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CERN Report

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ECFA, November 2015

Topics

- CERN Membership
- Medium Term Plan (MTP) 2016-2020

Scientific Strategy

- Two main pillars of physics activities at CERN
 - High Energy Frontier, i.e. LHC, FCC, CLIC
 - Unique fixed target program, i.e. AD and ELENA, HIE-Isolde (and TSR), n-ToF(EAR1,2)

The first cryomodule of HIE-ISOLDE is up and running, increasing the beam energy from 3 to 4.3 MeV per nucleon.

- Two main pillars for physics activities outside CERN
 - Neutrino Platform (mainly towards activities in the US: [LBNF](#))
 - ILC

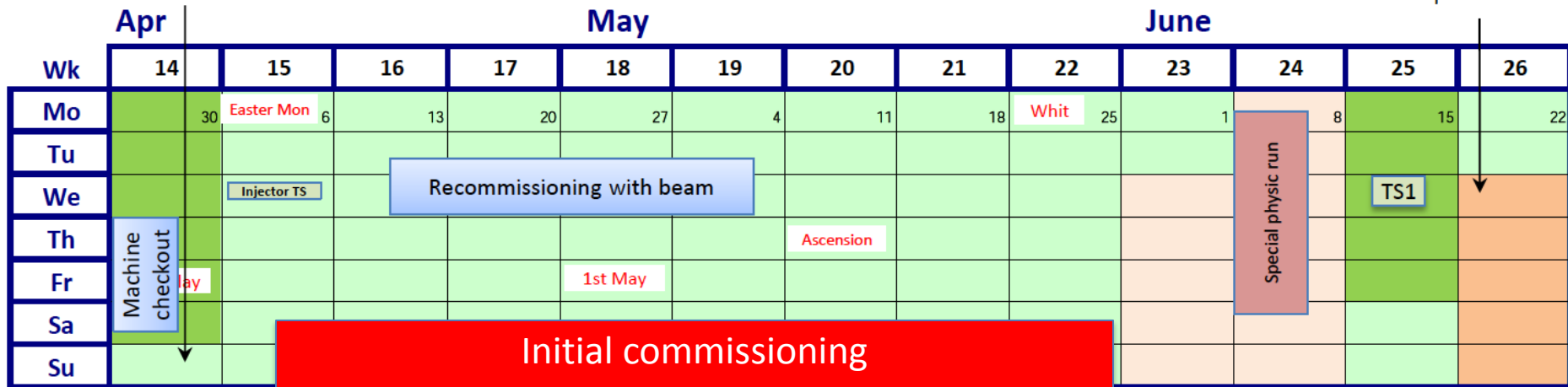
LHC

- LHC Performance 2015
- Injectors Performance 2015
- Schedule next decade(s)
- HL-LHC

