

Summary of Expenditure for CMS Construction for the Period from 1995 to 2008

INTRODUCTION

From 1995 to 1997, the CMS Collaboration worked on R&D, design, prototyping and pre-industrialization as required to accomplish the set "Milestones" and to submit the Technical Design Reports; this period was covered by the Interim Memorandum of Understanding.

In 1998, once the CMS Memorandum of Understanding for the Construction (MoU) had been signed by most of the CMS Funding Agencies, the detector construction started, apart from Tracker and Trigger/DAQ.

An amendment to the MoU was presented to the October 2000 RRB for the Tracker, and approved. By the end of 2000, the Tracker construction started. The Technical Design Report (TDR) for the Trigger was submitted in December 2000 and its construction started soon after.

The TDR for the Data Acquisition was submitted in December 2002 and its construction started as soon as the TDR was approved by the LHCC (May 2003).

The Cost to Complete of CMS has evolved since October 2000 and the RRB has been kept informed of the changes. The cost estimates used in the following tables are the ones presented to this board in April 2005. The funding figures used in the following tables are based on the latest available information for the MoU, CtC and CtC2 with Steps 1, 2 and 3 being kept separate, as presented in the CMS Status Report (cf. CERN-RRB-2009-030).

By the end of 2008, the total commitments and payments reported reach 100% of the MoU, CtC and CtC2 pledged funds.

This document only contains expenditure for items listed in the CMS Cost Estimate Version 9 breakdown, that is the reference for the CMS MoU. The cost estimate figures are presented at **current prices**. For ease of comparison with the values of deliverables shown in the MoU, payments and commitments in expenditure statements are detailed to the same level as for the MoU (Level 3 of Cost Estimate). Note that all expenditure in the present report, as for past reports, is shown at **current prices**.

The expenditure compiled in this document has been gathered from a large number of participating institutes, which manage their budgets according to their own policy of making commitments. In this report "commitment" is understood as the total amount for which commercial contracts or any other legally binding documents were signed. Some institutes prefer to report payments only, in which case "commitments" are assumed to be equal to the reported "payments". This implies that whilst all payments figures are precise in this report, the total level of financial commitments is likely to be larger than that shown herein.

1. COMMITMENTS

A detailed overview of all the financial commitments (expenditure) for items or activities covered by the CMS Memorandum of Understanding is compiled in **Annex 1**.

Annex 1.A gives the summary of the commitments by Funding Agency to each subdetector.

Annex 1.B further shows the individual commitments made by the different Funding Agencies/institutes for procurements through their institutes (“payments to contracts”) or for “in-kind contributions”, as well as their total commitments (including payments to the Common Funds).

1.1 Magnet, Offline Computing and Commissioning & Integration (Common Funds)

Magnet: The remaining open commitments in 2008 mainly concerned the rental of the 2000t crane for the lowering of CMS (so called “heavy lifting” contract with VSL, Switzerland). No new commitments were taken.

Offline: No new commitments were taken.

C&I: No new commitments were taken.

1.2 Sub-detectors and Infrastructure

Tracker: for both the Pixel Detector and the Strip Tracker, all procurements had practically already been completed by the end of 2007 together with the corresponding commitments and payments. The only leftover commitment in 2008 has been a contribution of 160 kCHF paid by INFN directly to CAEN to speed up the production of electronics modules in time for the start up of the LHC in September 2008.

Electromagnetic Calorimeter (ECAL): Few commitments remain open after 2008, concerning mainly the Assembly and Installation of the Preshower.

Hadron Calorimeter (HCAL): final commitments for the remaining HCAL installation and cabling costs were made in 2008. The total HCAL commitments are 100% of the available funding.

Muon Detector: Major 2008 commitments cover:

- HV-LV repair of off-warranty broken units,
- DAQ Drift Tubes electronics maintenance
- DT gas system analysis finalization,
- completion of HV-LV spare purchasing,
- Barrel Resistive Plate Chamber procurements electronics and installation,
- Muon system alignment.

Trigger and Data Acquisition: Trigger and Data Acquisition: the CMS Trigger/DAQ project is on schedule according to the CMS planning.

In 2008, the construction of final items of the GT and DTF trigger hardware was undertaken.

Infrastructure: No new commitments were taken.

2. PAYMENTS

A detailed overview of all payments for items or activities covered by the CMS MoU is given in **Annex 2**.

Annex 2.A gives the summary of the payments by Funding Agency to each subdetector.

In addition to the origin of payments to the Common Funds, **Annex 2.B** also shows the payments made by the Funding Agencies/Institutes for procurements through their institutes to Common Projects as well as their total payments (including the payments to the Common Funds).

2.1 Magnet, Offline Computing and Commissioning & Integration (Common Funds)

Magnet: the final payments mostly concerned the payments for the “heavy lifting crane” contract.

Smaller payments were related to the update of the re-assembling and the control system.

Only payments for carried-over commitments were executed in 2008.

Offline: Only payments for carried-over commitments were executed in 2008.

C&I: Only payments for carried-over commitments were executed in 2008.

2.2 Sub-detectors and Infrastructure

Tracker: for both the Pixel Detector and the Strip Tracker, all procurements had practically already been completed by the end of 2007 together with the corresponding commitments and payments. The only leftover payment in 2008 has been a contribution of 160 kCHF paid by INFN directly to CAEN to speed up the production of electronics modules in time for the start up of the LHC in September 2008.

Electromagnetic Calorimeter (ECAL): in 2008, the payments were still dominated by the Crystals. The only other noticeable expenses relate to the outer Electronics, Mechanics, Assembly and Installation, all for the End Caps.

Hadron Calorimeter (HCAL): final payments for HCAL installation and cabling costs were made in 2008, and construction is complete. The total HCAL payments are 100% of the available funding.

Muon Detector: the major payments made in 2008 were in the areas indicated in the commitments section above.

For ME1/1, commissioning of all chambers in the underground cavern is in the progress.

For the Forward RPC's, no major payments took place.

The Barrel RPC has been completed and is now in the integration phase.

Trigger/Data Acquisition: Trigger/Data Acquisition: the 2008 payments arose from works initiated during the same year and detailed in the Commitments section above.

Infrastructure: final payments for installation and cabling costs were made in 2008, and construction is now complete.

3. SUMMARY

Only about 8 MCHF of the MoU, CtC and CtC2 funds are left to be paid. Most of these funds have been pledged and/or invoiced by CERN on behalf of the CMS Collaboration.

There is no indication of any problem for the payment of these funds.

The Step 1 and Step 2 funding as reported in the CMS Status Report (cf. CERN-RRB-2009-030) covers all the remaining commitments and payments needed to complete the initial luminosity CMS detector.

ANNEXES

The structure of the Annexes is the same as last year.

The summary tables give an overview of the total expenditures by Funding Agency (Annexes 1.A and 2.A) as well as an overview of payments to all Common Funds.

Full details by Sub-detector and Funding Agency are available in Annexes 1.B and 2.B.

Annex 1 : Tables - Total Accrued Commitments by Item and Funding Agency.

- **Annex 1.A:** Summary of CMS Commitments
- **Annex 1.B:** Detailed CMS Subdetectors Commitments

Annex 2 : Tables - Total Accrued Payments by Item and Funding Agency

- **Annex 2.A:** Summary of CMS Payments
- **Annex 2.B:** Detailed CMS Subdetectors Payments

ANNEX 1.A

Summary Commitments vs. Funding 1995-2008 (in kCHF)

