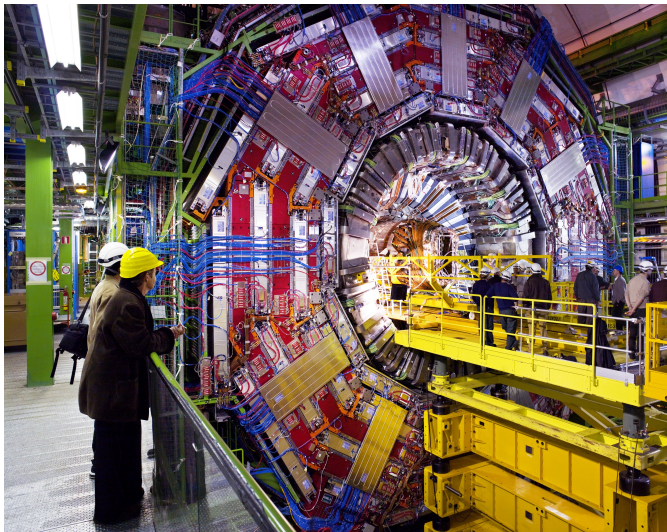
CMS Status and GREN

(Global Run End of November)

All Experimenters' Meeting

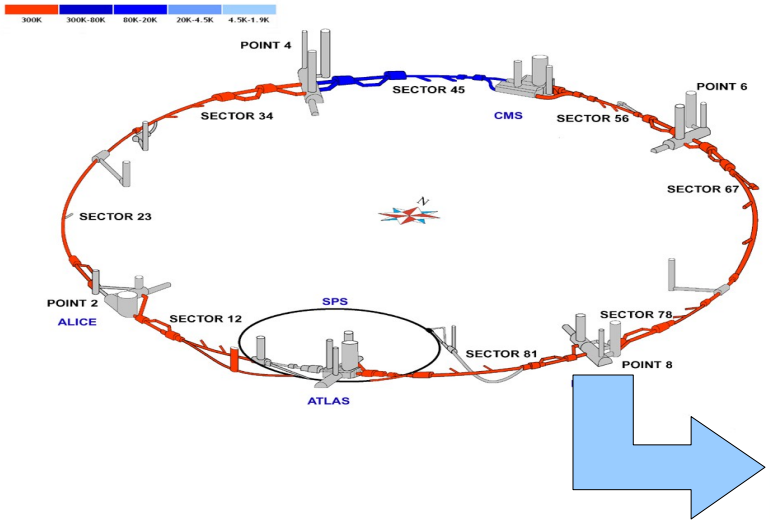
December 17, 2007

Kaori Maeshima

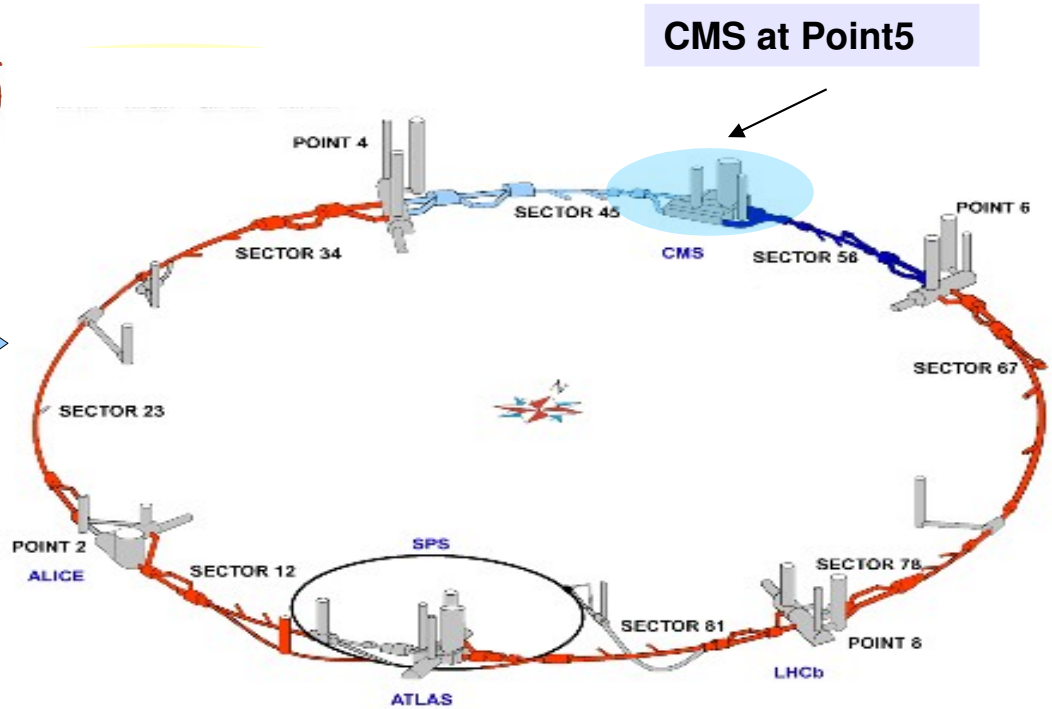


LHC – Cooldown in Progress

- **Design: 1232 superconducting 8.4T dipole magnets at T=1.9K**
- **Cooldown: Sector 45 stable at ~2K .**
  Sector 56 started -> ~80K by Xmas.

