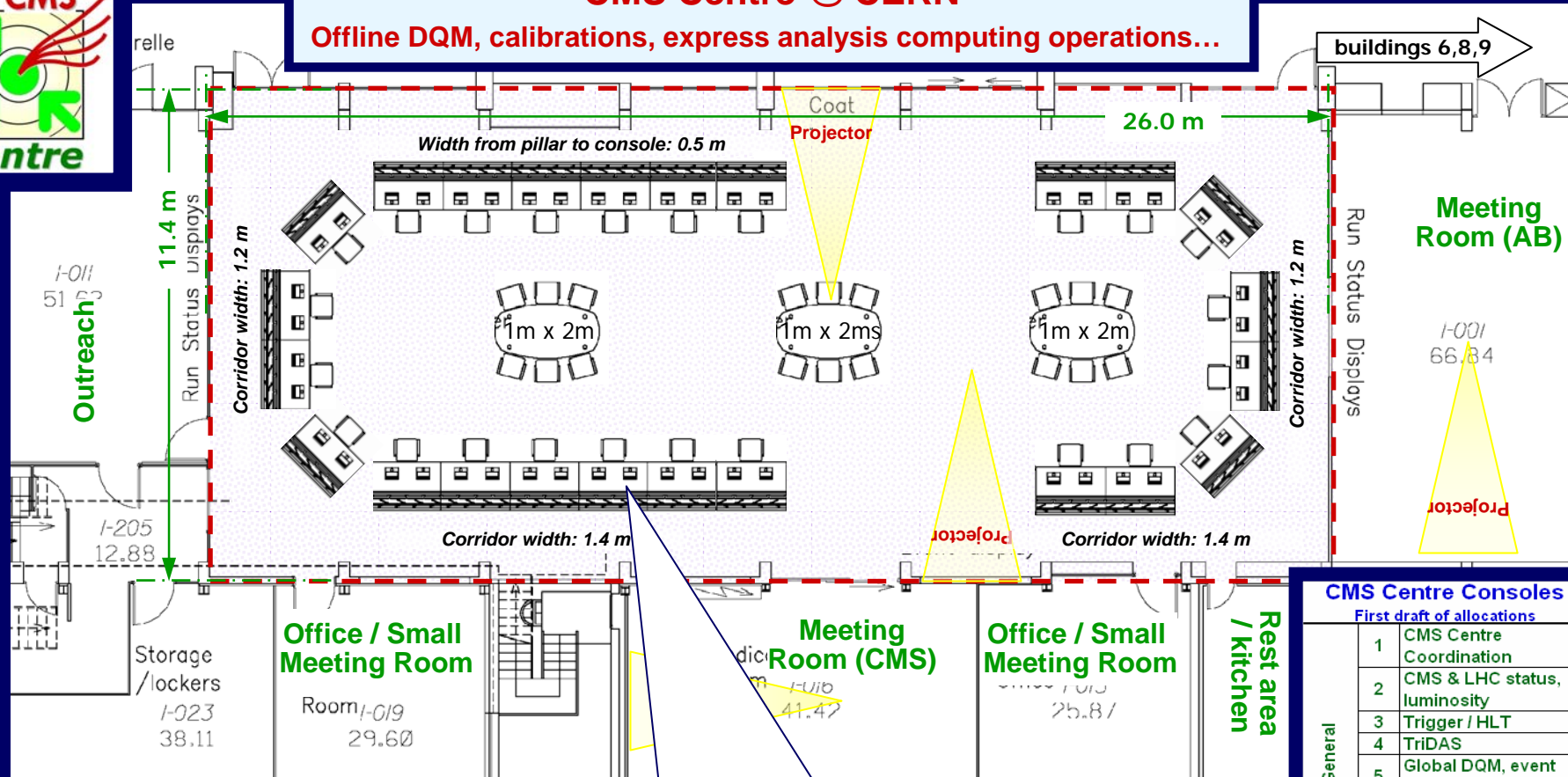




# CMS Centre @ CERN

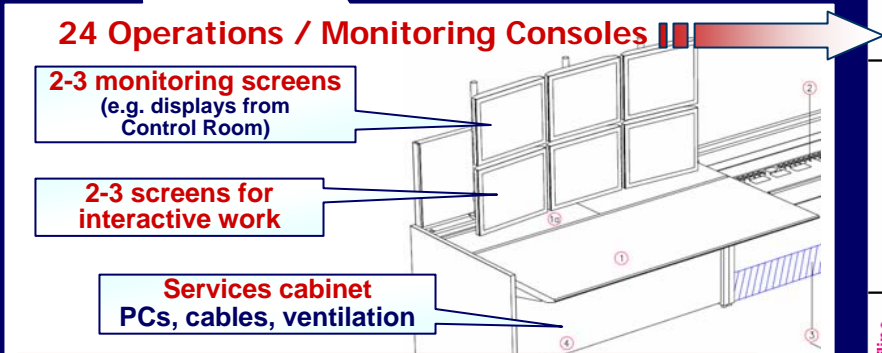
Offline DQM, calibrations, express analysis computing operations...



