

CMS

Draft Budget for M&O 2011

CERN-RRB-2010-109

Cf. CERN-RRB-2010-108

Compact Muon Solenoid

A. Charkiewicz, RRB-31, October 12, 2010



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	7-Aug-2008
Colombia	19-Sep-2008
CERN	4-Dec-2002
China NSFC/CAS	2-Aug-2002
Croatia	8-Oct-2002
Cyprus	16-Aug-2002
Egypt	
Estonia	17-Oct-2002
Finland	19-Sep-2002
France-CEA	26-Aug-2002
France-IN2P3	25-Sep-2002
Germany	12-Sep-2002
Greece	28-Apr-2009
Hungary	13-Sep-2002
India	16-Sep-2002
Iran	
Ireland	
Italy	25-Nov-2002



Status of M&O MoU Signatures

Funding Agency	Signed on
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

The M&O MoU has not yet been sent to the following Funding Agencies:
Egypt, Iran, Ireland and New Zealand



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 cost per PhD remains at a similar level as in 2010 of approx. 10 kCHF/PhD**
- **The sharing of M&O-B expenses is based on responsibility for all subsystems**



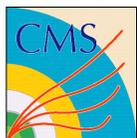
Introduction

- **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.**
- **The M&O-A cost estimates have been updated with respect to the April 2010 RRB Meeting leading to a decrease of some 2.8 MCHF**



Revised M&O-A Budget

- **In agreement with the RRB Scrutiny Group the actual amount of the deficit on 2009 expenditures as announced at the April RRB is 488 kCHF when taking into account accumulated savings of past years. Efforts will be made offset this by savings where possible.**
- **The cost of the emergency leak repair of the YE-1 cooling system would be added onto the 2011 budget (total of 1,1 MCHF)**
- **The M&O category have been reduced by 2,767 kCHF as compared to the proposal made at the April 2010 RRB. The main factors contributing to this are:**
 - **Reducing the allocation for Online hardware by 1,9 MCHF by postponing replacement of DAQ equipment to 2012 and 2013 (adapting to the revised LHC Schedule)**
 - **Applying an Operational Model in 2011 to produce savings during a running year as compared to shutdown**
 - **Reducing the allocation for Video-conferencing on request of CERN Management and the RRB Scrutiny Group**
 - **Reducing the request for manpower in Core Computing and On-line**



2011 M&O-A Budget: Overview Annex A.1

Maintenance & Operations (kCHF)		Year
Group	Description	2011
Maintenance & Operations	Detector related costs	4,310
	Secretariat	297
	Communications	282
	On-line computing	2,843
	Test beams, calibration facilities	96
	Laboratory operations	893
	General services	1,870
	Core Computing Infrastructure & Services	1,964
Maintenance & Operations Total		12,553
Power	Electricity	1,800
Grand Total		14,353



2011 M&O-B Budget: Overview Annex B.1

Amount (kCHF/FTE)			Detector					Core Computing	Grand Total
Description	Ref.	Details	Tracker	ECAL	HCAL	Muon	Trigger		
Material Resources (kCHF)	B.1.01	Mechanics	40	25	140	10			215
	B.1.02	Gas-system	115	15	0	20			150
	B.1.03	Cryo-system			0	0			0
	B.1.04	Cooling system	250	90	0	0			340
	B.1.05	FE electronics			0	0	64		64
	B.1.06	Standard electronics, PS (LV, HV)	330	100	10	128			568
	B.1.07	Standard electronics, Crates			40	56	46		142
	B.1.08	Standard electronics, RO Modules	90	155	20	126		490	881
	B.1.09	Controls, (DCS, DSS)	110	85	27	35			257
	B.1.10	Sub-Detector Spares	0	0	4	38			42
	B.1.11	Areas	100	100	8	89			297
	B.1.12	Communications	20	10	64	43			137
	B.1.13	Store Items	60	50	16	41			167
	B.1.14	Hired Manpower @CERN	620	470	557	1,311		200	3,158
Material Resources (kCHF) Total			1,735	1,140	902	1,951	690		6,418
Human Resources (FTE)	B.2.01	Technical Manpower @CERN	0	0	0	0	8		8
	B.2.02	Core Computing Manpower @CMS						8	8
Human Resources (FTE) Total			0	0	0	0	8	8	16



