

CERN-RRB-2010-087

ATLAS Resources Review Board, October 11, 2010




For RRB to approve

Request for 2011 ATLAS M&O Budget

Introduction

The ATLAS management, supported by the ATLAS Executive and Collaboration Boards, kindly invites the RRB to approve the M&O budget for 2011.

The M&O budget request for the ATLAS detector in 2011 amount to 23.6 MCHF in payments. The ATLAS detector will be running a full long year in 2011 at Point 1 in data-taking mode, in accordance with the machine schedule. Its performance is being closely monitored and its functionalities constantly checked and maintained. The supporting technical infrastructure remain to be fully operational (e.g. cryogenics, gases, coolants, access operations, cooling and ventilation plant). The present budget follows from an internal update of the 2010-2011 work program planning and from interactions with the RRB Scrutiny Group (CERN-RRB-2010-070).

M & O B U D G E T
REPORT ELEMENTS
 Budget summary
 Activity Description
 Table References

1. M&O Budget Request for 2011

The 2011 ATLAS M&O request for Category-A items is 18.4 MCHF (including energy) and 5.2 MCHF for Category-B items.

The dominant part of the cost in Category-A is providing the required technical services (e.g. detector access, gas systems, heavy handling, crane operations, cooling and ventilation maintenance services, electricity; amounting to 10.5 MCHF). Another cost driver is the operation of the LAr and magnet system at an annual level of 1.4 MCHF. The general support for running the TDAQ system and replacement of equipment is 4.3 MCHF, half of which is foreseen for high-level trigger processor replacements, following three full years of operation. Core computing (infrastructure) services are planned at 2.1 MCHF.

In Category-B, the maintenance activities continue at a nominal level, as the detector systems now reach full operation status and become more stable.

The main Category-B cost driver is related to running the detector modules and related electronics (2.4 MCHF). Sub-detector spares amortization are planned at 0.2 MCHF, including previous payment advancements that were arranged internally within ATLAS. Scheduled maintenance work of detector structures and mechanics,

including the use of store items, amounts to 0.3 MCHF. The cost of hired technical manpower to run the facilities is estimated at 2.0 MCHF.

The manpower required from institutes for operation expert tasks (OTP), excluding shifts, amounts to 320 man-years. Category-B also includes core computing tasks such as core computing management, software project management, data management and computer operations. An estimated manpower effort of 157 man-years is planned to be provided in full as in-kind contributions.

Figure 1 provides a summary of actual payments up to end of 2009 and a forward look to M&O budget estimates up to 2015. The breakdown between Categories A and B in 2011 is provided in **Table 1**. It should be noted that the Category-B costs in 2011 include only a part of the Insertable b-layer effort (149 kCHF of 2.5 MCHF), as some Funding Agencies wish their share to be treated separately as project funding.

Table 2 shows the expected contributions for 2011 for each Funding Agency and system (Categories A and B). The Category-A contributions are based on authors holding a PhD or equivalent and are split into two columns; the second column “budgeted” shows the cost sharing including electricity costs and the first column “invoiced” shows the amount to be invoiced to the Funding Agencies, taking into account the energy cost adjustments.

Figure 1. Evolution of M&O Budget up to 2015 (MCHF)

