

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

## INTRODUCTION

This document summarizes the 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 recently scrutinized by the RRB Scrutiny Group for M&O for the October 2007 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 figures shown as "Payments expected in the year 2008" in the Summary Table (**Annex 2**) have been reviewed by the RRB Scrutiny Group and are based on the updated PhD count.

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 Preliminary Draft Budget for M&O (cf. CERN-RRB-2007-027), the present budget request has remained overall the same: 11'959 kCHF.

The present budget request has changed in a few areas:

- A.1.11, Detector Safety System, has been increased to take into account the foreseen BCM/BRM maintenance charges, which were not included previously.
- A.4.01, System Management, has been lowered to reflect the exact buying profile for the on-line farm and therefore the exact start dates for the staff.

- A.4.05, Software licences, has been reduced to zero.
- A.7.05, Cranes, spare parts have been purchased in advance this year with the Scrutiny Group approval and the budget has been reduced accordingly in the future.
- A.7.08, Survey, an additional 0.5 FTE has been added to the budget.

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 has been discussed with the RRB Scrutiny Group.

## **M&O CATEGORY B**

With respect to the forecast for the year 2008 in the Preliminary Draft Budget for M&O presented at the April 2007 RRB (cf. CERN-RRB-2007-027), the present budget request has decreased from 6'377 kCHF to 5'827 kCHF.

This decrease is concentrated in the Tracker, where the replacement costs for the Pixel detector, barrel and endcap, will not be incurred until 2009 and onwards.

HCAL has reviewed the yearly profile for the year 2008 and foresees an increase in the technical manpower requirements. While USA-DOE and USA-NSF contribute financially to the M&O-B, all the 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 has been presented to 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

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# 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://cms.cern.ch/iCMS/jsp/page.jsp?mode=cms&action=url&urlkey=CMS\\_DOCOFF](http://cms.cern.ch/iCMS/jsp/page.jsp?mode=cms&action=url&urlkey=CMS_DOCOFF)  
 (Count closed on October 9, 2007)