M&O-B Manpower

- **As reported in April 2010, CMS has set up a Task Force to study the sharing of the M&O-B Budget**
- **Following in-depth analysis, recommendations were made to ensure an efficient and equitable system in which all FAs participate fairly in sub-detector maintenance and operation**
- **One of the main recommendations of the TF was to assign a monetary value to manpower and report FTEs in CHF according to common guidelines**
- **This is already adopted by most sub-detectors and resulted in a decrease from 19 FTEs to 8 FTEs**
- **Following a thorough analysis of the Core Computing manpower and eliminating service work reported under ESP the total number of FTEs was reduced from 96 to 7.5**
- **These measures are to ensure clear and uniform reporting of expenditures and recognition of all FA contributions. They have no effect on the actual level of cash contributions to M&O-B**



2011 Total M&O Draft Budget (kCHF)

Funding Agency	Category A	Category B	Total Category A+B	Total Invoiced
Austria	199.3	100.4	299.7	199.3
Belgium-FNRS	144.9	87.4	232.3	144.9
Belgium-FWO	144.9	191.0	335.9	144.9
Brazil	176.0		176.0	176.0
Bulgaria	72.5	40.4	112.8	72.5
CERN	724.5	608.1	1,332.7	724.5
China	103.6	6.7	110.3	103.6
Colombia	31.1	6.7	37.8	31.1
Croatia	72.5	23.3	95.7	72.5
Cyprus	51.8	19.9	71.7	51.8
Egypt	31.1	10.1	41.2	31.1
Estonia	41.4		41.4	41.4
Finland	126.8	77.7	204.5	126.8
France-CEA	135.9	74.8	210.6	135.9
France-IN2P3	480.0	248.9	728.9	480.0
Germany-BMBF	543.4	306.0	849.4	543.4
Germany-DESY	353.2	30.0	383.2	353.2
Greece	135.9	79.8	215.7	135.9
Hungary	90.6		90.6	90.6
India	296.1	63.5	359.6	296.1
Iran	62.1		62.1	62.1
Ireland				
Italy	1,566.8	896.0	2,462.9	1,566.8



2011 Total M&O Draft Budget (kCHF) - 2

Funding Agency	Category A	Category B	Total Category A+B	Total Invoiced
Korea	217.5	40.4	257.8	217.5
Mexico	113.9		113.9	113.9
New Zealand	20.7		20.7	20.7
Pakistan	20.7	20.2	40.9	20.7
Poland	135.9	182.3	318.2	135.9
Portugal	63.4	36.0	99.4	63.4
RDMS-DMS	217.5	20.1	237.6	217.5
RDMS-Russia	580.0	230.5	810.5	580.0
Serbia	31.1	15.0	46.0	31.1
Spain	443.8	127.2	571.0	443.8
Switzerland-ETHZ	172.1	79.7	251.8	172.1
Switzerland-PSI	90.6	61.5	152.0	90.6
Switzerland-UNIV	81.5	39.8	121.3	81.5
Taipei	155.3	40.3	195.6	155.3
Turkey	186.4		186.4	186.4
United Kingdom	507.2	260.8	768.0	507.2
USA-DOE	3,645.7	1,673.5	5,319.2	3,645.7
USA-DOE-NP	225.9	53.0	278.9	225.9
USA-NSF	852.4	667.0	1,519.3	852.4
USA-NSF-NP	20.5		20.5	20.5
Grand Total	13,366	6,418	19,784	13,366



Outstanding Contributions M&O-A

- **The total currently outstanding amount for 2002-2009 is 15'892 CHF of the total invoiced contributions (46.5 MCHF)**
- **The total outstanding amount for 2010 is 428 kCHF which is 3.4 % of the total invoiced 2010 contribution**
- **CMS expresses its appreciation for the timely payment of contributions by the Funding Agencies**
- **We kindly ask Funding Agencies with due contributions to make these payments as soon as possible**

