



CMS Centre @ CERN

Lucas Taylor, Northeastern University
Computing & Offline Week, 20 April 2007

2006

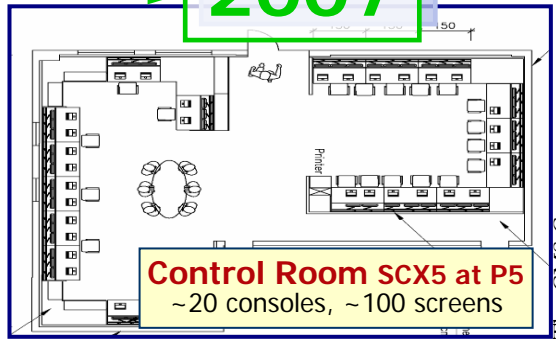


"Green Barrack" P5
~15 seats; ~20 screens

CMS Control Room

- CMS detector, trigger, DAQ
- Installations underway (David Stickland et al.)

2007



Control Room SCX5 at P5
~20 consoles, ~100 screens

The CMS Centre



CERN B40 3rd floor
~10 seats; ~15 screens

CMS Centre (Meyrin)

- Centre-of-gravity for CMS Offline
 - DQM, calibration, express analysis
 - Offline computing operations
 - Communications with CMS Control Room and offsite centres
- In former PS main control room, Meyrin (on the way to restaurant 2)



CMS Centre (Meyrin)
~25 consoles, ~150 screens

Lucas Taylor, Northeastern University



FNAL ROC
~15 seats; ~30 screens

Remote Centres

- Fermilab - maybe others in future
- Share offline tasks with CMS Centre in Meyrin
- Tier-1, Tier-2 operations



LHC @ FNAL
~10 consoles

May 2, 2007



CMS Centre RTAG* finished

It defined the functions and requirements

CMS Note 2007 / 010 <http://lucas-nice.web.cern.ch/lucas-nice/cms-centre/>

(1) Data Quality Monitoring, Calibrations, Express Analysis

- Focal point for detectors' offline experts (DPGs...)
- Offline DQM (shifts) to monitor data-taking
 - *Feedback to Control Room*
 - *Share work with offsite centres*
 - *LHC@FNAL, maybe others*
- Calibrations, Alignments, Express Analysis
 - *Communications between sub-systems*
 - *Input to Tier-0 reconstruction*
 - *Feedback to HLT*

(2) Offline Computing Operations

- Receipt / storage of event data
- Tier-0 reconstruction
- Distribution of data to Tier-1s
- CAF operations for calibration, alignment and rapid analysis
- Coordinate offsite production
 - *Re-processing of real data, MC*
- Offline Services
 - *DB admin, SW distribution, ...*
 - *User Support (maybe in B40)*

(3) Outreach

- Visits, displays

* Requirements and Technical Assessment Group

- David Barney, Michel Della Negra, Giuseppe Della Ricca, Erik Gottschalk, Hans Hoffmann, Werner Jank, Kaori Maeshima, Martijn Mulders, Christoph Paus, David Stickland, Lucas Taylor (chair)



CMS Centre – Main Features

Main Room (300 sq.m) 25-50 people

- Desks, computers, networks
- Numerous monitoring displays
- Meeting rooms, offices, rest area

CMS offices nearby ~250 people

- Priority for CMS Centre users
 - *Offline / Computing project*
 - *Sub-detector offline (DQM...)*
- Large shared rooms
 - *For sub-projects*
 - *For visitors with laptops*

Meeting Rooms nearby

- Auditorium + smaller rooms
 - *Need to equip for audio/video conferencing*

Outreach

- Public visits, displays...



