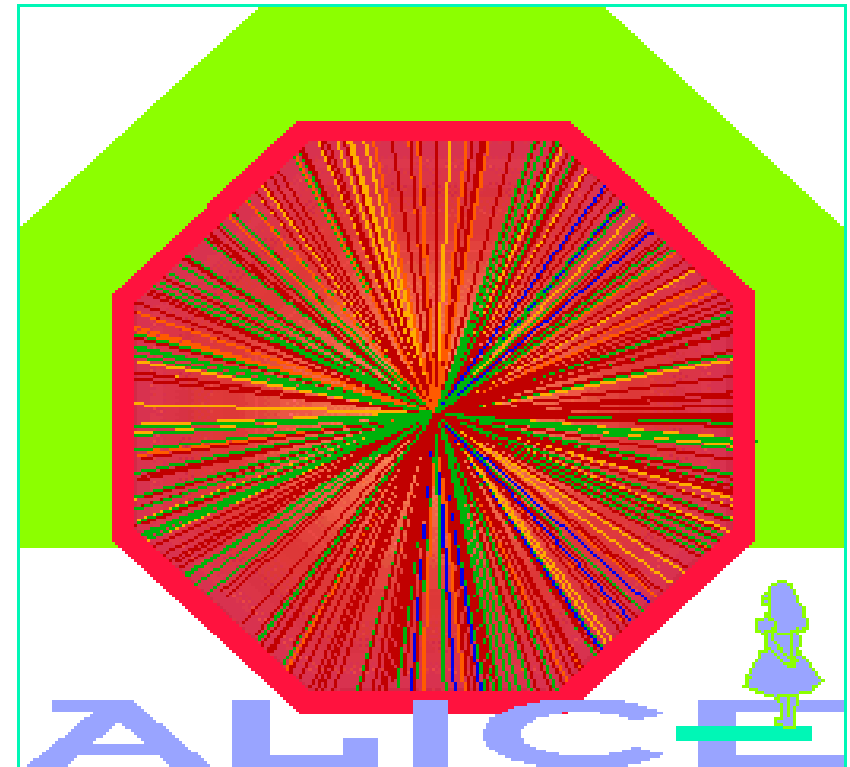


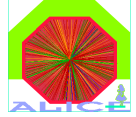
12th ALICE RRB

- **Cost-to-Completion**
- **= 6.9 MSF (~6%)**





Summary shown at Oct. RRB:



● **prel. 'Cost-to-Completion' of MoU detector**

⇒ detectors sub-systems: 3.3- 3.9 MSF

☆ MoU under-funding of Si-strips: **0.7 MSF**

☆ additional costs: **1.1-1.4 MSF** detectors, **1.5-1.8 MSF** muon absorber (2.6%)

⇒ services, installation, commissioning & integration: ~ 3 MSF (> 25%)

☆ assumes 2 MSF of savings can be realized

☆ rely less on IS, more on Institutes manpower

☆ hope for no further surprises in 'gray area' of machine - detector interface

⇒ **Sum: 6.3 - 6.9 MSF**

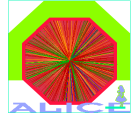
● next steps

⇒ refine ALICE 'cost-to-completion', report **final numbers in April 2002**

⇒ look for **cost savings** everywhere



Summary today



● Common Cost: 5 MSF(Oct) -> 3.2 MSF

⇒ found **savings** of (only) **1.1 MSF** (manpower, smaller control room,

★ some 200 kSF actually still to be confirmed...

⇒ **attribute racks** to detectors (**0.9 MSF**)

⇒ **add 200 kSF** for **FMD/T0** (previously Greek responsibility)

● Detectors: 3.3- 3.9(Oct) -> 3.7 MSF

⇒ found **savings** of **1.1 MSF** (pixel, muon absorber)

⇒ **add 0.9 MSF** for racks from Common Cost

● Racks

(house power supplies, computers, ..)

⇒ original estimated need (1996): **< 100 racks**

★ normally, **racks are part of the detector !**

★ we got 100 racks from L3

★ estimated cost for upgrades ~ **110 kSF**, included in Common items

⇒ now we need some **225 racks**

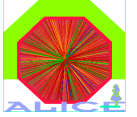
⇒ upgrade more expensive, 125 new racks -> **cost 1 MSF**

★ **attributed to detectors 'pro rata'**





Inner Tracking System (ITS)



- Pixel Detectors (CORE = 2.8 MSF) CtC 270 kSF
 - ⇒ funding shortfall (125 kSF)
 - ⇒ pixel chip : 72 wafers needed, IBM contract allows only lots of 48
 - ⇒ new engineering run (250 kSF): skipped (desirable, but not vital)

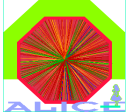
- Drift Detectors (CORE = 5.2 MSF), CtC 330 kSF
 - ⇒ outcome of detector tender
 - ⇒ HV power supplies (underestimated)

- Strip Detectors (CORE = 10.3 MSF), CtC 975 kSF
 - ⇒ funding shortfall (702 kSF)
 - ★ reduced original shortfall of 1.4 MSF (Draft MoU, 1999) to 0.7 MSF by reducing area of SSD as much as possible !
 - ⇒ outcome of detector tender

