

CMS Upgrade Workshop

FNAL Nov. 19-21 2008

Muon Detector WG Introduction

Wolfram Zeuner DESY & CERN

Charge of the Muon Detector WG:

Create a detailed working plan for the Phase 1 Muon upgrade

Create a concrete action plan for the next 6 months

First time I have to plan an upgrade of a detector that has not yet seen a single collision

The muon system could not show yet its performance under LHC conditions

There are still technical issues with the current system – e.g. RE-Gas

It has to be done now to be ready by 2012 – 2013

But we need to remain flexible to be able to incorporate experience from operation with beam

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All three Muon systems plan significant upgrades

- Complete the geometrical coverage
ME4/2
RE number of stations needed for optimal acceptance
- Improve electronics for higher occupancy, pile up etc.
- Improve the triggering and track finding

Large advantage of Muon system is its modularity

One could envisage partial installation over several shutdowns.
Requires careful integration of new components to not hamper the functionality of the entire system

Muon Detector WG Introduction

Work plan contains not only WHAT to do but also

- **WHERE** at your home Institute or at CERN ?
If at CERN what facilities and infrastructure will be needed
- **WHEN** everything at once or a sort of an adiabatic upgrade ?
- **WHO** Institute staff or central CMS crews
Building and Installation might be different
- **HOW MUCH** will it cost

Muon Detector WG Introduction

INTEGRATION

At the detector: What services are needed
cables, fibres, cooling, gas, racks, power...
Is there enough space for all that ??

Infrastructure: Almost the same as above

Readout & Data acquisition: Has to fit into the working system
Requires careful planning

Please keep in mind

CMS TC will do its utmost to support all upgrades of CMS, but
CERN resources are limited and will be so in future...










Before implementation all upgrade proposals will have to go through a
formal multi-step approval process with external reviewers.

Variety of interesting talks

Come, listen, discuss and take over some work

























Wednesday 19 November 2008

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14:00	   Updated ME4/2 chamber construction costs and prototype (30')	Oleg Prokofyev
14:30	   Update on the digital CFEB (30')	Jianhui Gu
15:00	Coffee break	
15:30	   RPC upgrade plans (45')	Dick Loveless

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09:00	   DT upgrade overview (40')	Pierluigi Zotto
09:40	   Specific interests of German groups (30')	Jens Frangenheim
10:10	Coffee break	
10:40	   Triggering CSC Muons in High Pileup Conditions (20')	Vadim Khotilovich
11:00	   Simulation/software tools for upgrade studies/geometries (20')	Michael Weinberger
11:20	   Progress on studying SLHC muon trigger rates with FastSimulation (20')	Eric Charles Brownson
11:40	Lunch break	
13:00	   Introduction to integration issues for muons (20')	Wolfram Zeuner
13:20	   CSC-RPC integration issues (20')	Dick Loveless
13:40	   Integration - general discussion (1h20')	