

## *Preparazione RRB*



- **Consuntivo fondi M&O 2002**
- **Divisione tra subdetectors dei fondi extra-CORE e stato extracosti deliverables**
- **Richieste per il 2004**
- **Altri punti presentati all'RRB**

*Commissione Scientifica Nazionale I 1-2 aprile 2003*

*S. Patricelli*



## Consuntivo fondi M&O - A 2002



- Bilancio di previsione: 1.370 kCHF
- Contributi cash: 1.125 (136 INFN)
- Contributi in-kind: 0
- Pagamenti: 1.040 + 85 impegnati

Item & Cost Driver (by RRB SG Headings)	Category A
	M&O
Detector related costs	0
Secretariat	0
Communications	0
On-line computing	
TDAQ system management	150
Software licences	18
Test beams	
Magnet Cryo Op. in B180	661
TDAQ pool rental	67
DCS electronics	12
Laboratory operations	0
General services	
Electricity	37
Cooling & ventilation	72
Survey	
Outreach	23
<b>TOTAL</b>	<b>1,040</b>
Hired manpower at CERN (in kCHF)	incl. above
Institute manpower (in FTE)	0
<b>TOTAL M&amp;O FOR A</b>	<b>1,040</b>

**Attività che si sono dovute ridurre per minori entrate:**

**- Minore supporto ai sistemi di DAQ e attrezzature di test beam**

# Consuntivo fondi M&O - B (ID) 2002



- Bilancio di previsione: 390 kCHF
- Contributi cash: 253 (48 INFN)
- Contributi in-kind: 17
- Pagamenti: 122 + 18 impegnati
- Avanzo di 130 kCHF da usare nel 2003 per ritardi in SR1

SCT		Pixel		TRT	
Category B M&O	Item & Cost Driver (by RRB SG Headings)	Category B M&O	Item & Cost Driver (by RRB SG Headings)	Category B M&O	Item & Cost Driver (by RRB SG Headings)
35	Beamttest	64	Beamttest, Irradiations	23	Beamttest, Irradiations
0	Systemtest	0	Systemtest	0	Systemtest
35	(Excluding hired manpower for Category B)	64	(Excluding hired manpower for Category B)	23	(Excluding hired manpower for Category B)
0	Hired manpower at CERN (in kCHF)	0	Hired manpower at CERN (in kCHF)	0	Hired manpower at CERN (in kCHF)
0	Institute manpower to be credited (in kCHF)	0	Institute manpower to be credited (in kCHF)	0	Institute manpower to be credited (in kCHF)
0	Institute manpower (in FTE)	0	Institute manpower (in FTE)	0	Institute manpower (in FTE)
35	TOTAL M&O FOR B (kCHF)	64	TOTAL M&O FOR B (kCHF)	23	TOTAL M&O FOR B (kCHF)
SCT		Pixel		TRT	
	M&O total budget 2002	100	M&O total budget 2002	150	M&O total budget 2002
	Received cash income	69	Received cash income	100	Received cash income
	Received in-kind	0	Received in-kind	17	Received in-kind
	cash payments in 2002	35	cash payments in 2002	64	cash payments in 2002
	open commitments	0	open commitments	0	open commitments
	carry over to 2003	34	carry over to 2003	36	carry over to 2003

# Consuntivo fondi M&O - B (LAr) 2002



- Bilancio di previsione: 140 kCHF
- Contributi cash: 135.9 (7 INFN)
- Contributi in-kind: 0
- Pagamenti: 117
- Avanzo 18.9 kCHF da usare nel 2003

Item & Cost Driver (by RRB SG Headings)	Cat. LAr B
	M&O
Detector related costs	0
Secretariat	0
Communications GSM phones	1
On-line computing	0
Test beams LAr Cryo Op. in EHN887	36
Laboratory operations Electronic Pool	70
General services Gaz rack Repairs	2
<b>TOTAL</b>	<b>109</b>

