

Resources Review Board 19/10/2011

- Core and Common Funds in 2011

- M&O Cat.A received funds for 2011 and status
- M&O Cat.A projected budgets for the coming years
- M&O Cat.A proposed 2012 budget
 - M&O Cat.A special account for Comp./Proc./Lan sub-line
 - Carry-over from 2010
 - Proposed modification of Romania status in LHCb

- M&O Cat.B status

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Core

Most of the Core spending came to an end in 2006. Purchasing for DAQ and data storage has been important throughout 2010 with the **DAQ – FARM** completion.

No additional requests for funds to be presented to RRB.

Common Funds situation at end of August 2011

COMMON FUNDS end of August, year 2011				
All in kCHF				
Detector	Outflow	Inflow	Committed	Total
OTR	3.5	0	0	3.5
CALO	0	0	0	0
DAQ	0.5	0	0	0.5
INFRASTRUCTURE	47.8	0	34.0	81.8
MUON	0	0	0	0
RICH	0	0	0	0
TOTAL	51.8	0	34.0	85.8
RICH HPDs	0	0	0	0
VELO NON CORE	84.8	0	0	84.8
	136.6	0	34.0	170.6

Spending from Common Funds is limited now essentially to Infrastructure, as foreseen.

The amount seen for “VELO NON CORE” is the result of the VELO-spare programme. This programme is financed using the M&O Cat.A framework and will end in 2013, summing a total amount of 500 kCHF. RICH-HPD programme is also expected to show a consistent outflow in the coming months (late billing).

~300 kCHF is still uncommitted (August 2011).

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Category A M&O received funds for 2011

About **80%** of the expected contributions for M&O Cat.A in 2011 has been received at present. That is a total of ~2.2 MCHF (including Velo spare and Power). Together with the carryover of funds and a few late payments from 2010, these contributions have ensured that there has been no cash flow problem.

CHF versus Euro/Dollar (rapidly) varying exchange rates induces a strain, visible in the incoming funds.

Category A M&O status for year 2011
(end of August, main lines, in kCHF)

2010	Budget	Used
Detector related	920	399.7
Secretariat	185	106.3
Communication	30	35
Core computing	150	88.6
Online computing	810	508.8
Test beams	30	0
Laboratory	60	17.7
General services	360	117.2
Totals	2512	1273.3

2011 is the **second full operation and data taking year**. All lines follow expected average values. Core computing shows a stabilization and, as already noted for the 2010 exercise (CERN-RRB-2011-040), Detector related and General services seem to confirm a slowing down during “operation years”. However, we do not expect large fluctuations of these lines inside an essentially constant total budget.

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Basic principle of our M&O Cat. A policy

