

Preliminary Draft Budget for CMS Maintenance & Operations in the Year 2008

INTRODUCTION

This document summarizes the preliminary funding requirements for the payments that the CMS Collaboration plans to make in the year 2008 in order to maintain and operate the already constructed detectors and Collaboration-wide facilities (M&O Cat. A).

In addition we present also estimates for the subdetectors maintenance and operations expenses (M&O Cat. B).

Both M&O Cat. A and Cat. B costs have been last scrutinized by the RRB Scrutiny Group for M&O before the October 2006 RRB. The Annexes presented here are based on the latest available figures.

The Cat. A costs are invoiced by CERN on behalf of the CMS Collaboration.

The Cat. B costs will be invoiced only upon request of each sub-detector and only for a small fraction of the total presented here.

The sharing of the costs is preliminary and given for information only. The exact sharing will be available after the PhD list is updated in September 2007.

The figures shown as "Payments expected in the year 2008" in the Summary Table (**Annex 2**) have not yet been reviewed by the RRB Scrutiny Group. Furthermore, various sharing percentages are based on the 2006 PhD count, which will change in the M&O Draft 2008 Budget submitted to the October 2007 RRB.

Following the established procedure for the Preliminary Draft Budget for Construction, this document is meant to give timely information to the CMS Resources Review Board (RRB) and to provide input for further discussions with the CMS Funding Agencies to prepare the M&O Draft 2008 Budget, which will be submitted for approval to the RRB in October 2007 after scrutiny by the Scrutiny Group.

Timely and early payments for this budget are necessary due to the operational nature of the costs presented here.

M&O CATEGORY A

With respect to the forecast for the year 2008 in the M&O Draft Budget for the year 2007 (cf. CERN-RRB-2006-089), the present budget request has changed in a few areas:

- A.1.05, Gas consumption, has been increased for both the years 2008 and 2009. This has been done in light of the experience gained during 2006 (cf. CERN-RRB-2007-026).
- A.1.09, Cryogenics fluids, has been increased for both the years 2008 and 2009. This has been done in light of the experience gained during 2006 (cf. CERN-RRB-2007-026). We expect that after 2009 the consumption will be back in line with the previous estimates.
- A.9, Core Computing manpower, has been reprofiled to some 15 FTE for 2008, up from 14 FTE previously.

The total estimated cost for M&O-A in 2008 is 11'958 kCHF, to be compared with the estimate presented to this board in October 2006 of 11'629 kCHF.

The estimated manpower cost for A.9, Core Computing, in the year 2008 totals some 1'311 kCHF. For this particular category and as for the current year, the CMS Collaboration strongly prefers to receive contributions directly from the Institutes/Funding Agencies rather than hiring personnel.

Annex I.A gives the projected costs for M&O-A until 2012.

Annex I.B gives the projected costs for M&O-B until 2012.

This updated budget request will be discussed with the RRB Scrutiny Group.

M&O CATEGORY B

With respect to the forecast for the year 2008 in the M&O Draft Budget for the year 2006 (cf. CERN-RRB-2006-089), the present budget request has changed in the ECAL, HCAL and Core Computing areas.

For ECAL, the total budget for the Material Resources should decrease by 5% in 2008, compared to the budget presented to the Scrutiny Group in 2006 for 2007; it includes a modification of the sharing. For the Human Resources, the planned contributions will be examined in the new context of the Memoranda of Agreement for the Maintenance and Operation of CMS.

HCAL has reviewed the yearly profile with a decrease in the order of 10% for the year 2008. While USA-DOE and USA-NSF contribute financially to the M&O-B, the other Funding Agencies contribute to the item B.2.01, Technical manpower at CERN.

Core Computing has reviewed the need for manpower in the CMS Institutes leading to an increase to 96 FTE for the year 2008, up from 81 FTE previously.

The updated budget request will be discussed with the RRB Scrutiny Group.

M&O CATEGORY B SHARING

Material Resources

The CMS Collaboration will continue to share its M&O Cat. B costs for the year 2008 by responsibility for all subsystems.

Technical manpower

The technical manpower required at CERN from the Institutes (item B.2.01 in Annex B.1) will be shared by responsibility for all subsystems.

SUMMARY

The numbers given in this document are summarized in **Annex 2**. It should be noted that funds paid in 2008, which will not have been committed during 2008, will be reported to the April 2009 RRB and will be carried forward.