CMS Centre Consoles	
First draft of allocations	
General	1 CMS Centre Coordination
	2 CMS & LHC status, luminosity
	3 Trigger / HLT
	4 TriDAS
	5 Global DQM, event display
	6 Global calibration / alignment
	7 Express-line
	8 Spare - to discuss
Sub-detectors	9
	10 Pixels and Tracker
	11
	12
	13 ECAL
	14
	15 HCAL
	16 Muon / DTs
	18 Muon / CSCs
	19 Muon / RPCs
	20 Forward detectors
	Offline Computing
22	
23 Offline operations shift crew	
24	



**LHC @ FNAL**  
Already operational - similar design and functions as CMS Centre



## 24 Operations / Monitoring Consoles

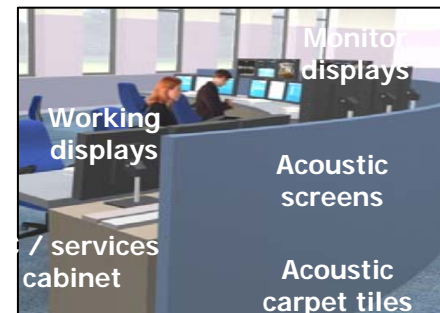
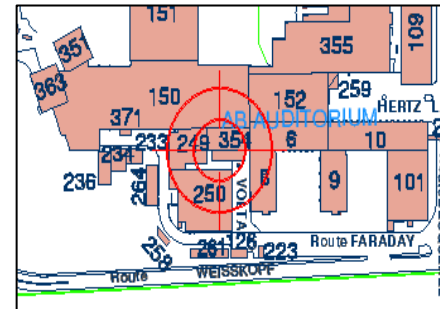
Lucas Taylor, Northeastern U. 13 June 2007



# CMS Centre Status

(Lucas Taylor, CMS Centre Project Manager)

- Functions / requirements RTAG finished: Mar 2007
    - CMS NOTE - 2007 / 010 <http://cern.ch/lucas-nice/cms-centre/>
  - Technical studies, WBS, schedule and costs. Baseline plan done: Jun 2007
    - Radiation solved: reconfigure PS; backup solution: concrete shielding
    - Technical services (civil engineering, power, cooling, ventilation, networks, phones...)
    - Acoustic & lighting studies, ergonomic study, Safety Commission & fire inspections
    - Consoles and IT equipment: designs / costing well advanced (Erich Keller AG)
      - Evaluated LHC Control Centre, LHC@FNAL, etc.
  - “Green Light Review” 18<sup>th</sup> Jun → Technical Services work starts: July 2007
  - Technical Services work complete Nov 2007
  - IT systems installation Nov-Dec 2007
  - Commissioning of Operations and Monitoring applications Jan-Feb 2007
  - **CMS Centre ready for full CMS Data-Taking** **Mar 2008**
    - **Currently we are 2 weeks ahead of schedule**
- 
- **Relocation of people to PS area (buildings 354, 8, 6, 9, 10...)**
    - First offices available: computing, offline, HCAL DQM/DPG,... started May 2007
  - **“Computing Operations Centre” for CSA07 (building 8 / 1-016)** July 2007
    - Large operations room + offices (refurbishment, networks, IT systems...)
    - Also used to prototype CMS Centre IT systems, applications ...
  - **CMS cosmic run using “Computing Operations Centre”** Nov-Dec 2007