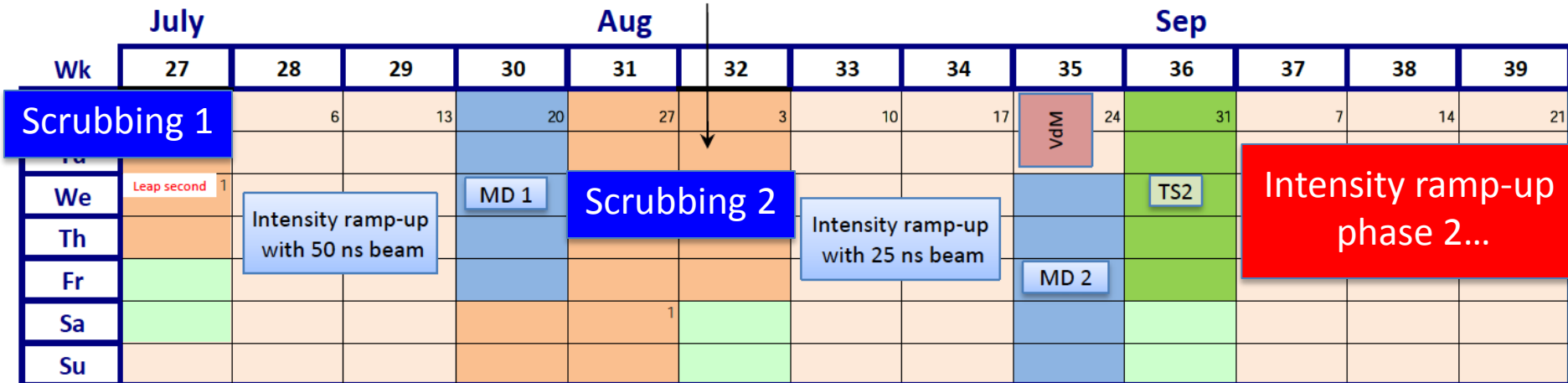
2015 schedule Q2/Q3

Start LHC commissioning with beam

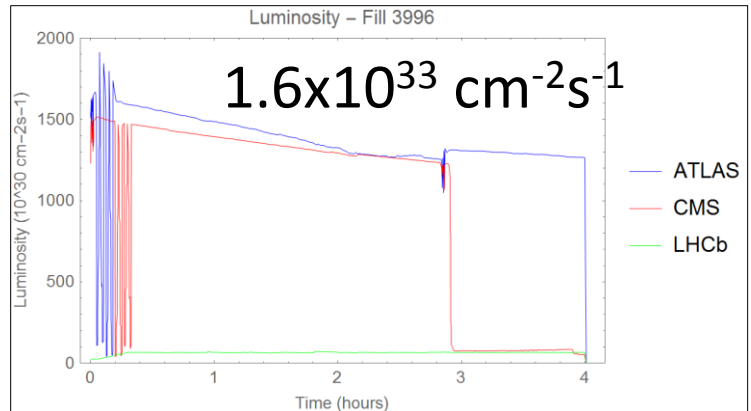
Scrubbing for 50 ns operation



Scrubbing for 25 ns operation



Intensity ramp-up phase 1 (50 and then 25 ns)



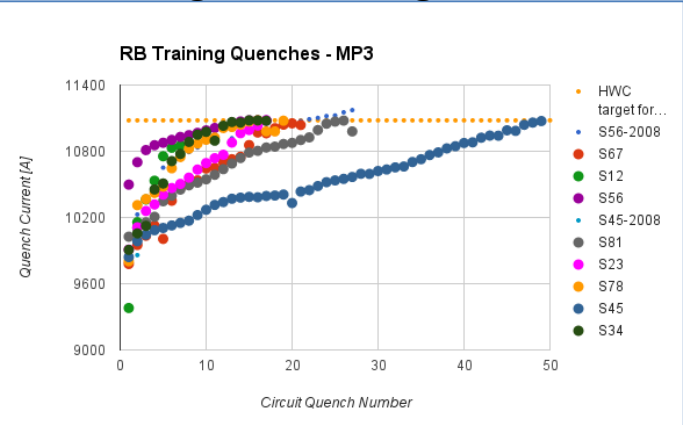
5th April
first beam

10th April: 6.5 TeV for the first time

July 14th: 476b (50 ns)

APRIL MAY JUNE JULY AUGUST...

