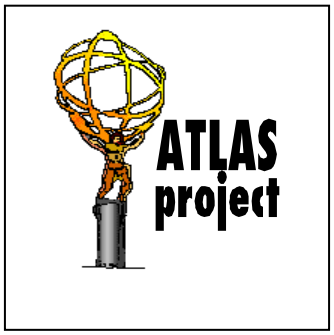


CERN-RRB-2008-085

ATLAS Resources Review Board, November 10, 2008

For RRB to approve

Request for 2009 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 2009 as well as the proposed new in-kind contributions in Category-A.

The ATLAS M&O (A and B) budget request for 2009 amounts to 23.4 MCHF in payments. Preliminary M&O budget estimates for 2009 were presented to the RRB in April 2008 (CERN-RRB-2008-035), amounting to 23.6 MCHF at the time. The present budget follows from an internal update of the 2008-2009 work program planning and from interactions with the RRB Scrutiny Group (CERN-RRB-2008-087).

In 2009, Point 1 with its underground caverns and surface halls and buildings is in full operation mode. The cryogenics and supporting technical infrastructure are running in nominal state. The detectors are operational for recording collisions scheduled for May 2009. Their functionalities will be constantly checked and monitored throughout the year with cosmic ray data during LHC down-time periods.

M&O BUDGET REPORT ELEMENTS

- Budget summary
- Activity Description
- Table References

1. M&O Budget Request for 2009

The 2009 M&O payments for Category-A items are planned at 16.4 MCHF (including power) and 7.0 MCHF for Category-B items. The Category-A activities continue increasing in 2009 in line with reaching nominal operation status. The main reasons for the increasing payments in Category-A w.r.t. the 2008 budget are as follows:

- Consolidation work needed to reduce risk of failing infrastructure (notably the detector cooling system);
- System administration and up-keeping of the TDAQ processor farms being installed and operated;
- Increased power consumption.

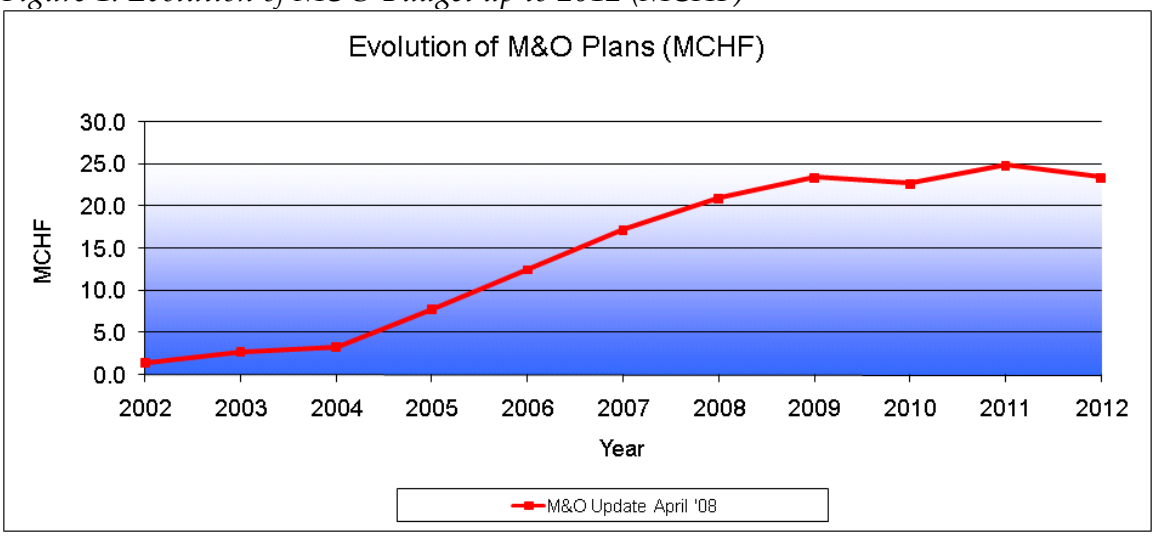
In Category-B, all systems are installed and in operation. The dominant cost drivers are replacement and rentals of electronics modules, amortization of spares as well as the operation of the specially equipped SR1-building and control rooms for the Inner Detector.

Table 1 gives the breakdown of the M&O (Categories A and B) budget for 2009. The dominant part of the cost in Category-A is associated with the cost of operating the overall cryogenics plants, detector access and gas systems (5.8 MCHF), providing general technical services (4.1 MCHF, including electricity) as well as operating the on-line computing facilities (3.7 MCHF) and core computing (1.9 MCHF). In Category-B the cost drivers are replacement of electronics (2.3 MCHF), payment of sub-detector spares (1.2 MCHF) and area operation activities (0.5 MCHF).