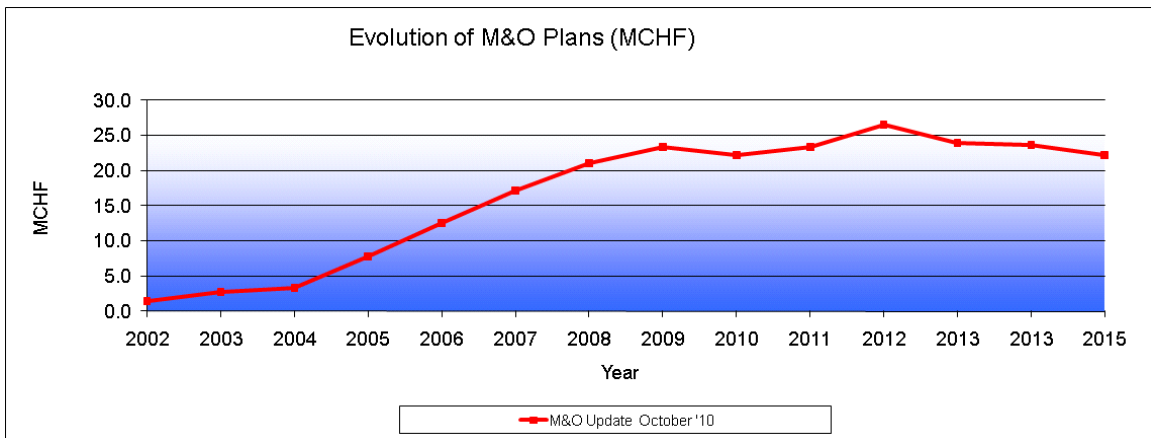




Table 3. Evolution of M&O Budget up to 2015 (MCHF)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Category A	1.0	1.6	2.6	5.6	9.0	10.5	14.3	16.4	16.7	18.4	20.1	18.4	19.1	18.1	171.8
Category B	0.4	1.1	0.7	2.2	3.5	6.7	6.8	7.0	5.5	5.2	6.4	5.5	4.6	4.1	59.7
Total (A+B)	1.4	2.7	3.3	7.8	12.5	17.2	21.1	23.4	22.2	23.6	26.5	23.9	23.7	22.2	231.5

M & O IN - KIND	
PROPOSAL	
ELEMENTS	
	Introduction
	Proposal for in-kind

2. New In-Kind Contributions (Category -A)

According to paragraph 9.3 in the ATLAS M&O MoU (CERN-RRB-2002-035), the RRB needs to agree to possible in-kind contributions made to Category-A (Annex 9).

1. Offers being finalized (Action: RRB to approve)

1.1 Core computing tasks (infrastructure and services; 1090 kCHF, from multiple Funding Agencies)

The addendum for core computing Category-A M&O-A (CERN-RRB-2005-008) describes the computing tasks related to infrastructure and services. The following Funding Agencies offer in-kind contributions for these tasks: Czech Republic (0.3 FTE), IN2P3 (1.1 FTE), BMBF (1.5 FTE), DESY (0.2 FTE), Israel (0.2 FTE), Italy (1.6 FTE), Poland (0.2 FTE), Russia (0.6 FTE), Spain (0.4 FTE), UK (1.9 FTE), US (4.0 FTE). The average cost is 91 kCHF/FTE. The invoices sent to the above Funding Agencies will be reduced accordingly; however, the final financial values for each task will be settled once the achieved work packages have been completed and verified. In case any corrections need to be made for the above in-kind contributions for 2011, they will be reported for the April 2011 RRB.

Planned ATLAS M+O (A) and (B) Payments in 2011 (kCHF)

Item & Cost Driver (by RRB SG Headings)	Cat. A									Cat. B	Item & Cost Driver (by RRB SG Headings)	
	M&O	Pixel	SCT	TRT	IDGen	LAr	TileC	Muon	Comp.	M&O		
Detector related costs Cryogenics operations IBL (common items) Safety Detector operations	6,378			20		25	14	55			114	Mechanics, structures, cooling
Secretariat 2 FTE charged to ATLAS Publications, consumables	305	360	305	270	50	665	400	210			2,260	Standard electronics Crates, electronics pool rentals
Collaborative tools GSM phones Computer network connections Videoconferencing, archiving	220					40	5	100			145	Detector controls
Core computing (infrastr. & services) Software process service Central production & operation	2,128											
On-line computing System administration HLT hardware repl., networking	3,995	45	20	30	120	10	20				245	Areas SR1-operations (ID), system tests, lab oper.
Test beams, facilities Evaporative cooling On-line computing support Common electronics	1,182	1	5		8	5	5	5			29	Communications
Laboratory operations Assembly areas, workshops TDAQ laboratory equipment	125	24	30	30	80	10	10				184	Store items
General services Heavy handling Technical support, storage Survey Outreach Energy	4,110	149					71				220	Sub-detector spares (incl. Insertable b-layer)
TOTAL	18,443	579	360	350	258	755	525	370	0	3,197	(Excluding hired manpower for Category B)	
Hired manpower at CERN (in kCHF)	incl. above	200	277	295	315	430	200	270			1,987	
Institute manpower (in FTE)	0	21	24	27	30	67	42	109	157	477	(Excluding shift work)	
TOTAL M&O FOR A	18,443	779	637	645	573	1,185	725	640	0	5,184	TOTAL M&O FOR B	