Hired manpower at CERN (in k)	8
Institute manpower (in FTE)	0

<b>TOTAL M&amp;O FOR LAr B</b>	<b>117</b>
--------------------------------	------------

# Consuntivo fondi M&O - B (Tile) 2002



- Bilancio di previsione: 105 kCHF
- Contributi cash: 78.4 (8 INFN)
- Contributi in-kind: 9
- Pagamenti: 66.1
- Avanzo di 12.3 kCHF da usare nel 2003

Category B	Item & Cost Driver
M&O	(by RRB SG Headings)
	Mechanics & Gas & Cooling & Cryogenics
	Gases
60	Standard electronics
	Electronics pool rentals for test-beams
	Detector controls
4	Areas
	Communications
2	Store items
	Sub-detector spares
66	(Excluding hired manpower for Category
	Hired manpower at CERN (in kCHF)
	Institute manpower to be credited (in kCHF)
1	Institute manpower (in FTE)
66	TOTAL M&O FOR B (kCHF)

## Consuntivo fondi M&O - B (Muon) 2002



- Bilancio di previsione: 280 kCHF
- Contributi cash: 142.7 (60 INFN)
- Contributi in-kind: 22.5
- Pagamenti: 39
- Avanzo di 126 kCHF da usare nel 2003 per attività rinviate e disponibilità ritardata dei fondi

Category B M&O	Item & Cost Driver (by RRB SG Headings)
12	Mechanics & Gas & Cooling & Cryogenics Cases
	Standard electronics Electronics pool rentals for test-beams
	Detector controls DCS replacements for ID for test beams
	Areas Test-beam activities
0	Communications
5	Store items
0	Sub-detector spares (Critical spares dealt with separately)
16	(Excluding hired manpower for Category B)
22.5	Hired manpower at CERN (in kCHF)
	Institute manpower to be credited (in kCHF)
2	Institute manpower (in FTE)
39	TOTAL M&O FOR B (kCHF)

# Cost to Completion



## ➤ RRB ottobre 2002

- E' stato approvato il piano dei CtoC presentato da ATLAS.
  - Necessari 68,2 MCHF (6.6 INFN)
  - Disponibili 46,8 MCHF (4 INFN)
  - Da recuperare con "reindirizzamenti" 21,4 MCHF (1+3+4+13)
  
- Le F.A. che hanno dato la piena disponibilità sui 68 MCHF hanno espresso l'augurio che anche le altre facciano uno sforzo per dare il loro contributo totale.
  
- Alle collaborazioni è stato chiesto di preparare uno schema dettagliato di suddivisione dei fondi (A, B, C&I, Suppl).  
Presentazione al prossimo RRB