Year		2008																																						
Commitments		Funding Agency																																						
Type	System	Austria	Belgium	Bulgaria	CERN	China	Croatia	Cyprus	Estonia	Finland	France-CEA	France-IN2P3	Germany	Greece	Hungary	India	Iran	Italy	Korea	Lithuania	New Zealand	Pakistan	Poland	Portugal	RDMS-DMS	RDMS-Russia	Serbia	Spain	Switzerland-ETHZ	Switzerland-PSI	Switzerland-Universities	Taipei	Turkey	United Kingdom	USA-DOE	USA-NSF	Grand Total			
Expense	1. Magnet	1,516	1,645		16,908	1,215	104	235	112	1,770	3,447	6,300	5,441	1,480	368	1,200	17,300	815																						
	2. Tracker	1,810	4,388		18,961					3,280		7,960	8,803																											
	3. ECAL				22,700	300	225	471			2,948	9,250		1,166		1,500		5,102						1,262	80	5,221	56		47,900	1,720		1,874								
	4. HCAL														500	2,500	510									5,715	5,701													
	5. Muon Detector	50		600	2,229	3,340							6,201		100			20,605	500			2,050																		
	6. Trigger-DAQ	1,300			7,470					1,020	852			2,016	90				100	500	150		2,060	309	1,000	3,810	5,808	33	2,000	500			2,050							
	7. Offline Computing	100	100		200					100			200	200	100																									
	8. Infrastructure				25,312											700										1,476		100	600	70				200			1,130			
	9. Commissioning & Integration	40			12,267	500					324		543									125	149		140		400					141					2,080			
	<i>Expense Total</i>	<i>4,775</i>	<i>6,173</i>	<i>600</i>	<i>106,046</i>	<i>5,355</i>	<i>329</i>	<i>706</i>	<i>112</i>	<i>6,170</i>	<i>7,571</i>	<i>23,710</i>	<i>21,189</i>	<i>4,762</i>	<i>1,058</i>	<i>5,200</i>	<i>1,210</i>	<i>67,934</i>	<i>1,815</i>	<i>300</i>	<i>150</i>	<i>2,824</i>	<i>3,000</i>	<i>2,440</i>	<i>6,795</i>	<i>16,208</i>	<i>456</i>	<i>8,081</i>	<i>75,500</i>	<i>8,501</i>	<i>2,700</i>	<i>2,740</i>	<i>1,058</i>	<i>13,464</i>	<i>101,152</i>	<i>18,997</i>	<i>529,080</i>			
	<i>Funding</i>	<i>4,775</i>	<i>6,170</i>	<i>600</i>	<i>103,500</i>	<i>5,165</i>	<i>329</i>	<i>706</i>	<i>112</i>	<i>6,170</i>	<i>7,732</i>	<i>23,700</i>	<i>20,809</i>	<i>5,000</i>	<i>1,058</i>	<i>5,200</i>	<i>1,210</i>	<i>67,253</i>	<i>1,815</i>	<i>300</i>	<i>150</i>	<i>2,824</i>	<i>3,000</i>	<i>2,440</i>	<i>6,815</i>	<i>15,928</i>	<i>450</i>	<i>7,856</i>	<i>75,500</i>	<i>8,500</i>	<i>2,700</i>	<i>2,740</i>	<i>1,058</i>	<i>13,018</i>	<i>101,267</i>	<i>18,797</i>	<i>524,646</i>			

ANNEX 1.B

Total Commitments 1995-2008 (in kCHF)

Year	2008
System	1. Magnet

Type	Subsystem	Item	Funding Agency														Contributing Total																			
			CF	Contributing	Austria	Belgium	CERN	China	Croatia	Cyprus	Estonia	Finland	France-CEA	France-IN2P3	Germany	Greece		Hungary	India	Italy	Korea	Pakistan	Poland	Portugal	Spain	Switzerland-ETHZ	Switzerland-PSI	Taipei	Turkey	United Kingdom	USA-DOE	USA-NSF				
Expense	1.0. Magnet Common Fund	1.0.1 MoU	1,100	1,500	15,760				80	35	90	1,480	1,760	6,000	1,886	1,480	310	900								500	730	310	2,650							39,724
		1.0.2 CIC	141	145	1,006			24		16	290		300	290		58	300										136	58	207						3,421	
		1.0.3 CIC2005		275						6																								281		
		<i>1.0. Magnet Common Fund Total</i>		1,516	1,645	16,766		104	35	112	1,770	1,760	6,300	2,176	1,480	368	1,200				940	523	2,140		8,584	2,110	500	866	368	2,857		7,615	2,852	43,426		
	1.1. Barrel Yoke and Vacuum Tank	1.1.01 Barrel Rings and Vacuum Tank	5,505							200				2,163																				23,523		
		1.1.02 High Tension Bolts	241																																	
		1.1.03 Hydraulic Tensioners	28																																	
		1.1.04.A Support Feet - Outer - Material (Plates)																						338										338		
		1.1.04.B Support Feet - Outer - Material (Welding)	100																																	
		1.1.05 Support Feet - Outer - Transport to Karachi	30																																	
		1.1.06 Support Feet - Outer - Manufacture																	625															625		
		1.1.07 Support Feet - Outer - Transport to CERN	62																																	
		1.1.08.A Manufacture Follow-up	461			2																												2		
		1.1.08.B Photogrammetry and Survey																																		
		1.1.09 Moving Beams	379																																	
		1.1.10 Jacks and Air Pad System	262											1,103																				1,103		
		1.1.11 Grease Pad Systems	140																															207		
		1.1.12 Hydraulic Rotator	275																																	
		1.1.13 Drilling Machine	822																																	
		1.1.14 Rails	19																																	
		1.1.15 Assembly on Surface	2,208																																	
		1.1.16 Rigs and Scaffolds	147																																	
		1.1.17 Ancillaries and Coupling Devices	111																																	
		1.1.18 Design and Follow-up	171																																	
		<i>1.1. Barrel Yoke and Vacuum Tank Total</i>	10,959		2		200						3,265						625		207		8,922	2,110			7,615	2,852					25,798			
	1.2. Endcap Yokes	1.2.01.A KHI Contract (6 disks, 2 noses and ancillaries)	625																															8,209		
		1.2.01.B FCI Contract (assembly of disks on surface)																																803		
		1.2.02 Superbolts																																868		
		1.2.03 HE Supports	101																																	
		1.2.04 Design and Follow-up																																932		
		1.2.05.A Carts Weldments (In-kind from China)					1,215																											1,215		
		1.2.05.B Carts Weldments (payment from Common Fund)	170																																	
		1.2.07 Ancillaries and Coupling Devices	153																															142		
		1.2.09 Engineering, Supervision, Quality Control	35																															829		
		1.2.10 Manufacture Follow-up	8																															12		
		1.2.11 Support System	275																																	
		<i>1.2. Endcap Yokes Total</i>	1,366			1,215																						11,795					13,010			

Commitments			Contributing																Contributing Total												
Type	Subsystem	Item	CF	Funding Agency																											
				Austria	Belgium	CERN	China	Croatia	Cyprus	Estonia	Finland	France-CEA	France-IN2P3	Germany	Greece	Hungary	India	Italy	Korea			Pakistan	Poland	Portugal	Spain	Switzerland-ETHZ	Switzerland-PSI	Taipei	Turkey	United Kingdom	USA-DOE
	1.3. Coil	1.3.01.A Superconducting Strands	6																									4,036	4,036		
		1.3.01.C Cabling Strands into Rutherford Cable	1																										978	978	
		1.3.01.D Pure Aluminium (99.998 %)	11																										1,255	1,255	
		1.3.01.E Co-extrusion of Insert	42																										3,474	3,474	
		1.3.01.F Strands for Tests and Prototypes																											322	322	
		1.3.02.A Alloy for Reinforcement	198			19																							322	1,091	
		1.3.02.B EB Welding Reinforcement	123			17																							7,372	7,389	
		1.3.03 Conductor - Quality Assurance	432			2																							3,932	3,934	
		1.3.04 Module Assembly, Swiveling Tooling	383												17,300	815														18,115	
		1.3.05 Process Qualification and QA Winding	320			97																								97	
		1.3.06 Thermal Shields	737																												
		1.3.07 Cold Supports	838																												
		1.3.08 He Circuits	871																												
		1.3.09 Cold Mass Instrumentation	223																												
		1.3.10 Vacuum System	257																												
		1.3.11 Power Supply and Bus Bar	1,692																												
		1.3.12 Dump Resistor	660																												
		1.3.13 Magnet Safety System	376																												
		1.3.14 Magnet Control System	111																												
		1.3.15 He Refrigeration External Plant	8,996																												
		1.3.16 Components Testing	545			5																								5	
		1.3.17 Coil Assembly	961																												
		1.3.18 Coil Surface Tests	340																												
		1.3.19 Studies and Supervision	12,219																											1,687	
		1.3.20 Consumables	246																												
		1.3.21 Coil Transfer into Underground Cavern	866																												
		1.3.22 Implantation and Integration	207																												
	<i>1.3. Coil Total</i>		31,661			139									17,300	815												16,078	6,363	42,382	
	1.4. Magnet Installation	1.4.01 2'200 t Crane Rental	2,551																												
		1.4.02 Rigging Equipment	341																												
		1.4.03 SX Infrastructure	357																												
		1.4.05 Field Mapping	15																												
	<i>1.4. Magnet Installation Total</i>		3,264																										755	755	
	<i>Expense Total</i>		47,251	1,516	1,645	16,908	1,215	104	235	112	1,770	3,447	6,300	5,441	1,480	368	1,200	17,300	815	625	940	730	2,140	25,000	2,610	866	368	2,857	26,527	2,852	125,371
	<i>Funding</i>			1,516	1,645	16,908	1,215	104	235	112	1,770	3,447	6,300	5,440	1,480	368	1,000	17,300	815	625	940	730	2,140	25,000	2,610	866	368	2,857	26,527	2,852	125,170

