

# CMS Centres

for  
Offline Operations, Monitoring & Communication

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## *Shaping Collaboration 2006*

A Conference Sponsored by the



and  
CERN Large Hadron Collider Users

December 11-13, 2006 International Conference Centre, Geneva, Switzerland

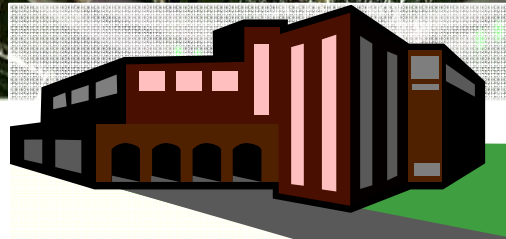
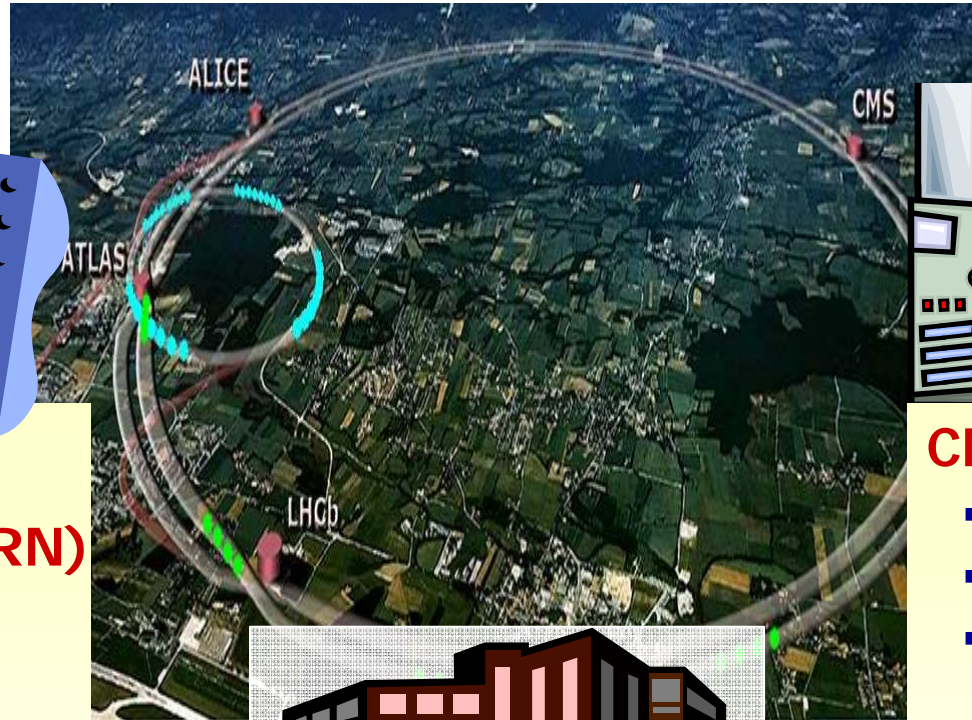


# CMS Centre



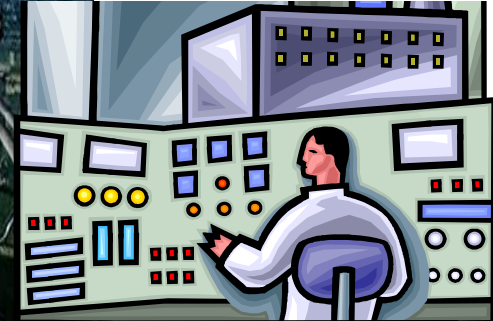
## CMS Centre (CERN)

- Human focal point
- Offices, auditoria
- Visitor facilities
- Detector monitoring
- Data analysis
- Computing operations
- Offline helpdesk
- Outreach: visits, displays...