# Cost to Completion - Lo schema di ATLAS



EP-ATO/mn/210203

## SUMMARY - PLANNED INCOME FOR ATLAS COST-TO-COMPLETION (kCHF)

Funding Agency	Cost-to-Completion (A)							Cost-to-Completion (B)							Cost-to-Completion (A+B)							Invoice Total	Calc. G.Total
	2002	2003	2004	2005	2006	2007	Total	2002	2003	2004	2005	2006	2007	Total	2002	2003	2004	2005	2006	2007	Total		
Armenia	0	0	12	13	13	0	38	3	0	0	0	0	0	3	3	0	12	13	13	0	41	56	
Australia	0	0	25	25	25	0	75	27	0	0	0	0	0	27	27	0	25	25	25	0	102	355	
Austria	0	17	20	17	13	0	67	0	0	0	0	0	0	0	0	17	20	17	13	0	67	67	
Azerbaijan	0	0	12	13	13	0	38	0	0	0	0	0	0	0	0	0	12	13	13	0	38	42	
Belarus	0	0	25	25	25	0	75	0	0	0	0	0	0	0	0	0	25	25	25	0	75	85	
Brazil	0	0	12	13	13	0	38	3	0	0	0	0	0	3	3	0	12	13	13	0	41	62	
Canada	0	0	87	88	88	0	263	32	0	0	0	0	0	32	32	0	87	88	88	0	295	2079	
China NSFC+MSTC	0	32	26	18	13	0	89	0	18	21	10	3	0	52	0	50	47	28	16	0	141	141	
Czech Republic	24	9	26	45	38	0	142	30	58	53	31	0	0	172	54	67	79	76	38	0	314	314	
Denmark	0	0	12	13	13	0	38	9	0	0	0	0	0	9	9	0	12	13	13	0	47	420	
France IN2P3	0	1330	75	210	263	0	1878	623	262	241	247	249	0	1622	623	1592	316	457	512	0	3500	5855	
France CEA	0	1000	12	13	13	0	1038	21	0	0	0	0	0	21	21	1000	12	13	13	0	1059	1930	
Georgia	0	0	12	13	13	0	38	0	0	0	0	0	0	0	0	0	12	13	13	0	38	42	
Germany BMBF	986	836	272	173	0	0	2267	207	348	495	272	28	0	1350	1193	1184	767	445	28	0	3617	4500	
Germany MPI	122	144	162	154	148	0	730	86	116	102	51	1	0	356	208	260	264	205	149	0	1086	1086	
Greece	0	0	37	38	38	0	113	0	0	0	0	0	0	0	0	0	37	38	38	0	113	259	
Israel	0	0	37	105	73	250	465	20	0	79	25	52	94	176	20	0	116	130	125	344	735	735	
Italy	80	700	286	365	356	0	1787	14	803	468	460	468	0	2213	94	1503	754	825	824	0	4000	6597	
Japan	0	0	187	188	188	0	563	0	0	0	0	0	0	0	0	0	187	188	188	0	563	4362	
Morocco	0	0	12	13	13	0	38	0	0	0	0	0	0	0	0	0	12	13	13	0	38	57	
Netherlands	0	815	431	213	25	0	1484	56	99	184	84	13	0	436	56	914	615	297	38	0	1920	1920	
Norway	0	219	108	47	25	0	399	45	62	47	24	0	0	178	45	281	155	71	25	0	577	577	
Poland	0	0	25	25	25	0	75	2	0	0	0	0	0	2	2	0	25	25	25	0	77	136	
Portugal	0	16	35	24	19	0	94	3	75	58	67	42	0	245	3	91	93	91	61	0	339	444	
Romania	0	0	17	33	17	0	67	0	0	46	27	0	0	73	0	0	63	60	17	0	140	140	
Russia	150	100	87	88	88	0	513	56	90	82	60	0	0	288	206	190	169	148	88	0	801	2975	
JINR	0	0	12	13	13	0	38	48	140	192	0	0	0	380	48	140	204	13	13	0	418	1062	
Slovak Republic	0	0	15	15	20	0	50	15	0	0	0	0	0	15	15	0	15	15	20	0	65	70	
Slovenia	0	0	0	0	94	61	155	0	0	0	0	51	15	51	0	0	0	0	145	76	221	221	
Spain	0	487	276	151	38	0	952	80	334	228	106	0	0	748	80	821	504	257	38	0	1700	1700	
Sweden	0	0	50	50	50	0	150	94	0	0	0	0	0	94	94	0	50	50	50	0	244	1681	
Switzerland	0	1400	12	13	13	0	1438	24	0	0	0	0	0	24	24	1400	12	13	13	0	1462	2353	
Taipei	0	156	84	34	13	0	287	18	68	39	27	4	0	156	18	224	123	61	17	0	443	443	
Turkey	0	0	25	25	25	0	75	0	0	0	0	0	0	0	0	0	25	25	25	0	75	85	
United Kingdom	0	0	703	703	694	0	2100	137	195	121	21	0	0	474	137	195	824	724	694	0	2574	4355	
US DOE + NSF	0	627	1084	846	413	0	2970	171	1605	881	523	50	0	3230	171	2232	1965	1369	463	0	6200	12170	
CERN	1089	1950	3193	2460	13	0	8705	1383	1208	1934	444	26	0	4995	2472	3158	5127	2904	39	0	13700	8377	
total	2451	9838	7506	6282	2944	311	29332	3207	5481	5271	2479	987	109	17425	5658	15319	12777	8761	3931	420	46866	67753	
calculated total	10415	14675	13255	7215	100	0	45660	3915	5715	7410	4470	570	0	22080	14330	20390	20665	11685	670	0	67740	13	

