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Action to be taken

Voting Procedure

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**ACTION PLAN AND TIME TABLE FOR THE
IMPLEMENTATION
OF THE EXTERNAL REVIEW COMMITTEE'S
RECOMMENDATIONS**

Following the External Review Committee's (ERC) Report (CERN/2444) and Council's statement after the discussions in the June 2002 Committees, the Management presents in this document an Action Plan and a time table, aiming at coherent detailing and implementation of the recommendations of the ERC.

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FOREWORD

This document contains an Action Plan and a time table for the implementation of the Recommendations of the External Review Committee (ERC).

Fully subscribing to the statement of Council in June, the Management would like to explicitly express its gratitude for the work done by the ERC. The review performed by the ERC was a key element in the process to finding a way out of the crisis, started by the Cost-to-Completion exercise for the LHC.

The Medium-Term Plan 2003-2006 (with a projection up to 2010), presented in June 2002, and this Action Plan are intended to provide a coherent package of concrete steps to adapt CERN to the needs of this decade, during which the construction and successful operation of the LHC will be the centrepieces.

The Management would once more like to acknowledge the dedication and commitment shown by CERN staff. Many difficulties have been faced and others are still in front of us. The way in which CERN and its staff have been able to solve certain problems and adapt to new circumstances and needs, makes the Management confident that we can overcome the difficulties still ahead of us and put this plan into real action.

1. INTRODUCTION

A year ago, the detection of a sizeable cost overrun in the overall LHC Project prompted an in-depth analysis of the organization and functioning of CERN and of the way the LHC Project is executed. Investigations on these issues have been carried out at CERN by the Internal Audit Service and by five ad hoc Task Forces. An External Review Committee was appointed by Council in December 2002, chaired by Dr. R. Aymar.

The External Review Committee (ERC) presented its Report to the CERN Council (CERN/2444) in June 2002.

The Council decided to accept the ERC's recommendations on a wide range of issues, including the LHC and non-LHC Programmes, managerial structure and human resources policy, considering them as a well-balanced set of measures for the future of CERN. The Council noted that the ERC's recommendations were coherent with the reports of CERN's internal Task Forces, the new LHC Status Report and the Medium-Term Plan presented by the Management at this June 2002 meeting.

It was agreed that the Management would prepare for September 2002 an Action Plan and a time table aiming at coherent detailing and implementation of the ERC's recommendations in a short time frame. The Action Plan presented here is a continuation of the actions presented in the document "Comments by the Management on the External Review Committee's Recommendations" (CERN/FC/4566-CERN/CC/2445) and the Medium-Term Plan (CERN/SPC/811/Corr. + Add. - CERN/FC/4567/Corr. + Add) (hereafter referred to as "MTP 2002"). Last but not least, it takes into account the discussions that took place during the June 2002 meetings.

All the ERC's recommendations are covered in this Action Plan, with some additions and one important exception.

Additions concern issues treated by the ERC but not presented as recommendations, such as giving proper and visible priority to the LHC, the policy of the Fellows, Associates and Students Programme, and the restructuring of the Accelerator Sector, which had already started in early 2002. Its completion by the end of 2002 is of utmost importance.

The ERC has recommended a fundamental re-think of CERN's top management structure, to clarify responsibilities and accountabilities and generally improve its efficiency, presenting two models for a new organizational structure.

The Management believes that its objective should have a restricted horizon both in time and in scope. Its aims are to focus resources on the LHC Project, to put in place the appropriate tools for transparency, proper monitoring and control of the processes inside CERN, to set into motion the savings programme required by the Medium and Long-Term Programme presented in June, and to secure adequate loans to compensate the cash flow deficit of the coming years, associated with the onset of the large scale industrial production. It will be more appropriate for the next Management to take a longer view of the organizational models that might best serve CERN's future needs. We are convinced that the actions presented here

and the organisational measures set in place during the last year (CERN/FC/4538, March 2002) are adequate to cope with the challenging tasks mentioned above.

2. LONG AND MEDIUM-TERM PLANNING

In accordance with the indications given by Council at its June 2002 session, the Management will prepare a proposal for a revision of the 1996 plan concerning the LHC Project ("The Scientific Activities of CERN and Budget Estimates over the LHC Construction period", CERN/SPC/722, CERN/FC/3918), for decision by Council in December 2002. The revision should contain a decision on the new cost-to-completion figures, including a contingency for the LHC Programme, and future contribution levels, including a decision on the indexation method from 2006 onwards. A draft document will be presented for discussion at the Finance Committee meeting in November 2002.