Year	2008
System	2. Tracker

Commitments			CF Contributing											Contributing Total		
Type	Subsystem	Item	Austria	Belgium	CERN	Finland	France-IN2P3	Germany	Italy	Switzerland-PSI	Switzerland-Universities	United Kingdom	USA-DOE	USA-NSF		
Expense	2.1. Pixel Detectors	2.1.01 Detectors (incl. Pre-series)								92	775	215	100		1,182	
		2.1.02 Electronics (include. Engineering)	170							1,832	1,064	1,235	135		4,436	
		2.1.03 Module Mechanics								1,203		380			1,583	
		2.1.04 Support Structures & Assembly								120		230			350	
		2.1.05 Monitoring								26		50			76	
		2.1.06 Service Systems								328	160	215			703	
	<i>2.1. Pixel Detectors Total</i>		170							3,601	1,999	2,325	235		8,330	
	2.2. Silicon Detectors	2.2.01 Procurement of Sensors	1,047	1,205	5,361	534	3,174	3,313	7,361						21,995	
		2.2.02 Capton			194			326	90						610	
		2.2.03 Frames		1,563				225							1,788	
		2.2.04 Pitch Adapters		776	686		26								1,488	
		2.2.05 FE Hybrid			506		1,535	10						49	2,100	
		2.2.07 Tooling and Box		41			55		18						114	
		2.2.08 Interconnect Board			451			475	461					100	1,488	
		2.2.09 Module Preseries	50	304			75	349	400						1,178	
	<i>2.2. Silicon Detectors Total</i>		1,097	3,888	7,199	534	4,865	4,698	8,330					149	30,761	
	2.3. Electronics for Si Detectors	2.3.01 Module Electronics				342	32		1,213			1,101			2,688	
		2.3.02 Analogue Link			4,193		1,424	1,165	4,740			500			12,022	
		2.3.03 Digital Link			0			130							130	
		2.3.04 Analogue Optohybrid	543						235						778	
		2.3.05 Digital Optohybrid			80										80	
		2.3.06 FED		233	1,504	814	917	110	51	500	1,549	355	639		6,672	
		2.3.08 FEC			135										135	
	<i>2.3. Electronics for Si Detectors Total</i>		543	233	6,254	846	2,341	1,405	6,239	500	3,150	355	639		22,505	
	2.4. Power Supplies for Si Detectors	2.4.01 Power Supplies			493				5,139						5,632	
		2.4.02 Cables (installed)			286	208		34	1,817		60		360		2,764	
	<i>2.4. Power Supplies for Si Detectors Total</i>				778	208		34	6,956		60		360		8,396	
	2.5. Mech. Struct. & Cooling for Si Detectors	2.5.01 Inner Barrel							1,236						1,236	
		2.5.02 Inner Endcap							462						462	
		2.5.03 Outer Barrel		195	472										667	
		2.5.04 Outer Barrel Rods			1,220										1,220	
		2.5.05 Endcaps					520	709							1,229	
		2.5.06 Endcaps Petals		167				848							1,014	
		2.5.07 General Cooling			2,367				405						2,772	
		2.5.08 Integration (st, ts, etc.)			1,314			138							1,453	
	<i>2.5. Mech. Struct. & Cooling for Si Detectors Total</i>			167	3,876	1,692	520	1,695	2,103						10,052	
	2.6. Monitoring for Si Detectors	2.6.01 Position Monitoring Systems			23			413							436	
		2.6.02 Temperature Control			362										362	
	<i>2.6. Monitoring for Si Detectors Total</i>				385			413							798	
	2.7. Data Acquisition for Si Detectors	2.7.01 Test Stands	100			234	558	285							1,177	
	<i>2.7. Data Acquisition for Si Detectors Total</i>		100			234	558	285							1,177	
	2.8. Installation of Si Detectors	2.8.01 Installation Manpower			468			414							882	
	<i>2.8. Installation of Si Detectors Total</i>				468			414							882	
	2.9. Integration Facilities	2.9.01 Clean Room	1,395									308			308	
		2.9.02 Integration Manpower	873									670			670	
	<i>2.9. Integration Facilities Total</i>		2,268									978			978	
<i>Expense Total</i>			2,268	1,810	4,388	18,961	3,280	7,960	8,803	24,327	3,601	2,559	3,150	4,018	1,023	83,879
<i>Funding</i>			1,809	4,385	17,700	3,280	7,950	8,820	24,300	3,600	2,500	2,700	4,018	990	82,052	

Year	2008
System	3. ECAL

Commitments			Contributing																Contributing Total			
Type	Subsystem	Item	CERN	China	Croatia	Cyprus	France-CEA	France-IN2P3	Greece	India	Italy	Portugal	RDMS-DMS	RDMS-Russia	Serbia	Switzerland-ETHZ	Switzerland-PSI	Taipei	United Kingdom	USA-DOE	USA-NSF	
Expense	3.1. Barrel	3.1.1 Crystals	15,424			5	250				987				24,350			1,308				42,324
		3.1.2 Electronics	467		225	321	414	3,151			1,874	812			44	6,450	1,720			4,407	4,202	24,087
		3.1.3 Mechanics	1,404					3,162			2,241					3,057						9,865
		3.1.4 Assembly and Installation	1,425					121								2,700						4,246
		3.1.5 Monitoring						1,702												837		2,539
		<i>3.1. Barrel Total</i>	18,721		225	326	2,237	6,563		5,102	812			44	36,557	1,720		1,308	5,244	4,202		83,061
	3.2. Endcaps	3.2.1 Crystals	844	300				1,500	500					1,958	9,100				76			14,277
		3.2.2 Electronics	124			145	145	1,187			450			19	12	1,461			1,312	958	54	5,867
		3.2.3 Mechanics												2,331					2,482			4,813
		3.2.4 Assembly and Installation														782						782
		3.2.5 Monitoring					565							13					29			607
		3.2.6 Preshower	3,011						1,166	1,000			80	900				1,874				8,031
		<i>3.2. Endcaps Total</i>	3,979	300		145	710	2,687	1,166	1,500	450	80	5,221	12	11,343		1,874	3,899	958	54		34,378
		<i>Expense Total</i>	22,700	300	225	471	2,948	9,250	1,166	1,500	5,102	1,262	80	5,221	56	47,900	1,720	1,874	5,207	6,201	4,257	117,439
		<i>Funding</i>	22,700	300	225	471	3,121	9,250	1,360	1,700	5,100	1,315	100	4,791	50	47,900	1,720	1,874	5,211	6,201	4,090	117,479

Year	2008
System	4. HCAL

			Contributing							Contributing Total		
			Funding Agency									
Type	Subsystem	Item	Hungary	India	Iran	RDMS-DMS	RDMS-Russia	Turkey	USA-DOE	USA-NSF		
Expense	4.1. Barrel	4.1.01 Mechanics							12,378	150	12,528	
		4.1.02 Optics							2,417	194	2,611	
		4.1.03 Read-out Boxes							536	121	656	
		4.1.04 Photodetectors							498	1,697	2,195	
		4.1.05 Front-end Electronics							1,578	516	2,094	
		4.1.06 Calibration Systems							362	19	381	
		4.1.07 Trigger/DAQ Electronics							1,083	799	1,882	
		4.1.08 Voltage Supply Systems							197	240	437	
		4.1.09 Detector Control Systems							250	58	308	
		4.1.10 Pre-production Prototypes							2,204	63	2,267	
	<i>4.1. Barrel Total</i>								21,502	3,857	25,359	
	4.2. Outer Barrel	4.2.01 Mechanics		481							481	
		4.2.02 Optics		1,761					34	14	1,809	
		4.2.03 Read-out Boxes							138	139	278	
		4.2.04 Photodetectors		98					176		274	
		4.2.05 Front-end Electronics							24	225	249	
		4.2.06 Calibration Systems							49		49	
		4.2.07 Trigger/DAQ Electronics							255	271	526	
		4.2.08 Voltage Supply Systems							28	101	129	
		4.2.09 Detector Control Systems							2	38	39	
		4.2.10 Pre-production Prototypes		160					8	5	173	
	<i>4.2. Outer Barrel Total</i>			2,500					713	794	4,007	
	4.3. Endcap	4.3.01 Mechanics				5,240	2,732		91	1,311	9,373	
		4.3.02 Optics				150	624		406	170	1,349	
		4.3.03 Read-out Boxes							125	96	221	
		4.3.04 Photodetectors							105		105	
		4.3.05 Front-end Electronics							12	221	233	
		4.3.06 Calibration Systems							261		261	
		4.3.07 Trigger/DAQ Electronics							148	473	621	
		4.3.08 Voltage Supply Systems							30	127	158	
		4.3.09 Detector Control Systems								38	38	
		4.3.10 Pre-production Prototypes				325	200		35	4	564	
	<i>4.3. Endcap Total</i>					5,715	3,556		1,213	2,439	12,923	
	4.5. Forward	4.5.01 Mechanics	9		510			1,856	677	16	20	3,088
		4.5.02 Optics	477						2,048		2,525	
		4.5.03 Read-out Boxes							93		93	
		4.5.04 Photodetectors							791		791	
		4.5.05 Front-end Electronics							104	243	347	
		4.5.06 Calibration Systems				59			316		375	
		4.5.07 Trigger/DAQ Electronics							105	233	338	
		4.5.08 Voltage Supply Systems							126		126	
		4.5.09 Detector Control Systems							32	38	70	
		4.5.10 Pre-production Prototypes	14			230	13	468			726	
	<i>4.5. Forward Total</i>		500	2,500	510	2,145	690	4,101	533		8,480	
<i>Expense Total</i>			500	2,500	510	5,715	5,701	690	27,529	7,623	50,769	
<i>Funding</i>			500	2,500	510	5,715	5,701	690	27,531	7,624	50,770	