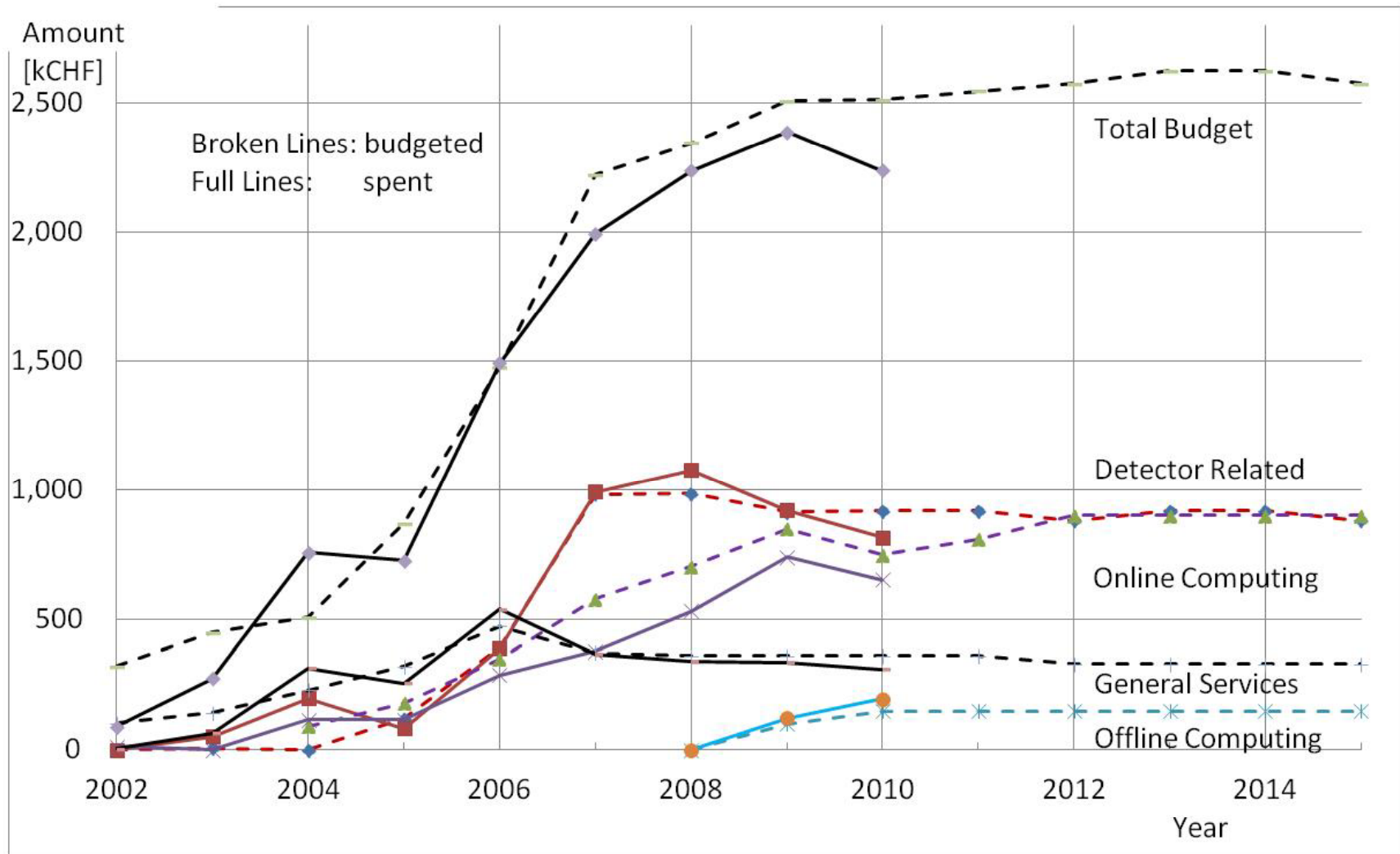
- Keep budget as constant as possible:
 - foresee what is foreseeable and budget for it;
 - smooth as much as possible Online CPU replacement needs (“just-in-time” principle) and, in any case, smear their cost over a few years;
 - provide a mechanism to compensate between “collision years” and “shutdown years” (at the moment first are cheaper than last);
 - as LHCb is running to optimize physics throughput, effects on the related expenditures have to be carefully studied and taken into account for the coming years budgets.

Proposed evolution of Category A M&O (without VELO and Power, in kCHF)

	Year						
	2009	2010	2011	2012	2013	2014	2015
Detector related costs	914	920	920	880	920	920	880
Secretariat	192	192	185	185	185	185	185
Communications	12	50	30	50	50	50	50
Core Computing	100	150	150	150	150	150	150
Online Computing	850	750	810	900	900	900	900
Test beams, calibration facilities	20	30	30	30	40	40	30
Laboratory operations	60	60	60	50	50	50	50
General services	360	360	360	330	330	330	330
	2508	2512	2545	2575	2625	2625	2575

Budget is kept constant and has been slightly redesigned, to take in account “collisions” and “shutdown” years. Online Computing line should reach its “steady-state” from 2012. The sub-line “Computers/Processors/LAN” amounts to 370 kCHF. In our constant budget and replacement model, we expect this amount to be enough to cover needs until 2018.

Actual versus Budgeted expenditures for some M&O Cat.A main lines



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Changes from 2011 (in agreement with the Scrutiny Group)

Inside a constant budget, main changes again reflect an updated spending profile in the Online Computing due to the running conditions of LHC and LHCb and to our policy of acquiring computing power on “just-in-time” basis. For 2010, this line was modified from 850 kCHF to 750 kCHF and now should reach a constant value of 900 kCHF from year 2012.

Other changes in the budget forecast are minor. As asked by the SG, we assume that the estimated cost for **EVO** is fully billed to the experiments for the coming years (was ½ in 2011). The Detector Related line is now modulated according to “collision” versus “shutdown” years and General Services has decreased from 360 to 330 kCHF.

As also pointed out by the SG chairman report (CERN-RRB-2011-076) and stressed in the last two CBs, LHCb needs to assess in detail the expected M&O expenditures for the long shutdown inside a coherent framework. Work has started together with our technical coordination team and in parallel with the LHCb sub-detectors, for what will concern more specifically Cat. B.

The sharing between the different Funding Authorities is slightly modified due to changes in the number of PhD equivalent members at the different institutes. We also positively note the regular increase of the overall PhD number over the past years.