Table 2 shows the expected contributions for 2009 for each Funding Agency and system (Categories A and B). The Category-A contributions 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 provides a summary of actual payments up to 2007 and a forward look to M&O budget estimates up to 2012. It should be noted that, in parity with CMS, the Category-B projections also include the replacement of the Pixel b-layer by 2013 (4.4 MCHF), starting with payments from 2009 onwards.

Figure 1. Evolution of M&O Budget up to 2012 (MCHF)



Evolution of the M&O budget up to 2012 (MCHF)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Category A	1.0	1.6	2.6	5.6	9.0	10.5	14.1	16.4	16.0	18.6	17.2	**112.6**
Category B	0.4	1.1	0.7	2.2	3.5	6.7	6.9	7.0	6.7	6.3	6.2	**47.7**
Total (A+B)	**1.4**	**2.7**	**3.3**	**7.8**	**12.5**	**17.2**	**21.0**	**23.4**	**22.7**	**24.9**	**23.4**	**160.3**

Table 3 shows the status of the M&O MoU signatures on October 25, 2008. The remaining Funding Agency that has not yet signed the Agreement is Brazil.

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; 870 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 (0.40 FTE), IN2P3 (1.0 FTE), BMBF (0.9 FTE), MPI (0.3 FTE), Israel (0.2 FTE), Italy (1.8 FTE), Poland (0.1 FTE), Russia (0.7 FTE), Taipei (0.1 FTE), UK (1.5 FTE), US (3.0 FTE). The average cost is 88 kCHF/FTE. The sent invoices 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 in-kind contributions for 2008, they will be reported for the April 2009 RRB.

1.2 Wireless exhibit guide system (35 kCHF, Greece)

As part of Outreach activities, a Wireless Exhibit Guide (hand held PDAs) is proposed to support organized CERN visit tours from the Globe to ATLAS using stream video, images and text. The total value of this pilot project is 80kEuros, the rest is supported by Greece and its industry.

Planned ATLAS M+O (A) and (B) Payments in 2009 (kCHF)

Item & Cost Driver (by RRB SG Headings)	Cat. A M&O	Pixel	SCT	TRT	IDGen	LAr	TileC	Muon	Comp.	Cat. B M&O	Item & Cost Driver (by RRB SG Headings)
Detector related costs	5,833		100	100	110	26	25	125		486	Mechanics & Cooling & Cryogenics
Cryogenics operations											
Detector operations											
Secretariat	300	380	225	382	377	555	142	210		2,271	Standard electronics
2 FTE charged to ATLAS											Crates, electronics pool rentals
Publications, consumables											
Collaborative tools	120		20	25		40	13	30		128	Detector controls
GSM phones											
Computer network connections											
Videoconferencing, archiving											
Core computing (infrastr. & services)	1,900										
Software process service											
Central production & operation											
On-line computing	3,680	100	100	100	165	20	59			544	Areas
Detector controls											SR1-operations (ID), system tests, lab oper.
Software licences											
Test beams, facilities	440				5	5	7	5		22	Communications
Testing equipment (DCS)											
Consolidation											
Laboratory operations	105	10	37	68		10	19			144	Store items
Assembly areas, workshops											
TDAQ laboratory equipment											
General services	4,052	800				345	37			1,182	Sub-detector spares
Heavy handling											(incl. b-layer replacement)
Technical support, storage											
Survey											
Outreach											
Energy											
TOTAL	16,430	1,290	482	675	657	1,001	302	370	0	4,777	(Excluding hired manpower for Category B)
Hired manpower at CERN (in kCHF)	incl. above	300	250	100	550	350	319	330		2,199	
Institute manpower (in FTE)	0					3	5	8	98	114	
TOTAL M&O FOR A	16,430	1,590	732	775	1,207	1,351	621	700	0	6,976	TOTAL M&O FOR B

10/24/2008

Proposed Sharing of M+O Contributions for ATLAS in 2009 by Funding Agency (kCHF)