Institute FA	Data	
	PhD #	PhD %
Austria	11	0.9%
Belgium-FNRS	20	1.6%
Belgium-FWO	9	0.7%
Brazil	9	0.7%
Bulgaria	5	0.4%
CERN	68	5.6%
China	8	0.7%
Colombia	1	0.1%
Croatia	6	0.5%
Cyprus	3	0.2%
Estonia	1	0.1%
Finland	14	1.1%
France-CEA	17	1.4%
France-IN2P3	36	2.9%
Germany-BMBF	57	4.7%
Germany-DESY	16	1.3%
Greece	12	1.0%
Hungary	6	0.5%
India	26	2.1%
Iran	5	0.4%
Ireland	2	0.2%
Italy	188	15.4%
Korea	12	1.0%
Mexico	4	0.3%
New Zealand	5	0.4%
Pakistan	3	0.2%
Poland	8	0.7%
Portugal	6	0.5%
RDMS-DMS	24	2.0%
RDMS-Russia	59	4.8%
Serbia	3	0.2%
Spain	35	2.9%
Switzerland-ETHZ	12	1.0%
Switzerland-PSI	11	0.9%
Switzerland-UNIV	5	0.4%
Taipei	13	1.1%
Turkey	16	1.3%
United Kingdom	56	4.6%
USA-DOE	327	26.8%
USA-DOE-NP	16	1.3%
USA-NSF	84	6.9%
USA-NSF-NP	2	0.2%
Grand Total	1,221	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	91.5	55.8	147.3	91.5
Belgium-FNRS	166.4	199.7	366.1	166.4
Belgium-FWO	74.9		74.9	74.9
Brazil	88.2		88.2	88.2
Bulgaria	41.6		41.6	41.6
CERN	565.8	561.4	1,127.2	565.8
China	78.4	15.7	94.1	78.4
Colombia	9.8		9.8	9.8
Croatia	58.8	25.6	84.4	58.8
Cyprus	29.4	18.2	47.6	29.4
Estonia	9.8		9.8	9.8
Finland	116.5	88.8	205.2	116.5
France-CEA	141.4	103.4	244.8	141.4
France-IN2P3	299.5	267.8	567.4	299.5
Germany-BMBF	474.3	395.2	869.4	474.3
Germany-DESY	133.1		133.1	133.1
Greece	99.8	58.5	158.4	99.8
Hungary	49.9		49.9	49.9
India	250.4	50.6	301.0	250.4
Iran	49.0		49.0	49.0
Ireland	19.6		19.6	19.6
Italy	1,564.2	1,381.1	2,945.3	1,564.2
Korea	117.5	39.1	156.7	117.5
Mexico	39.2		39.2	39.2
New Zealand	49.0		49.0	49.0
Pakistan	29.4	78.5	107.9	29.4
Poland	66.6	59.4	126.0	66.6
Portugal	49.9	26.8	76.7	49.9
RDMS-DMS	235.1		235.1	235.1
RDMS-Russia	521.1	66.4	587.5	521.1
Serbia	29.4	12.0	41.4	29.4
Spain	291.2	142.3	433.5	291.2
Switzerland-ETHZ	99.8	71.7	171.6	99.8
Switzerland-PSI	91.5	62.2	153.8	91.5
Switzerland-UNIV	41.6	31.0	72.6	41.6
Taipei	127.3	73.0	200.3	127.3
Turkey	156.7		156.7	156.7
United Kingdom	465.9	234.8	700.7	465.9
USA-DOE	3,170.9	1,265.0	4,435.9	3,170.9
USA-DOE-NP	155.2		155.2	155.2
USA-NSF	814.5	442.8	1,257.3	814.5
USA-NSF-NP	19.4		19.4	19.4
<b>Grand Total</b>	<b>10,984</b>	<b>5,827</b>	<b>16,810</b>	<b>10,984</b>

# 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, BCM/BRM	205	
		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	Collaborative tools		100
	Communications Total				120
	On-line computing	A.4.01	System management		536
		A.4.02	Data storage, (temporary on disk)		32
		A.4.03	Detector controls		130
		A.4.04	Computers/processors/LANs		1,843
		A.4.05	Software licenses		0
	On-line computing Total				2,541
	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		35
		A.7.06	Cars		30
		A.7.08	Survey		195
		A.7.09	Storage space		50
		A.7.10	Common desktop infrastructure		50
A.7.11		Reviewing & engineering		60	
A.7.12		Outreach		220	
General services Total				1,670	
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				10,159	
Power	Electricity	A.8.01	Power Consumption	1,800	
	Electricity Total			1,800	
Power Total				1,800	
Grand Total				11,959	

# 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	91.5		91.5
Belgium-FNRS	166.4		166.4
Belgium-FWO	74.9		74.9
Brazil	74.9	13.3	88.2
Bulgaria	41.6		41.6
CERN	565.8		565.8
China	66.6	11.8	78.4
Colombia	8.3	1.5	9.8
Croatia	49.9	8.8	58.8
Cyprus	25.0	4.4	29.4
Estonia	8.3	1.5	9.8
Finland	116.5		116.5
France-CEA	141.4		141.4
France-IN2P3	299.5		299.5
Germany-BMBF	474.3		474.3
Germany-DESY	133.1		133.1
Greece	99.8		99.8
Hungary	49.9		49.9
India	216.3	34.1	250.4
Iran	41.6	7.4	49.0
Ireland	16.6	2.9	19.6
Italy	1564.2		1564.2
Korea	99.8	17.7	117.5
Mexico	33.3	5.9	39.2
New Zealand	41.6	7.4	49.0
Pakistan	25.0	4.4	29.4
Poland	66.6		66.6
Portugal	49.9		49.9
RDMS-DMS	199.7	35.4	235.1
RDMS-Russia	490.9	30.2	521.1
Serbia	25.0	4.4	29.4
Spain	291.2		291.2
Switzerland-ETHZ	99.8		99.8
Switzerland-PSI	91.5		91.5
Switzerland-UNIV	41.6		41.6
Taipei	108.2	19.2	127.3
Turkey	133.1	23.6	156.7
United Kingdom	465.9		465.9
USA-DOE	2720.8	450.1	3170.9
USA-DOE-NP	133.1	22.0	155.2
USA-NSF	698.9	115.6	814.5
USA-NSF-NP	16.6	2.8	19.4
<b>Grand Total</b>	<b>10,159</b>	<b>824</b>	<b>10,984</b>