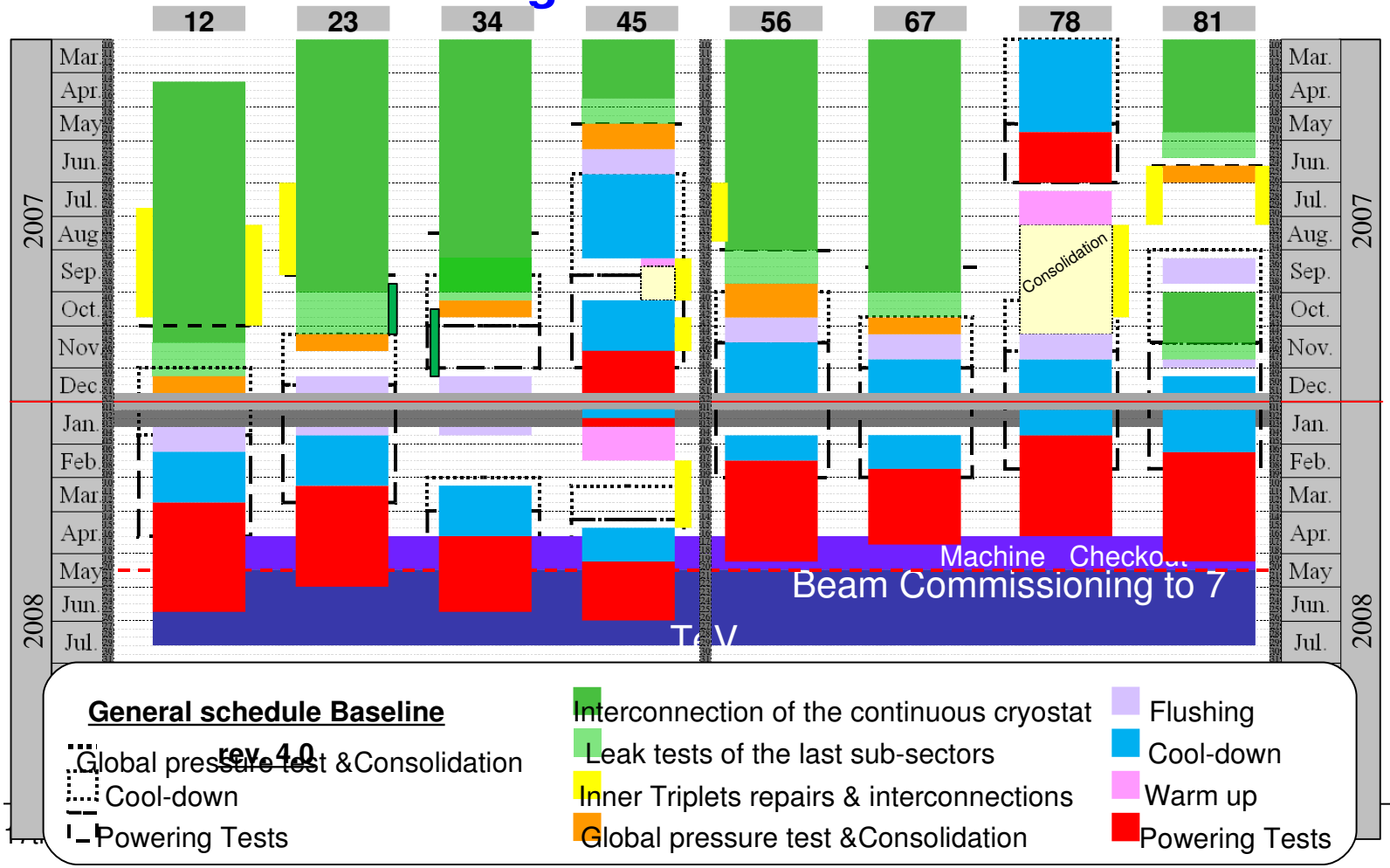


changes from last report (Nov. 12th '07)



