



SLHC-PP

DELIVERABLE REPORT

EU DELIVERABLE: 4.2.2

Document identifier: **SLHC-PP-4.2.2-1049281-v1.0**

Contractual Date of Delivery to the EC **End of Month 18 (September 2009)**

Document date: **October 2009**

Deliverable Title: **Key structural requirements (information repository, tools, coordination framework, safety and quality systems, integration office) and scheduling and reporting mechanisms in place**

Work package: **WP4: Coordination for the CMS2 experiment implementation**

Lead Beneficiary: **CERN**

Authors: **Wolfram Zeuner**

Document status: **Released**

Document link: <https://edms.cern.ch/document/1049281/1>



DELIVERABLE REPORT

Doc. Identifier:
SLHC-PP-4.2.2-1049281-v1.0

Date: October 2009

History of Changes

Version	Date	Comment	Authors
1.0	-	-	- Wolfram Zeuner

Copyright notice:

Copyright © Members of the SLHC-PP Collaboration, 2009.

For more information on SLHC-PP, its partners and contributors please see www.cern.ch/SLHC-PP/

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.

The information contained in this document reflects only the author's views and the Community is not liable for any use that may be made of the information contained therein.



DELIVERABLE REPORT

Doc. Identifier:
SLHC-PP-4.2.2-1049281-v1.0

Date: October 2009

TABLE OF CONTENTS

EXECUTIVE SUMMARY	4
1. ORGANIZATION OF THE CMS UPGRADE PROJECTS.....	4



EXECUTIVE SUMMARY

The CMS upgrade project uses a similar organization as for the original construction. The Technical coordination team is supported by an integration office that coordinates the mechanical and electrical integration aspects for the upgrade. Any upgrade work is organized in work packages that contain the technical details, schedules and safety measures. As information repository CMS has a large equipment management database which includes all drawings and models. The organizational structures of the Technical Coordination and the Integration Office are in place.

ORGANIZATION OF THE CMS TECHNICAL COORDINATION FOR THE UPGRADE

The general project structure of the upgrade has been described in deliverable report D.4.1.1. (<https://edms.cern.ch/document/982413/1>)

Any detector component that will be upgraded is organized as a project with an internal structure. For all aspects regarding Technical Coordination the project leader reports to the Technical Coordination of CMS. The upgrade will be managed with same technical coordination team that managed the construction and currently supervises the operation of CMS.

Any upgrade project will go through a well-defined sequence of reviews from the design over the production to the installation. Usually a written Technical Design Report (TDR) is reviewed in a Conceptual Design Review (CDR) which, if endorsed, is followed by an Engineering Design Review (EDR). After the successful EDR, the construction and production starts. Its progress is monitored in one or more a Production Progress Reviews (PPR). Just before installation an Installation Readiness Review (IRR) is held to discuss the installation procedure in detail, to make sure the infrastructure is prepared and all possible integration problems are solved.

In all phases the Integration Office is an integral part of this review process to spot any incompatibilities as early as possible. The Integration Office is an engineering office, independent of TC. It deals with all aspects of integrating detector components into CMS, including mechanics, electronics and infrastructure. This office keeps the documentation of all components, their as build status and any later modifications.

The backbone of the information repository for any upgrade is the CMS equipment management database.

It contains all as build models and drawings of the CMS detector. In addition all components and equipment installed in CMS are stored in this database for reference and traceability.

The readiness and completeness of this database is a precondition to be able to integrate any new component into the existing detector. It has to reflect at any moment the as build status of the detector and has always to be kept up-to-date.

Though in general ready and operational, the model and drawing section of the database is still being updated and checked to optimize the completeness and correctness of its content.

Any work performed at CMS will be organized in work packages, which include a detailed resource loaded schedule, necessary safety measures and an inspection of the workplace. The work packages have been used already for the installation. For the upgrade the



DELIVERABLE REPORT

Doc. Identifier:
SLHC-PP-4.2.2-1049281-v1.0

Date: **October 2009**

additional risk of radiation has to be taken into account. Currently the procedures are under development to analyze the radiation risk and to minimize the exposure of personnel. With the described measures the organization and the procedures are available to start any upgrade project.