Notes

C2C = C&I + CC

Total = Total to be invoiced (committed by FAs)

Calc. G. Total = Total calculated of 68 MCHF (not yet comm. by all FAs)

deficit 20874

## Cost to Completion - Il dettaglio INFN



- Il profilo temporale del contributo INFN di 4 MCHF, suddiviso nelle varie voci è mostrato nella tabella seguente.
- Per il 2003 il contributo include la quota 2002 che non è stata finanziata.

	2002		2003		2004		2005		2006		Totale
	C&I	C-C	C&I	C-C	C&I	C-C	C&I	C-C	C&I	C-C	
L.Ar	0	14	31	67	50	13	18	35	0	43	271
Tile	0	0	68	88	100	34	8	10	0	10	318
Mu	0	0	207	52	0	155	124	140	159	140	977
Pixel	0	0	0	127	0	71	0	80	0	80	358
I.D. General	0	0	104	59	40	5	40	5	31	5	289
Comm. Proj.	0	80	350	350	206	80	205	160	205	151	1.787
<b>Totale</b>	<b>0</b>	<b>94</b>	<b>760</b>	<b>743</b>	<b>396</b>	<b>358</b>	<b>395</b>	<b>430</b>	<b>395</b>	<b>429</b>	<b>4.000</b>

KCHF

- Chiediamo alla CSN1 lo sblocco dei fondi previsti per il 2003 dal s.j. indiviso di Napoli (Costr. App.)

## *Stato extracosti deliverables*



- L'ultima stima dei costi fatta dai sottosistemi di ATLAS risale al giugno 2001, quando molte delle costruzioni erano in partenza.
- A quasi due anni di distanza **Tile e LAr** hanno terminato i loro impegni costruttivi, **MDT ed RPC** sono in piena costruzione e devono avviare gli approvvigionamenti dei sistemi di potenza e cablaggi, i **Pixel** si trovano nello stato in cui gli altri detector erano 2 anni fa ed il **Trigger di LV1** è pronto a partire con le produzioni di massa.
- In questo scenario è possibile presentare un quadro più aggiornato dei costi per il completamento dei nostri deliverables.

## Stato extracosti deliverables - Tile e LAr



- Tile: Completato
- Piano 2001: 888 k€
- Finanziamento CSN1: 872 k€
- Potrebbe essere necessario adeguare il finanziamento dei PM al cambio dello yen (max. 50 k€)
  
- LAr: Completato
- Piano 2001: 2658 k€
- Finanziamento CSN1: 2.827 k€
- Attività nuove: partecipazione al progetto per la meccanica di movimentazione al fascio di test (60 k€)

## Stato extracosti deliverables - Pixel



- Pixel: In fase di avvio della produzione
- Piano 2001: **3.827 k€**
- Piano 2001 senza terzo layer: **3.227**
- Finanziamento CSN1 ad oggi : **949 k€**
- E' già stato preso l'impegno per la gara per il bump-bonding (1.145 k€ di cui 120 già finanziati). Sugli items ancora da finanziare il gruppo ritiene che la valutazione del 2001 è ancora abbastanza realistica con un risparmio sull'elettronica rad-hard che probabilmente compenserà (almeno parzialmente) costi cresciuti di altri items. Ad oggi non hanno una valutazione precisa del costo finale essendo questo legato alle rese delle varie fasi di lavorazione, ma presumono che il sovracosto sarà intorno al 10% (fisiologico). Il tutto con un margine di errore di +/- 10 %.

