



# CMS

## Draft Budget for M&O 2007

Compact Muon Solenoid

**CERN-RRB-2006-107**

Cf. CERN-RRB-2006-089

A. Petrilli, RRB-23, October 24, 2006



## Status of M&O MoU Signatures

<b>Funding Agency</b>	<b>Signed on</b>
<b>Austria</b>	<b>9/10/02</b>
<b>Belgium-FNRS</b>	<b>23/8/02</b>
<b>Belgium-FWO</b>	<b>20/8/02</b>
<b>Brazil</b>	
<b>Bulgaria</b>	
<b>CERN</b>	<b>4/12/02</b>
<b>China NSFC/CAS</b>	<b>2/8/02</b>
<b>Croatia</b>	<b>8/10/02</b>
<b>Cyprus</b>	<b>16/8/02</b>
<b>Estonia</b>	<b>17/10/02</b>
<b>Finland</b>	<b>19/9/02</b>
<b>France-CEA</b>	<b>26/8/02</b>
<b>France-IN2P3</b>	<b>25/9/02</b>
<b>Germany</b>	<b>12/9/02</b>
<b>Greece</b>	
<b>Hungary</b>	<b>13/9/02</b>
<b>India</b>	<b>16/9/02</b>
<b>Iran</b>	
<b>Ireland</b>	



## Status of M&O MoU Signatures

<b>Funding Agency</b>	<b>Signed on</b>
<b>Italy</b>	<b>25/11/2002</b>
<b>Korea *</b>	
<b>Mexico</b>	
<b>New Zealand</b>	
<b>Pakistan</b>	<b>03/03/2003</b>
<b>Poland</b>	<b>19/10/2004</b>
<b>Portugal</b>	<b>26/06/2002</b>
<b>RDMS-Dubna</b>	<b>17/09/2002</b>
<b>RDMS-Russia</b>	<b>26/03/2006</b>
<b>Serbia</b>	<b>12/08/2005</b>
<b>Spain</b>	<b>17/02/2003</b>
<b>Switzerland-ETHZ</b>	
<b>Switzerland-PSI</b>	
<b>Switzerland-Univ. Basel</b>	<b>15/11/2002</b>
<b>Switzerland-Univ. Zurich</b>	<b>27/11/2002</b>
<b>Turkey</b>	<b>12/03/2003</b>
<b>Taipei</b>	<b>12/07/2002</b>
<b>UK</b>	<b>24/09/2002</b>
<b>USA-DOE/NSF</b>	<b>14/10/2002</b>

The M&O MoU has not yet been sent to the following Funding Agencies:  
Iran, Ireland, Mexico and New Zealand (in pipeline)



# 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.**



## M&O Changes vs. RRB-22

- **M&O-A**
  - **A.3.02 Collaborative tools added**
  - **A.4 Replacement algorithm reviewed with SG**
  - **A.9 Reprofiled**
  - **Global decrease of 3.3 MCHF over 2007-2010**
- **M&O-B**
  - **Tracker, ECAL, HCAL, Muon reviewed**
  - **Global decrease of 2.7 MCHF over 2007-2010**



## 2007 M&O-A Budget: Overview Annex A.1

Maintenance & Operations (kCHF)		Year
Group	Description	2007
Maintenance & Operations	Detector related costs	3,242
	Secretariat	245
	Communications	70
	On-line computing	1,256
	Test beams, calibration facilities	165
	Laboratory operations	280
	General services	1,860
	Core Computing Infrastructure & Services	980
Maintenance & Operations Total		8,098
Power	Electricity	1,600
Power Total		1,600
Grand Total		9,698



## 2007 M&O-A Budget Comments

- **Category A.4, on-line, has been completely reviewed in light of the updated profile of DAQ purchases**
  - **Updated algorithm and schedule of replacements, explicitly included purchase of 2 DAQ slices**
  - **Manpower hiring reprofiled to follow hardware purchase closely**
- **For A.9., core computing, the boundary between category A and category B jobs has been reviewed, leading to some 5 FTEs being moved from category A to category B**