# CMS Centre Status

- I will do this for tomorrow morning

# Milestones

Milestone date (at completion or current estimate)	ID	Level	Milestone title
May-07	CPT-5-03-	2	Demonstrate performance of HLT/offline reconstruction, calibration, alignment, visualisation
Jun-07	CPT-5-05-	2	Software complete: HLT, reconstruction, simulation (fast and full), calibration, alignment, visualisation, analysis
Jul-07	CPT-5--	1	Computing and Software Systems and Physics Procedures ready for CSA 07
Sep-07	CPT-6-01-	2	Tier-0 centre and CERN Analysis Facility ready for cosmic (was pilot) run
Oct-07	CPT-6-02-	2	Tier-1 and 2 centres ready for cosmic (was pilot) run
	CPT-6-03-	2	HLT/offline software systems ready for cosmic (was pilot) run
Oct-07	CPT-6--	1	Tier 0, 1, and 2 Computing and Offline Systems Operational (with CSA07 capacity)
Apr-08	CPT-7--	1	Tier 0, 1, and 2 Computing and Offline Systems Operational (low luminosity capacity)
Apr-09	CPT-8--	1	Tier 0, 1, and 2 Computing and Offline Systems Operational (high luminosity capacity)

# Resources at L2 – N.B. cross-project needs to be shown somewhere (here?)

L1 Project	L2 Task	Sum of Actual FTE (2007)	Sum of Needed FTE (2008)	Sum of Needed FTE (2009)
<b>Computing</b>	Canonical CMS support Tier-1s, Tier-2s, Grids	32.5	32.5	32.5
	Computing Commissioning	5.0	5.4	6.0
	Computing Coordination and Overall Operations	2.0	6.4	10.8
	Data Operations	11.0	14.3	18.0
	Facilities / Infrastructure Operations	8.0	14.1	20.3
	User Support	3.0	4.9	7.3
<b>Computing Total</b>		<b>61</b>	<b>78</b>	<b>95</b>
<b>Cross-Project</b>	CMS Centres	3.9	6.0	6.6
	Information Systems	2.7	2.7	2.7
	Resource Management	0.5	0.6	0.7
<b>Cross-Project Total</b>		<b>7</b>	<b>9</b>	<b>10</b>
<b>Offline</b>	Analysis Tools	3.7	4.8	6.0
	Calibration / Alignment	2.0	3.0	4.0
	Data and Workflow Management	21.0	23.4	24.5
	Database	2.6	6.8	6.5
	Fast Simulation	1.7	2.4	3.0
	Framework	6.8	7.7	8.7
	HLT and DQM	6.7	8.9	11.3
	L1 Software	1.5	2.7	3.8
	Offline Coordination and Overall Operations	2.0	5.2	8.4
	Reconstruction	2.0	3.9	5.8
	Simulation	4.6	6.0	7.3
	Software Development Tools	6.0	7.7	8.8
	Software Performance	3.1	3.2	3.4
<b>Offline Total</b>		<b>64</b>	<b>86</b>	<b>101</b>
<b>Grand Total</b>		<b>132</b>	<b>172</b>	<b>206</b>

# Offline Manpower

L1 Project	L2 Task	Sum of Actual FTE (2007)	Sum of Needed FTE (2008)	Sum of Needed FTE (2009)
Offline	Offline Coordination and Overall Operations	2.0	5.2	8.4
	Analysis Tools	3.7	4.8	6.0
	Calibration / Alignment	2.0	3.0	4.0
	Data and Workflow Management	21.0	23.4	24.5
	Database	2.6	6.8	6.5
	Fast Simulation	1.7	2.4	3.0
	Framework	6.8	7.7	8.7
	HLT and DQM	6.7	8.9	11.3
	L1 Software	1.5	2.7	3.8
	Reconstruction	2.0	3.9	5.8
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Software Performance	3.1	3.2	3.4	
<b>Offline Total</b>		<b>64</b>	<b>86</b>	<b>101</b>

# Offline Manpower

L1 Project	L2 Task	Sum of Actual FTE (2007)	Sum of Needed FTE (2008)	Sum of Needed FTE (2009)
Offline	Offline Coordination and Overall Operations	2.0	5.2	8.4
	Analysis Tools	3.7	4.8	6.0
	Calibration / Alignment	2.0	3.0	4.0
	Data and Workflow Management	21.0	23.4	24.5
	Database	2.6	6.8	6.5
	Fast Simulation	1.7	2.4	3.0
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	Simulation	4.6	6.0	7.3
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Software Performance	3.1	3.2	3.4	
<b>Offline Total</b>		<b>64</b>	<b>86</b>	<b>101</b>

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## Comment

- 2009 minus 2007 is *\*not\** equal to amount of missing manpower
- Reason: we increase the amount of shifters and experts on call in 2008/2009 but we do not label all this as “missing” – we assume this will be “extracted” from existing people