## *Stato extracosti deliverables - MDT*



- MDT: Produzione in corso
- Piano 2001: 4.029 k€
- Finanziamento CSN1 ad oggi : 3.319 k€
- Restano da finanziare: pochi item di produzione, tools per montaggio RPC/MDT, completamento supporti comuni, sistemi HV/LV e trasporti. Per queste voci è previsto un costo di circa 800 k€

## *Stato extracosti deliverables - RPC*



- RPC: Produzione in corso
- Piano 2001: 4.079 k€
- Finanziamento CSN1 ad oggi : 3.091 k€
- Restano da finanziare: completamento sistema del gas, cablaggi da F.E. a elettronica di trigger, sistemi di HV e LV con cavi di potenza, extracosti GT e PanPla. Per queste voci è previsto una spesa dell'ordine di 1.600 k€

## *Stato extracosti deliverables - T/DAQ (LV1)*



- Trigger LV1: Pronto alla produzione di massa
- Piano 2001: 2.759 k€
- Finanziamento CSN1 ad oggi : 283 k€
- Sono stati finanziati solo i Pad-Or ed il 5% di una parte dell'elettronica on detector. Le valutazioni dei costi dell'elettronica sono ora affidabili mentre qualche incertezza esiste ancora sui cablaggi e sul sistema di potenza. La previsione di spesa (senza iva) è di 4.300 k€.

## *Stato extracosti deliverables - T/DAQ (DAQ)*



- DAQ: TDR in preparazione
- Piano 2001: 2.066 k€
- Piano 2001 con riallocazione: 866 k€
- Finanziamento CSN1 ad oggi : 0 k€

## Stato extracosti deliverables - Riassunto



- CORE MoU: 25.284 kSF
  - Quote CORE da riallocare:
    - 880 kSF (pixel)
    - 1.763 kSF (DAQ)
- Piano 2001: 20.306 k€
- Piano 2001 senza cifre da riallocare: 18.506 k€
- Finanziamento CSN1 ad oggi: 11.341 k€
- Valutazione aggiornata dei costi necessari per completare i deliverables: 10.200 k€

# Richieste RRB per il 2004



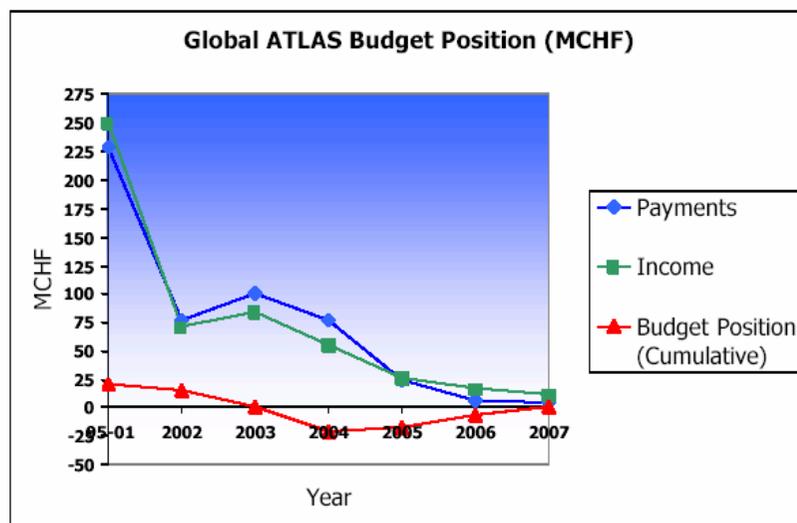
- M&O A: 290 kSF (erano 410 prima della riduzione)
  
- M&O B: 104 kSF
  - Muon: 54
  - Lar: 2
  - Tile: 8
  - Pixel: 32
  - ID Gen: 8
  
- CtoC: 754 kSF (per i dettagli vedi tabella precedente)

## Altri punti presentati all'RRB



- L'evoluzione temporale del bilancio globale di ATLAS nei prossimi anni (CORE + Cost to Completion sicuri) basato sull'attuale profilo temporale dato dalle F.A. per i Cost to Completion ha un deficit di cassa per gli anni 2004-06. In questo schema i fondi CORE riallocati sono disponibili a partire dal 2005.