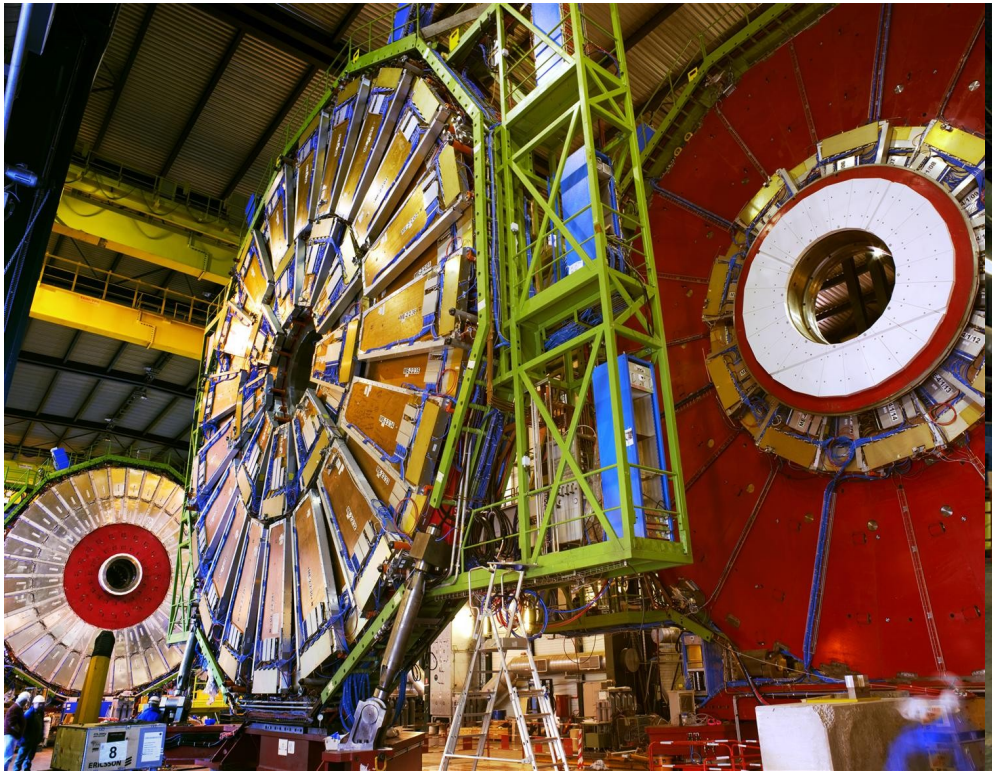
LHC General Coordination Schedule

- Official Schedule: Beam in summer 2008
- Time [warmup-cooldown] is "months" not "weeks"
- Schedule still holding

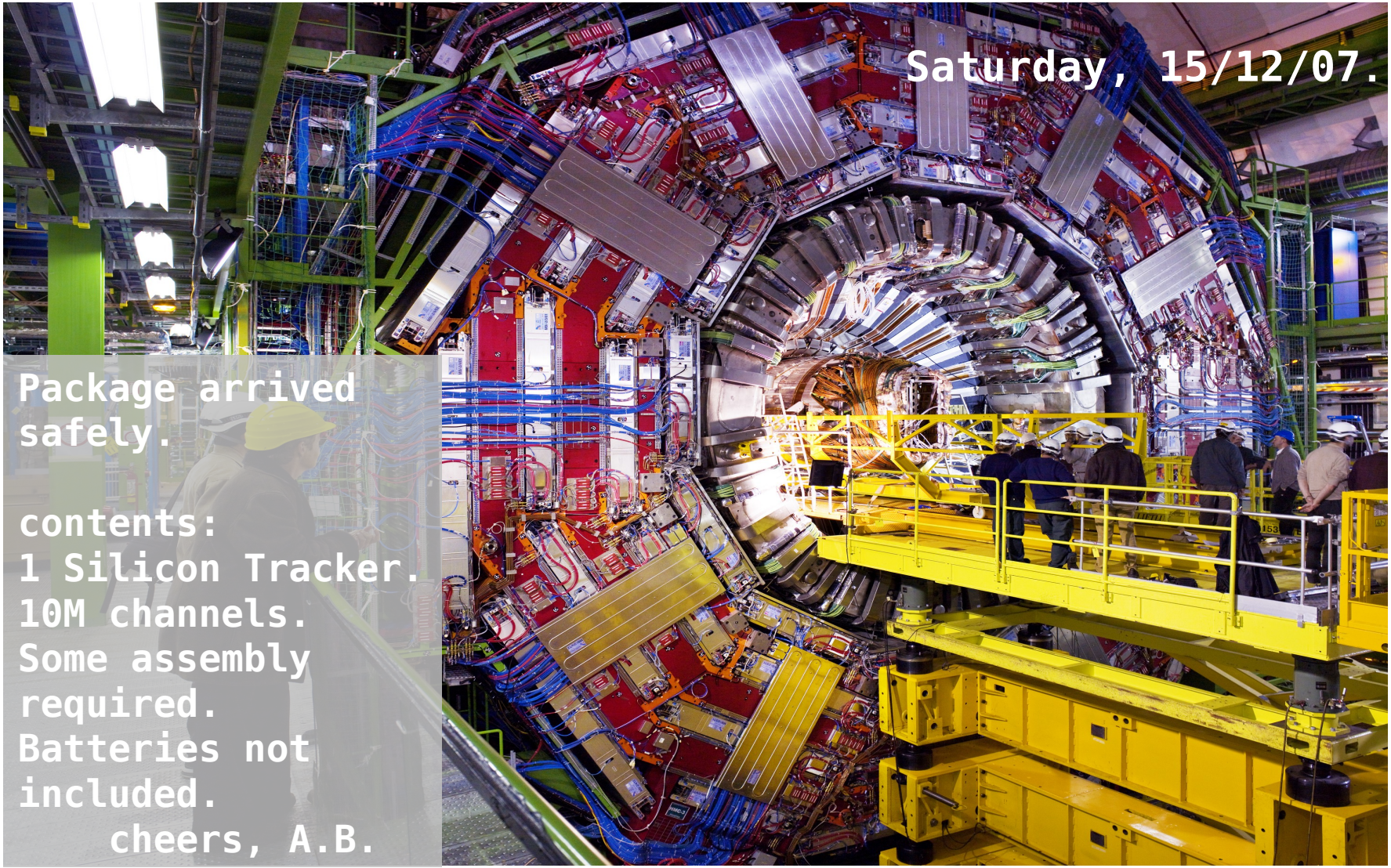


CMS Installation – progress since last report (Nov. 12th –> Dec. 17)

