

PURCHASING FOR THE COLLABORATIONS



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SUMMARY

- Introduction: CERN's role in the Collaborations
- Purchasing via CERN: Cases A, B, C and D
- Memoranda of Understanding:
 - Construction Phase
 - Maintenance and Operation Phase
 - Upgrade Phase
- Recommendations
- Contacts



INTRODUCTION

CERN has a dual role in the Collaborations: It is the Host Laboratory and a Collaborating Institute.

As Host Laboratory, CERN provides essential services:

- **Particle beams and related equipment:** shielding, monitoring equipment etc.;
- **Space:** floor space in experimental areas, laboratory, hall, office space, storage space etc.;
- **General infrastructure services:** assistance in installation and removal of detectors, transport of equipment, cranes, mains electricity, water, telephones and telephone lines etc.;
- **Central computing resources**
- **Administrative services in financial matters:** in accordance with the CERN Financial Rules.



PURCHASING RULES

- CERN Purchasing Rules and Procedures apply to all contracts placed by CERN for the Collaborations;
- The extent of application of the rules depends on the involvement of CERN funds;
- Four cases have been identified in the document:
“Financial Guidelines for LHC Collaborations” - CERN/FC/3796 and CERN/FC/3796 rev. which has recently been modified to:
“Purchasing Rules and Procedures for all Approved and Recognised Experiments at CERN” (PRAREC).



CASE A

Cases which do not involve CERN's budget and the Collaborations do not desire CERN's involvement

- CERN shall not be the contract partner;
- An institute participating in the Collaboration shall negotiate the contract itself;
- CERN Purchasing Rules and Procedures shall not apply;
- Approval from Finance Committee is not required.



CASE B

Cases which do not involve CERN's budget but the Collaboration or its collaborating institutes request CERN to be the contracting party

- Either the Collaboration selects the firm(s), certifying that the legislation of the country(ies) where Institutes providing the funds are based was followed;
- Or the Collaboration requests CERN to perform the tendering. CERN shall contact firms in the States of the Collaboration.



CASE B cont.

- The selection process shall not be limited to firms in the State(s) providing the funds for the contract;
- However, the Collaboration can request that contract is awarded on condition that at least 50% of the tender value originates from the country(ies) providing the funds for the contract;
- Contract negotiations are conducted by CERN;



CASE B cont.

- General Conditions of CERN Contracts shall apply;
- A condition of non-involvement of Finance Committee is the **transfer of risks and liability** associated with these contracts to participating Institutes;
- The call for tenders shall be issued once CERN has received all the necessary **financial guarantees** from the Funding Agencies concerned.



CASE C

Cases where CERN contributes 100% of the financing

- CERN Purchasing Rules and Procedures shall apply.



CASE D

Cases funded by the Common Fund established by the Collaboration at CERN (and to which CERN contributes)

- CERN shall be the contract partner;
- Call for tenders shall be issued by CERN to firms with a view to achieving a balanced distribution of purchases among all the States of the Collaboration;
- **General Conditions of CERN Contracts** shall apply;
- Contract negotiations are conducted by CERN;



CASE D cont.

- Finance Committee approval shall be required if CERN's contribution exceeds 200 000 CHF (without competitive tendering) or 750 000 CHF (with competitive tendering);
- Where CERN and institutes from CERN Non Member States contribute, the alignment rule and the limitation of tendering to CERN Member States shall be waived;
- The call for tenders shall be issued once CERN has received all the necessary **financial guarantees**.
- Note: This case has also been used for requirements where a subset of Institutes of a Collaboration and CERN have participated in the funding of a deliverable (i.e. mixed funding).



MEMORANDUM OF UNDERSTANDING (MoU)

- An agreement signed between each Institute or Funding Agency of the Collaboration concerned and CERN as the Host Laboratory;
- Defines the programme of work, schedule, distribution of costs and responsibilities amongst the parties;
- MoU is a general document concerning purchasing;
- Not a legally binding document;
- The distribution of responsibilities and costs are monitored regularly by the Collaboration and endorsed by the Resource Review Board (RRB)
- Separate MoUs for different phases:
 - Construction Phase (completed in 2005 and extended until 2010)
 - Maintenance & Operation Phase (2002-2011)
 - Upgrade Phase (2009 -2016) - under discussion.



CONSTRUCTION MoU

- Manpower and financial resources grouped into three headings:
 - a) R&D work on detector elements;
 - b) Costs of the Institutes for infrastructure, personnel, travel etc.;
 - c) Engineering design, prototyping, pre-production, construction, testing, transportation, assembly, installation and commissioning of detector elements in the underground experimental area.
- Resources needed for work under a) and b) are the responsibility of the Institutes supported by their Funding Agencies;
- Only resources listed under c) are part of the MoU i.e. cover the costs of the detector construction and are monitored centrally by the Collaboration.