Year	2008
System	5. Muon Detector

Commitments			CF	Contributing													Contributing Total		
Type	Subsystem	Item		Austria	Bulgaria	CERN	China	Germany	Hungary	Italy	Korea	Pakistan	RDMS-DMS	RDMS-Russia	Spain	USA-DOE	USA-NSF		
Expense	5.1. Barrel Drifttubes	5.1.1 Detectors and Components						2,576		5,909					1,972			10,457	
		5.1.2 Electronics			853	800	2,773		7,846						1,989				14,261
		5.1.3 Mechanical Structure and Supports					350	191		521						152			1,214
		5.1.4 Assembly and Installation						94		287						108			489
		5.1.6 Service Systems				315		568		299						222			1,404
		<i>5.1. Barrel Drifttubes Total</i>				1,168	1,150	6,201		14,862						4,443			27,824
	5.2. Forward ME 1/1	5.2.1 Detectors and Components												80	1,685				1,765
		5.2.2 Electronics												700	160		1,781	600	3,241
		5.2.3 Mechanical Structure, Supports													210				210
		5.2.4 Assembly and Installation												170	155				325
		5.2.5 Monitoring												50					50
		5.2.6 Service Systems													100				100
	<i>5.2. Forward ME 1/1 Total</i>												1,000	2,310		1,781	600	5,691	
5.3. Endcap CSC	5.3.1 Detectors and Components					1,500								1,500		8,855		11,855	
	5.3.2 Electronics															11,361	674	12,034	
	5.3.3 Mechanical Structure and Supports															430		430	
	5.3.4 Assembly and Installation															260		260	
	5.3.5 Monitoring															323		323	
	5.3.6 Service Systems															1,183		1,183	
<i>5.3. Endcap CSC Total</i>						1,500							1,500		22,411	674	26,085		
5.4. Barrel RPC	5.4.1 Detectors and Components			600		320				2,932								3,852	
	5.4.2 Electronics									1,968								1,968	
	5.4.3 Mechanical Structure and Supports									100								100	
	5.4.4 Assembly and Installation						20			40								60	
	5.4.5 Monitoring									130								130	
	5.4.6 Service Systems		410							573								573	
<i>5.4. Barrel RPC Total</i>		410		600		340			5,743								6,683		
5.5. Forward RPC	5.5.1 Detectors and Components		613			350					500	220						1,070	
	5.5.2 Electronics		10								0	876						876	
	5.5.3 Mechanical Structure and Supports										0							0	
	5.5.4 Assembly and Installation		321									430						430	
	5.5.6 Service Systems		597									524						524	
	<i>5.5. Forward RPC Total</i>		1,541				350				500	2,050						2,900	
5.6. Alignment	5.6.1 Barrel			50		1,060			100									1,210	
	5.6.2 Forward															203	838	1,041	
	5.6.3 Link													1,365				1,365	
<i>5.6. Alignment Total</i>			50		1,060			100						1,365	203	838	3,617		
<i>Expense Total</i>			1,951	50	600	2,229	3,340	6,201	100	20,605	500	2,050	1,000	3,810	5,808	24,395	2,112	72,799	
<i>Funding</i>			1,485	50	600	2,300	3,150	5,806	100	19,953	500	2,050	1,000	3,810	5,583	24,395	2,112	71,409	

Year	2008
System	6. Trigger-DAQ

			Funding Agency																	
Commitments			CF	Contributing														Contributing Total		
Type	Subsystem	Item	Austria	CERN	Finland	France-CEA	Greece	Hungary	Italy	Korea	Lithuania	Poland	Portugal	Spain	Switzerland-ETHZ	Switzerland-PSI	United Kingdom	USA-DOE		
Expense	6.1. Trigger	6.1.1 Calorimeter Trigger											309				1,600	4,382	6,290	
		6.1.2 CSC Trigger																1,683	1,683	
		6.1.3 DT Trigger	793						53					33					879	
		6.1.4 RPC Trigger			1,020				47			2,060							3,127	
		6.1.5 Global Trigger	507																507	
		<i>6.1. Trigger Total</i>	1,300		1,020				100			2,060	309	33			1,600	6,065	12,486	
	6.2. Data Acquisition	6.2.1 Event Filter	4,000			852	1,991	90		500	150				1,390	350			5,323	
		6.2.2 Readout Builder		3,425												150		510	4,085	
		6.2.3 Data to Surface		1,417											610		450	2,573	5,050	
		6.2.4 Detector Controls		959															959	
		6.2.5 Preseries		703			25											600	1,328	
		6.2.6 DAQ Integration		966														653	1,619	
		<i>6.2. Data Acquisition Total</i>	4,000	7,470		852	2,016	90	100	500	150				2,000	500	450	4,336	18,364	
		<i>Expense Total</i>	4,000	1,300	7,470	1,020	852	2,016	90	100	500	150	2,060	309	33	2,000	500	2,050	10,401	30,851
		<i>Funding</i>		1,300	7,470	1,020	840	2,060	90	100	500	150	2,060	255	33	2,000	500	2,050	10,515	30,943

Year	2008
System	7. Offline Computing

			CF	Contributing													Contributing Total		
			Funding Agency																
Type	Subsystem	Item		Austria	Belgium	CERN	Finland	France-IN2P3	Germany	Greece	Italy	Lithuania	New Zealand	Spain	Switzerland-ETHZ	Switzerland-PSI	United Kingdom	USA-NSF	
Expense	7.0. Offline Common Fund	7.0.1 MoU		100	100	200	100	200	200	100	500	150		100	496		200	1,130	3,576
	<i>7.0. Offline Common Fund Total</i>			100	100	200	100	200	200	100	500	150		100	496		200	1,130	3,576
	7.1. Offline Infrastructure	7.1.1 File Servers	743													35			35
		7.1.2 Information Servers	139																
		7.1.3 Computing Power	191										25	104	35				164
		7.1.4 Spares	21																
		7.1.5 System Assembly	109																
		7.1.6 Software Licenses	83																
		7.1.7 System Management	856																
	<i>7.1. Offline Infrastructure Total</i>		2,141										25	104	70				199
<i>Expense Total</i>			2,141	100	100	200	100	200	200	100	500	150	25	100	600	70	200	1,130	3,775
<i>Funding</i>				100	100	200	100	200	200	100	500	150	25	100	600	70	200	1,130	3,775

Year	2008
System	8. Infrastructure

Commitments			Contributing			Contributing Total
			CERN	Iran	RDMS-Russia	
Type	Subsystem	Item				
Expense	8.1. Access and Survey	8.1.1 Gangways, Stairs	1,788			1,788
		8.1.2 Structures on Yoke	1,363			1,363
		8.1.3 Personnel Access Equipment	1,327			1,327
		8.1.4 General Survey	606			606
	<i>8.1. Access and Survey Total</i>		5,085			5,085
	8.2. General Installation	8.2.1 Counting Room Structures	631			631
		8.2.2 Racks with Cooling	836			836
		8.2.3 Electrical Distribution from Outlets	2,790			2,790
		8.2.4 Gas Systems and Primary Distribution Racks	1,863			1,863
		8.2.5 Beam Pipe	624			624
		8.2.6 Cable Trays to Counting Rooms	412			412
		8.2.7 Control Room and Cabling to Surface	93			93
		8.2.8 General Piping	914			914
	<i>8.2. General Installation Total</i>		8,164			8,164
	8.3. Cooling and Ventilation	8.3.1 Detector Cooling Plant	3,892			3,892
		8.3.2 Detector Specific Ventilation	205			205
		8.3.3 Detector Primary Cooling System	884			884
	<i>8.3. Cooling and Ventilation Total</i>		4,982			4,982
	8.4. Safety	8.4.1 Safety Installations	847			847
		8.4.2 Safety Equipment Control	371			371
		8.4.3 Hard-wired Safety System	98			98
		8.4.4 Inertion System	354			354
	<i>8.4. Safety Total</i>		1,669			1,669
	8.5. Fixed Cranes	8.5.1 80 ton / 100 m	857			857
		8.5.2 80 ton / 100 m Double Beam System	1,706			1,706
		8.5.3 20 ton Crane	219			219
		8.5.4 3 ton Lift	271			271
	<i>8.5. Fixed Cranes Total</i>		3,054			3,054
	8.6. Shielding Systems	8.6.1 Rotating Shielding	646	1,476		2,121
		8.6.2 Vertical 400 ton Lifting System	604			604
		8.6.3 Mechanics and Shielding for Forward HCAL	1,109	700		1,809
	<i>8.6. Shielding Systems Total</i>		2,359	700	1,476	4,534
<i>Expense Total</i>			25,312	700	1,476	27,487
<i>Funding</i>			23,955	700	1,476	26,131