CMS Centre
Refurbish former PS
main control room





Consoles

Upper row:
2-3 monitoring screens
 (e.g. displays from Control Room)

Lower row:
2-3 screens for interactive work

Cable tray:
 Power, phone, networks

Services cabinet
2 PCs per console
 cooling, ventilation

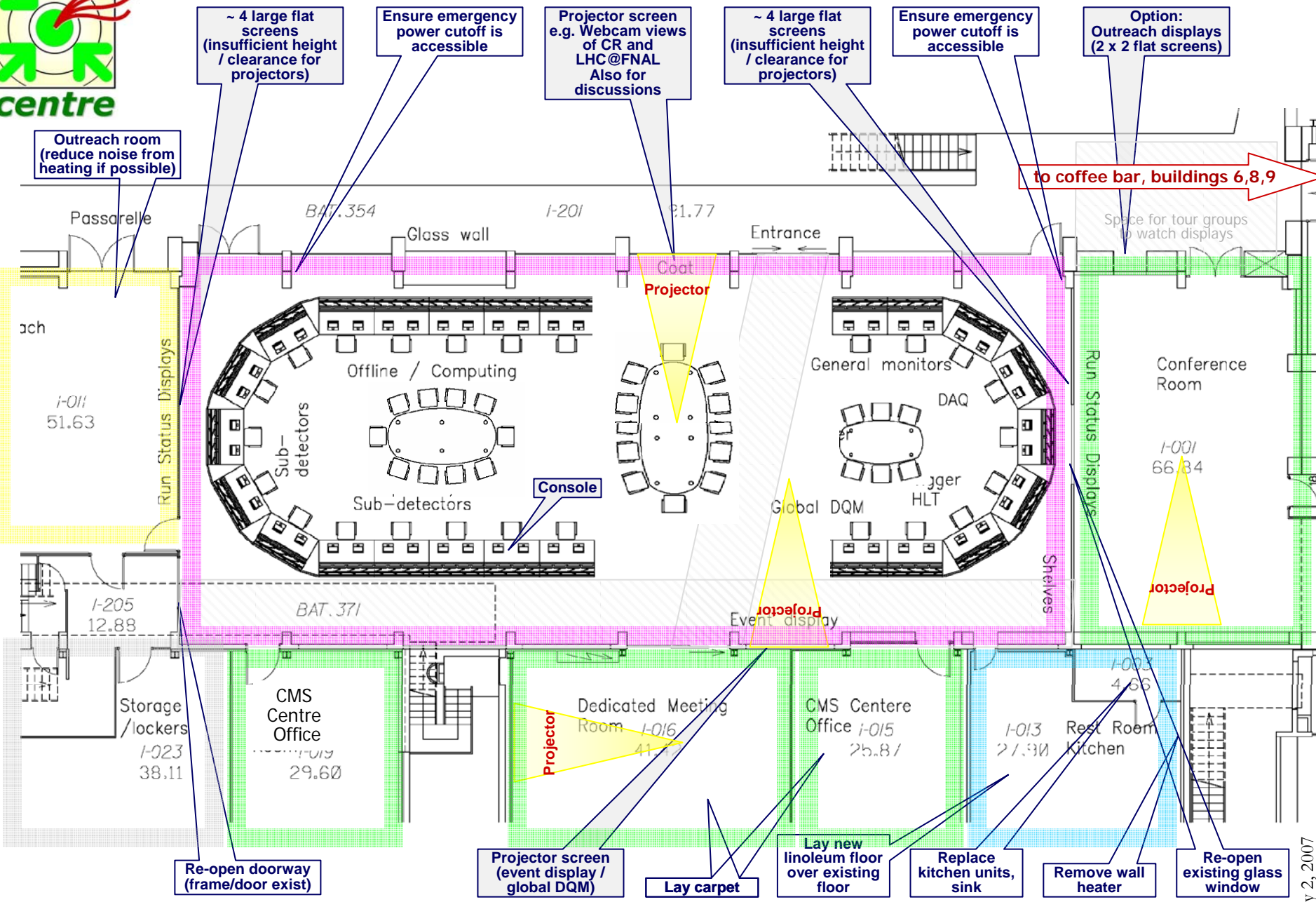


Design studies underway with *Erich Keller AG*

Functions of consoles

General	1) CMS Centre shift leader
	2) Luminosity, LHC conditions, CMS top-level status
	3) Trigger / HLT
	4) TriDAS
	5) Global run quality (DQM, event display)
	6) Global calibration / alignment
Sub-detectors	7) Pixels
	8) Tracker
	9) ECAL
	10) HCAL
	11) Muon / DTs
	12) Muon / CSCs
	13) Muon / RPCs
	14) Forward detectors
Offline Computing	15) General IT monitoring: CERN systems and CMS Centre
	16) Data management / movement
	17) Tier-0 and CMS Analysis Facility (CAF) operations
	18) Production operations (MC, re-reconstruction, skims,...)
	19) Database operations
	20) Offline software management / distribution
For dynamic assignment as required	21) Console A
	22) Console B
	23) Console C
	24) Console D
	25) Console E

One possible allocation of consoles. Needs refining. Will evolve.





Re-location to PS Area



CMS requested new offices for ~250 people (buildings 6, 8, 9, 10)

- First offices available in B8 (awaiting new furniture)

Proposed strategy (LT) for relocation – to discuss

1. Relocate Offline / Computing **May / June 2007** i.e. **before CSA'07**
 - Large room for core operations team (CMS Centre will not be ready for CSA07)
 - 1 office / meeting room for Offline / Computing coordinators
