

CMS Upgrades Workshop Introduction

J. Nash 28 October 2009

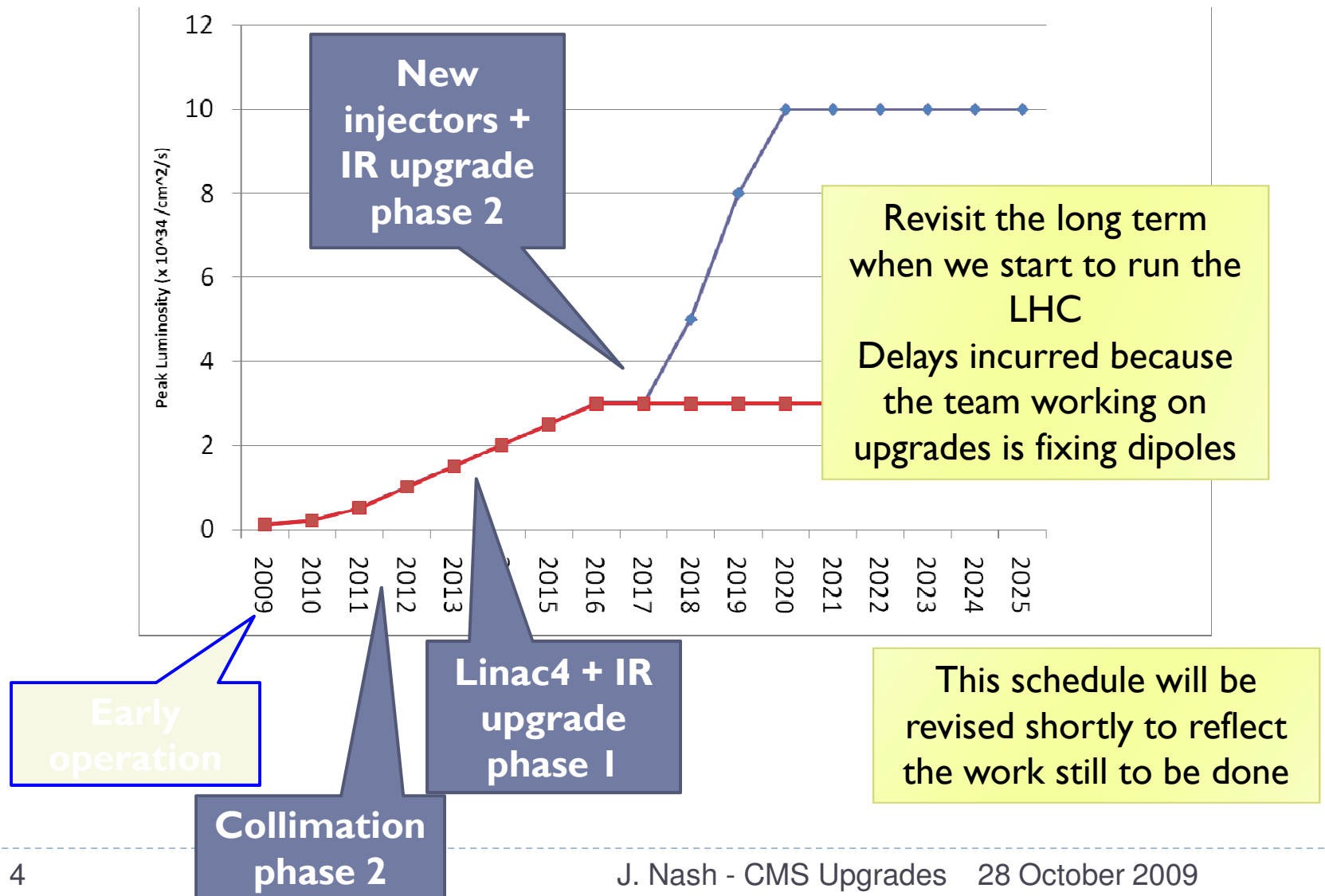
Welcome

- ▶ This meeting is a follow on to last year's very successful meeting at FNAL in November
- ▶ A chance to gather people off site for
 - ▶ Planning work for the coming year
 - ▶ Examining some of the strategic issues for the upgrades

Outline

- ▶ **Plans for the Workshop**
 - ▶ 1) Phase I planning - today
 - ▶ 2) Phase 2 R/D – tomorrow/friday
 - ▶ 3) Joint Working Groups - tomorrow
- ▶ **Logistics**

Agreed Scenario for Peak luminosity (CMS/ATLAS/Machine/LHCC)



What is Phase 1 of the Upgrade?