- 4 heavy items remained to be installed (Nov. '07): YE-1,2,3 and tracker.
- YE-1,2,3 needed to be re-shuffled before lowering to lower YE-3 first
- Done: Rotation of YE-1,2,3, lowering of YE-3 and lowering/installation of tracker
- Lowering of YE-1,2 are scheduled in January 2008.



SiTracker Inserted in the CMS Detector!



The Compact Muon Solenoid Experiment

still to be installed:

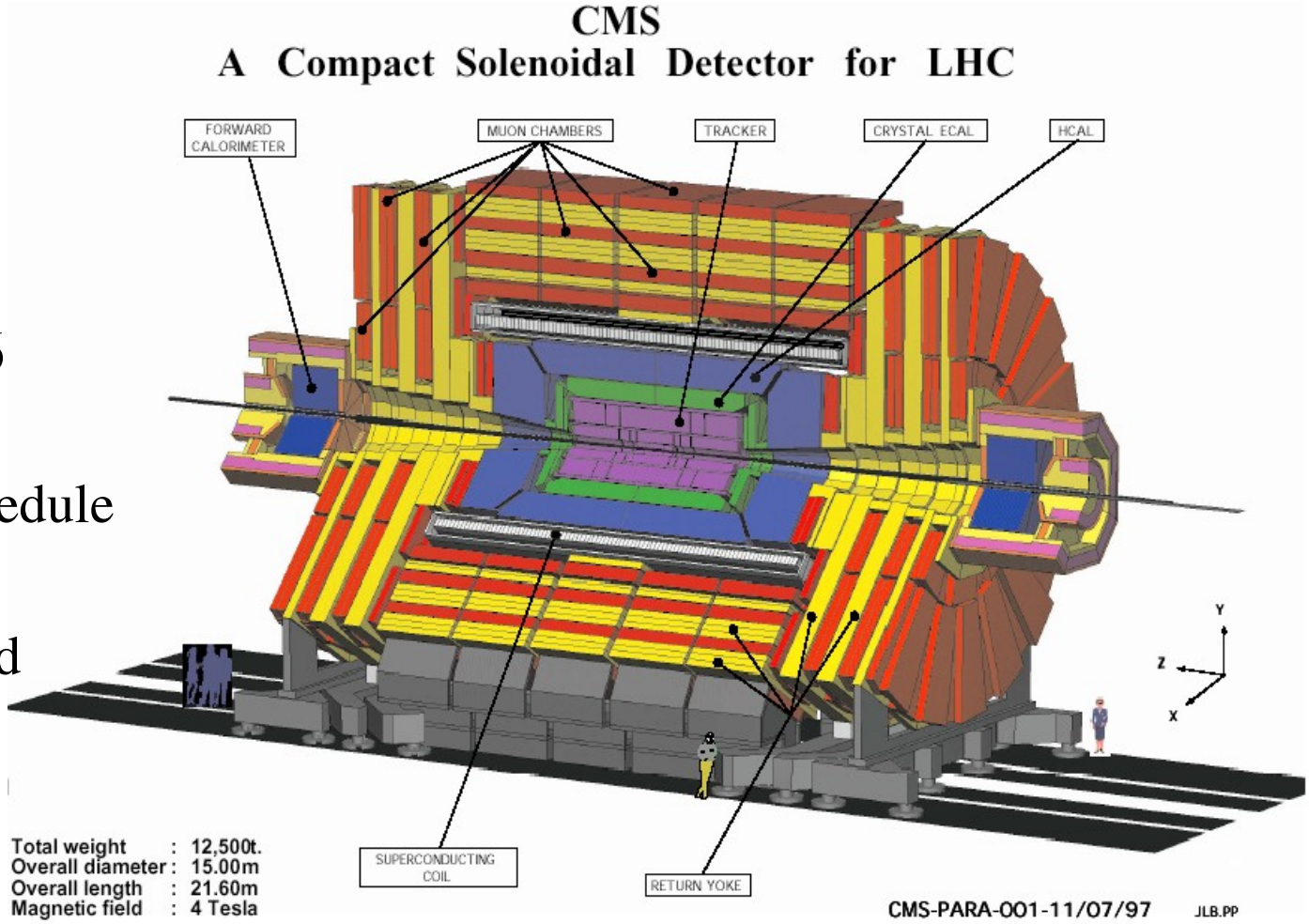
- YE-2, 1*
- Endcap Ecal
- Pixel

CMS schedule v36.6

on-schedule to meet

the official LHC schedule

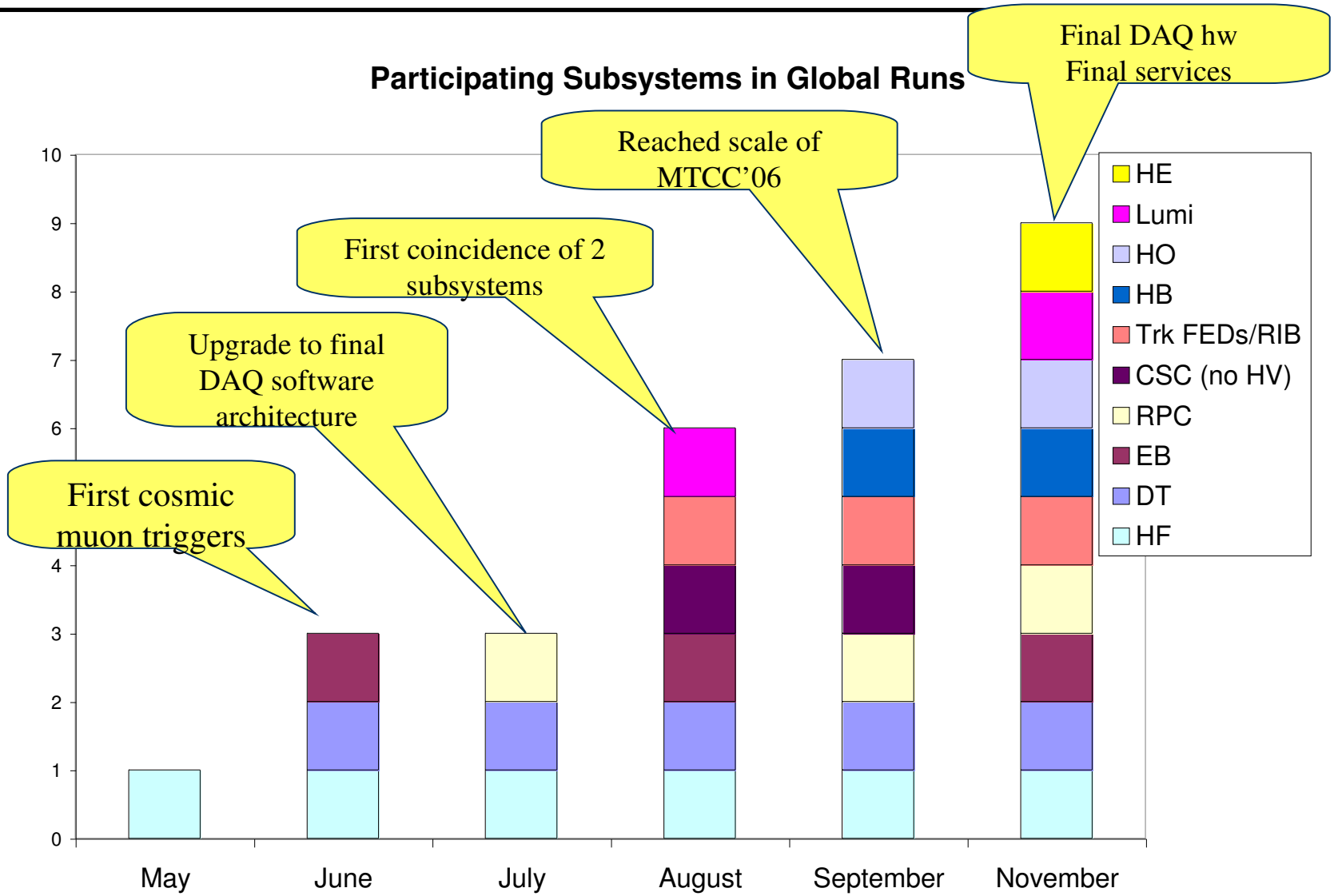
* ready to be lowered



November Global Run

- **Global run exercises: monthly mobilization of subdetector hardware, software, and their experts, in order to exercise**
  - **global DAQ, hardware (L1) trigger, high level software trigger (HLT)**
  - **inter-detector synchronization and performance analysis**
  - **global run control and monitoring**
- **Started last May, continuing up to LHC beam**
- **This exercise: Nov. 26 –Dec. 7 (no GR in Oct. or Dec.)**
- **Participation on- (CERN-P5) and off-site (CERN-Meyrin, FNAL, et al.)**

Increasing Complexity of the 2007 Global Runs



Participating Components

- Components included in Nov. global runs:
  - DAQ, TRG, DQM
  - HCAL, ECAL*, DT, RPC, TRACKER**
  - Four runs with all together