Figure 1. Evolution of the ATLAS Budget Position (MCHF)



### Possibili soluzioni:

- Anticipare i C to C
- Anticipare al 2004 i fondi riallocati
- Richiedere al CERN l'autorizzazione ad andare "in rosso"
- Rallentare le spese di C&I e C-C dei sottosistemi con conseguenze sulla schedule di installazione



## C&I Activities in 2002

---

- 2002 C&I Budget level for Cat. A accepted in April 2002 (CERN-RRB-2002-026)
  - Total budget planned: 865 kCHF
    - For integration, cryogenics and crane operations
  - Received cash income: 170 kCHF
  - Received in-kind contributions: 160 kCHF
    - Designers from Russia (ATLAS agreement 117/02)
  - Final cash payments for 2002: 184 kCHF
  - Remaining open commitments: 0 kCHF

## C&I Final Payments in 2002

Item & Cost Driver (by RRB/LHCC SG Headings)	Category A
	C&I
<b>Detector related costs</b>	
Magnet assembly in B180 (gas, controls)	
General integration tasks (TCn)	160
Gen. Technical support	
Integration and survey	
Secretariat	0
Communications	0
On-line computing	0
Test beams	
Magnet Cryo consumables	50
Laboratory operations	0
General services	
Heavy transport, crane operations	132
Technical training	2
<b>TOTAL</b>	<b>344</b>
Hired manpower at CERN (in kCHF)	incl. above
Institute manpower to be credited (in kCHF)	
Institute manpower (in FTE)	0
<b>TOTAL C&amp;I FOR A</b>	<b>344</b>

- Comments to Category A activities
  - Designers for integration (cables, services): 2.5 FTE from Russia as in kind = 160 kCHF
  - Crane drivers in bldg 185,180,191 & Point 1: 132 kCHF
  - 50KCHF of cryogenics material
  - Following activities shifted to 2003 (for 150 kCHF) or to other budgets:
    - Magnets controls and operation
    - Technical support
    - Operation of traction systems
    - Desktop material
  - Carry-over to 2003
    - - 14 kCHF
  - Potential net savings from 2002:
    - None
  - 2002 final budget
    - 344 kCHF



## Plan of Work for C&I in 2003 and 2004

- 2003
  - Impact of delays in 2002: No consequences for 2003 (shift in time: 3 months). Activities planned as in October 2002 RRB (CERN-RRB-2002-112)
  - Critical tasks (for a minimum of 1805 kCHF)
    - Commissioning the cryoplant at Point 1+ operation in 180 = 1305 kCHF
    - Crane drivers (part of it) = 300 kCHF
    - Manpower for preparation and start-up of installation (feet, magnet, racks)
    - Cables and services integration as in 2002
    - Heavy transports to Point 1
  - However the planned budget is 2435 kCHF
  
- 2004
  - With respect to the October 2002 plan
    - Still as planned. Cranes and cryogenics dominating
    - TDAQ activities need to be reviewed in light of deferral plan and TDR



## C&I Activities in 2002

---

- 2002 C&I Budget level for ID accepted in April 2002 (CERN-RRB-2002-026)
  - Total budget: 667 kCHF
    - Of which hired institute manpower 115 kCHF.
  - Received cash income: 291 kCHF
  - Received in-kind contributions: 53 kCHF (extra ASIC testing done by US)
  - Final cash payments for 2002: 93 kCHF
  - Remaining open commitments/pipeline (SR1 infrastructure – for example platform for cooling systems, light and electricity work, airlock to control room) : 66 kCHF



