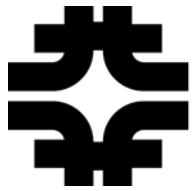# Committee News and Requirements Document

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June 9, 2005

Committee News

- **As of today we have a new name:**

  ## LHC@FNAL

  - ➢ **Suzanne has started to modify our web page**

- **Review of our Requirements Document:**

  - ➢ **July 26, 2005 (Tuesday)**

  - ➢ **Begin: 7:30 am (Central)**

  - ➢ **Duration: 3 hours**

  We will have a few days after the review to include recommendations from our Advisory Committee.

Requirements Document

1. Introduction

This document describes the requirements for a new facility at Fermilab to support work on experiments at the Large Hadron Collider (LHC) at CERN, and to support active involvement in LHC accelerator activities. The name of this facility is LHC@FNAL. The purpose of LHC@FNAL is to facilitate communication between CERN and members of the LHC community located in North America, and to help members contribute their expertise to accelerator activities and experiments at the LHC. While there are no technical reasons that would prevent participation in multiple LHC experiments, the current plan for LHC@FNAL is to be involved with the CMS experiment, for which Fermilab is the host institution in the U.S.

The requirements in this document are based on scenarios that characterize activities envisioned for LHC@FNAL. The activities that have been considered include the following:

- Monitoring data quality for CMS detector and LHC accelerator components
- Analyzing the monitoring data for CMS and LHC
- Developing monitoring capabilities for CMS
- Developing diagnostic software for the LHC
- Participating in CMS shifts during commissioning and operations
- Training members of US/LARP who will travel to CERN
- Providing support to members of US/LARP after they return from CERN
- Providing a rapid response "call center" to get experts located in North America connected to CERN

Requirements Document Outline

1. Introduction
2. Assumptions
3. Actors
4. Scenarios
5. Requirements
   5.1. CMS Detector Requirements
   5.1.1. Requirements for CMS Commissioning
   5.1.2. Requirements for CMS Operations
   5.2. LHC Accelerator Requirements
   5.2.1. Requirements to Assist in Hardware Commissioning
   5.2.2. Requirements to Assist in Beam Commissioning
   5.3. CMS/LHC Combined Requirements
   5.4. Constraints
   5.4.1. Communications Requirements
   5.4.2. Computing and Networking Requirements
   5.4.3. Software Requirements
   5.4.4. Security Requirements
   5.4.5. Safety Requirements
6. Dependencies
7. Scenario Appendices
   7.1. CMS Detector Scenarios
   7.2. LHC Accelerator Scenarios
   7.3. Combined CMS and LHC Scenarios

Some Requirements

5.4.3. Software Requirements

The software that is developed for LHC@FNAL must be developed using standard software tools that allow version tracking, assist code reviews, encourage documentation, and help with maintainability. The software must be robust and stable. Software bugs that could interfere with LHC@FNAL operations must be eliminated.

4 – 1. Software repository	Essential	Proposed-EG
All software must reside in a software repository that must be used to keep track of different versions of the software during development.		

4 – 2. Version control	Essential	Proposed-EG
The version numbers of software used to process data must be managed in such a way that the particular version that was used to process data can always be identified and reproduced.		

4 – 3. Parameters database	Essential	Propsed-EG
Parameters and constants (such as those used in data analysis programs) must reside in a database so that the particular values used to process data can always be identified.		

4 – 4. Software testing	Essential	Propsed-EG
All software must include code for testing purposes as part of the development process, and must be used for testing the software after development has been completed.		