## Offsite facilities

- CMS institutes
- Computing Facilities (Tier-1s, Tier-2s)



## CMS Control Room

- Safety, shifts...
- Liaison with LHC
- Detector and trigger control
- Data acquisition
- Online calibration
- Data quality monitoring
- Transfer data & DBs offline



# CMS Centre

## 2006

Interim "CMS Centres" set up for CMS online operation, offline ops & remote monitoring

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

CERN B40 for CSA06/MTCC  
~10 seats; ~15 screens

FNAL Remote Operations Centre  
~15 seats; ~30 screens

Very successful in magnet & detector commissioning, CSA06 Grid computing challenge



## 2007

Major new facilities for LHC data-taking

Underground and on surface

**CMS Centre**

LHC@FNAL (near Chicago)

...plus other centres of various sizes in institutes



# CMS Centre



## CMS focal point on the main CERN site

- Centre on former Proton Synchrotron main control room  
– Near CMS buildings 40, 32 and a restaurant
- Offline operations, monitoring, control room (50 people)
- Offices (250 people), visitor desks, meeting rooms
- Outreach – public visits, displays...

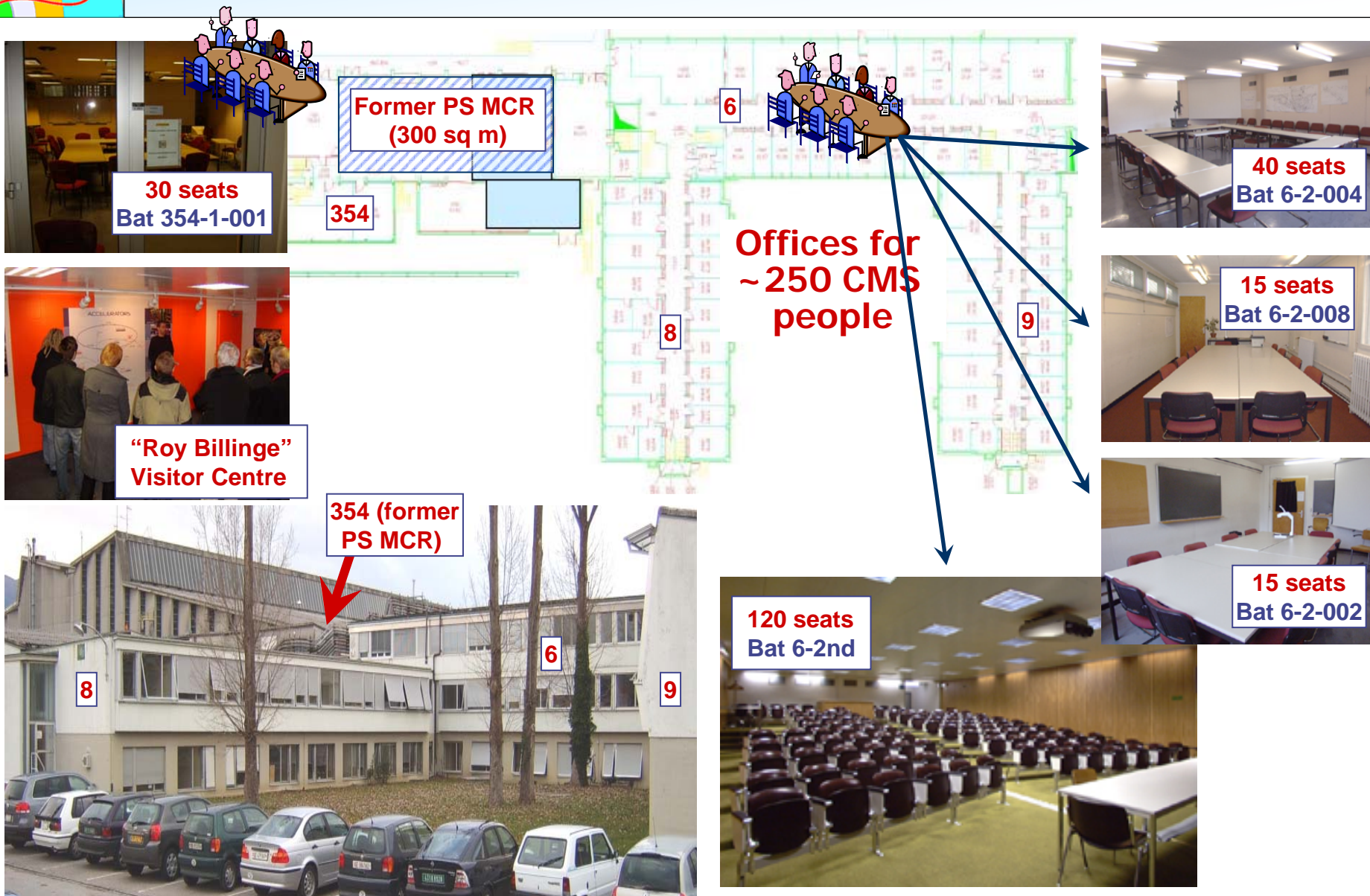
Pointer 46°13'50.93" N 6°02'52.27" E elev 1430 ft

