

Draft Budget for CMS Construction in the Year 2009

INTRODUCTION

This document summarizes the funding requirements for the payments that the CMS Collaboration plans to make in the year 2009 in order to follow the detector construction schedule.

Nearly all of the sub-detectors have now finished construction.

This draft budget for the year 2009 is based on the overall planning as presented at this RRB.

The figures shown as "Income and Payments expected in 2008" in the Summary Table (Annex 10) are to be considered as best estimates at the present stage.

The financial commitments arising from contracts that are expected to be placed in the years 2008 and 2009 will depend, case by case, on contractual policy and the associated negotiations with the potential contractors. It is, therefore, too early to present reliable and precise estimates for all the commitments to be made by the end of the year 2009.

1. MAGNET

No funds are requested for 2009. The project is concluded.

The Common Fund is and will remain in deficit until the last expected contributions will have been received by the end of 2010.

2. TRACKER

There is no expenditure foreseen in 2009. The project is concluded.

3. ELECTROMAGNETIC CALORIMETER

An overview of the draft 2009 budget requirements is shown in **Annex 1**. The total budget amounts to 248 kCHF, and corresponds to the last payments for the Preshower and Crystals.

4. HADRON CALORIMETER

There is no expenditure foreseen in 2009. The project is concluded.

5. MUON DETECTOR

There is no expenditure foreseen in 2009. The project is concluded.

6. TRIGGER AND DATA ACQUISITION

An overview of the preliminary 2009 budget requirements is shown in **Annex 2**.

6.1 Trigger

There is no expenditure foreseen in 2009. The project is concluded.

6.2 Data Acquisition

In 2009 the Data Acquisition system requires funds for the purchase of cooled racks and 10 Gbps networking infrastructure. This will complete the DAQ infrastructure.

7. OFFLINE COMPUTING

There is no expenditure foreseen in 2009. The project is concluded.

8. INFRASTRUCTURE

There is no expenditure foreseen in 2009. The project is concluded.

9. COMMISSIONING & INTEGRATION

There is no expenditure foreseen in 2009. The project is concluded.

10. SUMMARY

The numbers given in this document are summarized in **Annex 3**.

Annex 3 shows all funds needed by CMS during the year 2009 to follow the detector construction schedule.

We are not including in this document the deficits covered by the Step 1, Common Fund and Crystals, nor by the Step 2, DAQ rescoping (cf. CERN-RRB-2006-105).

The current status of the Steps funding and expenses is given in the CMS Financial Plan (cf. CERN-RRB-2008-095).

It should also be noted that:

- (1) Many numbers shown as "Income and Payments expected" are current best estimates.
- (2) The use of uncommitted funds, which may have been allocated by the Funding Agencies to their respective institutes in previous years for payments expected in 2008, is a matter of policy for the respective Funding Agencies and their associated institutes. Therefore, they are not included in this document (except for the CMS Common Funds).

11. ANNEXES

Budget Requirements for 2009

Annex 1: Electromagnetic Calorimeter

Annex 2: Trigger and Data Acquisition

Annex 3: Summary of Income and Payments expected in the year 2009

ANNEX 1

ELECTROMAGNETIC CALORIMETER Payments expected in the Year 2009 (kCHF)

	<u>CE-Ref</u>	Payments expected in 2009
<u>Barrel</u>		
Electronics	3.1	
	3.1.2	
	<u>Subtotal</u>	
<u>Endcaps</u>		
Crystals	3.2	125
Electronics	3.2.1	40
Preshower	3.2.2	83
	3.2.6	
	<u>Subtotal</u>	248
<u>OVERALL TOTAL</u>		248

ANNEX 2

TRIGGER/DATA ACQUISITION

Payments expected in the Year 2009 (kCHF)

	<u>CE-Ref</u>	Payments expected in 2009
<u>Trigger</u>	<u>6.1</u>	[]
	Subtotal	[]
<u>Data Acquisition</u>	<u>6.2</u>	[]
Readout Builder	6.2.2	200
Data to Surface	6.2.3	535
Detector Controls	6.2.4	740
DAQ Integration	6.2.6	310
	Subtotal	1,785
<u>OVERALL TOTAL</u>		1,785

ANNEX 3

Income and Payments expected in the Year 2009 (in kCHF)

Funding Agencies	COMMON PROJECTS					SUB-DETECTORS					Infrastructure	Commissioning & Integration	TOTALS	
	Common Fund	Payments to Contracts	In-kind Contributions	Subtotals for Magnet	Offline Computing	Totals Common Projects	Tracker	Electromagnetic Calorimeter	Hadron Calorimeter	Muon Detector				Trigger and Data Acquisition
	MAGNET				OFFL	Σ						Σ		Σ
Austria														
Belgium														
Bulgaria														
CERN										1,785		1,785		1,785
China														
Croatia														
Cyprus							40					40		40
Estonia														
Finland														
France - CEA														
France - IN2P3														
Germany														
Greece														
Hungary														
India							125					125		125
Iran														
Ireland														
Italy														
Korea														
Mexico														
New Zealand														
Pakistan [A]														
Poland														
Portugal														
RDMS - Russia [A]														
RDMS - DMS														
Serbia														
Spain														
Switzerland - ETHZ														
Switzerland - PSI														
Switzerland - Universities														
Taipei														
Turkey							83					83		83
United Kingdom														
USA - DOE														
USA - NSF														
Funds expected to be carried forward from 2008														
Income expected in 2009 plus funds from 2008							248			1,785		2,033		2,033 [A]
Planned payments							248			1,785		2,033		2,033
Funds expected to be carried forward to 2010														

[A] Includes advanced funds as per the CMS Global Financial Plan, October 2007, CERN-RRB-2007-085

Shaded fields indicate that no contribution is expected in 2009 for this sub-detector from that Funding Agency