Here and in the following only major cost factors are listed, the detailed listing is in document CERN-RRB-2002-042



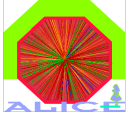
Muon Arm



- Muon arm (CORE = 19.2 MSF), CtC 1458 kSF
- Muon tracking & trigger chambers
 - ⇒ chamber frames, racks
 - ⇒ Muon dipole magnet
 - ⇒ reshuffling of responsibilities and resources to contain cost increase of coil of 1.4 MSF
 - ☆ save about 1 MSF in coil cost
 - ☆ shift 620 kSF from magnet to PHOS (JINR), used muon arm overfunding
- Muon absorber
 - ⇒ current (industrial) estimate back to ~ 3.5 MSF after extensive redesign
 - ☆ at (actually even below) MoU estimate
 - ⇒ no 'Skrinsky' factor materialized on this item => missing funds from Russia ~ 1.1 MSF



Other detectors



- TPC (CORE = 15.6 MSF), CtC 250 kSF
 - ⇒ TPC on target (cost increase in FC absorbed in electronics)
 - ⇒ racks (200 kSF), **laser platform** (50 kSF)

- HMPID (Core = 2.1 MSF), CtC 125 kSF
 - ⇒ **power supplies** (80 kSF),

- Forward, DAQ, HLT, PHOS, CtC 308 kSF
 - ⇒ racks only

- FMD, T0, CtC 200 kSF
 - ⇒ consequence of Greek withdrawal, **funding** shortfall of 750 kSF
 - ★ absorbed overfunding (305 kSF)
 - ★ shift 200 kSF from Finland (now PL of T0-project) from ITS
 - ★ some reductions/savings (eg reducing size of T0)



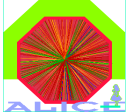
Commissioning & Integration, Services, Installation



- contains non-detector specific and common items, installation,..
 - ⇒ expt. area, support structures, beam pipe, general services, installation, ('C&I')...
- CORE ~ 12 MSF CtC = 3165 kSF
 - ⇒ **Installation** (material, tools, crane drivers, transport, manpower, ...) +2335
 - ⇒ **experimental area** (+755), services (+170), vacuum chamber (+320)
 - ⇒ L3 magnet repair/upgrade (+207)
 - ⇒ support structures (- 585)
 - ⇒ FMD/T0 (+200) (previously Greek responsibility)
- reasons for the cost increase
 - ⇒ sign. **increase in complexity and size** of services, infrastructure and integration
 - ★ from 'conceptual design' in TP to final design in TDR's
 - ⇒ unforeseen **replacement/repairs of L3** equipment
 - ⇒ **less help** and/or **increased cost of CERN services** ('gray' areas)
 - ⇒ genuine **cost increases**



Summary CtC



● Common Cost: 3.2 MSF

⇒ found **savings** of (only) 1.1 MSF (manpower, smaller control room,

⇒ **ALICE does not separately list C&I and CtC**

☆ included in Common Cost above, i.e. there is no additional C&I funding request !

● Detectors: 3.7 MSF

⇒ found **savings** of 1.1 MSF (pixel, muon absorber)

⇒ **main items**

☆ MoU underfunding 0.8 MSF

☆ muon absorber(missing funds) 1.1 MSF

☆ racks 0.9 MSF

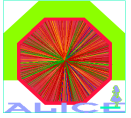
☆ cost increase, forgotten,..... 0.9 MSF

⇒

● Total Cost-to-Completion: 6.9 MSF



Proposal for sharing CtC



- **MoU underfunding** (ITS, 0.825 kSF)
 - ⇒ not responsibility of any FA, no cost increase
 - ⇒ cover from CERN share of CtC (20% of total CtC)

- **Detector specific** (2.9 MSF)
 - ⇒ distributed according to MoU responsibility in detector projects

- **Common items ('C&I')** (3.2 MSF)
 - ⇒ propose to cover ~ 10% (300 kSF) by **extending yearly fee** (5kSF/Institute) to 2006
 - ★ LHC startup now 1 year later
 - ⇒ rest **according to MoU contribution**, except:
 - ★ **CERN**: contributes in MoU 550 kSF more to CF than required 10%
 - ★ **Russia**: use actual funding level (6.5 MSF), not 'nominal value' (13 MSF)



What next ?



● ALICE Cost-to-Completion is 6.9 MSF

- ⇒ reduced CtC by ~ 2 MSF since Oct 2001, as promised
- ⇒ includes MoU underfunding, missing funds, C&I, cost increase in deliverables, forgotten items, ...
 - ✦ any 'foreseable' further variations should be a small fraction of the current CtC
 - ✦ ALICE should be able to absorb these in the available resources
- ⇒ worked out a scheme to treat the different items, as basis for future discussion
 - ✦ MoU underfunding
 - ✦ Detector
 - ✦ Common Items (including 'C&I')

● start consultation with FA's how to address the CtC/C&I issue

- ⇒ **get feedback from FA**
 - ✦ some FA's have indicated their willingness to help within their possibilities
- ⇒ **report back in October 2002**