# 2007 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	10	15		16			41
	B.1.02	Gas-system	0	5	1	13			19
	B.1.04	Cooling system	0	35	1	7			43
	B.1.05	FE electronics	0	0		170			170
	B.1.06	Standard electronics, PS (LV, HV)	548	164	10	304			1,026
	B.1.07	Standard electronics, Crates	0	30	10	47			87
	B.1.08	Standard electronics, RO Modules	748	143	10	324	490		1,715
	B.1.09	Controls, (DCS, DSS)	74	230		121			425
	B.1.10	Sub-Detector Spares	191	0	3	113			308
	B.1.11	Areas	100	180	22	178			480
	B.1.12	Communications	15	21	92	30			158
	B.1.13	Store Items	40	40	132	78			290
	B.1.14	Hired Manpower @CERN	400	535	330	235			1,500
	Material Resources (kCHF) Total			2,126	1,398	611	1,638	490	
Human Resources (FTE)	B.2.01	Technical Manpower @CERN	6	10	9	17	8		50
	B.2.02	Core Computing Manpower @CMS						75	75
Human Resources (FTE) Total			6	10	9	17	8	75	126



## 2007 Total M&O Draft Budget (kCHF)

Funding Agency	Category A	Category B	Total Category A+B	Total Invoiced
Austria	76.3	88.6	164.9	76.3
Belgium	187.2	227.0	414.2	187.2
Brazil	74.7		74.7	74.7
Bulgaria	34.7		34.7	34.7
CERN	499.2	500.9	1,000.1	499.2
China	107.9	15.8	123.8	107.9
Croatia	58.1	42.0	100.2	58.1
Cyprus	24.9	18.0	42.9	24.9
Estonia	16.6		16.6	16.6
Finland	83.2	100.9	184.1	83.2
France-CEA	97.1	90.1	187.2	97.1
France-IN2P3	263.5	302.5	566.0	263.5
Germany	318.9	378.9	697.8	318.9
Greece	117.9	74.8	192.7	117.9
Hungary	41.6		41.6	41.6
India	211.9	55.5	267.4	211.9
Iran	24.9		24.9	24.9
Ireland	8.3		8.3	8.3
Italy	1,254.9	1,174.9	2,429.8	1,254.9



## 2007 Total M&O Draft Budget (kCHF)

Funding Agency	Category A	Category B	Total Category A+B	Total Invoiced
Korea	99.6	39.5	139.1	99.6
Mexico	41.5		41.5	41.5
New Zealand	24.9		24.9	24.9
Pakistan	24.9	79.2	104.1	24.9
Poland	83.2	131.2	214.4	83.2
Portugal	34.7	40.9	75.6	34.7
RDMS-DMS	199.3		199.3	199.3
RDMS-Russia	355.7	87.0	442.7	355.7
Serbia	24.9	12.0	36.9	24.9
Spain	235.7	148.7	384.4	235.7
Switzerland-ETHZ	97.1	83.1	180.1	97.1
Switzerland-PSI	76.3	61.8	138.0	76.3
Switzerland-UNIV	34.7	31.3	65.9	34.7
Taipei	91.3	66.1	157.4	91.3
Turkey	149.5		149.5	149.5
United Kingdom	339.7	265.9	605.6	339.7
USA-DOE	2,710.1	1,610.1	4,320.2	2,710.1
USA-NSF	722.7	535.8	1,258.5	722.7
<b>Grand Total</b>	<b>8,847</b>	<b>6,262</b>	<b>15,110</b>	<b>8,847</b>