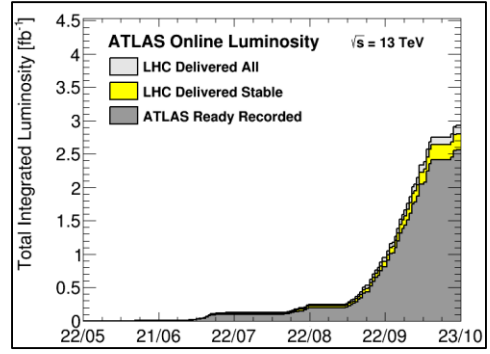
Finish magnet training



3rd June: First Stable Beams



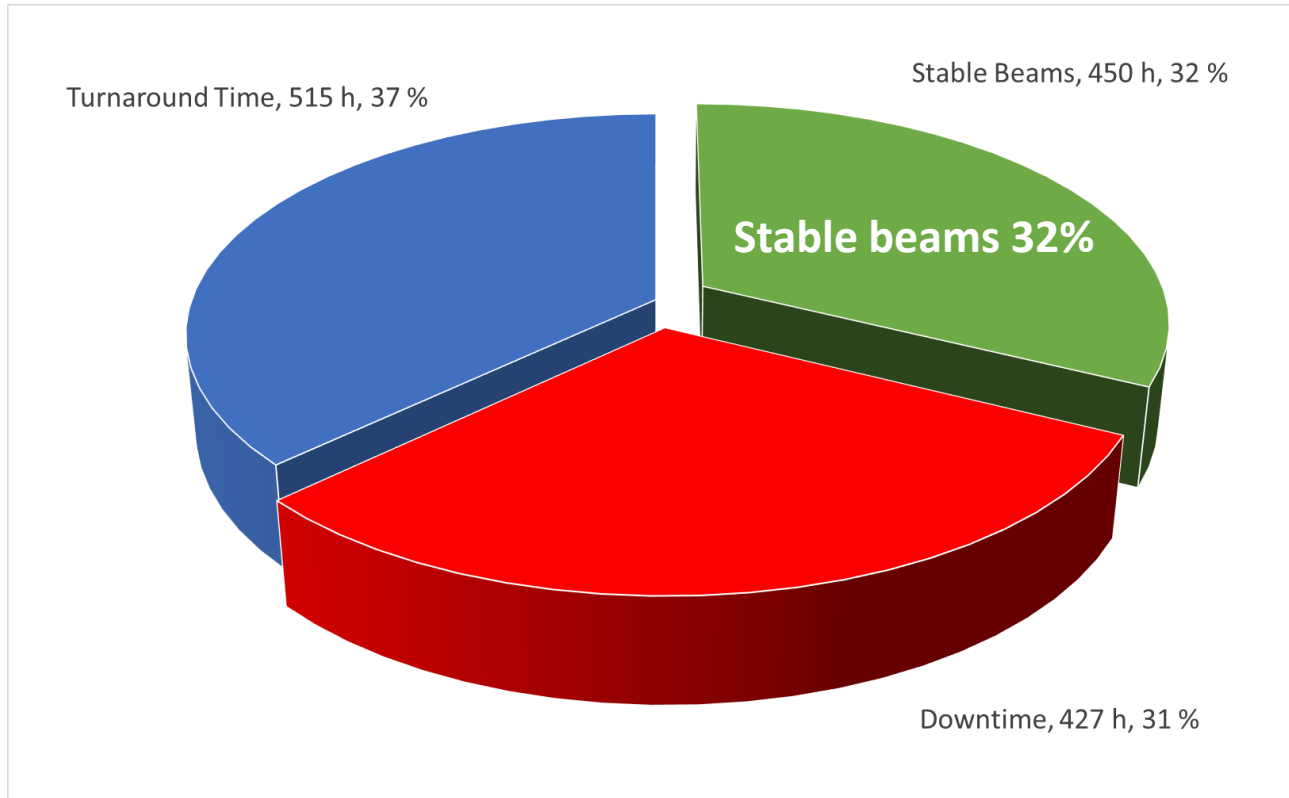
25 ns ramp-up

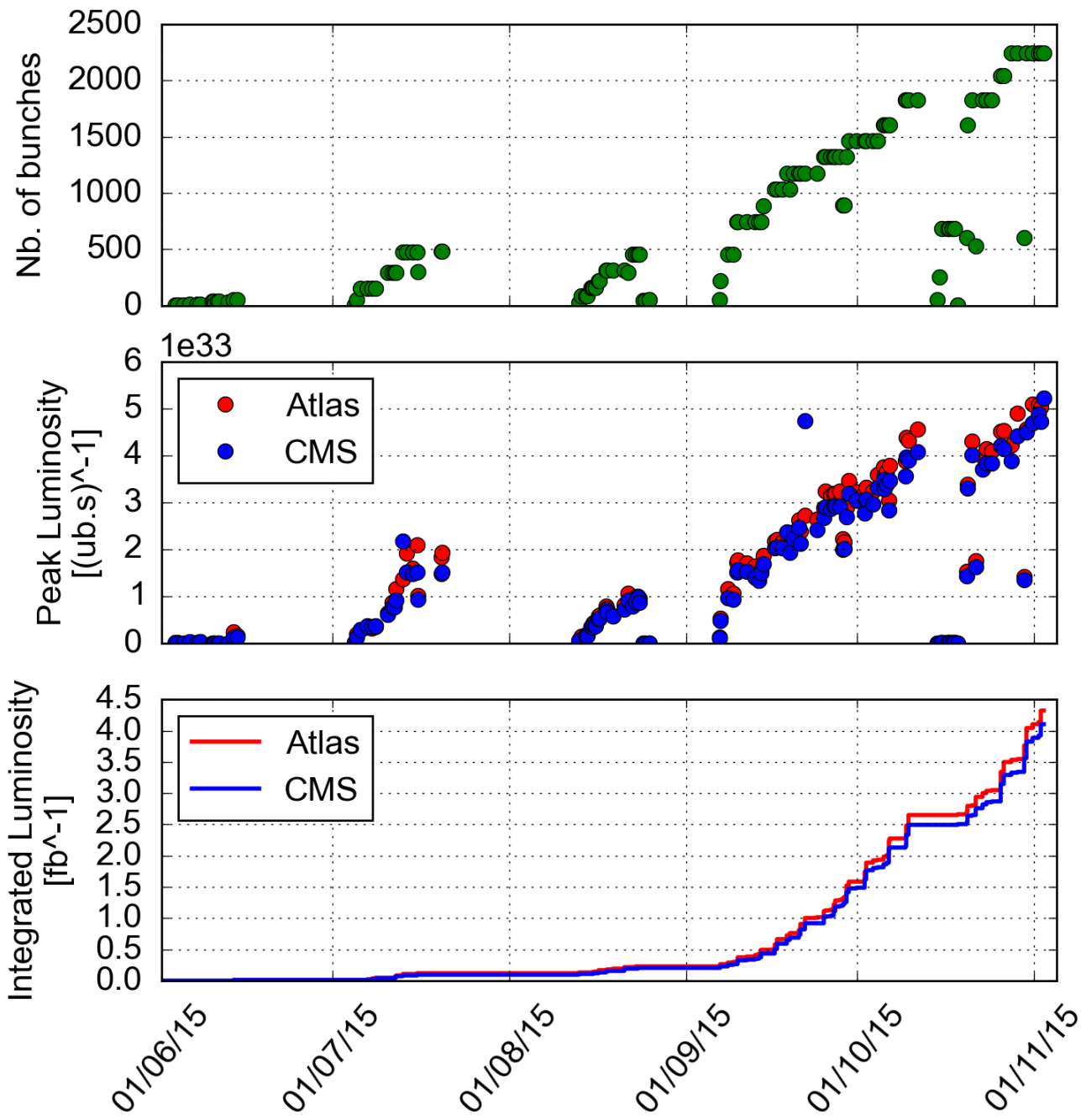


2015

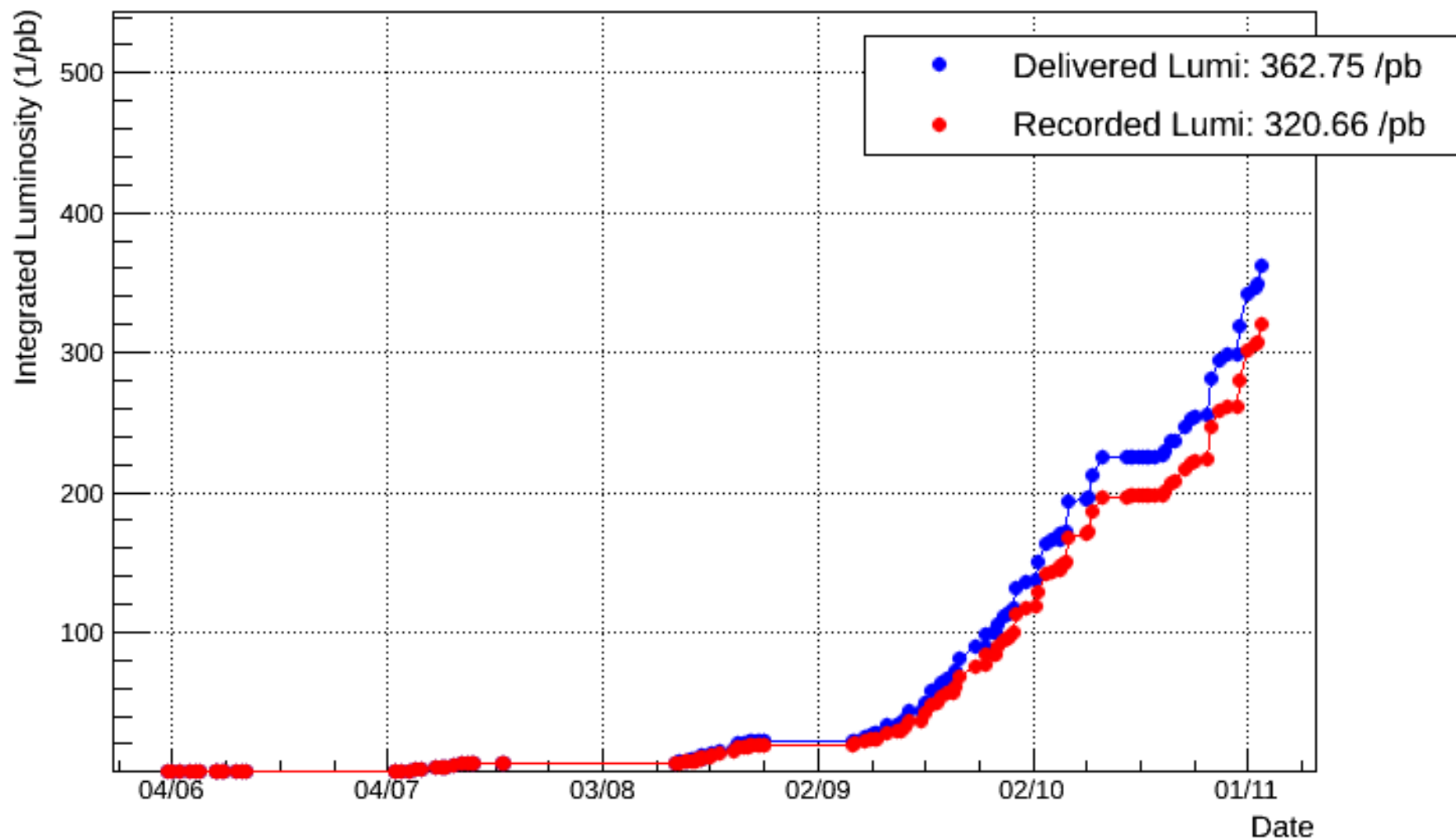