CONSTRUCTION MoU cont.

- The Construction MoU is divided into two parts:

- a) **Common Projects** (Magnet, Infrastructure, Commissioning and Integration):

Items are to be provided at the common expense of the Collaboration in two ways:

- by “in-kind contributions”;
- by cash payments to a “Common Fund” established at CERN;

All contracts for Common Projects placed by CERN in accordance with PRAREC.

- b) **Sub-system construction** (Tracker, Calorimeters, Muon Chambers, Trigger and Data Acquisition):

Responsibility of individual Institutes or groups of Institutes supported by their Funding Agencies to deliver items as “in-kind contributions” within the limits of their funding.

All contracts for the sub-system construction in accordance with Cases A, B and C of PRAREC.

38 Countries, 183 Institutes, 3000 scientists and engineers (including 400 students)

TRIGGER, DATA ACQUISITION & OFFLINE COMPUTING

Austria, Brazil, CERN, Finland, France, Greece, Hungary, Ireland, Italy, Korea, Lithuania, New Zealand, Poland, Portugal, Switzerland, UK, USA

TRACKER

Austria, Belgium, CERN, Finland, France, Germany, Italy, Japan*, Mexico, New Zealand, Switzerland, UK, USA

CRYSTAL ECAL

Belarus, CERN, China, Croatia, Cyprus, France, Italy, Japan*, Portugal, Russia, Serbia, Switzerland, UK, USA

PRESHOWER

Armenia, CERN, Greece, India, Russia, Taiwan

RETURN YOKE

Barrel: Estonia, Germany, Greece, Russia
Endcap: Japan*, USA

SUPERCONDUCTING MAGNET

All countries in CMS contribute to Magnet financing in particular:
Finland, France, Italy, Japan*, Korea, Switzerland, USA

FEET
Pakistan
China

FORWARD CALORIMETER

Hungary, Iran, Russia, Turkey, USA

HCAL

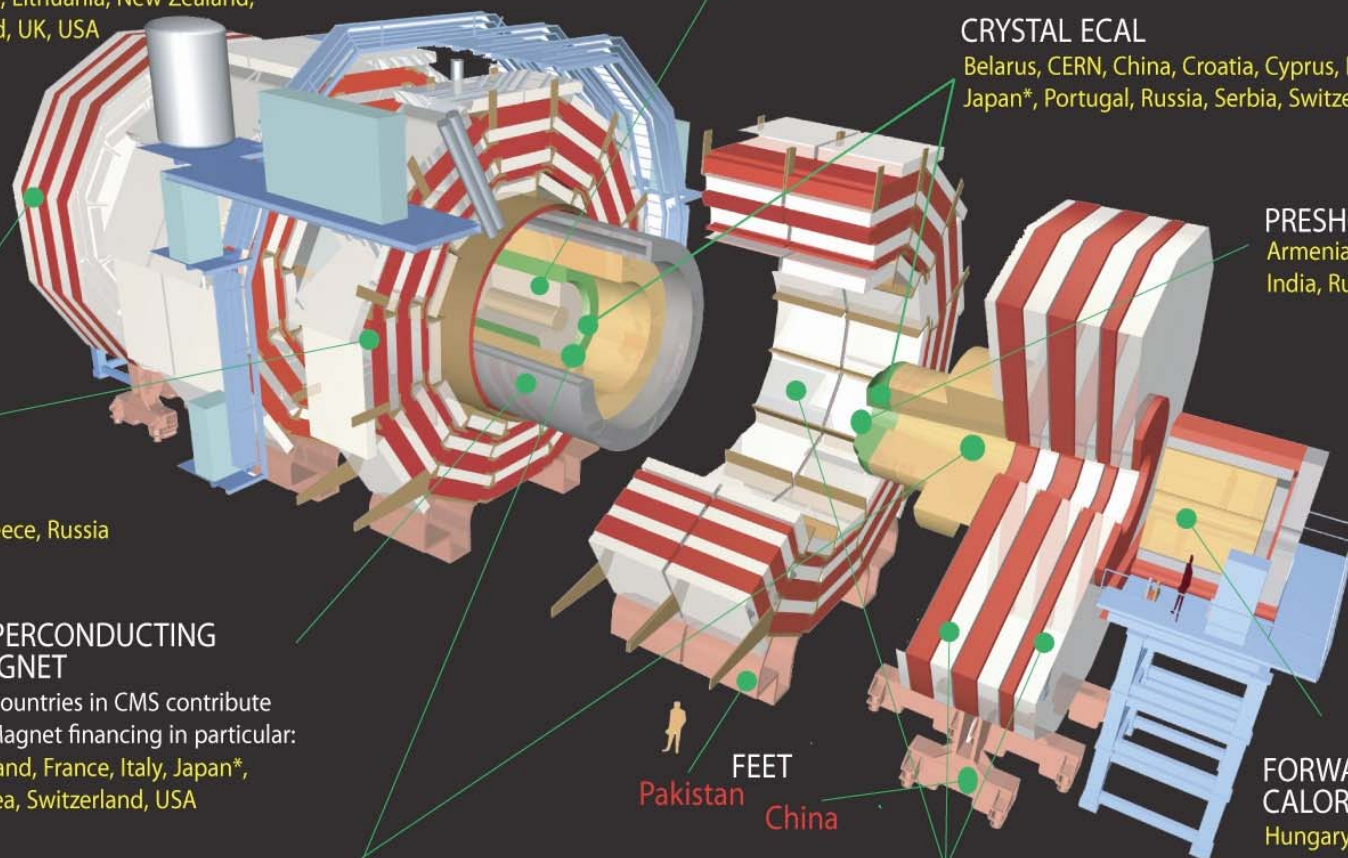
Barrel: Bulgaria, India, Spain*, USA
Endcap: Belarus, Bulgaria, Georgia, Russia, Ukraine, Uzbekistan
HO: India