Year	2008
System	9. Commissioning & Integration

Commitments			Funding Agency											Contributing Total				
Type	Subsystem	Item	CF	Contributing										Contributing Total				
				Belgium	CERN	China	France-CEA	Germany	Korea	New Zealand	Portugal	RDMS-Russia	Serbia		Switzerland-Universities	USA-DOE		
Expense	9.0. C&I Common Fund	9.0.1 CIC		40	12,267				543					140		141		13,131
	<i>9.0. C&I Common Fund Total</i>			40	12,267				543					140		141		13,131
	9.1. Additional facilities for Commissioning on surface	9.1.01 Mixed Water Cooling		1,959														
		9.1.02 Gas Distribution		449														
		9.1.03 Control Room		207														
		9.1.04 Smoke Detection		442														
		9.1.05 LV System (1 generator)		400												780		780
		9.1.06 20t lifting equipment		253														
		9.1.07 Extra Electric & Optical Cabling		1,390														
		9.1.08 Common Electronics		481														
		9.1.09 Pre-cabling, pre-testing & related facilities		2,037														
		9.1.10 Basic DSS for Equipment Protection		331							125							125
		9.1.11 Semi-clean areas		205														
	<i>9.1. Additional facilities for Commissioning on surface Total</i>			8,154							125					780		905
	9.2. Detector Installation, Opening and Access Facilities	9.2.01 Installation and access tooling		1,238				324										324
		9.2.02 Dummy End Flanges (EB, EE, SE)		246														
		9.2.03 Magnet Closing System		899												400		400
		9.2.04 Control for Magnet and Magnet Power Supply		123														
		9.2.05 Beampipe Vacuum Tooling & Support Structure		175														
		9.2.06 Floor Plates for UXC		94				500										500
		9.2.07 Cherry Pickers & Access Platforms		352														
	<i>9.2. Detector Installation, Opening and Access Facilities Total</i>			3,126				500	324							400		1,224
	9.3. General Services	9.3.01 Workshops		583														
		9.3.02 Heavy Transport		1,039														
		9.3.03 Survey		212														
		9.3.04 Storage Infrastructure		675														
		9.3.05 Extra Engineering for Integration of Magnet & Detectors		1,489														
		9.3.06 Technical Support Team		4,551												1,300		1,300
	<i>9.3. General Services Total</i>			8,550												1,300		1,300
	<i>Expense Total</i>			19,831	40	12,267	500	324	543		125	140		400	141	2,080		16,560
	<i>Funding</i>			40	12,267	500	324	543		125	140	150	400	200	2,080			16,769

ANNEX 2.A

Summary Payments vs Funding 1995-2008 (kCHF)

Year		2008																																			
		Funding Agency																																			
Payments																																					
Type	System	Austria	Belgium	Bulgaria	CERN	China	Croatia	Cyprus	Estonia	Finland	France-CEA	France-IN2P3	Germany	Greece	Hungary	India	Iran	Italy	Korea	Lithuania	Pakistan	Poland	Portugal	RDMS-DMS	RDMS-Russia	Serbia	Spain	Switzerland-ETHZ	Switzerland-PSI	Switzerland-Universities	Taipei	Turkey	United Kingdom	USA-DOE	USA-NSF	Grand Total	
Expense	1. Magnet	1,516	1,645		16,908	1,215	104	235	112	1,770	3,447	6,300	5,441	1,480	368	1,200		17,300	815									2,140	25,000	2,610		866	368	2,857	26,527	2,852	125,371
	2. Tracker	1,810	4,388		18,961					3,280		7,960	8,803					24,327											3,601	2,559			3,150	4,018	1,023	83,879	
	3. ECAL				21,883	300	225	381			2,948	9,147		942		969		5,102					1,262	80	5,221	56		47,900	1,720		1,427		5,207	6,201	4,257	115,227	
	4. HCAL														500	2,500	510							5,715	5,701								27,529	7,623	50,769		
	5. Muon Detector	50		600	2,229	3,340						6,201		100				20,605	500		2,050			1,000	3,810	5,808						24,395	2,112	72,799			
	6. Trigger-DAQ	1,300			4,670					1,020	852			25	90			100	500	75		1,756	309				33	2,000	500			2,050	10,401		25,681		
	7. Offline Computing	100	100		200					100		200	200	100				500		75							100	600	70			200		1,130	3,675		
	8. Infrastructure				25,312											700									1,476										27,487		
	9. Commissioning & Integration		40		12,267	500					324	543								149		140				400				141			2,080		16,584		
<i>Expense Total</i>		4,775	6,173	600	102,429	5,355	329	616	112	6,170	7,571	23,607	21,189	2,548	1,058	4,669	1,210	67,934	1,815	150	2,824	2,696	2,440	6,795	16,208	456	8,081	75,500	8,501	2,700	2,293	1,058	13,464	101,152	18,997	521,473	
<i>Funding</i>		4,775	6,170	600	103,500	5,165	329	706	112	6,170	7,732	23,700	20,809	5,000	1,058	5,200	1,210	67,253	1,815	300	2,824	3,000	2,440	6,815	15,928	450	7,856	75,500	8,500	2,700	2,740	1,058	13,018	101,267	18,797	524,496	

ANNEX 2.A

Summary of Payments to Common Funds 1995-2008 (kCHF)

Year	2008
System	(Show All)
Subsystem Ref.	0.

Payments			Funding Agency																						DAQ St Interest							
Type	Subsystem	Item	Group1		Austria	Belgium	CERN	Croatia	Cyprus	Estonia	Finland	France-CEA	France-IN2P3	Germany	Greece	Hungary	India	Italy	Lithuania	Poland	Portugal	Spain	Switzerland-ETHZ	Switzerland-PSI	Switzerland-Universities	Taipei	Turkey	United Kingdom	USA-NSF	DAQ Staging	Interest	
Expense	0.0. Other Common Funds Income	0.0. Other Common Funds Income																														
	<i>0.0. Other Common Funds Income Total</i>																															
	1.0. Magnet Common Fund	1.0.1 MoU			1,100	1,500	15,760	80	35	90	1,480	1,760	6,000	1,886	1,480	310	900			940	423	###	500		730	310	2,650					
		1.0.2 CtC			141	145	1,006	24		16	290		300	290		58	300				100	350			136	58	207					
		1.0.3 CtC2005			275					6																						
	<i>1.0. Magnet Common Fund Total</i>				1,516	1,645	16,766	104	35	112	1,770	1,760	6,300	2,176	1,480	368	1,200			940	523	###	500		866	368	2,857					
	6.0. DAQ Common Fund	6.0.1 DAQ Staging																													2,000	
	<i>6.0. DAQ Common Fund Total</i>																														2,000	
	7.0. Offline Common Fund	7.0.1 MoU			100	100	200				100		200	200	100			500	75			100	496					200	1,130			
	<i>7.0. Offline Common Fund Total</i>				100	100	200				100		200	200	100			500	75			100	496					200	1,130			
	9.0. C&I Common Fund	9.0.1 CtC				40	12,267							543								140			141							
	<i>9.0. C&I Common Fund Total</i>					40	12,267							543								140			141							
<i>Expense Total</i>					1,616	1,785	29,233	104	35	112	1,870	1,760	6,500	2,919	1,580	368	1,200	500	75	940	663	###	496	500	141	866	368	3,057	1,130	2,000		

ANNEX 2.B

Total Payments 1995-2008 (kCHF)