The Medium-Term Plan 2004-2007, to be presented in June 2003, will be based on these framework decisions.

An adaptation of current procedures is needed to decide on the use of the contingency for the LHC Project. The Management proposes to review annually the cost-to-completion of the machine, internally and by an external panel (see § 5.6), for the December Status Report. These measures, when taken together, will permit an annual analysis of risks and will result in the timely identification of any need that might arise for release, after review, of funds by the Director-General and Council from the anticipated 140 MCHF surplus in 2010. This surplus will serve as a contingency and its release will be proposed in the context of the future Medium-Term Plans.

3. FOCUSING CERN ON THE LHC

A first and most important observation of the ERC concerns the need to enhance the priority and visibility given by CERN to the LHC Project.

This issue must be seen in the context of the broad scientific programme carried out by CERN at the time of the LHC's approval. LEP2 was the major programme, but there was also a fully-fledged fixed target programme with neutrino, CP violation, heavy ions, low energy nuclear physics. The phasing out of such a complex programme has been carried out systematically since 1999. The decision in 2000 not to prolong the LEP programme, despite strong opposition, was an important step in this direction. In parallel, there emerged an increased visibility of the LHC with a corresponding increase in the amount of resources dedicated to it by the Laboratory.

The need for a more aggressive approach has been made evident by the cost increases detected by the 2001 review, with respect to the 1996 estimates. Resources had to be allocated to the LHC, first to reabsorb in the CERN operation budget the expenses for the LHC prototyping and, later, to compensate for an important part of the cost increase of the LHC Programme.

Table 1. Fraction of LHC related resources in the materials budget for the years from 1999 to 2003 (data taken from the Annual Accounts).

Year	1999	2000	2001	2002	2003
Fraction of Material Budget	51%	49%	54%	67%	75%

Focussing CERN on the LHC has been essentially achieved along three lines.

1. The Task Forces, established in November 2001, presented contents and costs of the various parts of the CERN activities, thus allowing for a rational choice among the available options. The information given to the CERN staff and to the scientific community has made it possible to enlarge the basis of consensus for the hard decisions that have been subsequently submitted to Council by the Management. **The overall programme envisages the whole of CERN being committed to the LHC Programme, with a limited number of ring-fenced parallel activities being maintained to keep a minimum of scientific diversity (COMPASS, long base-line neutrino beam, low energy antiprotons, low energy nuclear and neutron physics) or to preserve vital options for CERN's future (CLIC and its Test Facility and the design of the front-end of the Super-conducting Proton Linac). This programme is supported by CERN's scientific advisory bodies and has been approved by the Research and Management Boards.**
2. In line with the new set of priorities, **increased responsibilities have been given to the Divisions, which are now fully responsible for administering the LHC Programme resources.** Resources-to-completion have been agreed between the Project Management and the individual Group Leaders responsible for the LHC Work Packages (see section 5) and are placed under the control of the divisional hierarchy, within the Yearly Budget. **Divisions are also accountable for enforcing the savings programme embodied in the Medium-Term Plan, including the ceilings set for Industrial Services.**
3. Finally, as described in more detail in the next section, the Accelerator Sector is being restructured into two Divisions (Accelerator Beam and Accelerator Technologies) from the previous three (PS, SL and LHC) to better suit the needs of LHC construction, installation and operation, and to focus additional manpower resources on LHC construction.

4. RESTRUCTURING OF THE ACCELERATOR SECTOR

Cf. ERC p.18 (1), (2)

The three present Divisions (PS, SL and LHC) of the Accelerator Sector are being reorganized into two Divisions, Accelerator Beams (AB) and Accelerator Technology (AT), effective as from January 1st, 2003, in order to cope in the most effective way with the construction and, later, the operation of the LHC.

The mandate of the two Accelerator Divisions is (i) to operate the CERN accelerator complex, (ii) to build the LHC and upgrade its injector chain, (iii) to build the CNGS facility and (iv) to ensure the continuity of expertise and maintain excellence in their disciplines by contributing also to accelerator R & D.

The new structure is the outcome of the work of Task Force 5, based on a large number of meetings and thorough discussions with Group Leaders, project leaders and other key persons.

The Division Leaders of the new Divisions have been appointed by Council in June 2002. The appointment of the new Group Leaders took place in the course of July and August 2002.

The detailed new budgetary structures and coding are being prepared and will be ready before the end of the year, so that **the new Accelerator Divisions will become operational from January 1st, 2003.**

The AB and AT Divisions will consist of a total of 17 groups (nine and eight groups, respectively), compared to the total of 30 groups in the former PS, SL and LHC Divisions. The new groups consist of typically 40 to 70 staff members, organized in sections of 10 to 20 persons. These larger units allow for an enhanced flexibility for staff redeployment within a field of activity.