MUON CHAMBERS

Barrel: Austria, Bulgaria, CERN, China, Germany, Hungary, Italy, Spain,
Endcap: Belarus, Bulgaria, China, Colombia, Korea, Pakistan, Russia, USA

Total weight : 12500 T
Overall diameter : 15.0 m
Overall length : 21.5 m
Magnetic field : 4 Tesla

* Only through industrial contracts



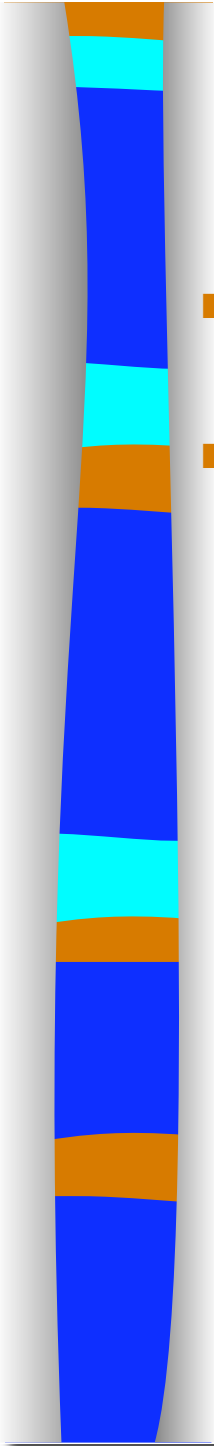


CONSTRUCTION MoU cont.

- ALICE: Sub-system construction: 107 MCHF
Common projects: 12 MCHF
Total: 119 MCHF
- ATLAS: Sub-system construction: 267 MCHF
Common projects: 208 MCHF
Total: 475 MCHF
- CMS: Sub-system construction: 325 MCHF
Common projects: 150 MCHF
Total: 475 MCHF
- LHCb: Sub-system construction: 51 MCHF
Common projects: 24 MCHF
Total: 75 MCHF

Original figures at time of signature of MoUs;
No further major expenditures foreseen under Construction MoUs

M&O MoU

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- Period from commissioning of individual sub-detector components to the first five years of physics data taking *i.e. from 2002 until end December 2011*.
 - The cost items are divided into the following categories:
 - a) **Common Items:**
 - M&O expenses are shared by the entire Collaboration;
 - mainly cash payments to a “Common Fund”;
 - within scope of M&O “Category A”;
 - b) **Sub detectors/systems:**
 - M&O expenses borne by part of the Collaboration *i.e.* responsibility of individual Institutes or groups of Institutes;
 - mainly in-kind contributions;
 - within scope of M&O “Category B”;
 - c) **General maintenance and operation expenses provided by CERN:**
 - paid for by CERN from its operating budget;
 - within scope of M&O “Category C”.