ANNEXES

Preliminary Budget Requirements for M&O in 2008

Annex 1: PhD Scientists per Funding Agency

Annex 2: M&O Cat. A and B Costs by Funding Agency

Annex A.1: M&O Cat. A Budget Request 2008

Annex A.2: M&O Cat. A by Funding Agency

Annex B.1: M&O Cat. B Budget Request 2008

Annex B.2: M&O Cat. B Budget Sharing 2008 by Funding Agency and Subsystem

Annex B.3: M&O Cat. B Estimated Costs Incurred in 2008 by Funding Agency and Subsystem

Annex I.A: Foreseen Cat. A Costs 2008-2012

Annex I.B: Foreseen Cat. A Costs 2008-2012

ANNEX 1

PhD Scientists per Funding Agency Based on the Annually Revised Annex 13 of the M&O MoU

The List of Names is Available at
<http://cmsdoc.cern.ch/docofficial.shtml>
(Count closed on October 4, 2006)

Institute FA	Data	
	PhD #	PhD %
Austria	11	0.9%
Belgium	27	2.3%
Brazil	9	0.8%
Bulgaria	5	0.4%
CERN	72	6.2%
China	13	1.1%
Croatia	7	0.6%
Cyprus	3	0.3%
Estonia	2	0.2%
Finland	12	1.0%
France-CEA	14	1.2%
France-IN2P3	38	3.3%
Germany	46	3.9%
Greece	17	1.5%
Hungary	6	0.5%
India	26	2.2%
Iran	3	0.3%
Ireland	1	0.1%
Italy	181	15.5%
Korea	12	1.0%
Mexico	5	0.4%
New Zealand	3	0.3%
Pakistan	3	0.3%
Poland	12	1.0%
Portugal	5	0.4%
RDMS-DMS	24	2.1%
RDMS-Russia	48	4.1%
Serbia	3	0.3%
Spain	34	2.9%
Switzerland-ETHZ	14	1.2%
Switzerland-PSI	11	0.9%
Switzerland-UNIV	5	0.4%
Taipei	11	0.9%
Turkey	18	1.5%
United Kingdom	49	4.2%
USA-DOE	330	28.3%
USA-NSF	88	7.5%
Grand Total	1,168	100.0%

ANNEX 2

M&O Cat. A and B Costs by Funding Agency Payments expected in the Year 2008 (kCHF)

Funding Agency	Category A	Category B	Total Category A+B	Total Invoiced
Austria	95.7	66.0	161.7	95.7
Belgium	234.8	262.9	497.8	234.8
Brazil	92.1		92.1	92.1
Bulgaria	43.5		43.5	43.5
CERN	626.2	641.3	1,267.4	626.2
China	133.1	15.7	148.8	133.1
Croatia	71.7	25.6	97.3	71.7
Cyprus	30.7	18.0	48.7	30.7
Estonia	20.5		20.5	20.5
Finland	104.4	116.9	221.2	104.4
France-CEA	121.8	96.1	217.9	121.8
France-IN2P3	330.5	330.3	660.8	330.5
Germany	400.1	455.8	855.8	400.1
Greece	147.9	58.5	206.4	147.9
Hungary	52.2		52.2	52.2
India	261.7	50.0	311.7	261.7
Iran	30.7		30.7	30.7
Ireland	10.2		10.2	10.2
Italy	1,574.2	1,454.1	3,028.3	1,574.2
Korea	122.9	39.1	162.0	122.9
Mexico	51.2		51.2	51.2
New Zealand	30.7		30.7	30.7
Pakistan	30.7	78.5	109.2	30.7
Poland	104.4	59.4	163.8	104.4
Portugal	43.5	29.0	72.4	43.5
RDMS-DMS	245.7		245.7	245.7
RDMS-Russia	443.2	64.8	507.9	443.2
Serbia	30.7	12.0	42.7	30.7
Spain	295.7	186.3	482.0	295.7
Switzerland-ETHZ	121.8	79.8	201.5	121.8
Switzerland-PSI	95.7	68.7	164.4	95.7
Switzerland-UNIV	43.5	36.2	79.7	43.5
Taipei	112.6	60.1	172.7	112.6
Turkey	184.3		184.3	184.3
United Kingdom	426.2	268.2	694.4	426.2
USA-DOE	3,344.9	1,282.4	4,627.3	3,344.9
USA-NSF	892.0	459.3	1,351.2	892.0
Grand Total	11,001	6,315	17,316	11,001

