CMS

Compact Muon Solenoid

Draft Budget for M&O 2008

CERN-RRB-2007-084

Cf. CERN-RRB-2007-083

A. Petrilli, RRB-25, October 23, 2007

Status of M&O MoU Signatures

Funding Agency	Signed on
Austria	9-Oct-2002
Belgium-FNRS	23-Aug-2002
Belgium-FWO	20-Aug-2002
Brazil	
Bulgaria	
Colombia	
CERN	4-Dec-2002
China NSFC/CAS	2-Aug-2002
Croatia	8-Oct-2002
Cyprus	16-Aug-2002
Estonia	17-Oct-2002
Finland	19-Sep-2002
France-CEA	26-Aug-2002
France-IN2P3	25-Sep-2002
Germany	12-Sep-2002
Greece	
Hungary	13-Sep-2002
India	16-Sep-2002
Iran	
Ireland	

Status of M&O MoU Signatures

Funding Agency	Signed on
Italy	25-Nov-2002
Korea	25-Oct-2006
Mexico	
New Zealand	
Pakistan	3-Mar-2003
Poland	19-Oct-2004
Portugal	26-Jun-2002
RDMS-Dubna	17-Sep-2002
RDMS-Russia	26-Mar-2006
Serbia	12-Aug-2005
Spain	17-Feb-2003
Switzerland-ETHZ	
Switzerland-PSI	
~~Switzerland-Univ. Basel~~	~~15-Nov-2002~~
Switzerland-Univ. Zurich	27-Nov-2002
Taipei	12-Jul-2002
Turkey	12-Mar-2003
UK	24-Sep-2002
USA-DOE/NSF	14-Oct-2002

Introduction

- **The CMS Collaboration presents the Draft Budget for both Category A and Category B M&O expenses**
- **The sharing of the M&O-A expenses is based on the PhD count**
  - **The list of PhDs participating in CMS has been updated as required by the M&O MoU**
- **The sharing of M&O-B expenses is based on responsibility for all subsystems**

Introduction

- **Both M&O-A and M&O-B expenses have been presented to the RRB Scrutiny Group for M&O and feedback has been taken into account.**

- **For readability, we present all figures by Funding Agency. Details are available by Institute. For invoicing purposes, CMS will follow the same arrangements as for the previous year.**

October 23, 2007

M&O Changes vs. RRB-24

- **M&O-A**
  - **A.1.11 BRM/BCM maintenance added**
  - **A.4.01 System management reprofiled**
  - **A.4.05 Software licenses removed**
  - **A.7.05 Cranes spares purchased in advance, 2008 onwards lowered**
  - **A.7.08 Survey strengthened by 0.5 FTE**
  - **Budget overall stable**
- **M&O-B**
  - **All subsystems reviewed**
  - **Budget decrease of ~500 kCHF in 2008**

2008 M&O-A Budget: Overview Annex A.1

Maintenance & Operations (kCHF)		Year
Group	Description	2008
Maintenance & Operations	Detector related costs	3,692
	Secretariat	340
	Communications	120
	On-line computing	2,541
	Test beams, calibration facilities	115
	Laboratory operations	270
	General services	1,670
	Core Computing Infrastructure & Services	1,411
Maintenance & Operations Total		10,159
Power	Electricity	1,800
Power Total		1,800
Grand Total		11,959

2008 M&O-B Budget: Overview Annex B.1

Amount (kCHF/FTE)			Detector						
Description	Ref.	Details	Tracker	ECAL	HCAL	Muon	Trigger	Core Computing	Grand Total
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	96
Human Resources (FTE) Total			8	10	15	15	8	96	152

2008 Total M&O Draft Budget (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

2008 Total M&O Draft Budget (kCHF)

Funding Agency	Category A	Category B	Total Category A+B	Total Invoiced
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
Grand Total	**10,984**	**5,827**	**16,810**	**10,984**

Outstanding Contributions M&O-A

Sum of Invoice Outstanding CHF	BudgetYear				
Type	2002	2003	2004	2005	2006
Income	35,515	69,925	45,173	95,000	56,796
Invoiced Total	924,788	1,765,339	2,497,734	3,692,022	6,564,745
% Outstanding	3.8%	4.0%	1.8%	2.6%	0.9%

- **The total currently outstanding amount for 2002-2006 is 302 kCHF**

- **Funding Agencies with outstanding contributions are kindly requested to rectify the situation as soon as possible**

M&O Evolution

- **The M&O category A estimates are overall stable since the April RRB**
    - **as the number of PhDs is gone up, the cost per PhD is very similar to last year**
- **The M&O category B estimates are also overall stable since the April RRB**
    - **changes are due to reprofiling to reflect the CMS startup**

Summary

The RRB is invited to

- **approve the Draft Budget for M&O Category A for the year 2008**

- **take note of the Draft Budget for M&O Category B for the year 2008 and its sharing amongst the CMS Funding Agencies**

It should be noted that the M&O Category B Draft Budget will not be invoiced but that those funds should be made available to the CMS collaborating Institutes