*cooling problems

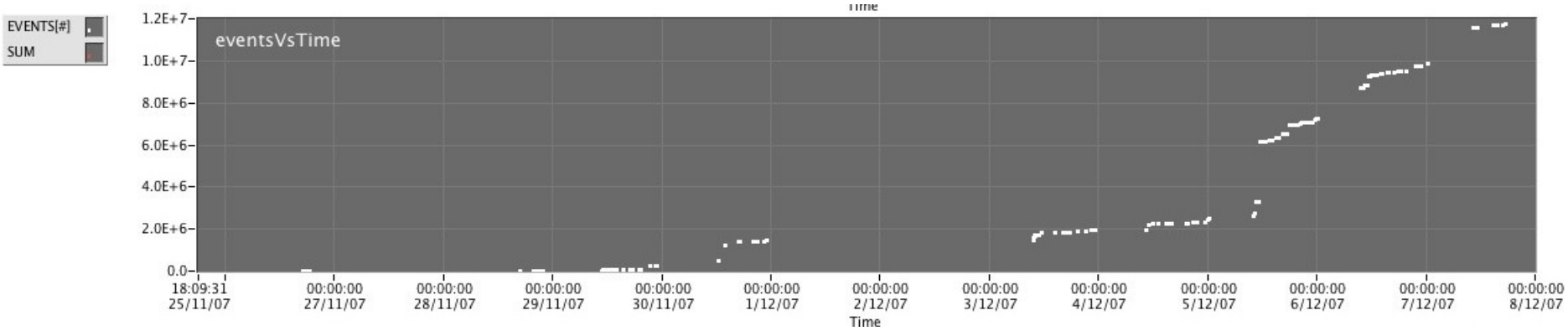
** "Rod-In-a-Box" RIB

- Triggers used:
  - DT, RPC, HCAL (mip), attempt ECAL
- NEW: all HCAL (HB,HE,HF,HO) in readout
- All ECAL barrel to participate but cooling problems prevented it
- CSC awaiting more cooling and electrical services
- Week 1 for daq/trigger tests and debugging
- Week 2 for large scale data collection

GREN achievements: highlights

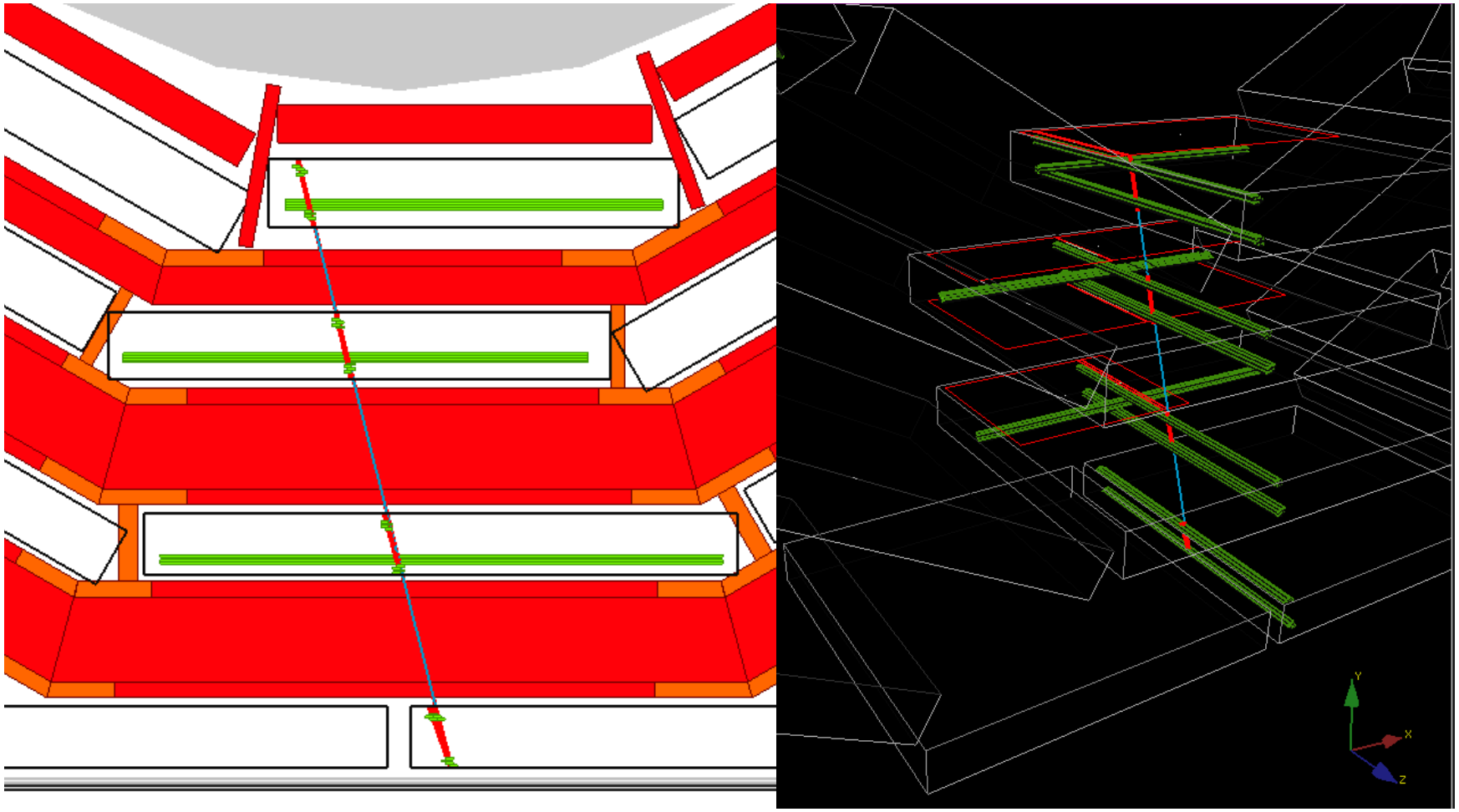
http://cmsdoc.cern.ch/cms/performance/NovGRSummary.html