# Missing Computing Manpower

L1 Project	L3 Activity	CMS Centres	Computing Commissioning	Data Operations	Facilities / Infrastructure Operations	Resource Management	User Support	Grand Total
Computing	Certification for physics (CERN team)			1.6				1.6
	Certification for physics (FNAL team)			2.0				2.0
	CMS system administration / service operations				0.2			0.2
	CMS Tier-2 integration				1.7			1.7
	Data / Production Management Operations (CERN)			3.4				3.4
	Data transfer fabric operation				2.0			2.0
	Database Operations - central and distributed (see				2.5			2.5
	FTS and test operations Supp.		1.0					1.0
	Job submission scaling		0.3					0.3
	L2 coordination				0.3		0.3	0.5
	Network Integration				0.7			0.7
	Software installation / verification at all sites				0.5			0.5
	Tier-0 and CAF operations				2.5			2.5
	User Documentation Editor / Writer						1.0	1.0
	User support expert						1.0	1.0
User Support Trouble shooting						2.6	2.6	
Workload management fabric operation					2.0		2.0	
<b>Computing Total</b>			<b>1.3</b>	<b>7.0</b>	<b>12.3</b>		<b>4.8</b>	<b>25.3</b>
Cross-Project	CMS Centre@CERN - IT systems support	0.5						0.5
	CMS Centre@CERN monitoring applications	1.0						1.0
	Computing resource planning and tracking					0.3		0.3
	Documentation and User Support	0.3						0.3
	Generic monitoring applications / infrastructure	0.9						0.9
<b>Cross-Project Grand Total</b>		<b>2.7</b>				<b>0.3</b>		<b>2.9</b>
<b>Grand Total</b>		<b>2.7</b>	<b>1.3</b>	<b>7.0</b>	<b>12.3</b>	<b>0.3</b>	<b>4.8</b>	<b>28.2</b>

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# Missing Offline Manpower

L1 Project	L3 Activity	Analysis Tools	Calibration / Alignment	Data and Workflow Management	Database	Fast Simulation	Framework	HLT and DQM	L1 Software	Reconstruction	Simulation	Software Development Tools	Software Performance	Grand Total	
Offline	Candidate Model (MCTruth, Constrained Fitters)	0.3												0.3	
	Common utilities	0.7												0.7	
	Configuration Database								1.0					1.0	
	Data tier definition									0.3				0.3	
	Documentation and User Support	0.3	0.5	0.5			0.5	0.3	0.5	0.3	0.2		0.5	0.3	3.8
	DQM Framework								0.7						0.7
	DQM GUI								0.5						0.5
	DQM integration in offline and operations								0.8						0.8
	DQM integration in online								0.8						0.8
	Event Setup							0.4							0.4
	Framework : Particle interactions, Pileup						0.4								0.4
	Framework integration (Core FW / user data tools)	0.5													0.5
	FWLite							0.2							0.2
	Geant4 liaison											0.5			0.5
	Geometry							0.5							0.5
	Gflash											1.5			1.5
	HLT OnSel FW, tables								1.0						1.0
	HLT/DQM Event Proxy, Collector								0.5						0.5
	I/O							0.5							0.5
	Integration (online and offline)										1.8				1.8
	Integration and User Support											0.3			0.3
	Integration, Workflow management		0.5												0.5
	L2 Coordination				0.3										0.3
	Magnetic field										0.3	0.2			0.5
	Monitoring and validation		0.5												0.5
	Offline Infrastructure					1.0									1.0
	Online Infrastructure					1.0									1.0
	Performance optimisation		0.5			1.0	0.4				0.8				2.7
	PhEDEx				0.5										0.5
	Production System				0.5										0.5
	Reconstruction geometry										0.5				0.5
	ROOT integration (Interactive, Tselector)	0.3													0.3
	Simulation interface to Geant4											0.3			0.3
	Software Quality Control												1.3		1.3
Tier0 integration				1.0										1.0	
User Tools (SCRAM, CVS, Iqnominy, etc.)												0.5		0.5	
Validation and performance									1.0					1.0	
Visualisation	0.3													0.3	
Webtools				0.5										0.5	
<b>Offline Total</b>		<b>2.4</b>	<b>2.0</b>	<b>3.3</b>	<b>3.0</b>	<b>1.3</b>	<b>1.9</b>	<b>4.7</b>	<b>2.3</b>	<b>3.8</b>	<b>2.7</b>	<b>2.3</b>	<b>0.3</b>	<b>29.7</b>	