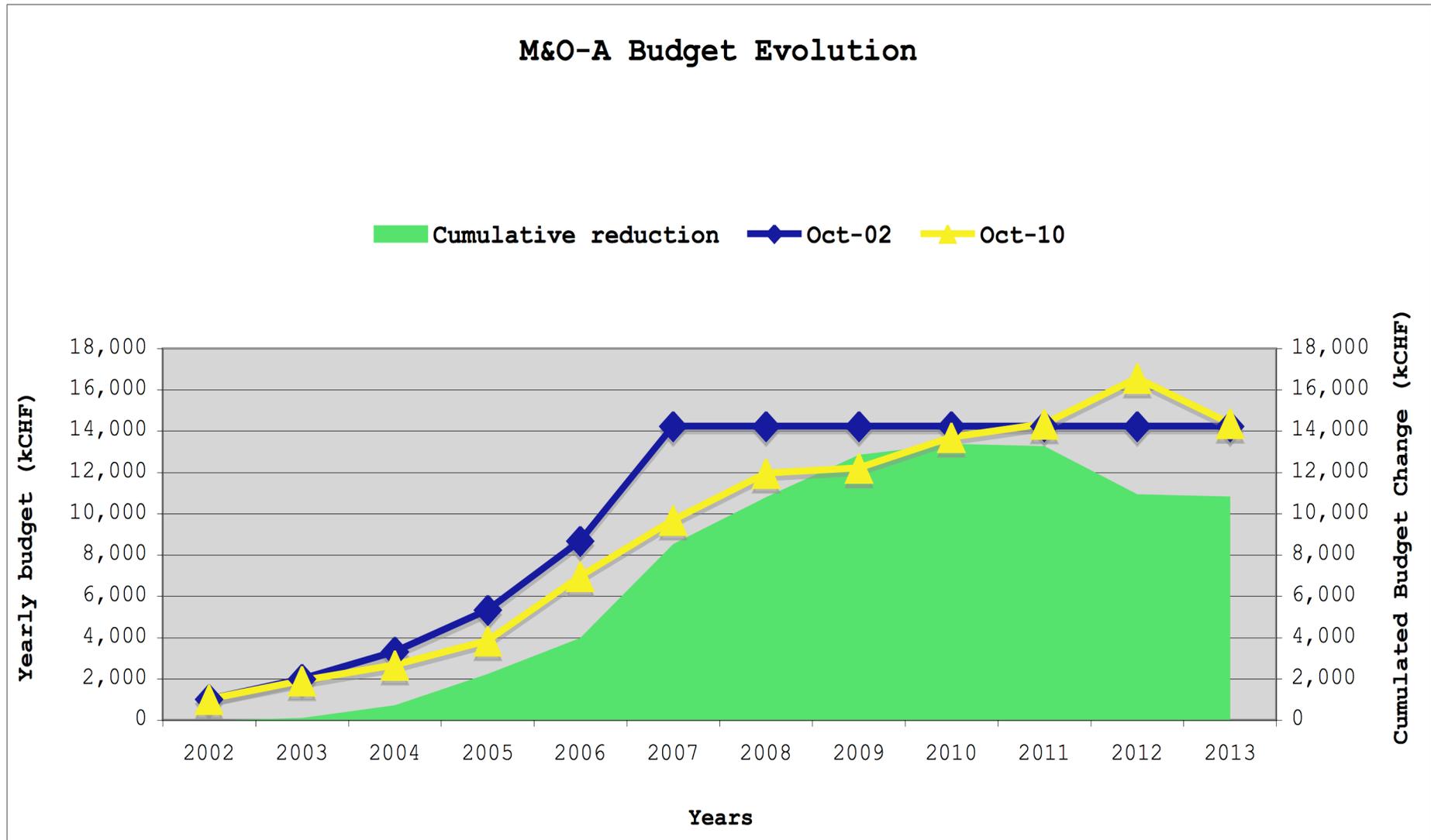


M&O Budget Evolution

- **The M&O category A estimates are mainly determined by:**
 - Changes in the LHC shutdown/run schedule
 - The DAQ replacement schedule dependent on the above
 - Adding an allocation for Personnel Safety
- **The M&O category B estimates have changed since the April RRB:**
 - The changes are mainly due to modifying the accounting of manpower and do not alter the actual cash contributions of Funding Agencies
 - As mentioned in the April RRB the objective is to arrive at a uniform reporting across all CMS subsystems in CHF (rather than FTE)