Some 15 staff members will be moved to the EST Division to a new group in charge of the installation and hardware commissioning of the LHC. The group will be complemented with some 25 staff from the Technical Sector and will become operational as from January 1st, 2003. Furthermore, it is foreseen in 2004 to regroup the experimental areas presently in the SL, PS and EST Divisions into the EST Division.

The AC unit assisting the Director of Accelerators and the Director of the LHC Project has also been reorganized, strengthening the planning, management and follow-up of resources. An additional position for personnel planning and follow-up has been created, as well as a cost and schedule unit with a direct link to the Director of the LHC Project.

A detailed staff plan for the Accelerator Sector is being worked out, based on the known activities and their subdivision into Work Packages, the reduced physics and accelerator R&D programme and the planned 20% staff reduction from about 900 persons in 2002 to 700 persons by 2007. This plan will be ready by end October 2002 and will be included in the CERN global Human Resources Plan, which will be available by December 2002 (see § 8.3).

5. THE LHC MACHINE AND EXPERIMENTAL AREAS

5.1 Cost Breakdown, Identification of Different Budget Lines

The lines for the LHC machine and its experimental areas budget, the related tests, commissioning, pre-operation, maintenance and operation budget, as well as for the upgrade budget for the injectors, are identified in the MTP 2002. For convenience, the data from this document concerning project and exploitation funding for the LHC and its injectors, along with the associated personnel plan, are reproduced in Annex A1.

5.2 Work Packages / Quasi Contracts

Cf. ERC p.35/36 (1), (2)

The LHC construction work is divided into well-identified Work Packages, each led by a Group Leader and under the responsibility of the divisional hierarchy. This structure was the basis of the 2001 cost-to-completion review. The Status Report of June 2002 (CERN/CC/2443) was, for the machine and experimental areas, structured in this way. After several iterations, **the Project Management and Group Leaders have now agreed on the full budget-to-completion of the Work Packages (Personnel and Materials), as reported in Annex A2. Resources are transferred to the Divisions concerned within the Yearly Budget, and will be managed under the control of the divisional hierarchy.** Within the envelopes shown, adjustments in the distribution amongst activities and over time may, with time, occur.

5.3 Staff Redeployment

Cf. ERC p.18 (1), (2)

A considerable effort has been made to fill a number of urgent staff posts for LHC work by internal mobility.

A shortfall has been identified with activities associated to the follow-up of the manufacturing of the superconducting magnets. Sixteen staff have been redeployed.

As already mentioned as part of the Accelerator Sector restructuring, some 15 staff members, presently employed in the exploitation of the SPS and PS experimental areas, will be moved to the EST Division to a new group in charge of the installation and hardware commissioning of the LHC sectors. The group will be complemented with some 25 staff from the Technical Sector and will become operational as from January 1st, 2003.

Due to the reduced accelerator operation in the years 2003 to 2006 and shutdown during 2005, staff normally concerned by machine operation have become available for the cold reception tests of the series cryomagnet and the originally foreseen call for tenders for industrial support has been cancelled.

The in-sourcing of activities presently foreseen in the LHC cost-to-completion for industrial support type contracts, such as the quality control and acceptance of installation work in the LHC tunnel carried out by contractors, will be considered next. Where appropriate, adequate training will be given to staff to adjust their

competence to the requirements of the LHC equipment installation and commissioning.

5.4 Risk Inventory

Cf. ERC p.35/36 (3)

Responding to the recommendations made by the Internal Audit and by the ERC, **a Risk Assessment Unit has been formed to address technical, commercial and financial issues. The Risk Assessment Unit will keep a Risk Inventory and will report regularly to the Directorate. Its findings will be incorporated into the LHC Status Report presented to Council in December** (see Annex B for terms of reference and composition).

Risk management has always been a key concern of the LHC Project. The more risky contracts are well known to management and fast action has already been taken on a number of occasions when warning signs appeared. The Project tries to protect itself against risk of failure of major contracts by avoiding single sourcing of supply. However, on a number of occasions the commercial benefit of single-sourced contracts, or the need to cope with limited staff, have made it attractive to accept an increased risk.

5.5 Earned Value Management (EVM)

Cf. ERC p.35/36 (4) c)

EVM is a project management methodology originating from the US Department of Defence (DoD), which has been adopted by the Department of Energy (DoE) for large projects. Properly implemented, it allows a clearer picture of the real status of a project concerning cost and schedule variations than that provided by traditional methods.