Funding Agency	Category-A items		Category-B items budgeted							Budget	Core comp.
	Invoiced*	Budgeted	Pixel	SCT	TRT	IDGen	LAr	TileC	Muon	Total	Categ.B (FTE)
Argentina	18	18	0	0	0	0	0	0	1	**19**	0
Armenia	18	18	0	0	0	0		1	0	**19**	
Australia	72	72	0	19	0	18	0	0	0	**109**	1
Austria	52	63	0	0	10	0	9	11	2	**95**	1
Azerbaijan	27	27	0	0	0	0	1	0	0	**28**	
Belarus	54	54	0	0	0	0	0	0	3	**57**	
Brazil	63	63	0	0	0	0	0	3	0	**66**	0
Canada	519	534	0	0	0	0	268	0	0	**802**	3
Chile	27	27	0	0	0	0	0	0	2	**29**	
China NSFC+MSTC	99	99	0	0	0	0	3	0	2	**104**	1
Colombia	9	9	0	0	0	0	0	0	1	**10**	
Czech Republic	270	326	6	2	0	2	0	6	0	**342**	2
Denmark	75	90	0	0	35	10	0	0	0	**136**	1
France IN2P3	802	968	166	0	0	25	235	60	0	**1454**	6
France CEA	195	235	0	0	0	0	87	0	31	**353**	2
Georgia	45	45	0	0	0	0	1	0	1	**47**	
Germany BMBF	1041	1257	395	47	0	103	51	0	36	**1888**	3
Germany DESY	225	271	0	0	0	0	68	0	69	**408**	1
Germany MPI	225	271	0	39	0	36	42	0	19	**408**	1
Greece	172	208	0	0	0	0	0	0	10	**218**	0
Israel	185	190	0	0	0	0	0	0	9	**199**	0
Italy	1318	1591	399	0	0	85	91	53	172	**2392**	8
Japan	645	660	0	113	0	106	0	0	113	**992**	3
Morocco	54	54	0	0	0	0	3	0	0	**57**	
Netherlands	202	244	0	28	0	30	0	0	65	**367**	2
Norway	127	154	0	38	0	40	0	0	0	**231**	2
Poland	127	154	0	1	4	2	0	0	0	**161**	0
Portugal	127	154	0	0	0	0	0	8	0	**161**	0
Romania	109	109	0	0	0	0	0	5	0	**114**	0
Russia	450	570	0	0	9	5	6	4	4	**598**	2
JINR	307	307	0	0	2	1	4	4	4	**323**	0
Serbia	54	54	0	0	0	0	3	0	0	**57**	
Slovak Republic	60	72	0	0	0	0	4	0	0	**76**	
Slovenia	63	63	0	2	0	2	0	0	0	**66**	1
Spain	307	371	0	24	0	23	49	90	0	**557**	3
Sweden	180	217	0	13	41	24	14	17	0	**326**	0
Switzerland	157	190	0	44	0	41	10	0	0	**285**	0
Taipei	63	63	2	0	0	1	0	0	0	**66**	3
Turkey	145	145	0	0	0	0	4	0	3	**152**	
United Kingdom	1393	1682	0	342	0	499	0	0	0	**2523**	10
US DOE + NSF	3503	3572	599	2	443	54	287	276	134	**5368**	30
CERN	959	1157	22	19	230	101	110	82	18	**1740**	15
total	14,546	**16,430**	1590	732	775	1207	1351	621	700	**23,406**	**98**
			System-specific items						**6,976**		

Notes:

*Invoiced to FAs; includes energy cost adjustments

List of qualified authors with PhD or equivalent (September 30, 2008) used for Category-A. Chile and Colombia added in March 1, 2008

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

ATLAS M+O MoU Signatures

(Status October 25, 2008)

Funding Agency	Signed Date	Signed by
Argentina	30.01.2008	L. Barañao
Armenia	02.09.2002	H. Asatryan
Australia	17.10.2003	A. Williams
Austria	02.10.2002	R. Kneucker
Azerbaijan	20.03.2003	N.A.K. Guliyev
Belarus	25.03.2005	Y. Pleskachevsky
Brazil		
Canada	09.09.2002	I. Blain
Chile	10.01.2008	V. Heyl
China NSFC+MSTC	02.08.2002	Wang Naiyan
Colombia	24.01.2008	J.F. Miranda
Czech Republic	20.01.2003	J. Niederle
Denmark	18.08.2004	J.R. Hansen
France CEA	04.09.2002	F. Gounand
France IN2P3	25.09.2002	J.J. Aubert
Georgia	22.08.2002	A.N. Tavkhelidze
Germany BMBF	12.09.2002	R. Koepke
Germany DESY	01.11.2006	R.D. Heuer, C. Scherf
Germany MPI	28.06.2002	S. Bethke
Greece	18.10.2005	I. Tsoukalas
Israel	23.08.2002	D. Horn
Italy	25.11.2002	E. Iarocci
Japan	31.03.2003	H. Sugawara
Morocco	04.02.2004	S. Belcadi
Netherlands	14.11.2002	J. Engelen
Norway	04.09.2002	O.H. Ellestad
Poland	18.10.2004	J.K Frackowiak
Portugal	26.06.2002	A. Trigo de Abreu
Romania	21.04.2004	G. Popa
Russia	26.03.2006	A. Fursenko
JINR	07.08.2002	A.N. Sissakian
Serbia	12.08.2005	A. Popovic
Slovak Republic	26.11.2002	M. Fronc
Slovenia	22.04.2003	Z. Stančič
Spain	19.02.2003	P. Morenés
Sweden	25.11.2002	K. Bremer
Switzerland	02.04.2007	A. Clark
Taipei	12.07.2002	C.J. Chen
Turkey	12.03.2003	N.K. Pak
United Kingdom	24.09.2002	J.F. Down
US DOE + NSF	18.10.2002	T.B.W. Kirk
CERN	04.12.2002	D. Schlatter