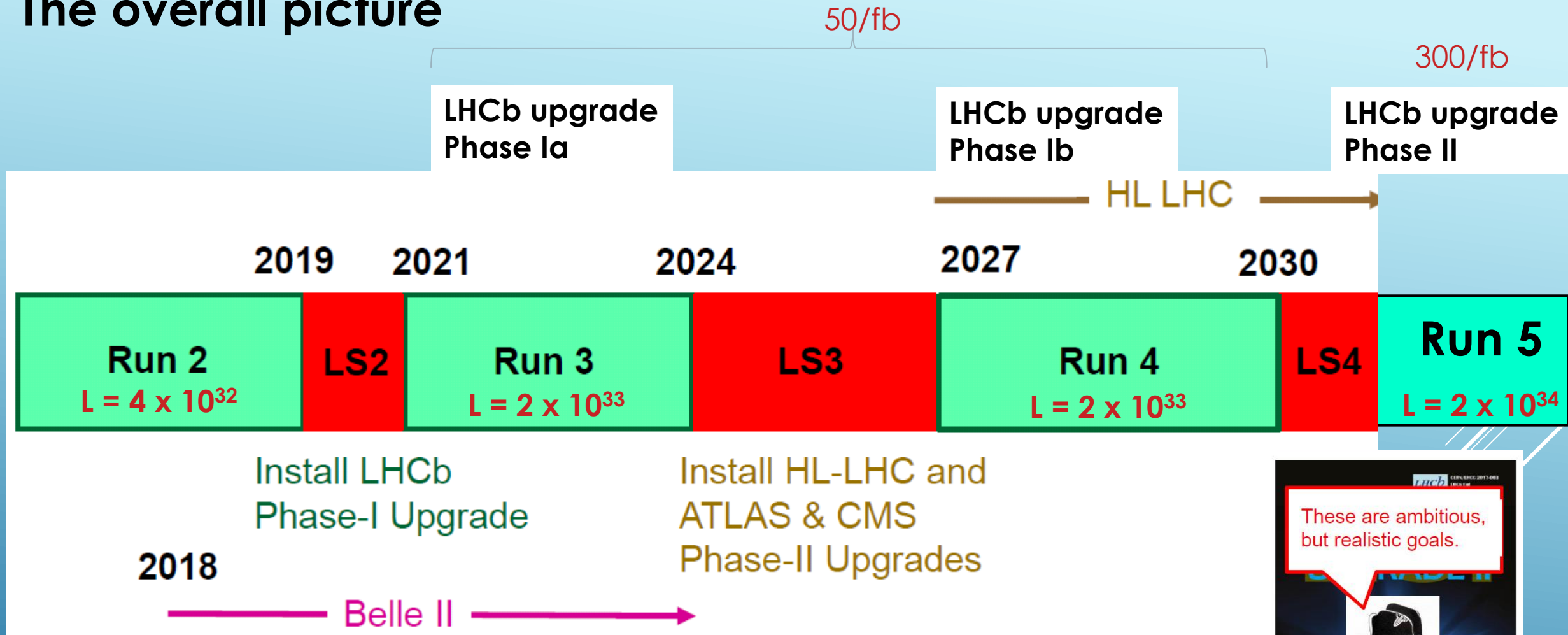
BEYOND THE PHASE I UPGRADE WORKSHOP ELBA 28 – 30 MAY 2017

- **About 90 participants**
- **Quite a few invited theoreticians**
- **Also some invited people from other experiments (BELLE, CMS)**
- **Intense and lively workshop, despite too nice weather, too good food, …**