LHC Availability

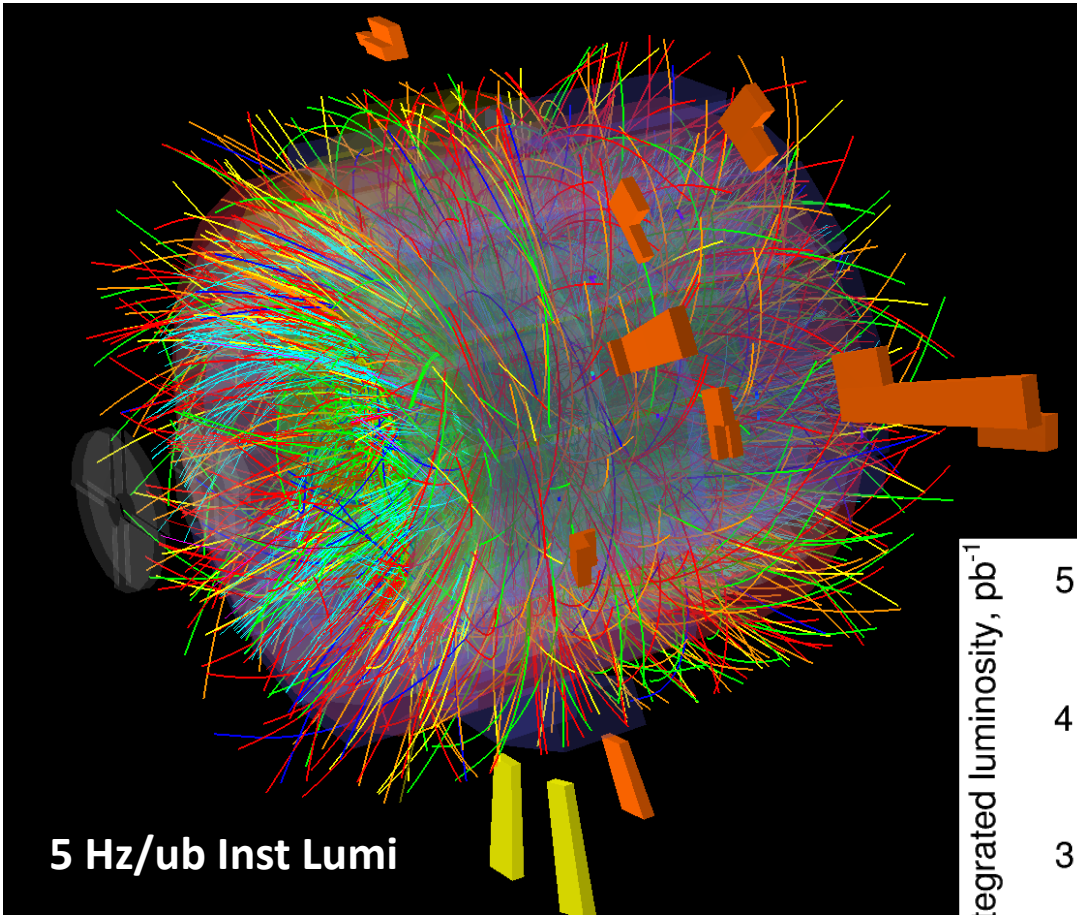
Statistics for 25 ns run (7/9 to 3/11/2015)