# 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	35	2	21		89	
	B.1.05	FE electronics	0	0	0	188		188	
	B.1.06	Standard electronics, PS (LV, HV)	348	214	0	353		915	
	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	0	0	0	79		79	
	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			1,913	1,433	517	1,742	222	5,827	
Human Resources (FTE)	B.2.01	Technical Manpower @CERN	8	10	15	15	8	56	
	B.2.02	Core Computing Manpower @CMS						96	
Human Resources (FTE) Total			8	10	15	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-FNRS	10.4%				
Belgium-FWO					
Brazil					
Bulgaria					
CERN	13.2%	17.4%		3.2%	1.7%
China				0.9%	
Colombia					
Croatia		1.8%			
Cyprus		1.3%			
Estonia					
Finland	4.6%				
France-CEA		7.2%			
France-IN2P3	8.0%	8.1%			
Germany-BMBF	11.3%			10.2%	
Germany-DESY					
Greece		3.1%			6.1%
Hungary					
India		3.5%			
Iran					
Ireland					
Italy	27.5%	13.0%		38.3%	0.9%
Korea				1.8%	3.5%
Mexico					
New Zealand					
Pakistan				4.5%	
Poland					26.8%
Portugal		1.5%			2.2%
RDMS-DMS					
RDMS-Russia		4.6%			
Serbia		0.8%			
Spain				8.2%	
Switzerland-ETHZ	0.9%	3.8%			
Switzerland-PSI	2.3%	1.3%			
Switzerland-UNIV	1.6%				
Taipei		5.1%			
Turkey					
United Kingdom	6.0%	7.8%			3.5%
USA-DOE	9.2%	14.5%	74.1%	24.4%	33.2%
USA-DOE-NP					
USA-NSF	3.2%	5.1%	25.9%	8.5%	11.6%
USA-NSF-NP					
<b>Grand Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

# 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	32.3				23.5	55.8
Belgium-FNRS	199.7					199.7
Belgium-FWO						
Brazil						
Bulgaria						
CERN	252.1	250.0		55.4	3.9	561.4
China				15.7		15.7
Colombia						
Croatia		25.6				25.6
Cyprus		18.2				18.2
Estonia						
Finland	88.8					88.8
France-CEA		103.4				103.4
France-IN2P3	152.3	115.5				267.8
Germany-BMBF	216.8			178.3		395.2
Germany-DESY						
Greece		45.0			13.5	58.5
Hungary						
India		50.6				50.6
Iran						
Ireland						
Italy	526.5	186.3		666.4	1.9	1,381.1
Korea				31.4	7.7	39.1
Mexico						
New Zealand						
Pakistan				78.5		78.5
Poland					59.4	59.4
Portugal		21.9			4.9	26.8
RDMS-DMS						
RDMS-Russia		66.4				66.4
Serbia		12.0				12.0
Spain				142.3		142.3
Switzerland-ETHZ	17.0	54.7				71.7
Switzerland-PSI	44.0	18.2				62.2
Switzerland-UNIV	31.0					31.0
Taipei		73.0				73.0
Turkey						
United Kingdom	115.0	112.1			7.7	234.8
USA-DOE	176.0	207.4	382.8	425.2	73.6	1,265.0
USA-DOE-NP						
USA-NSF	61.6	72.6	134.0	148.8	25.8	442.8
USA-NSF-NP						
<b>Grand Total</b>	<b>1,913</b>	<b>1,433</b>	<b>517</b>	<b>1,742</b>	<b>222</b>	<b>5,827</b>