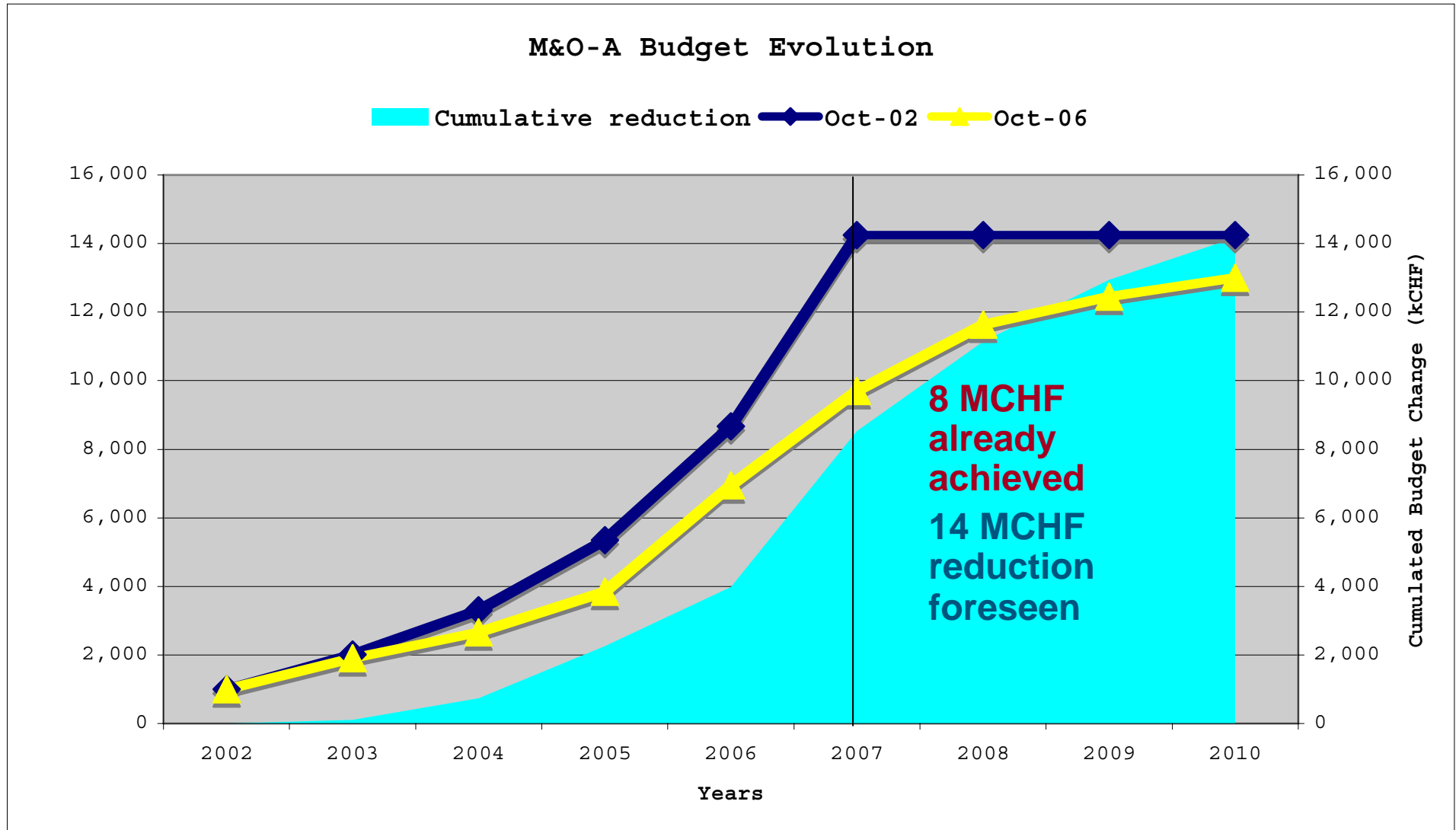
## Outstanding Contributions M&O-A

	2002	2003	2004	2005	2006
Budget	924,788	1,765,339	2,497,734	3,692,022	6,564,745
Paid before following year October RRB	847,709	1,624,779	2,346,911	3,371,720	6,118,069
<i>% Outstanding before following year October RRB</i>	8.3%	8.0%	6.0%	8.7%	6.8%
<i>Paid to-date</i>	880,449	1,684,967	2,437,018	3,547,328	6,118,069
<b>% Outstanding to-date</b>	4.8%	4.6%	2.4%	3.9%	6.8%
<i>% Outstanding at April 2006 RRB</i>	5.8%	6.0%	6.6%	8.7%	

- **The total currently outstanding amount for 2002-2005 is 330 kCHF**
- **Funding Agencies with outstanding contributions are kindly requested to rectify the situation as soon as possible**