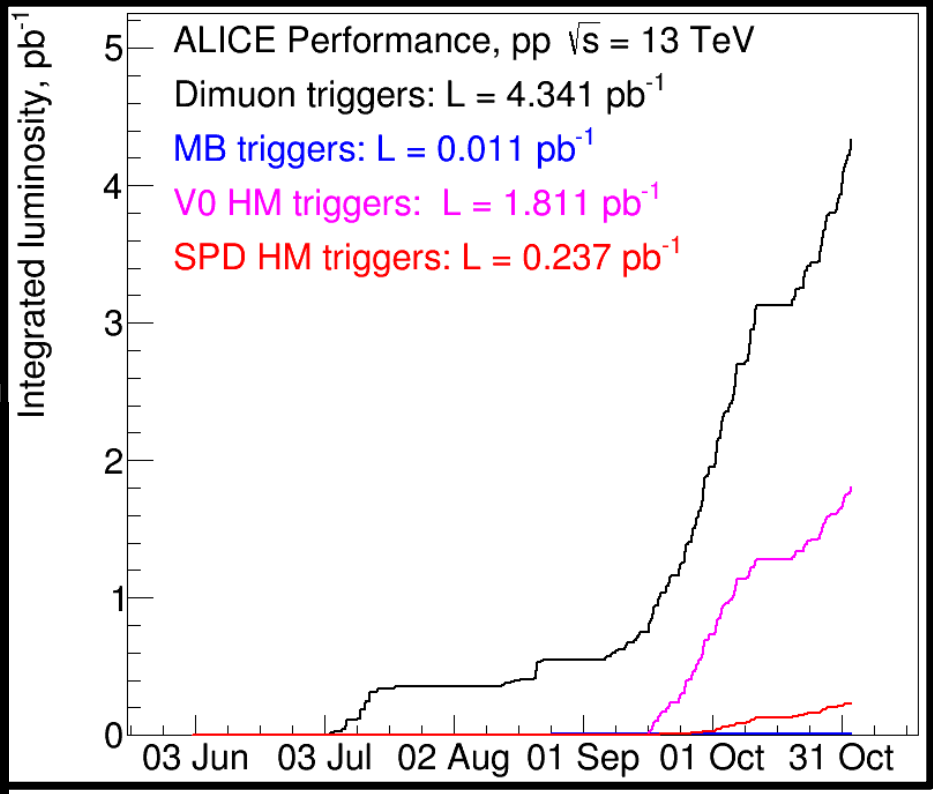
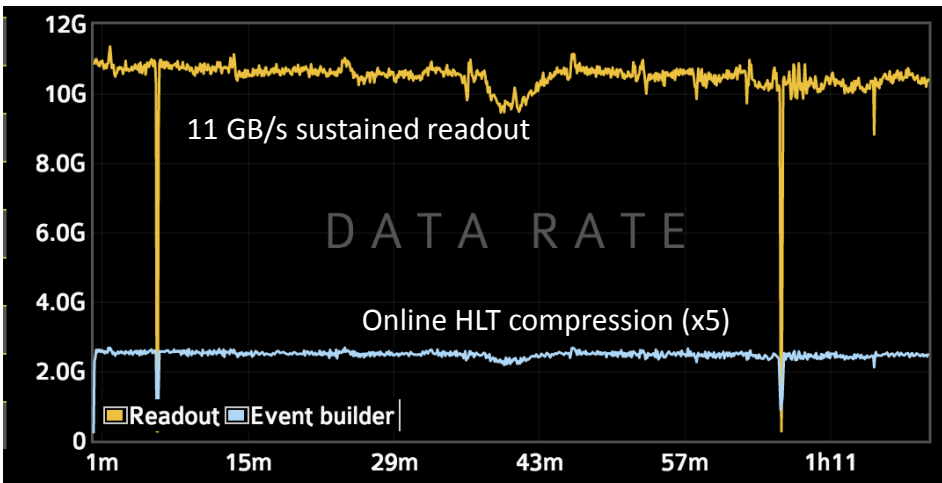
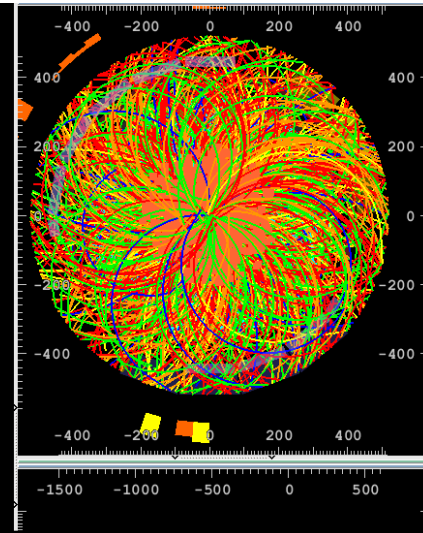