**Proposed Sharing of M+O Contributions
for ATLAS in 2011 by Funding Agency (kCHF)**

10/1/2010

Funding Agency	Category-A items		Category-B items budgeted							Budget	Core comp. Categ.B (FTE)	Authors M&O-A
	Invoiced*	Budgeted	Pixel	SCT	TRT	IDGen	LAr	TileC	Muon	Total		
Argentina	30	30	0	0	0	0	0	0	2	32	0	3
Armenia	10	10	0	0	0	0	1	1	0	12	0	1
Australia	61	61	0	13	0	7	0	0	0	80	1	6
Austria	42	50	0	5	5	0	3	0	3	66	0	5
Azerbaijan	30	30	0	0	0	0	1	0	0	31	0	3
Belarus	61	61	0	0	0	0	0	0	3	64	1	6
Brazil	71	71	0	0	0	0	0	4	0	74	1	7
Canada	607	626	0	0	0	0	201	0	0	827	5	62
Chile	30	30	0	0	0	0	0	0	2	32	0	3
China NSFC+MSTC	111	111	0	0	0	0	3	0	3	117	1	11
Colombia	50	50	0	0	0	0	0	0	2	52	0	5
Czech Republic	289	343	14	2	0	2	0	10	0	370	3	34
Denmark	93	111	0	0	30	5	0	0	0	147	1	11
France IN2P3	1002	1191	71	0	0	13	223	75	0	1573	10	118
France CEA	221	262	0	0	0	0	61	0	23	347	2	26
Georgia	50	50	0	0	0	0	1	0	1	52	0	5
Germany BMBF	1325	1565	382	63	0	76	69	0	51	2205	13	155
Germany DESY	195	232	0	0	0	0	37	0	37	306	2	23
Germany MPI	238	283	0	29	0	15	32	0	15	373	2	28
Greece	187	222	0	0	0	0	0	0	11	233	2	22
Israel	196	202	0	0	0	0	0	0	10	212	2	20
Italy	1393	1615	217	0	0	27	60	62	152	2134	14	160
Japan	697	717	0	80	0	46	0	10	94	947	6	71
Morocco	81	81	0	0	0	0	4	0	0	85	1	8
Netherlands	255	303	0	24	0	14	0	0	59	400	3	30
Norway	127	151	0	31	0	18	0	0	0	200	1	15
Poland	187	222	0	2	7	2	0	0	0	233	2	22
Portugal	110	121	0	0	0	0	0	6	0	127	1	12
Romania	121	121	0	0	0	0	0	6	0	127	1	12
Russia	563	686	0	0	14	3	7	6	5	721	6	68
JINR	283	283	0	0	2	1	3	5	4	297	2	28
Serbia	91	91	0	0	0	0	4	0	0	95	1	9
Slovak Republic	76	91	0	0	0	0	5	0	0	95	1	9
Slovenia	71	71	0	2	0	1	0	0	0	74	1	7
South Africa	30	30	0	0	2	0	0	0	0	32	0	3
Spain	391	464	0	17	0	9	36	87	0	613	4	46
Sweden	238	283	0	11	34	12	13	21	0	373	2	28
Switzerland	187	222	0	41	0	21	9	0	0	293	2	22
Taipei	81	81	2	1	0	1	1	0	0	85	1	8
Turkey	162	162	0	0	0	0	5	0	3	170	1	16
United Kingdom	1580	1878	0	303	0	299	0	0	0	2480	16	186
US DOE + NSF	3845	3876	94	9	328	0	321	347	144	5120	33	384
CERN	1096	1302	0	2	224	4	85	85	18	1720	11	129
total	16,563	18,443	779	635	645	575	1185	725	640	23,627	157	1,827
										5,184		

Notes:

*Invoiced to FAs; includes energy cost adjustments

List of qualified authors with PhD or equivalent (September 30, 2010) used for Category-A

Category-B is based on authors, modulated by CORE contributions

Core computing in Category B expressed in Full-Time-Equivalents (FTE). Figure 0 refers to an effort smaller than 0.5 FTE