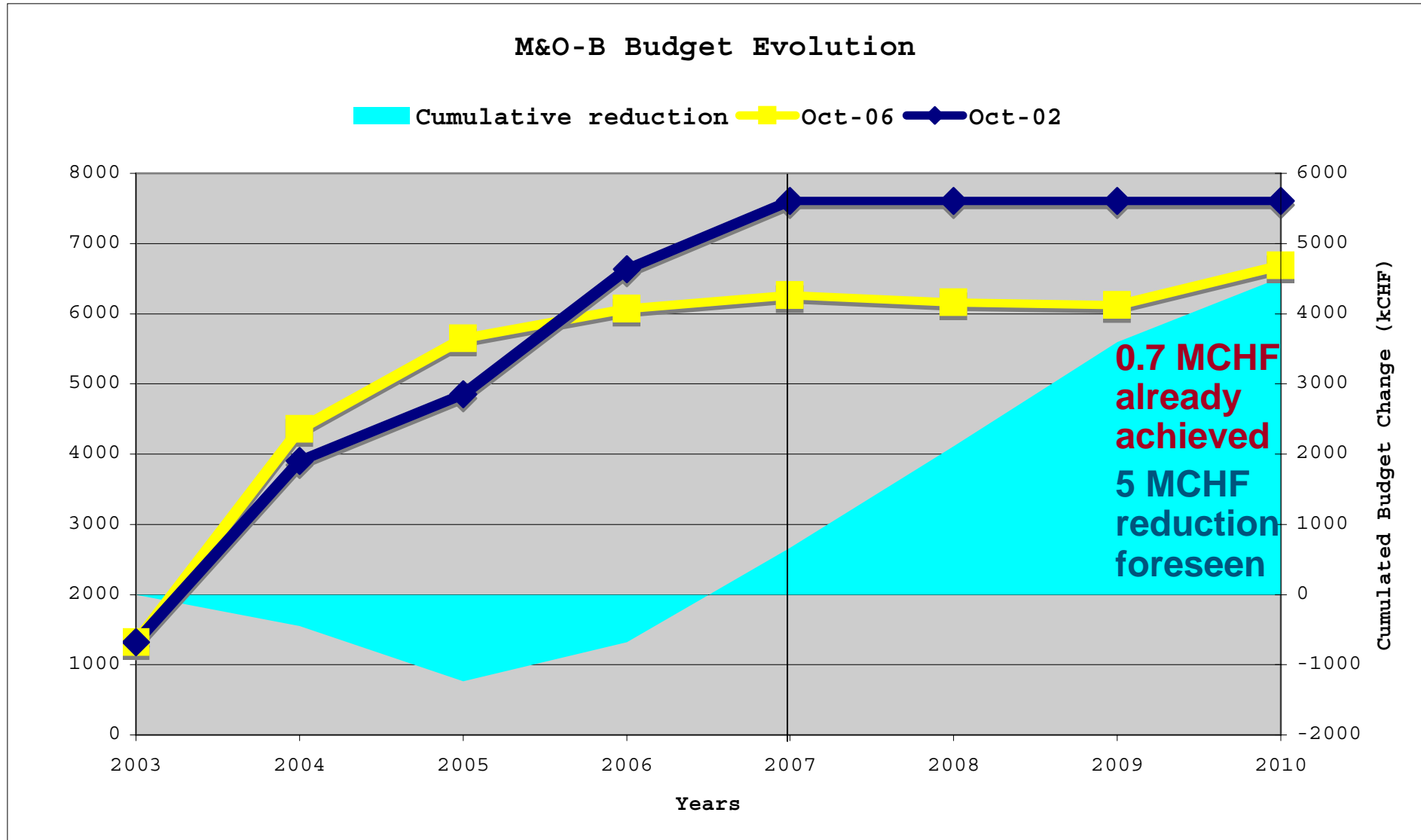


# M&O-A Budget Evolution





# M&O-B Budget Evolution





## M&O Evolution

- **The M&O category A and B budgets have both seen a decrease over the 2002-2007 period totaling over 9 MCHF**
- **With respect to the October 2002 forecast, the decrease will continue in the period 2008-2010 totaling another 9 MCHF**
- **Overall, the successive refinements to the M&O estimates will have led to a reduction in the budget of 18 MCHF.**



## M&O-A Late Payments

- **The following Funding Agencies have not yet regularized their past payments to M&O-A:**
  - **Bulgaria**
  - **Korea - signature 25/10/2006**
  - **Poland**
- **Actions:**
  - **The CMS Collaboration will formally remind the Linkpersons for Bulgaria and Poland of the actions to be taken for late payments relating to participation in the CMS Collaboration.**





## Summary

### **The RRB is invited to approve**

- **the Draft Budget for M&O Category A for the year 2007**
- **the Draft Budget for M&O Category B for the year 2007 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**