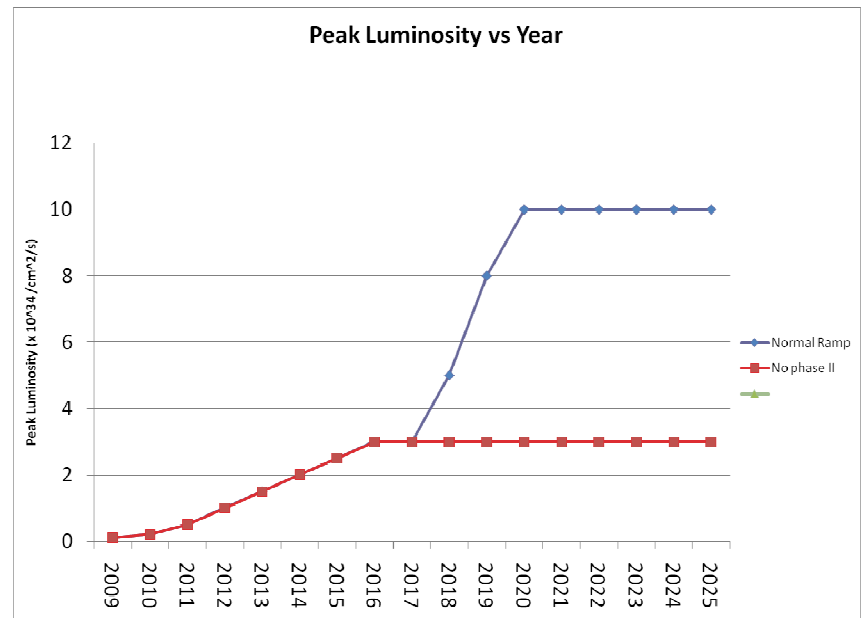
- ▶ Contains all upgrades to CMS which take place before the long shutdown to replace the trackers of ATLAS/CMS
 - ▶ These may or may not be linked to upgrades of machine elements
 - ▶ Putting in a new beampipe
 - ▶ Putting in the new triplets

What is required of Phase I detectors?

- ▶ They should be able to operate with a peak luminosity of up to $2-3 \cdot 10^{34}$
 - ▶ This is the level which could be reached with new triplets and the new linac (already approved and under construction)
- ▶ They should be able to cope with an integrated luminosity of up to around 700/fb

When is the luminosity going to increase?

- ▶ Original planning had luminosity increasing steadily as the understanding of the LHC improved
 - ▶ New triplets and Linac allowed luminosities beyond 10^{34}
- ▶ This will clearly be delayed
 - ▶ Machine start is delayed
 - ▶ Still a lot of work to do on the splices before the energy can be raised
 - ▶ Likely that raising energy will be the priority for initial running
 - ▶ The new triplets can be put in place when “we want”