The overall picture



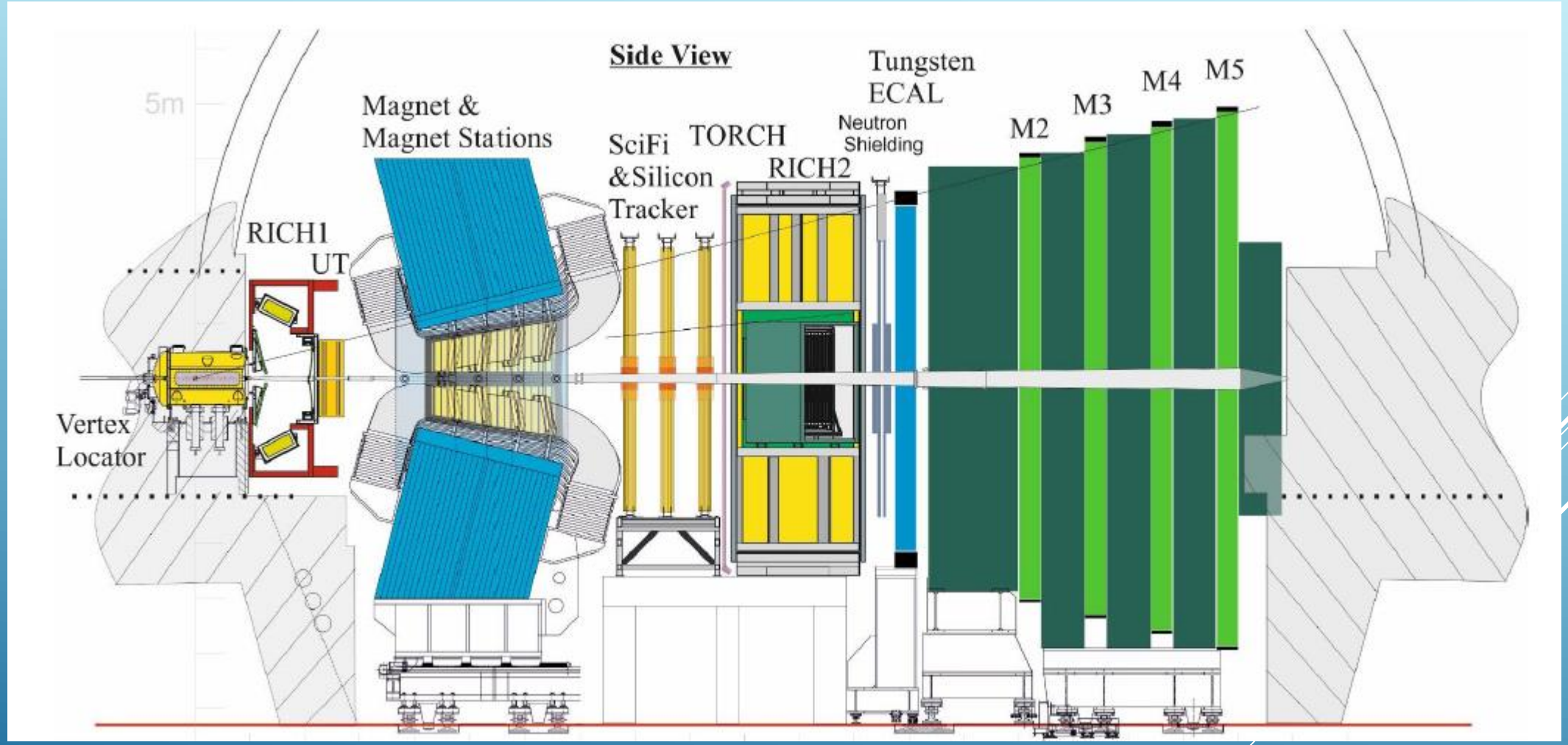
[CERN-LHCC-2017-003]

See Expression Of Interest ➔

Phase II challenges

- **50 primary vertices per BX**
- **1500 – 3000 particles in the detector (per BX)**
- **Very harsh radiation environment**

How can current performance be maintained in such an environment?



A massively upgraded detector is required. Smaller granularity.
Precise time information appears like a must to disentangle overlapping events.

VELO smaller pixels, precise timing, may replace after x years. RF foil thinned / removed?

SciFi must keep a larger distance to the beam pipe (40-50 cm). Lower T for SiPM ?

Inner / Middle Tracker Fill hole of SciFi around beam pipe with silicon.

TORCH high precision particle timing

ECAL finer granularity in innermost part (W absorbers?), Timing for photons? Radiation hardness?

RICH Change optics. CF mirrors, SiPMs ?

MUON Replace HCAL with iron slabs. New technology for muon chambers in hottest regions.

Part of it will already may already be done during LS3 (2025/26, 2.5 years long)

Very expensive upgrade(s), at least comparable to the current upgrade.

Physics case looks good. LHCb achievements and potential highly praised by the (invited) theorists.