- Successful HCAL MIP triggering, DT/RPC triggering
- Noise studies of TRK ROD readout
- High rate random trigger tests
- HLT running unpacking, analysis and selection code
- New DQM GUI successfully deployed



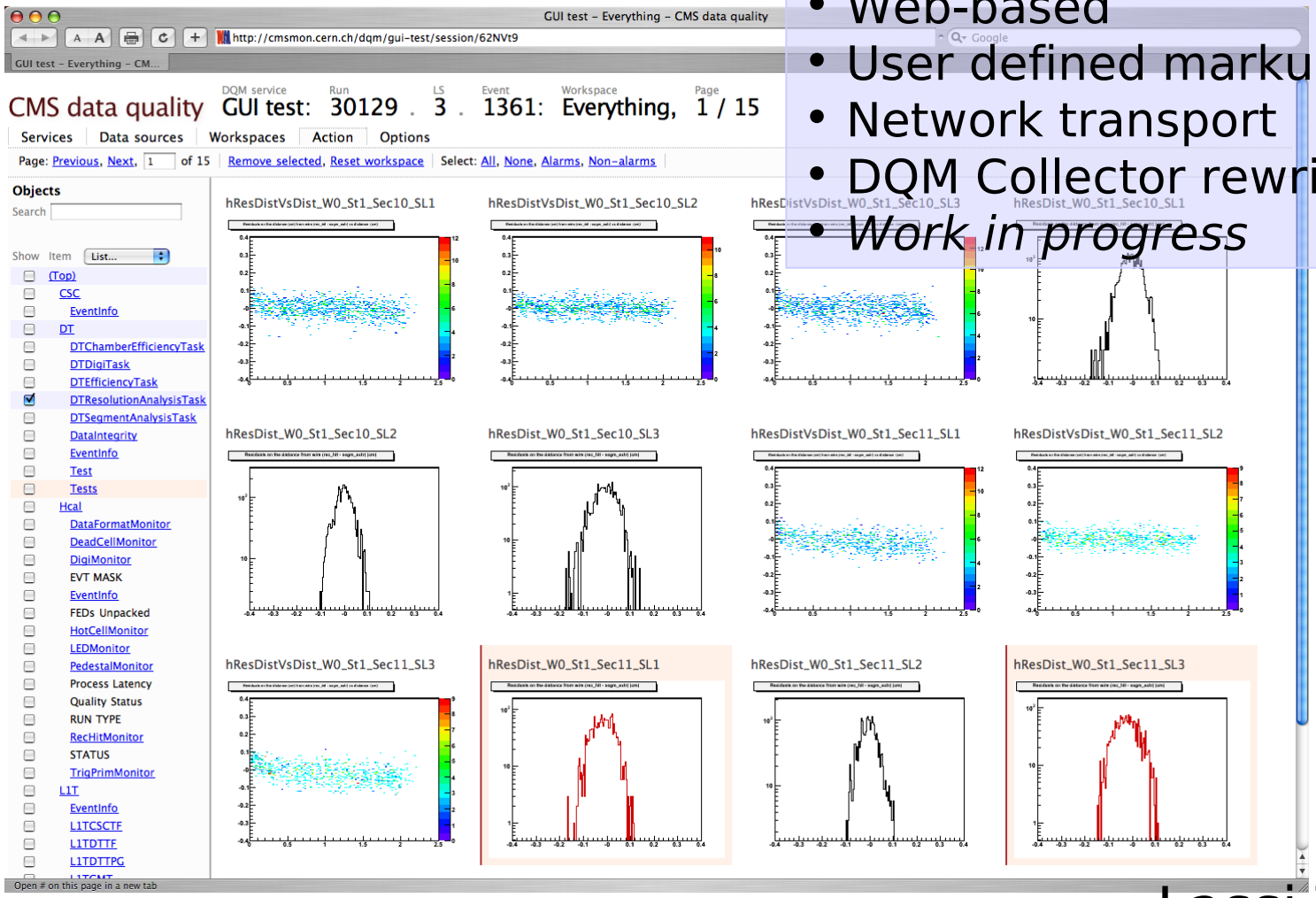
logged events vs time: ~ 10M events logged

DT Muons from HLT (GREN)



