



SLHC-PP

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The Preparatory Phase of the Large Hadron Collider upgrade (SLHC-PP) is a project co-funded by the European Commission in its 7th Framework Programme under the Grant Agreement n° 212114. SLHC-PP began in April 2008 and will run for 3 years.

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1. EXECUTIVE SUMMARY

A Project structure for the CMS upgrades has been defined, and approved by the CMS collaboration, and is now fully operational.

The CMS upgrades project structure has been defined, and includes links to each of the sub-detector upgrade projects. This structure was approved by the CMS Management Board, and the CMS Collaboration Board, and the Upgrade project now reports to the CMS Management Board through the CMS Upgrade Project Manager.

Each sub-detector in CMS has created an upgrade structure for their systems. Representatives from each of the sub-detectors report to the upgrade project management board. The Upgrade Management Board (UMB) also contains links to the CMS Technical Coordination, Resource Management, Computing and Physics.

An Upgrade Peer Review Panel has been created to examine R&D proposals, and determine if they are aligned with the needs of the Upgrade Project. The chair of this panel reports to the UMB.

The Upgrades Management Board meets regularly and has responsibility for the studies to determine the upgrade scope.

2. INTRODUCTION

The CMS detector will need to undergo substantial changes in each of its systems in order to cope with the increased luminosity proposed by the sLHC project. The changes are likely to occur in two phases.

Phase 1; where the luminosity increases above the design luminosity of the LHC by no more than a factor of 3

Phase 2; where the luminosity increases by a factor of 10 or more above the design luminosity of the LHC.

Each of the sub-detectors has a different set of upgrade requirements for each phase, and the Upgrades Project was created in order to manage the process of defining the scope and requirements of the CMS upgrades in each phase.

3. THE CMS UPGRADES PROJECT

The CMS detector is organized with each sub-detector independently organized as a collection of the institutes involved in the construction and operation of the sub-detector. The sub-detectors report to the CMS Management through the project managers sitting in the CMS Management Board. Each sub-detector is responsible for managing its own resources. The CMS upgrades project was created and approved as a new project for CMS during 2008. The project has the responsibility for overseeing activities related to upgrades of CMS. Each sub-detector has teams involved in looking at the specific issues related to upgrades of their individual sub-detectors. There are representatives from each sub-detector on the management team of the upgrade project.

The Upgrade Management Board (see Figure Below), meets monthly to discuss the overall upgrade issues for CMS, monitor the progress in each of the sub-detectors, and look at issues related to multiple sub-detectors. The CMS Technical Coordination is represented by the Upgrade Technical Coordinator, and the Electronics Systems Coordinator. The Financial

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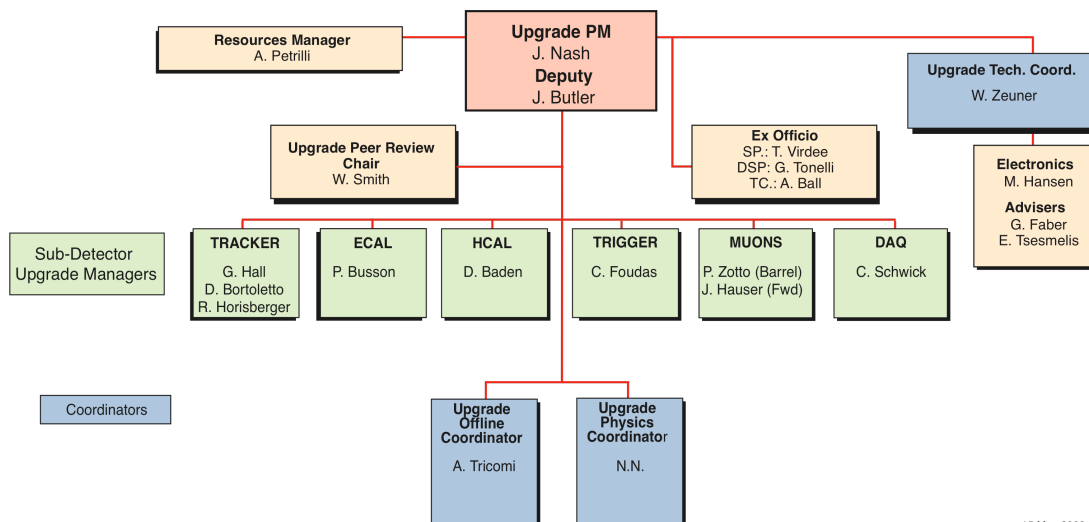
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issues are overseen by the Upgrade Resources Manager. There are also links with the Physics Coordination, and the Software Coordination. The Upgrades Project Manager reports regularly to the CMS Management Board, and the CMS Collaboration Board.

R&D required for the upgrades is reviewed by an Upgrade Peer Review Panel. This board receives proposals, verifies if they are well matched to the upgrade programme of CMS, and reports to the Upgrade Management Board where a decision is taken on whether to endorse the proposals.

Workshops have been held at six monthly intervals open to the CMS collaboration where the proposed scope of the upgrades and the status of R&D in each sub-detectors is discussed and reviewed. Work plans for the following six months are also agreed.

CMS Upgrade Project



15 May 2008

4. CONCLUSIONS

CMS has created an Upgrades Project to coordinate and manage the teams working on upgrades of the CMS sub-detectors. The project organizes regular meetings between the sub-detector upgrade project teams, and reports to the CMS management.