ANNEX A.1

M & O Cat. A

Budget Request for the Year 2008 (kCHF)

Maintenance & Operations (kCHF)				Year	
Group	Description	Ref.	Details	2008	
Maintenance & Operations	Detector related costs	A.1.01	Magnet	40	
		A.1.02	Magnet controls	142	
		A.1.03	Magnet power supply	50	
		A.1.04	Gas systems	210	
		A.1.05	Gas consumption	450	
		A.1.06	Cooling systems	220	
		A.1.07	Cooling fluids(above -50°C)	200	
		A.1.08	External cryogenics	375	
		A.1.09	Cryogenic fluids (below -50°C)	140	
		A.1.10	Moving/hydraulic systems	80	
		A.1.11	Detector safety systems	65	
		A.1.12	Shutdown activities	410	
		A.1.13	General Technical support	610	
		A.1.14	UPS maintenance	80	
		A.1.16	Beam pipe & vacuum	240	
		A.1.17	Counting & control rooms	240	
		Detector related costs Total			
	Secretariat	A.2.01	Secretarial assistance	225	
		A.2.02	Economat	15	
		A.2.04	Printing and publication	100	
	Secretariat Total				340
	Communications	A.3.01	GSM phones; on-call service	20	
		A.3.02	Automatic call-back	100	
	Communications Total				120
	On-line computing	A.4.01	System management	670	
		A.4.02	Data storage, (temporary on disk)	27	
		A.4.03	Detector controls	120	
		A.4.04	Computers/processors/LANs	1,828	
		A.4.05	Software licenses	90	
	On-line computing Total				2,735
	Test beams, calibration facilities	A.5.01	General operation	60	
		A.5.02	Common electronics	15	
		A.5.03	Electronics pool rentals	20	
		A.5.04	Gas systems	10	
		A.5.05	Gas consumption	10	
	Test beams, calibration facilities Total				115
	Laboratory operations	A.6.01	Assembly areas, clean rooms	20	
		A.6.02	Workshops	250	
	Laboratory operations Total				270
	General services	A.7.01	Cooling & ventilation	510	
		A.7.03	Power distribution system	60	
		A.7.04	Heavy transport	460	
		A.7.05	Cranes	50	
		A.7.06	Cars	30	
		A.7.08	Survey	125	
		A.7.09	Storage space	50	
		A.7.10	Common desktop infrastructure	50	
A.7.11		Academic Subsistence	60		
A.7.12		Outreach	220		
General services Total				1,615	
Core Computing Infrastructure & Services	A.9.01	Central computing environment	378		
	A.9.02	Software process service	176		
	A.9.03	User support	150		
	A.9.04	Central production operations	607		
	A.9.05	Hardware	100		
Core Computing Infrastructure & Services Total				1,411	
Maintenance & Operations Total				10,158	
Power	Electricity	A.8.01	Power Consumption	1,800	
	Electricity Total			1,800	
Power Total				1,800	
Grand Total				11,958	

ANNEX A.2

M & O Cat. A by Funding Agency

All Figures in kCHF

Funding Agency	Category A without Power Bill	Power Billed	Category A
Austria	95.7		95.7
Belgium	234.8		234.8
Brazil	78.3	13.9	92.1
Bulgaria	43.5		43.5
CERN	626.2		626.2
China	113.1	20.0	133.1
Croatia	60.9	10.8	71.7
Cyprus	26.1	4.6	30.7
Estonia	17.4	3.1	20.5
Finland	104.4		104.4
France-CEA	121.8		121.8
France-IN2P3	330.5		330.5
Germany	400.1		400.1
Greece	147.9		147.9
Hungary	52.2		52.2
India	226.1	35.6	261.7
Iran	26.1	4.6	30.7
Ireland	8.7	1.5	10.2
Italy	1574.2		1574.2
Korea	104.4	18.5	122.9
Mexico	43.5	7.7	51.2
New Zealand	26.1	4.6	30.7
Pakistan	26.1	4.6	30.7
Poland	104.4		104.4
Portugal	43.5		43.5
RDMS-DMS	208.7	37.0	245.7
RDMS-Russia	417.5	25.7	443.2
Serbia	26.1	4.6	30.7
Spain	295.7		295.7
Switzerland-ETHZ	121.8		121.8
Switzerland-PSI	95.7		95.7
Switzerland-UNIV	43.5		43.5
Taipei	95.7	17.0	112.6
Turkey	156.5	27.7	184.3
United Kingdom	426.2		426.2
USA-DOE	2870.0	474.9	3344.9
USA-NSF	765.3	126.6	892.0
Grand Total	10,158	843	11,001