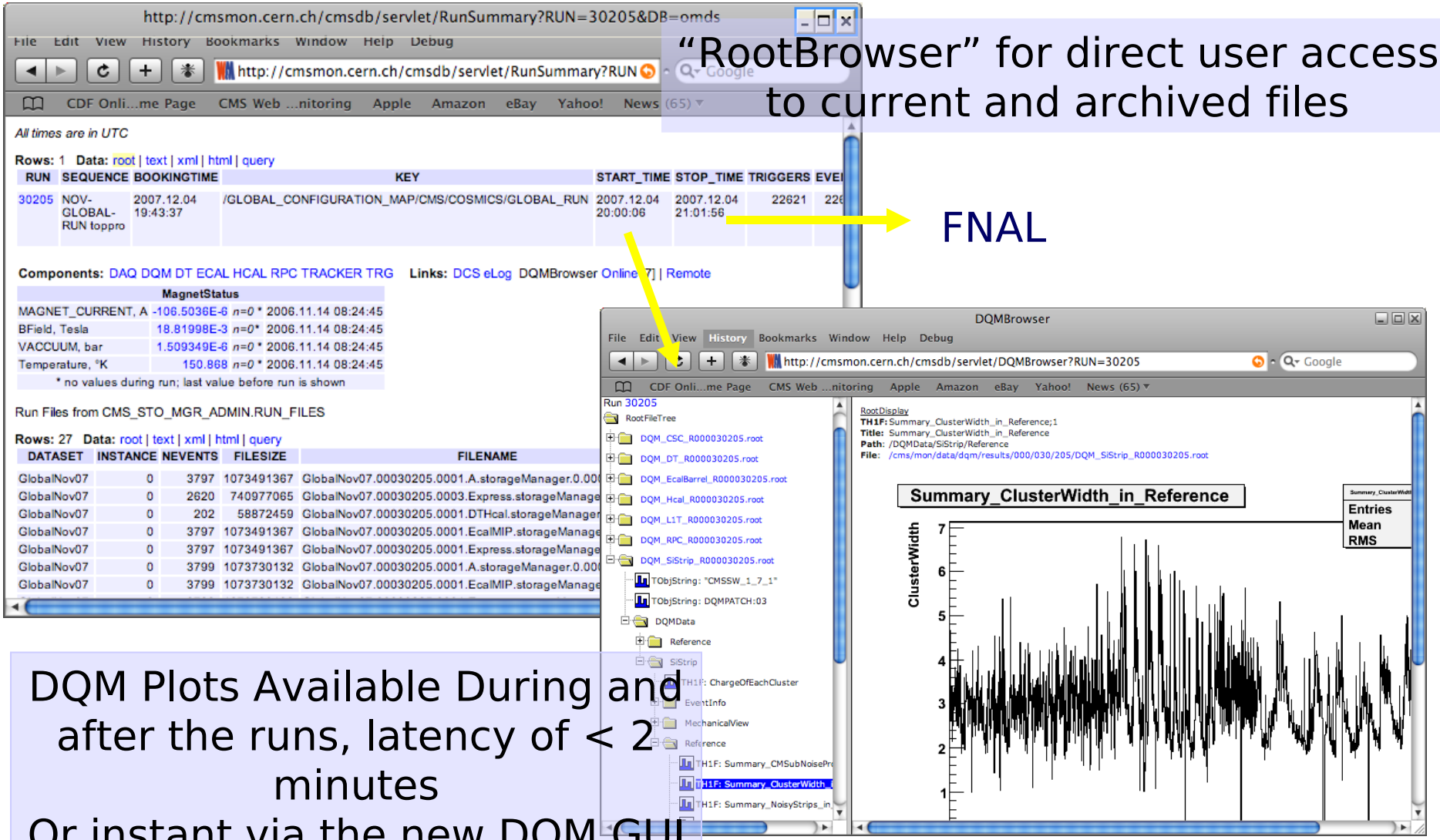
New DQM GUI

- Web-based
- User defined markups and plugins
- Network transport
- DQM Collector rewritten
- *Work in progress*



Lassi Tuura

RunSummary Example



"RootBrowser" for direct user access to current and archived files

FNAL

DQM Plots Available During and after the runs, latency of < 2 minutes
Or instant via the new DQM GUI

CMS Centre
Technical Installations
Jan. 2008: Ready for operation

Preparatory phase	Jan-May
Requirements, scope, cost, schedule	done
Studies: ergonomics, acoustics, light…	done
Safety: fire, radiation …	done
Relocation of personnel / room clearing	done

Civil Eng. & Technical Services	Jul - Oct
Major electrical upgrade (376 new sockets, lighting)	done
126 Cat-6 network sockets (2 * 10 Gbps uplink)	done
25 new phone lines	done
40 kW iced-water cooling system	done
New fire exit and window	done
Ventillation system, acoustic and thermal insulation	done
Concrete, fire breaks, false floor, ceiling	done
Computing operations, meeting rooms, offices	done
Painting and repairs throughout	done

Lucas Taylor

Summary

- LHC is progressing on schedule.
- CMS installation is on schedule to meet the LHC schedule.
- Full field (3.8T) cosmic run is planned ~ May 2008.
- GREN (Global Run End of November) was quite successful.
  - CERN ROC from Meyrin as well as from FNAL ROC have participated to GREN.
  - FNAL ROC has provided many very useful general tools to be used for monitoring which everyone in CMS can benefit.
    - FNAL ROC is perceived and employed as an essential resource for commissioning by Int'l CMS
  - Upcoming main challenge for FNAL ROC:
    - in sync with CERN activities (at P5 and CMS Centre).
    - No doubt that CERN has the concentration of sub-detector experts and conditions are rapidly changing.
    - Progress out from the current "expert-only" commissioning mode
    - Work with sub-detector groups how we can supply USEFUL timely feedback to the experiment in this environment.