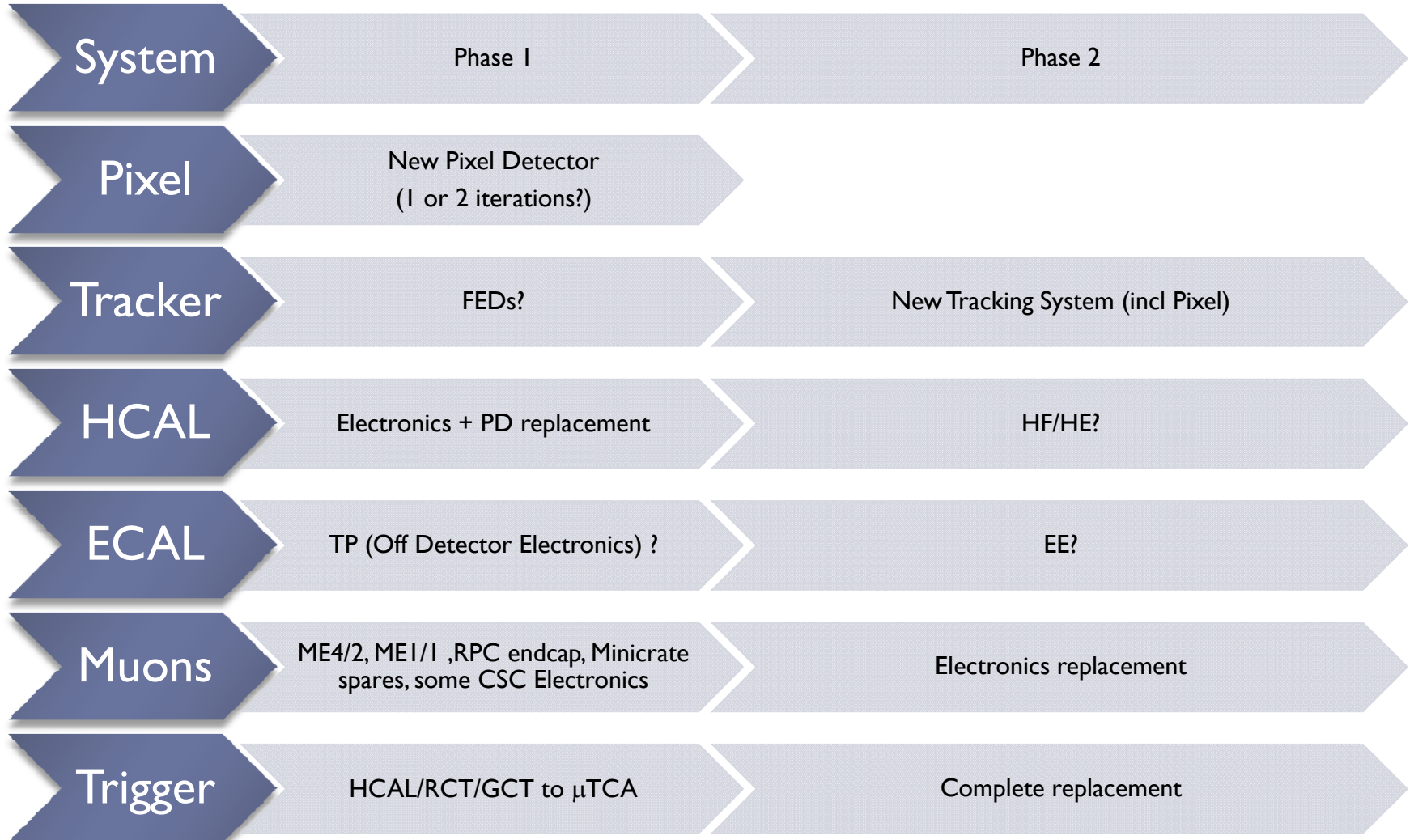


When do we need the Phase I upgrades?

- ▶ This is an important issue for us to focus on during this week's meeting.
 - ▶ Are the upgrades required to cope with higher peak/integrated luminosity
 - ▶ Would we get benefits by introducing some of the upgrades earlier?
 - ▶ Physics/performance (e.g. reliability)
 - ▶ Are there some upgrades which we would be better off delaying?