ANNEX B.1

M & O Cat. B

Budget Request for the Year 2008 (kCHF or FTE)

Year	2008
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Amount (kCHF/FTE)			Detector					Core Computing	Grand Total
Description	Ref.	Details	Tracker	ECAL	HCAL	Muon	Trigger		
Material Resources (kCHF)	B.1.01	Mechanics	10	28	0	11		49	
	B.1.02	Gas-system	14	5	2	45		66	
	B.1.03	Cryo-system			0			0	
	B.1.04	Cooling system	31	69	2	21		123	
	B.1.05	FE electronics	0	0	0	188		188	
	B.1.06	Standard electronics, PS (LV, HV)	348	180	0	291		819	
	B.1.07	Standard electronics, Crates	0	48	0	74		122	
	B.1.08	Standard electronics, RO Modules	748	165	0	280	222	1,415	
	B.1.09	Controls, (DCS, DSS)	58	100	0	152		310	
	B.1.10	Sub-Detector Spares	550	0	0	79		629	
	B.1.11	Areas	233	80	23	145		481	
	B.1.12	Communications	23	21	94	31		169	
	B.1.13	Store Items	48	40	60	50		198	
	B.1.14	Hired Manpower @CERN	400	698	338	313		1,749	
Material Resources (kCHF) Total			2,463	1,433	517	1,680	222	6,315	
Human Resources (FTE)	B.2.01	Technical Manpower @CERN	8	10	13	15	8	54	
	B.2.02	Core Computing Manpower @CMS						96	
Human Resources (FTE) Total			8	10	13	15	8	96	

ANNEX B.2

M&O Cat. B Cost Sharing by Funding Agency and Subsystem

Funding Agency	Tracker	ECAL	HCAL	Muon	Trigger
Austria	1.7%				10.6%
Belgium	10.7%				
Brazil					
Bulgaria					
CERN	13.5%	17.4%		3.3%	1.7%
China				0.9%	
Croatia		1.8%			
Cyprus		1.3%			
Estonia					
Finland	4.7%				
France-CEA		6.7%			
France-IN2P3	8.1%	9.1%			
Germany	11.6%			9.7%	
Greece		3.1%			6.1%
Hungary					
India		3.5%			
Iran					
Ireland					
Italy	28.1%	13.3%		37.5%	0.9%
Korea				1.9%	3.5%
Mexico					
New Zealand					
Pakistan				4.7%	
Poland					26.8%
Portugal		1.7%			2.2%
RDMS-DMS					
RDMS-Russia		4.5%			
Serbia		0.8%			
Spain				7.8%	
Switzerland-ETHZ	0.8%	4.2%			
Switzerland-PSI	2.1%	1.3%			
Switzerland-UNIV	1.5%				
Taipei		4.2%			
Turkey					
United Kingdom	6.1%	7.6%			3.5%
USA-DOE	8.2%	14.9%	74.1%	24.6%	32.2%
USA-NSF	2.9%	4.6%	25.9%	9.6%	12.6%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

All subsystems sharing by responsibility

ANNEX B.3

M&O Cat. B Costs by Funding Agency and Subsystem

Estimated Costs Incurred in 2008 (kCHF)

Funding Agency	Tracker	ECAL	HCAL	Muon	Trigger	Total
Austria	42.5				23.5	66.0
Belgium	262.9					262.9
Brazil						
Bulgaria						
CERN	332.0	250.0		55.4	3.9	641.3
China				15.7		15.7
Croatia		25.6				25.6
Cyprus		18.0				18.0
Estonia						
Finland	116.9					116.9
France-CEA		96.1				96.1
France-IN2P3	200.5	129.8				330.3
Germany	285.5			163.4		449.0
Greece		45.0			13.5	58.5
Hungary						
India		50.0				50.0
Iran						
Ireland						
Italy	693.2	190.4		629.8	1.9	1,515.4
Korea				31.4	7.7	39.1
Mexico						
New Zealand						
Pakistan				78.5		78.5
Poland					59.4	59.4
Portugal		24.0			4.9	29.0
RDMS-DMS						
RDMS-Russia		64.8				64.8
Serbia		12.0				12.0
Spain				131.8		131.8
Switzerland-ETHZ	19.7	60.1				79.8
Switzerland-PSI	50.7	18.0				68.7
Switzerland-UNIV	36.2					36.2
Taipei		60.1				60.1
Turkey						
United Kingdom	151.4	109.1			7.7	268.2
USA-DOE	201.1	214.1	382.8	412.9	71.5	1,282.4
USA-NSF	70.4	65.9	134.0	161.1	27.9	459.3
Grand Total	2,463	1,433	517	1,680	222	6,315