 - ~5 offices (total 10 people) for closely related Offline / Computing staff
 - Move rest of Offline / Computing people steadily as offices become available
2. Sub-detector offline groups (DQM, DPG, ...) **Start in Summer 2007**
 - Large room per sub-detector (core team) + some neighbouring offices
3. Some shared space for visiting collaborators (laptops + wireless)

N.B. this is my opinion only ... input to an global CMS strategy

- Launch meeting will discuss this next week
 - Philippe Bloch, Marie-Claude Pelloux, Ian Willers
 - Matthias Kaseman, John Harvey
 - Lucas Taylor

CERN
Comp./Offline PMs
“CMS Centre” PM



CMS Centre - Schedule

Functions / requirements: **RTAG finished March (early)**

– CMS NOTE - 2007 / 010 <http://cern.ch/lucas-nice/cms-centre/>

First offices (building 8): **becoming free now**

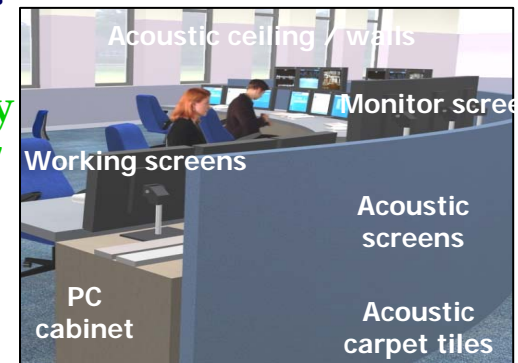
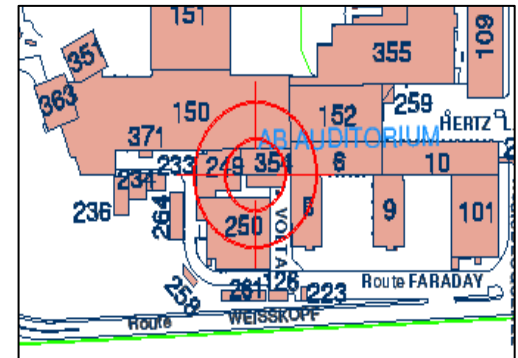
- Move Computing / Offline core team **before CSA07**
- Establish interim (large) operations room + offices

A lot of infrastructure work needed for CMS Centre

- Power, air-con, networks, phones, lighting, acoustics, etc.
- Radiation: reconfigure PS; backup: concrete shielding
- Technical planning, price enquires, contracts ...**underway**
- Start work when room is vacated for CMS: **June/July 2007**

Consoles and IT equipment: design / costing underway

- With Erich Keller (who did CCC, LHC@FNAL, etc.)



Nov 2007: Basic CMS Centre for LHC engineering run ... may be too tight ?

Mar 2008: CMS Centre ready for LHC physics pilot run ... required !