Streaming 100%

Eye alt 6196 ft

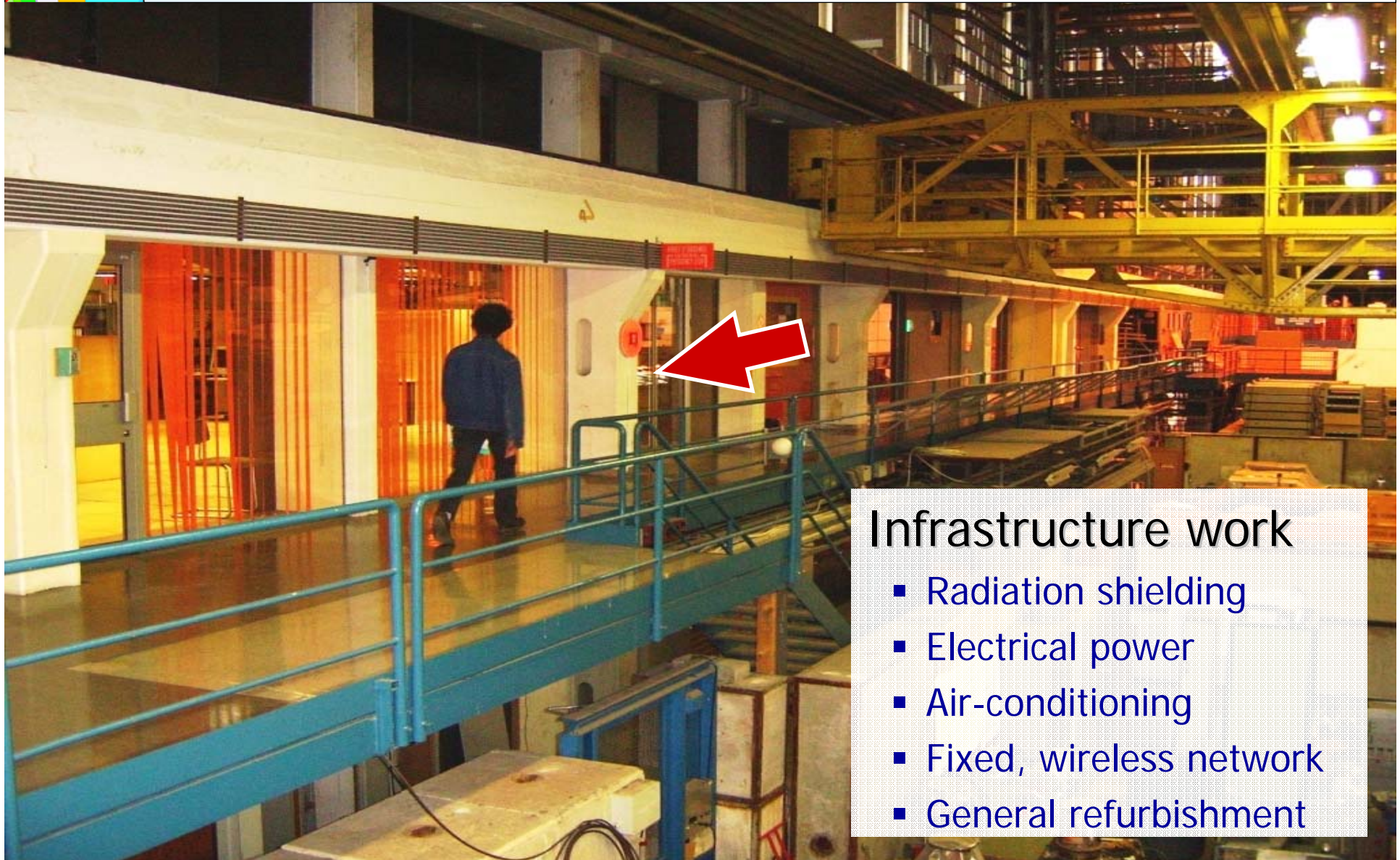


# CMS Centre Area





# CMS Centre

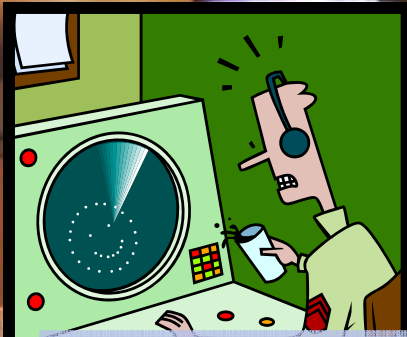


## Infrastructure work

- Radiation shielding
- Electrical power
- Air-conditioning
- Fixed, wireless network
- General refurbishment



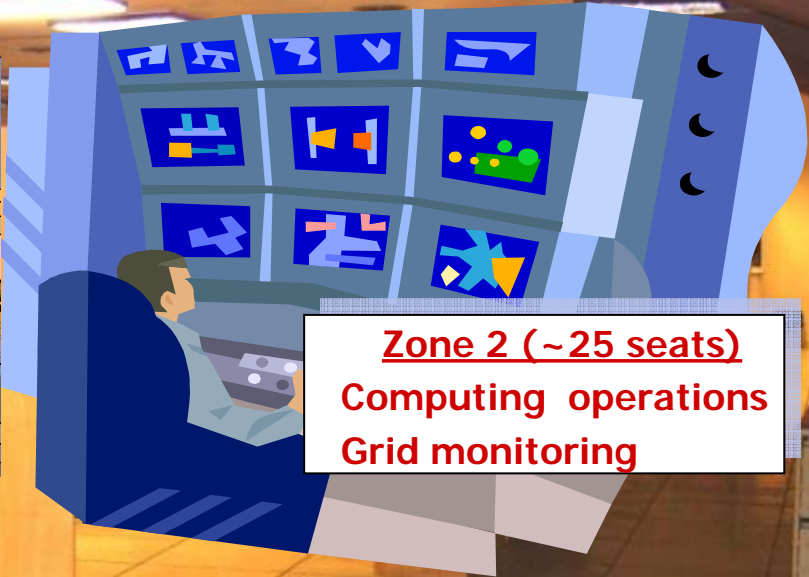
# CMS Centre (Main Room)



**Zone 1 (~25 seats)**  
Physics monitoring / trouble-shooting  
Express analysis



Large permanent video-conference "windows" to online control room and other major centres



**Zone 2 (~25 seats)**  
Computing operations  
Grid monitoring



(At night) offsite shift-takers in better time-zones



Point-to-point video links e.g. to online shifts



Phone, Email, chat connections to CMS people worldwide



Outreach: public displays, glass wall ...



# CMS Centre Taskforce

(aka RTAG - Requirements and Technical Assessment Group)

The RTAG should clearly establish the needs of CMS Centre(s)

- in areas such as: Computing and Offline operations, user support, monitoring of data quality, detector calibrations, express analysis, collaboration communications and outreach.

The RTAG should focus on the CERN Meyrin centre but also consider the CMS online control room and offsite centres

- especially with respect to communications needs and overall system coherence.

The RTAG should make technical & planning recommendations

- taking cost, schedule and other constraints into account and having consulted CERN and other interested parties.

**Mar 2005**

Completion of RTAG

**Mar to Dec 2007**

Construction & commissioning of CMS Centre

**End 2007**

**CMS Centre ready to use**

*Subject to resolution  
of numerous issues*