# ANNEX I.A

## M & O Cat. A Costs 2007-2012

(All Figures in kCHF)

		All Amounts in kCHF				Year					
Group	Description	Ref.	Details	Type (1)	2007	2008	2009	2010	2011	2012	
Maintenance & Operations	Detector related costs	A.1.01	Magnet	C	40	40	30	30	30	30	
		A.1.02	Magnet controls	O	110	110	110	110	110	110	
				C	32	32	32	32	32	32	
		A.1.03	Magnet power supply	O	30	30	20	20	20	20	
				C	30	20	20	20	20	20	
		A.1.04	Gas systems	O	160	160	160	160	160	160	
				C	50	50	50	50	50	50	
		A.1.05	Gas consumption	C	200	450	375	300	300	300	
		A.1.06	Cooling systems	O	150	190	190	190	190	190	
				C	30	30	30	30	30	30	
		A.1.07	Cooling fluids(above -50°C)	C	200	200	200	145	145	145	
		A.1.08	External cryogenics	O	345	345	345	345	345	345	
				C	120	30	30	30	30	30	
		A.1.09	Cryogenic fluids (below -50°C)	C	40	140	90	40	40	40	
		A.1.10	Moving /hydraulic systems	O	50	50	50	50	50	50	
				C	50	30	30	30	30	30	
			Detector safety systems	O						50	50
				C						90	90
		A.1.11	Detector safety systems, BCM/BRM	O	25	75	75	75			
				C	40	130	130	130			
	A.1.12	Shutdown activities	O	390	390	390	390	390	390		
			C	20	20	20	20	20	20		
	A.1.13	General Technical support	O	550	550	550	550	550	550		
			C	60	60	60	50	50	50		
	A.1.14	UPS maintenance	C	80	80	80	80	80	80		
	A.1.16	Beam pipe & vacuum	O	120	120	120	120	120	120		
			C	120	120	120	120	120	120		
	A.1.17	Counting & control rooms	O	120	120	120	120	120	120		
			C	80	120	120	100	100	100		
		Detector related costs Total				3,242	3,692	3,547	3,337	3,272	3,272
		Secretariat	A.2.01	Secretarial assistance	O	180	225	225	225	225	225
			A.2.02	Economat	C	15	15	15	15	15	15
			A.2.04	Printing and publication	C	50	100	100	100	100	100
	Secretariat Total				245	340	340	340	340	340	
	Communications	A.3.01	GSM phones; on-call service	C	20	20	20	20	20	20	
		A.3.02	Automatic call-back	C					100	100	
			Collaborative tools	C	50	100	100	100			
	Communications Total				70	120	120	120	120	120	
	On-line computing	A.4.01	System management	O	395	536	796	896	980	980	
		A.4.02	Data storage, (temporary on disk)	C	16	32	52	375	375	375	
		A.4.03	Detector controls	C	95	130	130	130	130	130	
		A.4.04	Computers/processors/LANs	C	690	1,843	2,422	2,281	2,467	2,770	
		A.4.05	Software licenses	C	60	0	0	0	0	0	
	On-line computing Total				1,256	2,541	3,400	3,682	3,952	4,255	
	Test beams, calibration facilities	A.5.01	General operation	O	60	40	40	30	30	30	
			C	20	20	20	10	10	10		
		A.5.02	Common electronics	C	45	15	15	15	15	15	
		A.5.03	Electronics pool rentals	C	20	20	20	20	20	20	
		A.5.04	Gas systems	C	10	10	10	10	10	10	
	A.5.05	Gas consumption	C	10	10	10	10	10	10		
	Test beams, calibration facilities Total				165	115	115	95	95	95	
	Laboratory operations	A.6.01	Assembly areas, clean rooms	C	30	20	20	20	20	20	
		A.6.02	Workshops	O	220	220	220	220	220	220	
			C	30	30	30	30	30	30		
	Laboratory operations Total				280	270	270	270	270	270	