Year	2008
System	1. Magnet

Payments			Contributing																	Contributing Total												
Type	Subsystem	Item	Austria	Belgium	CERN	China	Croatia	Cyprus	Estonia	Finland	France-CEA	France-IN2P3	Germany	Greece	Hungary	India	Italy	Korea	Pakistan	Poland	Portugal	Spain	Switzerland-ETHZ	Switzerland-PSI	Taipei	Turkey	United Kingdom	USA-DOE	USA-NSF			
Expense	1.0. Magnet Common Fund	1.0.1 MoU	1,100	1,500	15,760																											39,724
		1.0.2 CiC	141	145	1,006		24	35	16	290	1,760	300	290	1,480	58	300				940	423	1,790		500	730	136	310	2,650			3,421	
		1.0.3 CiC2005	275						6												100	350				58	207			281		
	<i>1.0. Magnet Common Fund Total</i>		1,516	1,645	16,766		104	35	112	1,770	1,760	6,300	2,176	1,480	368	1,200				940	523	2,140		500	866	368	2,857				43,426	
	1.1. Barrel Yoke and Vacuum Tank	1.1.01 Barrel Rings and Vacuum Tank	5,505					200																8,584	2,110			7,615	2,852		23,523	
		1.1.02 High Tension Bolts	241																													
		1.1.03 Hydraulic Tensioners	28																													
		1.1.04.A Support Feet - Outer - Material (Plates)																					338								338	
		1.1.04.B Support Feet - Outer - Material (Welding)	100																													
		1.1.05 Support Feet - Outer - Transport to Karachi	30																													
		1.1.06 Support Feet - Outer - Manufacture																		625												625
		1.1.07 Support Feet - Outer - Transport to CERN	62																													
		1.1.08.A Manufacture Follow-up	461			2																										2
		1.1.08.B Photogrammetry and Survey																														
		1.1.09 Moving Beams	379																													
		1.1.10 Jacks and Air Pad System	262									1,103																				1,103
		1.1.11 Grease Pad Systems	140																			207										207
		1.1.12 Hydraulic Rotator	275																													
		1.1.13 Drilling Machine	822																													
		1.1.14 Rails	19																													
		1.1.15 Assembly on Surface	2,208																													
		1.1.16 Rigs and Scaffolds	147																													
		1.1.17 Ancillaries and Coupling Devices	111																													
		1.1.18 Design and Follow-up	171																													
	<i>1.1. Barrel Yoke and Vacuum Tank Total</i>		10,959		2			200				3,265							625		207		8,922	2,110			7,615	2,852		25,798		
	1.2. Endcap Yokes	1.2.01.A KHI Contract (6 disks, 2 noses and ancillaries)	625																													8,209
		1.2.01.B FCI Contract (assembly of disks on surface)																														803
		1.2.02 Superbolts																														868
		1.2.03 HE Supports	101																													
		1.2.04 Design and Follow-up																														
		1.2.05.A Carts Weldments (In-kind from China)				1,215																										932
		1.2.05.B Carts Weldments (payment from Common Fund)	170																													
		1.2.07 Ancillaries and Coupling Devices	153																													142
		1.2.09 Engineering, Supervision, Quality Control	35																													829
		1.2.10 Manufacture Follow-up	8																													12
		1.2.11 Support System	275																													
	<i>1.2. Endcap Yokes Total</i>		1,366			1,215																						11,795			13,010	

Payments			Contributing																			Contributing Total												
Type	Subsystem	Item	Austria	Belgium	CERN	China	Croatia	Cyprus	Estonia	Finland	France-CEA	France-IN2P3	Germany	Greece	Hungary	India	Italy	Korea	Pakistan	Poland	Portugal	Spain	Switzerland-ETHZ	Switzerland-PSI	Taipei	Turkey	United Kingdom	USA-DOE	USA-NSF					
	1.3. Coil	1.3.01.A Superconducting Strands	6																													4,036	4,036	
		1.3.01.C Cabling Strands into Rutherford Cable	1																				978									978		
		1.3.01.D Pure Aluminium (99.998 %)	11																													1,255	1,255	
		1.3.01.E Co-extrusion of Insert	42																				3,474									3,474		
		1.3.01.F Strands for Tests and Prototypes																					322									322		
		1.3.02.A Alloy for Reinforcement	198		19																											1,091		
		1.3.02.B EB Welding Reinforcement	123		17																												7,389	
		1.3.03 Conductor - Quality Assurance	432		2																												3,934	
		1.3.04 Module Assembly, Swiveling Tooling	383														17,300	815															18,115	
		1.3.05 Process Qualification and QA Winding	320		97																												97	
		1.3.06 Thermal Shields	737																															
		1.3.07 Cold Supports	838																															
		1.3.08 He Circuits	871																															
		1.3.09 Cold Mass Instrumentation	223																															
		1.3.10 Vacuum System	257																															
		1.3.11 Power Supply and Bus Bar	1,668																															
		1.3.12 Dump Resistor	660																															
		1.3.13 Magnet Safety System	376																															
		1.3.14 Magnet Control System	111																															
		1.3.15 He Refrigeration External Plant	7,813																															
		1.3.16 Components Testing	545		5																													5
		1.3.17 Coil Assembly	961																															
		1.3.18 Coil Surface Tests	340																															
		1.3.19 Studies and Supervision	12,219																															
		1.3.20 Consumables	246																															
		1.3.21 Coil Transfer into Underground Cavern	758																															
		1.3.22 Implantation and Integration	207																															
	1.3. Coil Total		30,346		139						1,687					17,300	815						16,078							6,363		42,382		
	1.4. Magnet Installation	1.4.01 2200 t Crane Rental	2,410																															
		1.4.02 Rigging Equipment	341																															
		1.4.03 SX Infrastructure	357																															
		1.4.05 Field Mapping	15																															
	1.4. Magnet Installation Total		3,123																															755
	Expense Total		45,795																															755
	Funding			1,516	1,645	16,908	1,215	104	235	112	1,770	3,447	6,300	5,441	1,480	368	1,200	17,300	815	625	940	730	2,140	25,000	2,610	866	368	2,857	26,527	2,852		125,371		
				1,516	1,645	16,908	1,215	104	235	112	1,770	3,447	6,300	5,440	1,480	368	1,000	17,300	815	625	940	730	2,140	25,000	2,610	866	368	2,857	26,527	2,852		125,170		

Year	2008
System	2. Tracker

Payments			CF Contributing											Contributing Total		
Type	Subsystem	Item	Austria	Belgium	CERN	Finland	France-IN2P3	Germany	Italy	Switzerland-PSI	Switzerland-Universities	United Kingdom	USA-DOE	USA-NSF		
Expense	2.1. Pixel Detectors	2.1.01 Detectors (incl. Pre-series)								92	775	215	100		1,182	
		2.1.02 Electronics (include. Engineering)	170							1,832	1,064	1,235	135		4,436	
		2.1.03 Module Mechanics								1,203		380			1,583	
		2.1.04 Support Structures & Assembly								120		230			350	
		2.1.05 Monitoring								26		50			76	
		2.1.06 Service Systems								328	160	215			703	
	<i>2.1. Pixel Detectors Total</i>		170							3,601	1,999	2,325	235		8,330	
	2.2. Silicon Detectors	2.2.01 Procurement of Sensors	1,047	1,205	5,361	534	3,174	3,313	7,361						21,995	
		2.2.02 Capton			194			326	90						610	
		2.2.03 Frames		1,563				225							1,788	
		2.2.04 Pitch Adapters		776	686		26								1,488	
		2.2.05 FE Hybrid			506		1,535	10					49		2,100	
		2.2.07 Tooling and Box		41			55		18						114	
		2.2.08 Interconnect Board			451			475	461				100		1,488	
		2.2.09 Module Preseries	50	304			75	349	400						1,178	
	<i>2.2. Silicon Detectors Total</i>		1,097	3,888	7,199	534	4,865	4,698	8,330				149		30,761	
	2.3. Electronics for Si Detectors	2.3.01 Module Electronics			342	32			1,213			1,101			2,688	
		2.3.02 Analogue Link			4,193		1,424	1,165	4,740			500			12,022	
		2.3.03 Digital Link			0			130							130	
		2.3.04 Analogue Optohybrid	543						235						778	
		2.3.05 Digital Optohybrid			80										80	
		2.3.06 FED		233	1,504	814	917	110	51		500	1,549	355	639	6,672	
		2.3.08 FEC			135										135	
	<i>2.3. Electronics for Si Detectors Total</i>		543	233	6,254	846	2,341	1,405	6,239		500	3,150	355	639	22,505	
	2.4. Power Supplies for Si Detectors	2.4.01 Power Supplies			493				5,139						5,632	
		2.4.02 Cables (installed)			286	208		34	1,817		60	360			2,764	
	<i>2.4. Power Supplies for Si Detectors Total</i>				778	208		34	6,956		60	360			8,396	
	2.5. Mech. Struct. & Cooling for Si Detectors	2.5.01 Inner Barrel							1,236						1,236	
		2.5.02 Inner Endcap							462						462	
		2.5.03 Outer Barrel			195	472									667	
		2.5.04 Outer Barrel Rods				1,220									1,220	
		2.5.05 Endcaps						520	709						1,229	
		2.5.06 Endcaps Petals		167					848						1,014	
		2.5.07 General Cooling			2,367				405						2,772	
		2.5.08 Integration (st, ts, etc.)			1,314				138						1,453	
	<i>2.5. Mech. Struct. & Cooling for Si Detectors Total</i>			167	3,876	1,692	520	1,695	2,103						10,052	
	2.6. Monitoring for Si Detectors	2.6.01 Position Monitoring Systems			23				413						436	
		2.6.02 Temperature Control			362										362	
	<i>2.6. Monitoring for Si Detectors Total</i>				385				413						798	
	2.7. Data Acquisition for Si Detectors	2.7.01 Test Stands		100			234	558	285						1,177	
	<i>2.7. Data Acquisition for Si Detectors Total</i>			100			234	558	285						1,177	
	2.8. Installation of Si Detectors	2.8.01 Installation Manpower			468				414						882	
	<i>2.8. Installation of Si Detectors Total</i>				468				414						882	
	2.9. Integration Facilities	2.9.01 Clean Room	1,395									308			308	
		2.9.02 Integration Manpower	873									670			670	
	<i>2.9. Integration Facilities Total</i>		2,268									978			978	
<i>Expense Total</i>			2,268	1,810	4,388	18,961	3,280	7,960	8,803	24,327	3,601	2,559	3,150	4,018	1,023	83,879
<i>Funding</i>				1,809	4,385	17,700	3,280	7,950	8,820	24,300	3,600	2,500	2,700	4,018	990	82,052