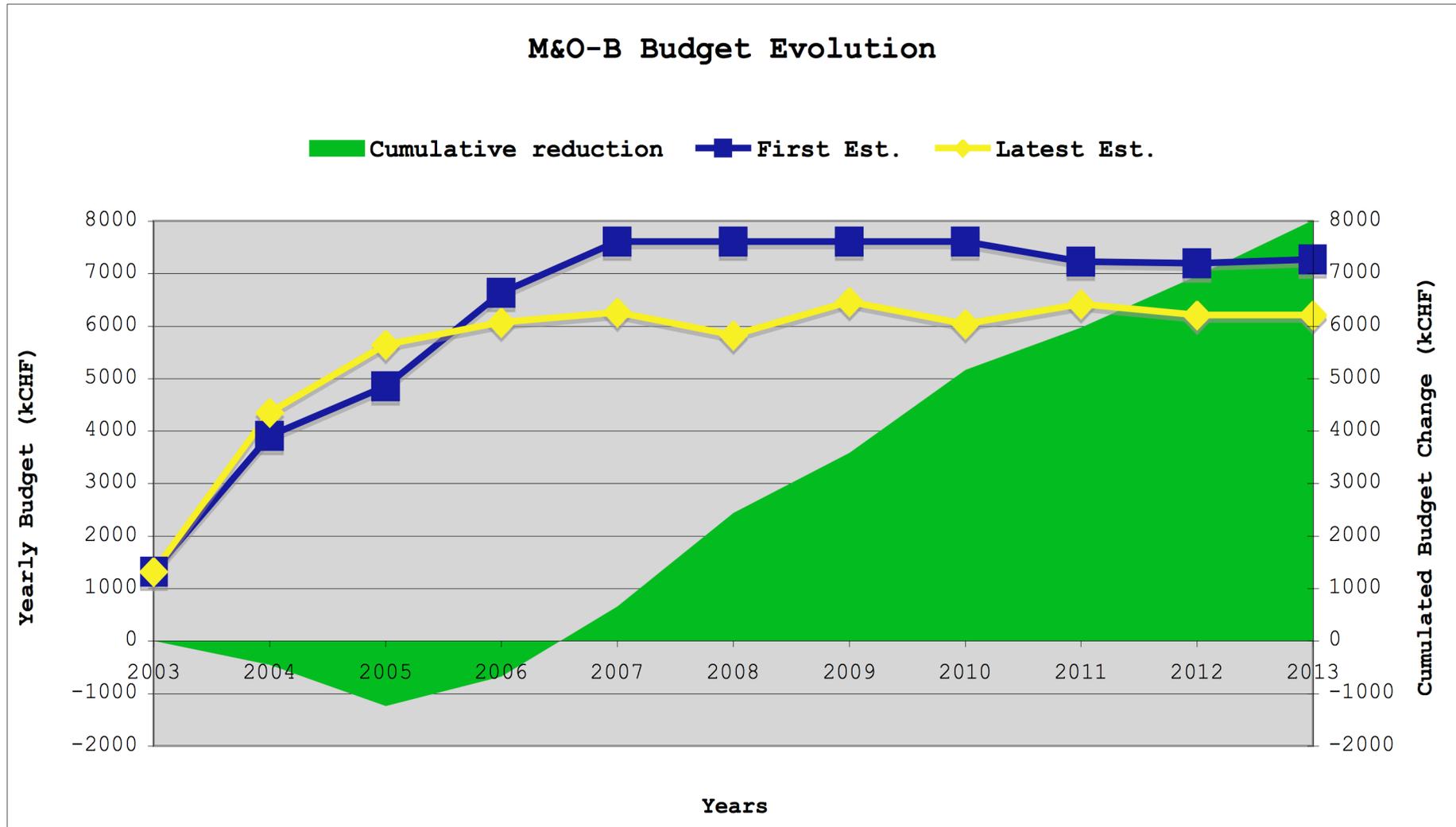


M&O-A Evolution





M&O-B Evolution





Summary

The RRB is invited to

- **approve the Draft Budget for M&O Category A for the year 2011**
- **take note of the Draft Budget for M&O Category B for the year 2011 and its sharing among 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



Any Other Business

- **CMS expresses its appreciation to the RRB Scrutiny Group for the constructive help in closing the 2009 Expenditures and preparing the 2011 Draft Budget**