Proposed 2012 Category A M&O Budget

2012	PhD eq. total/ funding auth.		M&OA	VELO	Power	
			kCHF	kCHF	kCHF	
			2,575	100	970	Total
	%	CHF	CHF	CHF	CHF	
BRAZIL	18	4.9	126,294	4,905	47,575	178,774
FRANCE	43	11.7	301,703	11,717	0	313,420
BMBF GERMANY	14	3.8	98,229	3,815	0	102,044
MPI, MPG, GERMANY	7	1.9	49,114	1,907	0	51,022
IRELAND	2	0.5	14,033	545	5,286	19,864
INFN ITALY	55	15.0	385,899	14,986	0	400,886
NETHERLANDS	13	3.5	91,213	3,542	0	94,755
P. R. CHINA	3	0.8	21,049	817	7,929	29,796
POLAND	8	2.2	56,131	2,180	0	58,311
HHNIPNE ROMANIA	4	1.1	28,065	1,090	0	29,155
RUSSIA	31	8.4	217,507	8,447	34,716	260,669
SPAIN	17	4.6	119,278	4,632	0	123,910
SWITZERLAND	24	6.5	168,392	6,540	0	174,932
UKRAINE	3	0.8	21,049	817	7,929	29,796
UK	66	18.0	463,079	17,984	0	481,063
USA	9	2.5	63,147	2,452	22,527	88,126
CERN	50	13.6	350,817	13,624	0	364,441
TOTAL	367	100.0	2,575,000	100,000	125,962	2,800,962

M&O Cat.A special account for Comp./Proc./Lan sub-line

Together with the SG, we have agreed to set up a special account to "store" under-spent funds in the sub-line Computers/Processors/LAN (CPL), in order to keep budgets constant and have enough funds to provide the needed replacements in due time. We propose to start this account with a sum of 400 kCHF from the carry-over funds.

In the future RRB spring sessions, we will report on the sub-line CPL of the closing year and propose a sum to be stored in the special account (in case of under-spending).

Carry-over from 2010

As already mentioned in April, we propose that the 2010 surplus, 19 kCHF plus 256 kCHF from the returned loan, is kept as a buffer in M&O A (see CERN-RRB-2011-39 and CERN-RRB-2011-40).

Proposed modification of Romania status in LHCb

In the proposed 2012 M&O Cat.A budget, it should be noted that Romania is not being charged anymore with NMS power costs, as if it were a "fully fledged" Member State. In agreement with CERN Management and with the LHCb Collaboration Board, we would like to ask RRB to agree and to apply this from the year 2011 onward. These funds amount to 13585 CHF for the year 2011.

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Category B M&O typical budget

Category B M&O 2010 budget is given in the Table. Only minor adjustments are anticipated for 2012. The total is ~1100 kCHF, a bit less than half of the M&O Cat.A total. Category B M&O funds show to be constant over time inside ~10% .

CALO (CERN, ES, FR, RO, RU)	315
Level_0 (FR, IT)	60
Muons (CERN, IT, RU)	151
On Line (CERN)	80
Outer Tracker (GE, NL, PL, PRC)	120
RICH (CERN, IT, UK) (*includes contributions for the HPD-spare programme)	207*
Silicon Trackers (CH, ES, GE, UKR)	80
VELO (CERN, CH, EI, NL, RU, UK, USA)	135

CERN (CA, MU, ON, RI, VE)	230
CH (STs, VE)	81
ES (CA, STs)	35
FR (CA, L0)	140
GE (OT, STs)	93
IT (L0, MU, RI)	140
NL (OT, VE)	90
RU (CA, MU, VE)	115
UK (RI, VE)	195

Category B M&O budgets for 2010 in kCHF and per FA (>10 kCHF)

2010

TABLE 1 M&O
Cat. B

	Total for all SD
Mechanics	111
Gas-system	6
Cryo-system	0
Cooling system	15
FE electronics	128
Standard electronics, PS (LV, HV), Crates, RO Modules	230
Controls, (DCS, DSS)	70
Sub-Detector Spares	201
Maintenance of clean rooms, active and passive storage (including rentals), workshops	46
Communications (Piquet tools (ACB, GSM, etc...))	37
Store Items (Materials (screws, washers, tools, etc...))	26
Hired Manpower @ CERN (in CHF (Industrial Support))	0
Technical Manpower @CERN (in CHF (from Collaboration Institutes))	304
	0
	0
Total for 2010	1174
Total for 2010 as in CB and RRB	1148

Sums intended for 2010.

Most of the amounts are converted from euros to suisse francs and at different times
(therefore they reflect reality with some uncertainty).

Sub-line splitting for M&O Cat.B budgets for 2010 in kCHF