Year	2008
System	3. ECAL

Payments			Contributing																	Contributing Total		
Type	Subsystem	Item	CERN	China	Croatia	Cyprus	France-CEA	France-IN2P3	Greece	India	Italy	Portugal	RDMS-DMS	RDMS-Russia	Serbia	Switzerland-ETHZ	Switzerland-FSI	Taipei	United Kingdom	USA-DOE	USA-NSF	
Expense	3.1. Barrel	3.1.1 Crystals	15,424			5	250				987				24,350			1,308				42,324
		3.1.2 Electronics	467		225	231	414	3,151			1,874	812			44	6,450	1,720			4,407	4,202	23,997
		3.1.3 Mechanics	1,404					3,162			2,241					3,057						9,865
		3.1.4 Assembly and Installation	1,425				121									2,700						4,246
		3.1.5 Monitoring					1,702													837		2,539
		3.1. Barrel Total	18,721		225	236	2,237	6,563			5,102	812			44	36,557	1,720		1,308	5,244	4,202	82,971
	3.2. Endcaps	3.2.1 Crystals	844	300			1,500		250					1,958	9,100			76				14,027
		3.2.2 Electronics	124			145	145	1,084				450		19	12	1,461			1,312	958	54	5,764
		3.2.3 Mechanics												2,331				2,482				4,813
		3.2.4 Assembly and Installation														782						782
		3.2.5 Monitoring					565							13					29			607
		3.2.6 Preshower	2,194						942	719			80	900			1,427					6,262
		3.2. Endcaps Total	3,162	300		145	710	2,584	942	969	450	80	5,221	12	11,343	1,427	3,899	958	54	54	54	32,256
		Expense Total	21,883	300	225	381	2,948	9,147	942	969	5,102	1,262	80	5,221	56	47,900	1,720	1,427	5,207	6,201	4,257	115,227
		Funding	22,700	300	225	471	3,121	9,250	1,360	1,700	5,100	1,315	100	4,791	50	47,900	1,720	1,874	5,211	6,201	4,090	117,479

Year	2008
System	4. HCAL

			Contributing							Contributing Total		
			Funding Agency									
Type	Subsystem	Item	Hungary	India	Iran	RDMS-DMS	RDMS-Russia	Turkey	USA-DOE	USA-NSF		
Expense	4.1. Barrel	4.1.01 Mechanics							12,378	150	12,528	
		4.1.02 Optics							2,417	194	2,611	
		4.1.03 Read-out Boxes							536	121	656	
		4.1.04 Photodetectors							498	1,697	2,195	
		4.1.05 Front-end Electronics							1,578	516	2,094	
		4.1.06 Calibration Systems							362	19	381	
		4.1.07 Trigger /DAQ Electronics							1,083	799	1,882	
		4.1.08 Voltage Supply Systems							197	240	437	
		4.1.09 Detector Control Systems							250	58	308	
		4.1.10 Pre-production Prototypes							2,204	63	2,267	
		<i>4.1. Barrel Total</i>								21,502	3,857	25,359
Expense	4.2. Outer Barrel	4.2.01 Mechanics		481					34	14	481	
		4.2.02 Optics		1,761					138	139	1,809	
		4.2.03 Read-out Boxes							176		274	
		4.2.04 Photodetectors			98				24	225	249	
		4.2.05 Front-end Electronics							49		49	
		4.2.06 Calibration Systems							255	271	526	
		4.2.07 Trigger /DAQ Electronics							28	101	129	
		4.2.08 Voltage Supply Systems							2	38	39	
		4.2.09 Detector Control Systems							8	5	173	
		4.2.10 Pre-production Prototypes			160					713	794	4,007
		<i>4.2. Outer Barrel Total</i>			2,500					713	794	4,007
Expense	4.3. Endcap	4.3.01 Mechanics				5,240	2,732		91	1,311	9,373	
		4.3.02 Optics				150	624		406	170	1,349	
		4.3.03 Read-out Boxes							125	96	221	
		4.3.04 Photodetectors							105		105	
		4.3.05 Front-end Electronics							12	221	233	
		4.3.06 Calibration Systems							261		261	
		4.3.07 Trigger /DAQ Electronics							148	473	621	
		4.3.08 Voltage Supply Systems							30	127	158	
		4.3.09 Detector Control Systems								38	38	
		4.3.10 Pre-production Prototypes					325	200		35	4	564
		<i>4.3. Endcap Total</i>					5,715	3,556		1,213	2,439	12,923
Expense	4.5. Forward	4.5.01 Mechanics	9		510		1,856	677	16	20	3,088	
		4.5.02 Optics	477						2,048		2,525	
		4.5.03 Read-out Boxes							93		93	
		4.5.04 Photodetectors							791		791	
		4.5.05 Front-end Electronics							104	243	347	
		4.5.06 Calibration Systems				59			316		375	
		4.5.07 Trigger /DAQ Electronics							105	233	338	
		4.5.08 Voltage Supply Systems							126		126	
		4.5.09 Detector Control Systems							32	38	70	
		4.5.10 Pre-production Prototypes	14				230	13	468		726	
		<i>4.5. Forward Total</i>		500		510		2,145	690	4,101	533	8,480
<i>Expense Total</i>		500	2,500	510	5,715	5,701	690	27,529	7,623	50,769		
<i>Funding</i>			500	2,500	510	5,715	5,701	690	27,531	7,624	50,770	

Year	2008
System	5. Muon Detector

			Funding Agency															
Payments			CF	Contributing													Contributing Total	
Type	Subsystem	Item	Austria	Bulgaria	CERN	China	Germany	Hungary	Italy	Korea	Pakistan	RDMS-DMS	RDMS-Russia	Spain	USA-DOE	USA-NSF		
Expense	5.1. Barrel Drifttubes	5.1.1 Detectors and Components					2,576		5,909					1,972			10,457	
		5.1.2 Electronics			853	800	2,773		7,846					1,989			14,261	
		5.1.3 Mechanical Structure and Supports				350	191		521					152			1,214	
		5.1.4 Assembly and Installation					94		287					108			489	
		5.1.6 Service Systems			315		568		299					222			1,404	
	<i>5.1. Barrel Drifttubes Total</i>				1,168	1,150	6,201		14,862					4,443			27,824	
	5.2. Forward ME 1/1	5.2.1 Detectors and Components										80	1,685				1,765	
		5.2.2 Electronics										700	160		1,781	600	3,241	
		5.2.3 Mechanical Structure, Supports											210				210	
		5.2.4 Assembly and Installation										170	155				325	
		5.2.5 Monitoring										50					50	
		5.2.6 Service Systems											100				100	
	<i>5.2. Forward ME 1/1 Total</i>											1,000	2,310		1,781	600	5,691	
	5.3. Endcap CSC	5.3.1 Detectors and Components				1,500							1,500		8,855		11,855	
		5.3.2 Electronics													11,361	674	12,034	
		5.3.3 Mechanical Structure and Supports													430		430	
		5.3.4 Assembly and Installation													260		260	
		5.3.5 Monitoring													323		323	
		5.3.6 Service Systems													1,183		1,183	
	<i>5.3. Endcap CSC Total</i>					1,500						1,500		22,411	674		26,085	
	5.4. Barrel RPC	5.4.1 Detectors and Components		600		320			2,932								3,852	
		5.4.2 Electronics							1,968								1,968	
		5.4.3 Mechanical Structure and Supports							100								100	
		5.4.4 Assembly and Installation				20			40								60	
		5.4.5 Monitoring							130								130	
		5.4.6 Service Systems	410						573								573	
	<i>5.4. Barrel RPC Total</i>		410	600		340			5,743								6,683	
	5.5. Forward RPC	5.5.1 Detectors and Components	613			350				500	220						1,070	
		5.5.2 Electronics	10							0	876						876	
		5.5.3 Mechanical Structure and Supports								0							0	
		5.5.4 Assembly and Installation	321								430						430	
		5.5.6 Service Systems	597								524						524	
	<i>5.5. Forward RPC Total</i>		1,541			350				500	2,050						2,900	
	5.6. Alignment	5.6.1 Barrel		50		1,060			100								1,210	
		5.6.2 Forward													203	838	1,041	
		5.6.3 Link												1,365			1,365	
	<i>5.6. Alignment Total</i>			50		1,060			100					1,365	203	838	3,617	
<i>Expense Total</i>			1,951	50	600	2,229	3,340	6,201	100	20,605	500	2,050	1,000	3,810	5,808	24,395	2,112	72,799
<i>Funding</i>			1,485	50	600	2,300	3,150	5,806	100	19,953	500	2,050	1,000	3,810	5,583	24,395	2,112	71,409