All Amounts in kCHF					Year						
Group	Description	Ref.	Details	Type (1)	2007	2008	2009	2010	2011	2012	
	General services	A.7.01	Cooling & ventilation	O	175	195	235	235	235	235	
				C	295	315	355	355	355	355	
		A.7.03	Power distribution system	C	60	60	60	60	60	60	
		A.7.04	Heavy transport	O	550	400	280	280	280	280	
				C	60	60	60	60	60	60	
		A.7.05	Cranes	C	70	35	35	35	35	35	
		A.7.06	Cars	C	40	30	30	30	30	30	
		A.7.08	Survey	O	120	180	120	60	60	60	
				C	10	15	10	5	5	5	
		A.7.09	Storage space	C	70	50	50	50	50	50	
		A.7.10	Common desktop infrastructure	C	60	50	45	40	40	40	
				O						40	40
	A.7.11	Reviewing & engineering	O								
			O	130	60	50	40				
	A.7.12	Outreach	O	50	50	50	50	50	50	50	
			C	170	170	170	170	170	170	170	
	General services Total					1,860	1,670	1,550	1,470	1,470	1,470
	Core Computing Infrastructure & Services	A.9.01	Central computing environment	O	141	378	458	458	458	458	
		A.9.02	Software process service	O	141	176	220	220	220	220	
		A.9.03	User support	O	141	150	202	202	202	202	
A.9.04		Central production operations	O	458	607	695	695	695	695		
A.9.05		Hardware	C	100	100	70	70	70	70		
Core Computing Infrastructure & Services Total					980	1,411	1,645	1,645	1,645	1,645	
Maintenance & Operations Total					8,098	10,159	10,987	10,959	11,164	11,467	
Power	Electricity				1,600	1,800	1,800	1,800	1,800	1,800	
	Power Total				1,600	1,800	1,800	1,800	1,800	1,800	
Grand Total					9,698	11,959	12,787	12,759	12,964	13,267	

(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					
Description	Detector	Subsystem	2007	2008	2009	2010	2011	2012
Material Resources	Tracker	Pixel	120	148	714	714		
		SST	2,006	1,765	1,565	1,565	1,440	1,440
	Tracker Total		2,126	1,913	2,279	2,279	1,440	1,440
	ECAL		1,398	1,433	1,433	1,433	1,433	1,433
	HCAL		611	517	598	542	555	568
	Muon	Barrel Alignment	29	24	24	24	59	39
		Drift Tubes	373	743	521	521	521	521
		EMU	805	574	459	459	459	459
		Forward RPC	157	157	157	157	157	157
		LinkAlignment	33	16	16	16	39	19
		RPC Barrel	241	228	228	228	228	228
Muon Total		1,638	1,742	1,405	1,405	1,463	1,423	
Trigger		490	222	490	490	490	490	
Material Resources Total			6,262	5,827	6,206	6,149	5,381	5,354
Human Resources	Tracker	Pixel		2	2	2		
		SST	6	6	6	6	6	6
	Tracker Total		6	8	8	8	6	6
	ECAL		10	10	10	10	10	10
	HCAL		9	15	15	14	14	14
	Muon	Barrel Alignment	2	1	1	1	1	1
		Drift Tubes	5	4	4	4	4	4
		EMU	5	5	5	5	5	5
		Forward RPC	2	2	2	2	2	2
		LinkAlignment	1	1	1	1	1	1
RPC Barrel		2	2	2	2	2	2	
Muon Total		17	15	15	15	15	15	
Trigger		8	8	8	8	8	8	
Core Computing		75	96	96	96	96	96	
Human Resources Total			126	152	152	151	149	149