LHCb Integrated Luminosity at p-p 6.5 TeV in 2015





5 Hz/ub Inst Lumi



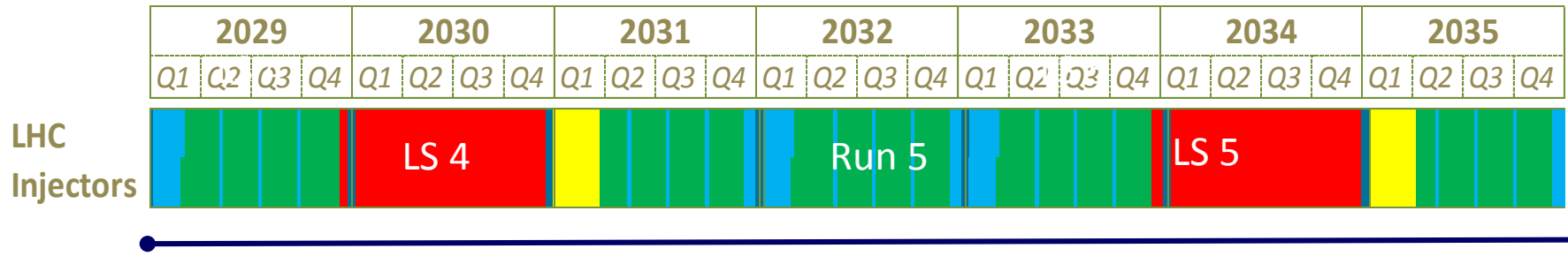
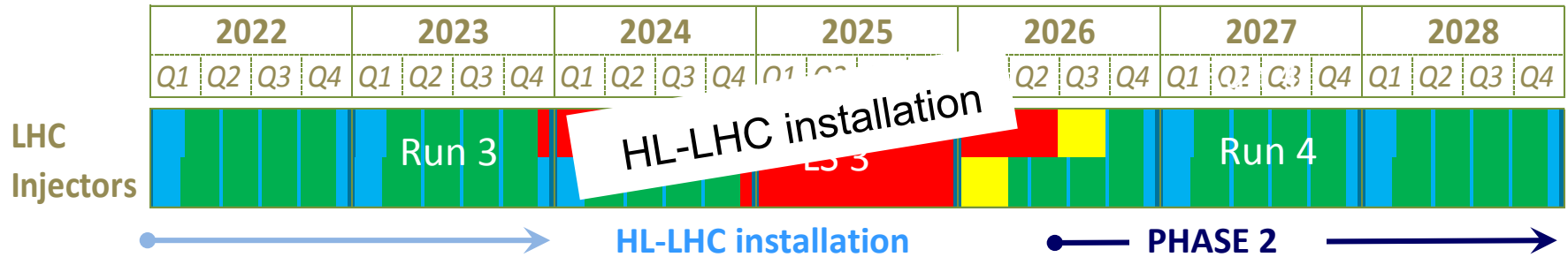
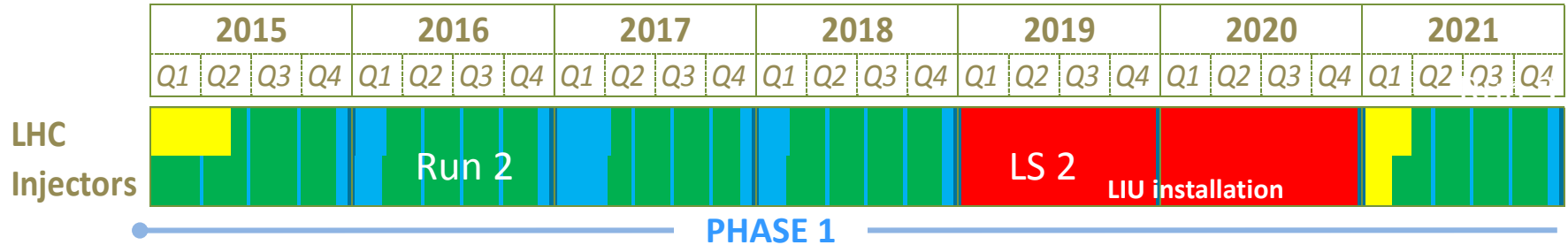
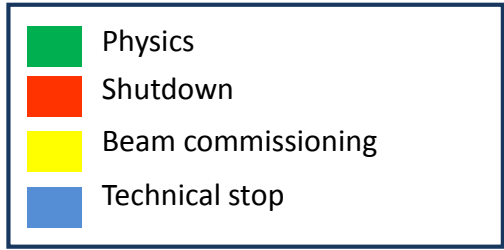
Excellent PS Beam/Machine Availability