## C&I Final Payments in 2002

IDGEN		TRT	
Category B	Item & Cost Driver (by RRB/LHCC SG Headings)	Category B	Item & Cost Driver (by RRB/LHCC SG Headings)
0	Fluids for evaporative ID system	0	TRT gas
0	NMR probes	0	TRT cooling liquid
43	General operation in SR building (storage boxes, tools, ricks, cleaning)	0	(Excluding hired manpower for Category B)
0	Stores	0	Hired manpower at CERN (in kCHF)
0	Pool	0	Institute manpower to be credited (in kCHF)
0		0	Institute manpower (in FTE)
50	Infrastructure (Floor, pumps, safety systems, cooling...)	0	TOTAL C&I FOR B (kCHF)
0	Instruments (LPS, lab-items)		
0	Online/DAQ		
93	(Excluding hired manpower for Category B)		
0	Hired manpower at CERN (in kCHF)		
0	Institute manpower to be credited (in kCHF)		
0	Institute manpower (in FTE)		
93	TOTAL C&I FOR B (kCHF)		
IDGEN		TRT	
	C&I total budget 2002	642	C&I total budget 2002
	Received cash income	278	Received cash income
	Received in-kind	53	Received in-kind
	cash payments in 2002	93	cash payments in 2002
	open commitments	66	open commitments
	carry over to 2003	186	carry over to 2003
			25
			13
			0
			0
			0
			13

- Comments for ID
  - Key activity driver: integration preparation in SR1
  - Following activities shifted to 2003:
    - Installation of key equipment in SR1
  - C&I activities started late (availability of SR1)
- Carry-over to 2003
  - + 198 kCHF
    - Work being done now
  - Potential net savings from 2002: None



## Plan of Work for C&I in 2003 and 2004

---

- 2003
  - Impact of delays in 2002: No consequences for 2003 (shift in time: 3 months). Activities planned as in October 2002 RRB (CERN-RRB-2002-112)
  - Critical tasks
    - Installing main equipment items in SR1
- 2004
  - With respect to the October 2002 plan
    - Still as planned.



## C&I Activities in 2002

---

- 2002 C&I Budget level for LAr accepted in April 2002 (CERN-RRB-2002-026)  
C&I budget is used for integration activities in B180
  - Total budget: 460.0 kCHF
    - Of which hired manpower
    - 270 kCHF from common projects (C&C)
  - Received cash income: 336.8 kCHF
  - Received in-kind contributions: 8 kCHF  
(Hired institute manpower from JINR)
  - Final cash payments for 2002: 354.0 kCHF
  - Remaining payments in pipeline: 20.9 kCHF

## C&I Final Payments in 2002

Item & Cost Driver (by RRB/LHCC SG Headings)	Cat. LAr B
	C&I
Detector related costs Cryogenic valves, Heavy tooling	52
Secretariat	0
Communications	0
On-line computing	0
Test beams	0
Laboratory operations	0
General services Heavy transport Cleaning	25
<b>TOTAL</b>	<b>77</b>
Hired manpower at CERN (in kCHF)	277
Institute manpower to be credited (in kCHF)	8
Institute manpower (in FTE)	0
<b>TOTAL C&amp;I FOR LAr B</b>	<b>362</b>

- Comments for LAr
  - Key activity driver: Hired manpower at CERN (277 kCHF)
  - C&I activities started late (availability of infrastructure, collection of funds), delay due to repair of ECC
  - Carry-over to 2003
    - - 17.2 kCHF
  - Potential net savings from 2002: None



## Plan of Work for C&I in 2003 and 2004

---

- 2003
  - Impact of delays in 2002: No consequences for 2003 (shift in time: 5 months). Activities planned as in October 2002 RRB (CERN-RRB-2002-112)
  - Critical tasks
    - Start cold test of barrel calorimeter
    - Completion of end-cap C
- 2004
  - Complete cold test of barrel calorimeter
  - Cold test of ECC calorimeter
  - Completion of end-cap A



## C&I Activities in 2002

---

- 2002 C&I Budget level for TileCal accepted in April 2002 (CERN-RRB-2002-026)
  - Total budget: 260 kCHF
    - Of which hired institute manpower 180 kCHF and 2 FTE (counted as part of deliverables)
  - Received cash income: 98.5 kCHF
  - Received in-kind contributions: 160 kCHF, including
    - Hired institute manpower from JINR, Russia, Spain, US, CZ, Port.
  - Final cash payments for 2002: 27.4 kCHF
  - Remaining payments in pipeline: 11.5 kCHF (drilling machine, special pins)



