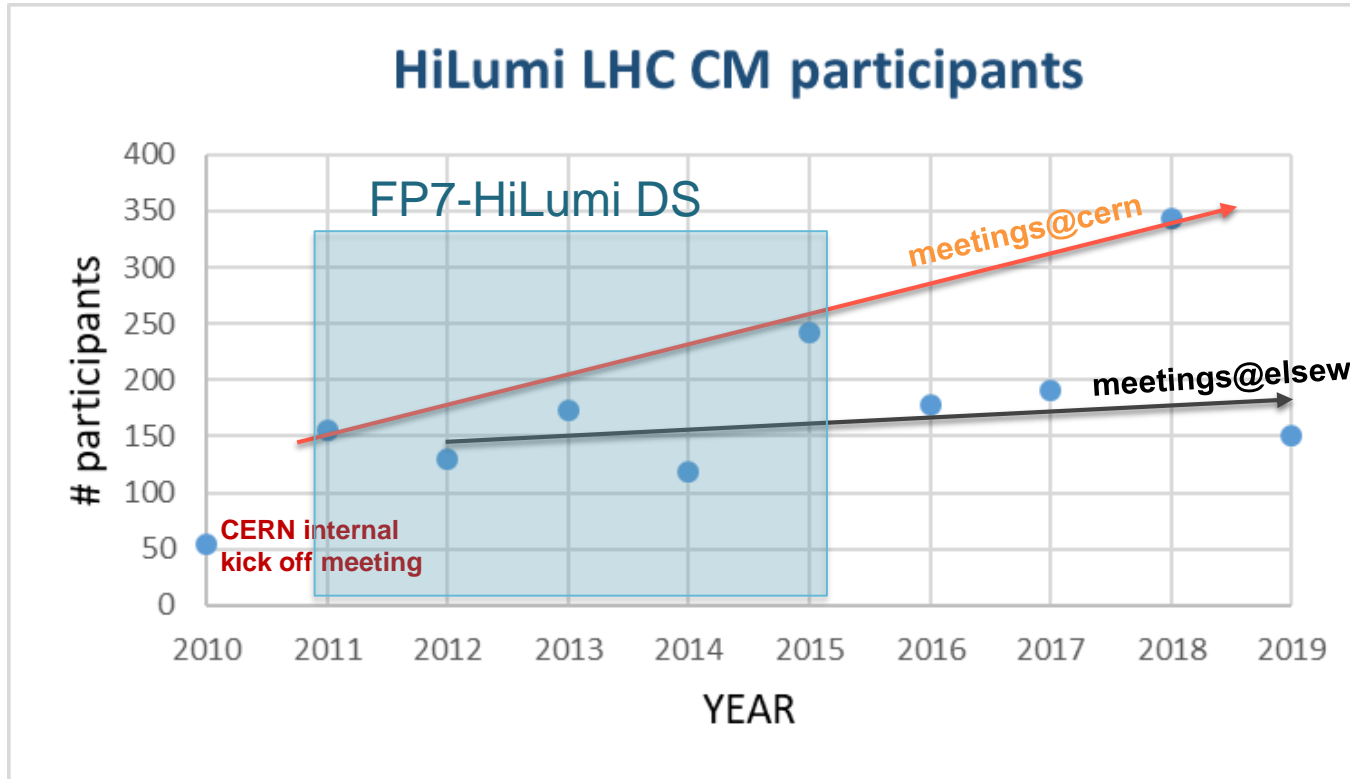


Knocking at LHC doors... literally.



LHC
Liner

Participants HiLumi Collaboration Meetings



It's you



Question: are you happy with the format?
3 days – with possible satellite meetings...

HL-LHC Collaboration Board

HL-LHC CB Chairs

2011 to 2015 (FP7-HiLumi)



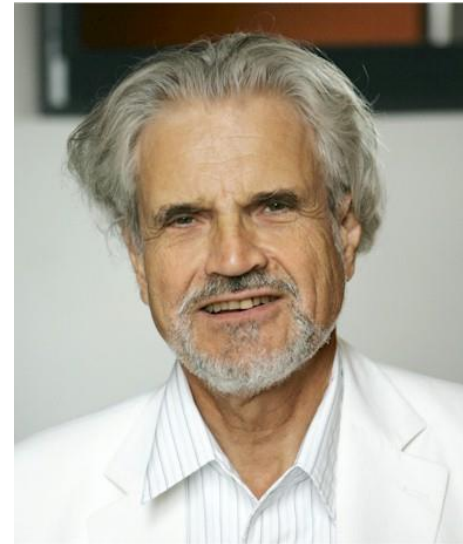
Andy Wolski (UNILIV)

2015 to 2018



Rob Appleby (UNIMAN)

Elected 2018



Tord Ekeloff (Uppsala U.)

CB#9 at Fermilab



- Review of collaboration principle:
- From MS Institutes CERN gives a contribution in cash/material of 50% of CORE value (Material)
- For NMS Institute normally a full in-kind is expected.
- CERN acknowledge that the total cost for the Institute is \gg CORE
- Review of collaborations plan
 - The project relies heavily on collaborators:
 - The 123 (136) MCHF of in-kind must not mislead: the contribution is critical

Next Annual Meeting CM#10



FREIA facility

Uppsala University

**See you in Uppsala
In the week 12-16 October 2020**