PS Beam	Beam availability
AD	93%
East area North branch	94%
East area Irrad/CHARM	94%
LHC INDIV/PROBE	91%
LHC 25 ns	93%
SFTPRO (CT/MTE)	93%
nTOF	93%
Ions (Ar. & Pb)	95%
Average	93%

Accumulated availability LINAC2/3, LEIR, PSB and PS
Status November 1st

LHC roadmap (changed wrt Nov 2014)

LS2 starting in 2019 => 24 months + 3 months BC
 LS3 LHC: starting in 2024 => 30 months + 3 months BC
 Injectors: in 2025 => 13 months + 3 months BC



HL-LHC

- Project proposed for inclusion in the ESFR Roadmap
- Project (with cost to completion) included in the MTP 2016/2020 concerning accelerator and CERN part of experiments' upgrade
- Experiments' upgrade: Resources Review Boards during the October meeting endorsed

“A **scale of funding** between the full funding and the intermediate scenario (which) seems to meet the performance requirements (for the exploitation of HL-LHC)”

FCC

- FCC = Future Circular Collider
- Study in an international collaboration with today 65 MoUs signed
- An H2020 DS proposal, focused on the FCC hadron collider design, has been approved by the EC
- Study is proceeding well

Neutrinos

- Neutrino programme established at CERN through the “Neutrino Platform”
- Neutrino platform is well underway & active. It enables European groups to develop their detector parts for participation at neutrino facilities. In addition, proposals from non-European groups received.
- Collaboration with Fermilab established for long-term neutrino programme, in particular through support from CERN to the DUNE infrastructure
- This collaboration is also vital for the US contribution to the LHC and its upgrades
- The CERN MTP contains one full cryostat as in-kind contribution to DUNE.
- Coordination in Europe concerning further contributions to the DUNE infrastructure required and under way.

Topics

- CERN Membership
- Medium Term Plan (MTP) 2016-2020
- Budget 2015/2016
- Miscellaneous
 - SESAME
 - BL4S
 - SCOAP3