ANNEX I.A

M & O Cat. A Costs 2007-2012

(All Figures in kCHF)

Group	Description	Ref.	Details	Type (I)	Year						Grand Total	
					2007	2008	2009	2010	2011	2012		
Maintenance & Operations	Detector related costs	A.1.01	Magnet	C	40	40	30	30	30	30	200	
		A.1.02	Magnet controls	C	110	110	110	110	110	110	660	
		A.1.03	Magnet power supply	O	30	30	20	20	20	20	140	
				C	30	20	20	20	20	130		
		A.1.04	Gas systems	O	160	160	160	160	160	160	960	
				C	50	50	50	50	50	50	300	
		A.1.05	Gas consumption	C	200	450	375	300	300	300	1,925	
		A.1.06	Cooling systems	O	150	190	190	190	190	190	1,100	
				C	30	30	30	30	30	30	180	
		A.1.07	Cooling fluids(above -50°C)	C	200	200	200	145	145	145	1,035	
		A.1.08	External cryogenics	O	345	345	345	345	345	345	2,070	
				C	120	30	30	30	30	30	270	
		A.1.09	Cryogenic fluids (below -50°C)	C	40	140	90	40	40	40	390	
		A.1.10	Moving /hydraulic systems	O	50	50	50	50	50	50	300	
				C	50	30	30	30	30	30	200	
		A.1.11	Detector safety systems	O	25	25	25	25	25	25	150	
				C	40	40	40	40	40	40	240	
	A.1.12	Shutdown activities	O	390	390	390	390	390	390	2,340		
			C	20	20	20	20	20	20	120		
	A.1.13	General Technical support	O	550	550	550	550	550	550	3,300		
			C	60	60	60	50	50	50	330		
	A.1.14	UPS maintenance	C	80	80	80	80	80	80	480		
	A.1.16	Beam pipe & vacuum	O	120	120	120	120	120	120	720		
			C	120	120	120	120	120	120	720		
	A.1.17	Counting & control rooms	O	120	120	120	120	120	120	720		
			C	80	120	120	100	100	100	620		
	Detector related costs Total					3,242	3,552	3,407	3,197	3,197	3,197	19,792
	Secretariat	A.2.01	Secretarial assistance	O	180	225	225	225	225	225	1,305	
		A.2.02	Economat	C	15	15	15	15	15	15	90	
		A.2.04	Printing and publication	C	50	100	100	100	100	100	550	
	Secretariat Total					245	340	340	340	340	340	1,945
	Communications	A.3.01	GSM phones; on-call service	C	20	20	20	20	20	20	120	
		A.3.02	Automatic call-back	C	50	100	100	100	100	100	550	
	Communications Total					70	120	120	120	120	120	670
	On-line computing	A.4.01	System management	O	395	670	980	980	980	980	4,985	
		A.4.02	Data storage, (temporary on disk)	C	16	27	47	325	325	325	1,065	
		A.4.03	Detector controls	C	95	120	145	145	145	145	795	
		A.4.04	Computers /processors /LANs	C	690	1,828	2,392	2,770	2,770	2,770	13,220	
		A.4.05	Software licenses	C	60	90	120	150	150	150	720	
	On-line computing Total					1,256	2,735	3,684	4,370	4,370	4,370	20,785
	Test beams, calibration facilities	A.5.01	General operation	O	60	40	40	30	30	30	230	
				C	20	20	20	10	10	10	90	
		A.5.02	Common electronics	C	45	15	15	15	15	15	120	
		A.5.03	Electronics pool rentals	C	20	20	20	20	20	20	120	
		A.5.04	Gas systems	C	10	10	10	10	10	10	60	
	C			10	10	10	10	10	10	60		
	Test beams, calibration facilities Total					165	115	115	95	95	95	680
Laboratory operations	A.6.01	Assembly areas, clean rooms	C	30	20	20	20	20	20	130		
	A.6.02	Workshops	O	220	220	220	220	220	220	1,320		
			C	30	30	30	30	30	30	180		
Laboratory operations Total					280	270	270	270	270	270	1,630	
A.7.01	Cooling & ventilation	O	175	195	235	235	235	235	1,310			
		C	295	315	355	355	355	355	2,030			
		C	60	60	60	60	60	60	360			