Implementation of EVM at CERN is a high priority for the LHC Management and a considerable amount of work has already been done. The Administrative Support Division is investing major resources in providing new software tools that are required for the collection and collation of the enormous amount of data needed for EVM, linking financial, purchasing and human resources databases. The LHC Project team is revising the whole Work Breakdown Structure (WBS) of the project to adapt it to the EVM methodology.

A first report on Project Status using EVM principles will be presented to the December 2002 Committees.

5.6 Annual Review Cycle

Cf. ERC p.35/36 (6)

Several Committees monitor periodically the LHC construction. Specific systems are reviewed by ad hoc working groups. Review panels, often containing external experts, are organized on a case-by-case basis to critically review the status of major systems. Examples in the past year are the superconducting cable review committee, the cryostat review and the beam instrumentation review. In-kind contributions are monitored through the appropriate external committees (CERN-USA, CERN-Russia, CERN-Japan, CERN-India and the US DoE reviews), all meeting at least once per year.

The Machine Advisory Committee (MAC) meets twice a year and monitors the technical progress of the machine. Technical progress is reported five times per year to the Scientific Policy Committee.

The LHC Annual Review Committee has been formed to monitor the cost and schedule progress on an annual basis, on the model of the DoE reviews. The LHC Annual Review Committee for 2002 has now been appointed and will meet in late October 2002 (see Annex C for its terms of reference and composition). The results will be incorporated into the Annual Status Report presented to Council in December. On the basis of the annual reassessment of the LHC cost and manpower-to-completion, a proposal on the use of the contingency will be presented to Council and its Committees in the following June.

6. LHC DETECTOR CONSTRUCTION

6.1 Cost Breakdown, Identification of Different Budget Lines

As for the machine, the CERN share of the LHC experiments' construction, installation, pre-operation, and maintenance & operation budgets is identified in the MTP 2002. For convenience, the relevant table of this document is reproduced in Annex D.

6.2 Installation and Integration Reviews

Cf. ERC p. 43 (1)

In response to the ERC's principal recommendation, **there will be annual reviews of the installation and integration plans of each LHC experiment as they move to the installation, commissioning and integration phase**, complementing the other review mechanisms already in place (see Annex E). The first such reviews will be held on 10-11 September (CMS) and on 24-25 September (ATLAS). From 2003 onwards these reviews, extended to ALICE and LHCb, will be linked with the annual LHCC Comprehensive Reviews. The reviews will check the resources coverage, validate the risk analyses for all aspects of the installation, and identify resources from the Collaborations for this phase. The Director for Collider Programmes will chair them. The review teams will comprise the Division Leaders and the Group Leaders concerned from LHC, ST, TIS, EST and EP Divisions, a subset of the LHCC with technical co-ordination experience, and outside experts.

The results of the Installation and Integration Reviews will be presented to the LHCC and the RRB. They will subsequently be incorporated into the LHC Status Report to Council and will contribute to any changes of CERN plans. **These reviews will analyse activities in terms of Work Packages that can be executed by suitably skilled teams made available in a number of ways, in particular from the Collaborations, but also as a result of the 2005 PS and SPS shutdown. The Collaborations have been instructed to prepare their review input in this form.**

6.3 Increased Managerial Role of Technical Coordinators

Cf. ERC p.43 (2)

In response to the ERC's recommendation to strengthen the EP Management role of the Technical Coordinators, **the relevant EP groups have been made directly responsible to the Technical Coordinators.**

The ERC associated with the previous point the need to improve the way in which the EP Division planning process takes account of the experiments' needs. It is worthwhile pointing out in this context the three series of meetings already in place, all of which involve the Technical Coordinators:

- For each experiment individually, the EP Management and the experiment (6/y);
- For each experiment individually, EP Management and the leaders of the experiment's EP groups (6/y);
- EP, ST & EST Managements with the Technical Coordinators of all the experiments together (12/y).

To further strengthen these contacts, Technical Coordinators are invited to the series of bi-weekly meetings of the EP Management and the four CERN Team Leaders in the experiments together.

6.4 Integrated Planning of the LHC Machine, Experimental Areas, and Detector Construction and Commissioning

Cf. ERC p.43 (3)

Since early 2001, there are bi-monthly meetings chaired by the Director-General and attended by the LHC Project Leader, LHC Project Management (Civil Engineering, Components, General Installation and Schedule, Experimental Areas), the Director for Collider Programmes, the Director of the Technical Sector and the Experiment Managements (Spokespersons, Technical Coordination).