MoU: M&O CATEGORY A

- “M&O A” expenses are shared by the entire Collaboration:
 - Detector-related costs: magnets, detector cryogenics and cooling systems;
 - Secretariat: secretarial assistance, stationary, printing;
 - On-line computing: trigger, data acquisition and data storage;
 - Laboratory Operations: assembly areas, clean rooms, workshops, laboratory instruments;
 - General services: infrastructure (heavy transport, cranes, cars) cooling and ventilation, power distribution system etc.;
 - Electricity: power consumption;
 - Core computing infrastructure (offline computing, user support);
- “M&O A” expenses shared in proportion to the number of scientific staff holding PhD or equivalent qualifications and eligible to be named as authors of scientific publications;
- *All contracts for “M&O A” items will be placed by CERN in accordance with Case D of PRAREC.*



M&O MoU CATEGORY B

- “M&O B” expenses are borne by single Institutes or groups of Institutes supported by their Funding Agencies:
- The headings in “M&O B” are defined in accordance with the Construction MoU;
- In general, an Institute which has delivered a component, in-kind, under the Construction MoU will also contribute to the necessary scientific and technical manpower support, as well as replacement of spare parts, to operate that component and maintain it in good working order;
- If problems arise that require major modifications, responsibility will lie with the Collaboration as a whole.
- *Contracts for “M&O B” items are placed in accordance with PRAREC:*
 - *Cases A, B and C (in case CERN provides the in-kind contribution);*
 - *Case D for ATLAS and LHCb which prefer to collect “M&O B” participations from subsets of institutes as cash payments, similar to the Common Fund, for certain “M&O B” activities.*



M&O MoU CATEGORY C

- “M&O C” includes general maintenance and operation expenses provided to the Collaboration by CERN as Host Laboratory;
- “M&O C” costs are determined by the DG with a view to providing a safe and secure environment for the operation of the detectors:
 - Safety & radioprotection;
 - Radioactive waste disposal;
 - Access system;
 - Elevators;
 - Flood control;
 - Cleaning;
 - Office space.
- *Wherever applicable, services will be provided within the scope of existing service contracts or contracts to be negotiated by CERN in accordance with Case C of PRAREC.*



M&O MoU EXPENSES 2009-2010

- ALICE: M&O A: 7.5 MCHF (Common Fund)
M&O B: 2 MCHF (In-kind contributions)
- ATLAS: M&O A: 16 MCHF (Common Fund)
M&O B: 7 MCHF (Cash contributions – “mini” CF)
- CMS: M&O A: 13 MCHF (Common Fund)
M&O B: 7 MCHF (In-kind contributions)
- LHCb: M&O A: 3.5 MCHF (Common Fund)
M&O B: 1 MCHF (Cash contributions – “mini” CF)

“M&O C” to be paid for by CERN but no figures available at present.

UPGRADE MoU

- Concerns the replacement of specific sub-system items (Inner Trackers, Muon Chambers, Calorimeters and associated electronics) in order to extend LHC running and to increase the luminosity after a long shutdown.
- Either a new MOU for Upgrade of each experiment or an amendment to Construction MoUs (to be decided);
- Upgrade MoUs will be divided into categories similar to the Construction MoUs i.e:
 - a) **Common Projects:** Items provided at the common expense of the Collaboration as:
 - “in-kind contributions”;
 - cash payments to a “Common Fund” established at CERN.
 - b) **Sub-system construction:** Responsibility of individual Institutes or groups of Institutes supported by their Funding Agencies to deliver items as “in-kind contributions” within the limits of their funding.

All contracts will be placed by CERN in accordance with PRAREC.



MoU: M&O UPGRADE

Preliminary Cost Estimates:

- ALICE: 35 MCHF
- ATLAS: 250 MCHF
- CMS: 250 MCHF
- LHCb: 40 MCHF

Preliminary Schedule (ATLAS):

- Upgrade MoUs to be signed: 2009
- Start of Procurement activities: 2010
- Start of Installation: 2014
- Commissioning: 2016



RECOMMENDATIONS

- As information from Purchasing Service does not represent the “global picture” and can only be provided at a late stage of the decision-making process, **early contacts required with the relevant national contact persons of the Collaborations to:**
 - identify future procurement opportunities (tendering not necessarily to be conducted by CERN) and;
 - to participate in “in-kind contributions” from your countries,within the scope of M&O MoUs and, in particular, the Upgrade MoUs.
- **In the case of “in-kind contributions”** the selection of firm(s) can be made either according to the national legislation of the country(ies) where Institutes providing the funds are based was followed or by CERN, in accordance with PRAREC;
- **Regular contacts with the Coordinators of the Collaborations and the CERN Purchasing Service** in order to be kept up-to-date with developments.



CONTACTS

Technical Coordinators

ALICE - Lars Leistam

ATLAS - Marzio Nessi

CMS - Austin Ball

LHCb - Werner Witzeling

Electronics Coordinators

ALICE - Fabio Formenti

ATLAS - Philippe Farthouat

CMS - Magnus Hansen

LHCb - Ken Wyllie

Resource Coordinators

ALICE - Hans de Groot

ATLAS - Markus Nordberg

CMS - Achille Petrilli

LHCb - Olav Ullaland

Purchasing Service

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