Year	2008
System	6. Trigger-DAQ

			Contributing Agency														Contributing Total			
			CF	Contributing																
Type	Subsystem	Item	Austria	CERN	Finland	France-CEA	Greece	Hungary	Italy	Korea	Lithuania	Poland	Portugal	Spain	Switzerland-ETHZ	Switzerland-PSI	United Kingdom	USA-DOE		
Expense	6.1. Trigger	6.1.1 Calorimeter Trigger											309				1,600	4,382	6,290	
		6.1.2 CSC Trigger																1,683	1,683	
		6.1.3 DT Trigger	793						53					33					879	
		6.1.4 RPC Trigger			1,020				47			1,756							2,823	
		6.1.5 Global Trigger	507																507	
	<i>6.1. Trigger Total</i>		1,300		1,020				100			1,756	309	33			1,600	6,065	12,182	
	6.2. Data Acquisition	6.2.1 Event Filter	4,000			852		90		500	75				1,390	350		510	3,257	
		6.2.2 Readout Builder				1,625											150		2,285	
		6.2.3 Data to Surface				1,417									610		450	2,573	5,050	
		6.2.4 Detector Controls				259													259	
		6.2.5 Preseries				403		25										600	1,028	
		6.2.6 DAQ Integration				966												653	1,619	
	<i>6.2. Data Acquisition Total</i>		4,000		4,670	852	25	90		500	75				2,000	500	450	4,336	13,499	
<i>Expense Total</i>			4,000	1,300	4,670	1,020	852	25	90	100	500	75	1,756	309	33	2,000	500	2,050	10,401	25,681
<i>Funding</i>				1,300	7,470	1,020	840	2,060	90	100	500	150	2,060	255	33	2,000	500	2,050	10,515	30,943

Year	2008
System	7. Offline Computing

			CF	Contributing													Contributing Total		
				Funding Agency															
Type	Subsystem	Item		Austria	Belgium	CERN	Finland	France-IN2P3	Germany	Greece	Italy	Lithuania	New Zealand	Spain	Switzerland-ETHZ	Switzerland-PSI	United Kingdom	USA-NSF	
Expense	7.0. Offline Common Fund	7.0.1 MoU		100	100	200	100	200	200	100	500	75	100	496				1,130	3,501
	<i>7.0. Offline Common Fund Total</i>			100	100	200	100	200	200	100	500	75	100	496			200	1,130	3,501
	7.1. Offline Infrastructure	7.1.1 File Servers	743													35			35
		7.1.2 Information Servers	139																
		7.1.3 Computing Power	191										25	104	35				164
		7.1.4 Spares	21																
		7.1.5 System Assembly	109																
		7.1.6 Software Licenses	83																
		7.1.7 System Management	856																
	<i>7.1. Offline Infrastructure Total</i>		2,141										25	104	70				199
<i>Expense Total</i>			2,141	100	100	200	100	200	200	100	500	75	25	100	600	70	200	1,130	3,700
<i>Funding</i>				100	100	200	100	200	200	100	500	150	25	100	600	70	200	1,130	3,775

Year	2008
System	8. Infrastructure

			Funding Agency		
			Contributing		Contributing Total
Type	Subsystem	Item	CERN	Iran	RDMS-Russia
Expense	8.1. Access and Survey	8.1.1 Gangways, Stairs	1,788		
		8.1.2 Structures on Yoke	1,363		
		8.1.3 Personnel Access Equipment	1,327		
		8.1.4 General Survey	606		
	<i>8.1. Access and Survey Total</i>		5,085		5,085
	8.2. General Installation	8.2.1 Counting Room Structures	631		
		8.2.2 Racks with Cooling	836		
		8.2.3 Electrical Distribution from Outlets	2,790		
		8.2.4 Gas Systems and Primary Distribution Racks	1,863		
		8.2.5 Beam Pipe	624		
		8.2.6 Cable Trays to Counting Rooms	412		
		8.2.7 Control Room and Cabling to Surface	93		
		8.2.8 General Piping	914		
	<i>8.2. General Installation Total</i>		8,164		8,164
	8.3. Cooling and Ventilation	8.3.1 Detector Cooling Plant	3,892		
		8.3.2 Detector Specific Ventilation	205		
		8.3.3 Detector Primary Cooling System	884		
	<i>8.3. Cooling and Ventilation Total</i>		4,982		4,982
	8.4. Safety	8.4.1 Safety Installations	847		
		8.4.2 Safety Equipment Control	371		
		8.4.3 Hard-wired Safety System	98		
		8.4.4 Inertion System	354		
	<i>8.4. Safety Total</i>		1,669		1,669
	8.5. Fixed Cranes	8.5.1 80 ton /100 m	857		
		8.5.2 80 ton /100 m Double Beam System	1,706		
		8.5.3 20 ton Crane	219		
		8.5.4 3 ton Lift	271		
	<i>8.5. Fixed Cranes Total</i>		3,054		3,054
	8.6. Shielding Systems	8.6.1 Rotating Shielding	646	1,476	
		8.6.2 Vertical 400 ton Lifting System	604		
		8.6.3 Mechanics and Shielding for Forward HCAL	1,109	700	
	<i>8.6. Shielding Systems Total</i>		2,359	700	1,476
<i>Expense Total</i>			25,312	700	1,476
<i>Funding</i>			23,955	700	1,476
					26,131

2008
9. Commissioning & Integration

Subsystem	Item	CF	Contributing Agency										Contributing Total	
			Belgium	CERN	China	France-CEA	Germany	Korea	New Zealand	Portugal	Serbia	Switzerland-Universities		USA-DOE
9.0. C&I Common Fund	9.0.1 CIC	40	12,267			543			140		141			13,131
<i>9.0. C&I Common Fund Total</i>		40	12,267			543			140		141			13,131
9.1. Additional facilities for Commissioning on surface	9.1.01 Mixed Water Cooling	1,959												
	9.1.02 Gas Distribution	271												
	9.1.03 Control Room	113												
	9.1.04 Smoke Detection	442												
	9.1.05 LV System (1 generator)	340									780			780
	9.1.06 20t lifting equipment	253												
	9.1.07 Extra Electric & Optical Cabling	1,239												
	9.1.08 Common Electronics	421												
	9.1.09 Pre-cabling, pre-testing & related facilities	2,037												
	9.1.10 Basic DSS for Equipment Protection	233							125					125
	9.1.11 Semi-clean areas	131												
<i>9.1. Additional facilities for Commissioning on surface Total</i>		7,440							125		780			905
9.2. Detector Installation, Opening and Access Facilities	9.2.01 Installation and access tooling	773			324									324
	9.2.02 Dummy End Flanges (EB, EE, SE)	244												
	9.2.03 Magnet Closing System	822								400				400
	9.2.04 Control for Magnet and Magnet Power Supply	42												
	9.2.05 Beampipe Vacuum Tooling & Support Structure	122												
	9.2.06 Floor Plates for UXC	89			500									500
	9.2.07 Cherry Pickers & Access Platforms	262												
<i>9.2. Detector Installation, Opening and Access Facilities Total</i>		2,353			500	324				400				1,224
9.3. General Services	9.3.01 Workshops	576												
	9.3.02 Heavy Transport	1,018												
	9.3.03 Survey	212												
	9.3.04 Storage Infrastructure	605												
	9.3.05 Extra Engineering for Integration of Magnet & Detectors	1,412												
	9.3.06 Technical Support Team	3,447									1,300			1,300
<i>9.3. General Services Total</i>		7,270									1,300			1,300
		17,063	40	12,267	500	324	543		125	140	400	141	2,080	16,560
			40	12,267	500	324	543		125	140	400	200	2,080	16,619