All Amounts in kCHF					Year						Grand Total	
Group	Description	Ref.	Details	Type (1)	2007	2008	2009	2010	2011	2012		
	General services	A.7.04	Heavy transport	O	550	400	280	280	280	280	2,070	
				C	60	60	60	60	60	60	360	
		A.7.05	Cranes	C	70	50	50	50	50	50	320	
		A.7.06	Cars	C	40	30	30	30	30	30	190	
		A.7.08	Survey	O	120	120	60	60	60	60	480	
				C	10	5	5	5	5	5	35	
		A.7.09	Storage space	C	70	50	50	50	50	50	320	
		A.7.10	Common desktop infrastructure	C	60	50	45	40	40	40	275	
		A.7.11	Academic Subsistence	O	130	60	50	40	40	40	360	
	A.7.12	Outreach	O	50	50	50	50	50	50	300		
			C	170	170	170	170	170	170	1,020		
	General services Total					1,860	1,615	1,500	1,485	1,485	1,485	9,430
	Core Computing Infrastructure & Services	A.9.01	Central computing environment	O	141	378	458	458	458	458	2,350	
		A.9.02	Software process service	O	141	176	220	220	220	220	1,197	
		A.9.03	User support	O	141	150	202	202	202	202	1,100	
		A.9.04	Central production operations	O	458	607	695	695	695	695	3,846	
		A.9.05	Hardware	C	100	100	100	100	100	100	600	
Core Computing Infrastructure & Services Total					980	1,411	1,675	1,675	1,675	1,675	9,092	
Maintenance & Operations Total					8,098	10,158	11,111	11,552	11,552	11,552	64,024	
Power	Electricity				1,600	1,800	1,800	1,800	1,800	1,800	10,600	
Power Total					1,600	1,800	1,800	1,800	1,800	1,800	10,600	
Grand Total					9,698	11,958	12,911	13,352	13,352	13,352	74,624	

(1) O=Operation, manpower intensive
C=Consumables

ANNEX I.B

M& O Cat. B Costs 2007-2012 for all CMS Subdetectors

(Material Resources in kCHF, Human Resources in FTE)

Amount (kCHF/ FTE)			Year						Grand Total
Description	Detector	Subsystem	2007	2008	2009	2010	2011	2012	
Material Resources	Tracker	Pixel	120	698	714	714			2,246
		SST	2,006	1,765	1,565	1,565	1,440	1,440	9,781
	Tracker Total		2,126	2,463	2,279	2,279	1,440	1,440	12,027
	ECAL		1,398	1,433	1,433	1,433	1,433	1,433	8,563
	HCAL		611	517	598	542	555	568	3,391
	Muon	Barrel Alignment	29	24	24	24	59	39	199
		Drift Tubes	373	681	521	521	521	521	3,138
		EMU	805	574	459	459	459	459	3,216
		Forward RPC	157	157	157	157	157	157	942
		LinkAlignment	33	16	16	16	39	19	139
		RPC Barrel	241	228	228	228	228	228	1,381
Muon Total		1,638	1,680	1,405	1,405	1,463	1,423	9,015	
Trigger		490	222	490	490	490	490	2,672	
Material Resources Total			6,262	6,315	6,206	6,149	5,381	5,354	35,667
Human Resources	Tracker	Pixel		2	2	2			6
		SST	6	6	6	6	6	6	36
	Tracker Total		6	8	8	8	6	6	42
	ECAL		10	10	10	10	10	10	60
	HCAL		9	13	13	12	12	12	71
	Muon	Barrel Alignment	2	1	1	1	1	1	7
		Drift Tubes	5	4	4	4	4	4	25
		EMU	5	5	5	5	5	5	30
		Forward RPC	2	2	2	2	2	2	12
		LinkAlignment	1	1	1	1	1	1	6
		RPC Barrel	2	2	2	2	2	2	12
Muon Total		17	15	15	15	15	15	92	
Trigger		8	8	8	8	8	8	48	
Core Computing		75	96	96	96	96	96	555	
Human Resources Total			126	150	150	149	147	147	869