## C&I Final Payments in 2002

Category B	Item & Cost Driver (by RRB/LHCC SG Headings)
C&I	
	Mechanics & Gas & Cooling & Cryogenic
	Gases
	Standard electronics
	Detector controls
	Areas
4	Communications
4	Store items
	Store materials (metal sheet, cables, connectors, components)
0	Sub-detector spares
8	(Excluding hired manpower for Category
	Hired manpower at CERN (in kCHF)
180	Institute manpower to be credited (in kCHF)
1,3	Institute manpower (in FTE)
188	TOTAL C&I FOR B (kCHF)

- Comments for TileCal
  - Key activity driver: institute mp for B180 assembly work
  - Following activities shifted to 2003:
    - Hydraulic system to drive the CS calibration
    - Certification work in B175
  - C&I activities started late (availability of tools, collection of funds)
  - Carry-over to 2003
    - + 71.1 kCHF
      - Due to late start in cylinder pre-assembly work
      - Will be consumed in 2003
  - Potential net savings from 2002: None



## Plan of Work for C&I in 2003 and 2004

---

- 2003
  - Impact of delays in 2002: No consequences for 2003 (shift in time: 3 months). Activities planned as in October 2002 RRB (CERN-RRB-2002-112)
  - Critical tasks in 2003
    - Finishing the pre-assembly of the 1st Extended Barrel and 1<sup>st</sup> Barrel
    - Starting the CS calibration of all modules in B175
    - Large-scale testing of the CS system
  - However, remaining uncertainties
    - Availability of drawers with final electronics on time
    - Availability of tools for the Barrel pre-assembly on time
- 2004
  - With respect to the October 2002 plan
    - Still as planned.
    - Risk: If Low Voltage Power Supplies not on time, more manpower needed during installation in the pit => additional costs (ca. 1FTE ~ 100 kCHF)



## C&I Activities in 2002

---

- 2002 C&I Budget level for Muons accepted in April 2002 (CERN-RRB-2002-026)
  - Total budget: 290 kCHF
    - Of which hired manpower 205 kCHF
  - Received cash income: 71.5 kCHF
  - Received in-kind contributions: 0 kCHF
  - Final cash payments for 2002: 0 kCHF
  - Remaining open commitments: 0 kCHF
  - Delay due to:
    - UA1 area available only in February 2003



## C&I Final Payments in 2002

Category B	Item & Cost Driver (by RRB/LHCC/SG Headings)
C&I	
	Mechanics & Gas & Cooling & Cryogenics Gases
	Standard electronics eg. FE electronics
	Detector controls eg. DCS replacements
	Areas eg. SR-building operation
	Communications GSM phones
	Store Items Store materials (metal sheet, cables, connectors, components)
0	Sub-detector spares
0	(Excluding hired manpower for Category B)
	Hired manpower at CERN (in kCHF)
	Institute manpower to be credited (in kCHF)
3	Institute manpower (in FTE)
0	TOTAL C&I FOR B (kCHF)

- Comments for Muons
  - Key activity driver: Manpower for test area preparation work
  - All activities shifted to 2003:
  - C&I activities started late (availability of areas, collection of funds)
  - Carry-over to 2003
    - + 71 kCHF
      - Due to late start of areas preparation
      - Will be consumed in 2003
  - Potential net savings from 2002: None



## Plan of Work for C&I in 2003 and 2004

---

- 2003
  - Impact of delays in 2002: No consequences for 2003 (shift in time: 6 months). Activities planned as in October 2002 RRB (CERN-RRB-2002-112)
  - Critical tasks
    - Areas ready for MDT/RPC mounting before September
- 2004
  - With respect to the October 2002 plan
    - Still as planned.