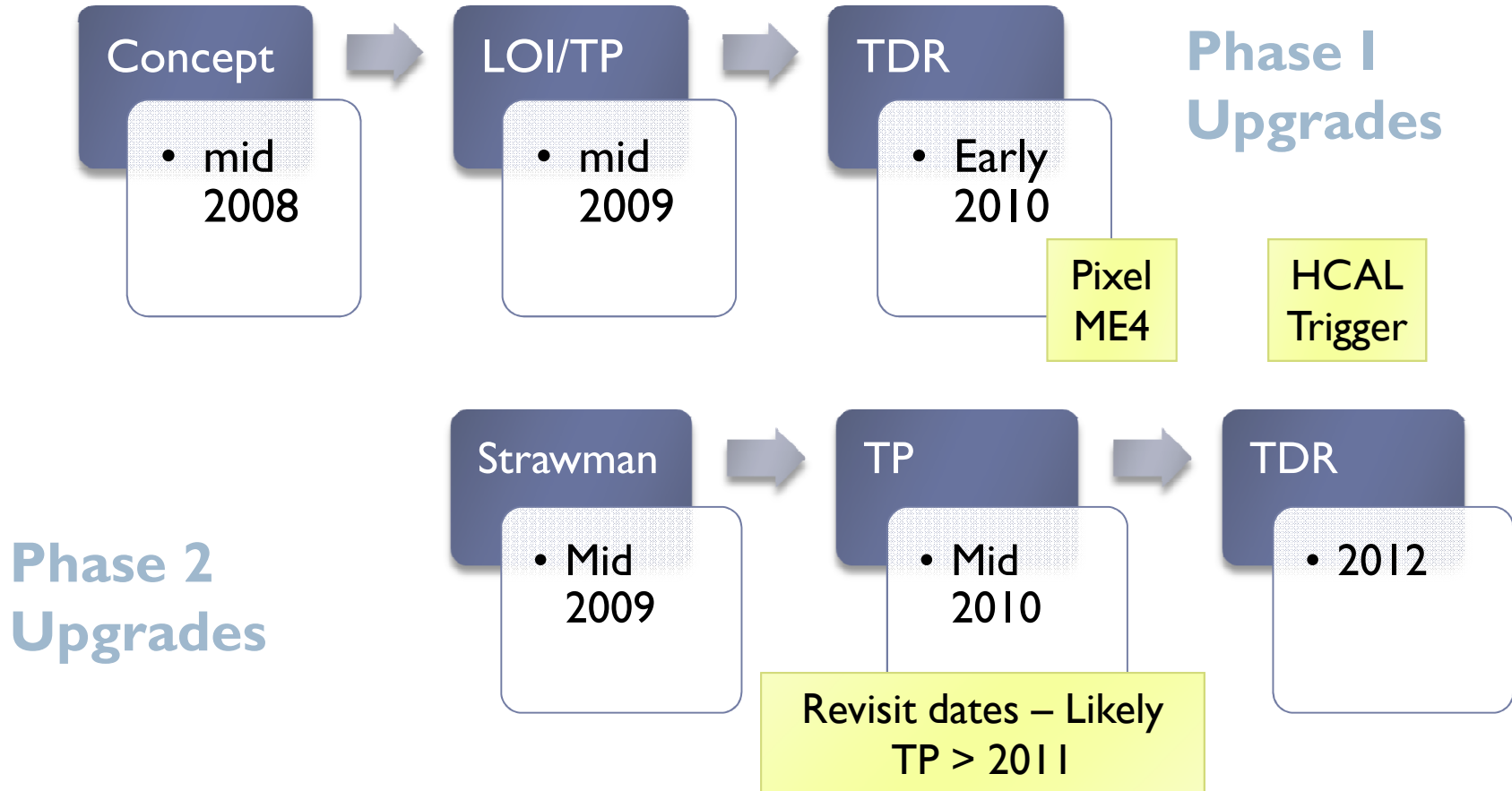
Phase I working groups should address these questions

Upgrade Scope



Documents

Work Plan agreed at the May Workshop 2008



Phase I discussions today

- ▶ Review the current state of planning for the upgrades
- ▶ Refine the arguments for the most appropriate timescales/scope for each phase I upgrade
- ▶ Ask each working group to prepare a 15 minute summary addressing the questions posed
 - ▶ Also consider when are the key decision points

Today's Logistics

- ▶ Parallel sessions run from 10:00-16:00
- ▶ Please note that lunch is **CLOSED** at 13:30, so be sure to break before 13:00
- ▶ We will re-convene in the auditorium at 16:00 to hear the reports from each of the working groups.