In practice, the installation planning of machine and detectors are fairly well decoupled. The main area in which conflicts can arise in future is in the request for common resources (transport, heavy handling) under the responsibility of ST Division and will be coordinated by the latter.

There are also two well-established working groups, the LHC Experiment Machine Interface Committee (LEMIC) and the INB matters in Experiments (INBEX) working group, covering topics that require detailed attention.

6.5 Detailed Planning for the Completion of the Detector Construction

Cf. ERC p.43 (4)

For the next RRB meetings in October, ATLAS, CMS and ALICE have been asked to provide the following information:

- The part of the completion funds already assured by the Funding Agencies and the extra amounts that they have agreed to seek.
- A detailed plan of what is to be done with the funds if only the assured amounts are available and a set of options to use any extra amounts that become available in the future.
- Identification of any staged items for the April 2007 Detector, along with their cost.
- Identification of items deferred to the high Luminosity Detector, along with their cost.

The last two points will be accompanied by a caveat that experience will dictate whether all these particular items need to be implemented or something else. The experiments constitute, after all, a Research Programme, which is influenced by experience and results from other laboratories (e.g. the Tevatron).

7. NON-LHC PROGRAMME

7.1 Scientific Programme

As detailed in Chapter 2.1 of the MTP 2002, the non-LHC scientific programme focuses on a small number of experiments of very high scientific value (see also chapter 3.).

7.2 Fund Raising for New Initiatives - Special Programmes - Links with Other Laboratories

Cf. ERC p.18 (3)

CERN and Institutes working with the CERN facilities and programmes have decades of experience in organising collaborative work in a variety of fields with clear focus, excellent results and well established methods such as peer reviews, appropriate project organisation and financial follow-up.

In fact, the LHC detectors were conceived, developed and are now being put together with 20% of CERN participation, whilst the LHC accelerator has external participation at the level of about 15% and the novel LHC Computing Grid Project aims at a provision of coherent computing resources for the worldwide LHC community at the level of 33% for CERN and 66% distributed over participating countries.

The R&D for all these activities has been or is shared with external institutes, sometimes in collaboration with institutes or institutions from other sciences.

7.3 Relations with the EU

Over recent years, considerable efforts have been made to understand and deepen the relations between CERN and the EU Framework Programmes. With CERN's core business, basic particle physics, being explicitly funded by the Member States, it is out of the question to seek funding for it in the Framework Programmes, with the notable exception of Theoretical Physics. However, areas such as Technology Transfer, R&D for future infrastructures, Computing, Technical Training, Outreach and Education have been identified as fields where the interaction is possible with mutual advantage. These views fit well with the notion of the European Research Area pursued by the present Commission and they have been accepted into the recently approved 6th Framework Programme (FP6), which has also seen a change in the rules of participation, in the sense of removing the barrier towards the International Research Organisations with a European mission.

CERN intends to participate in the FP6 in specific fields of recognised interest for the particle physics community, together with its collaborating institutes and interested external organisations. This will allow the community to continue a well-focussed R&D programme using the combined experience of its partners and with adequate combined resources.

CERN has already expressed interest in R&D work in the fields of GRID computing, accelerators, ionising radiation detector systems and in combinations thereof (<http://www.cordis.lu/fp6/eoi-instruments/home.html>). CERN resources for such R&D activities are identified in the Medium and Long-Term Plan. The involvement of external collaborators and the potentiality of the EU will allow the particle physics community in Europe to enhance its joint R&D capabilities for the future of the field and for the interest of other sciences and industry.

8. HUMAN RESOURCES ISSUES

8.1 Integrated Personnel and Materials Budget ("P + M")

Cf. ERC p.35/36 (4 a, p.44 (1), (6))

The introduction of an integrated Personnel and Materials budget (hereafter referred to as "P+M") will increase cost consciousness and optimise the use of resources, but it will be a complex operation which will require a prolonged effort.

The presentation of the MTP 2002 in a new format was a first step in this direction. The second step in P+M will be to move from staff complements to a personnel budget ceiling. Further proposals will be presented in the context of the Human Resources Plan in December 2002 (see also §8.3).

The cost-to-completion budget for the LHC Work Packages now contains both Personnel and Materials. The possibility of transfers between Personnel and Materials at Group or Divisional level is not yet implemented, but specific proposals are being examined.

8.2 Human Resources Control

A number of immediate actions have been undertaken to implement the savings plan, particularly in the area of Industrial Services, and the improvement of human resources allocations:

1. Certain Industrial Services contracts have been considerably reduced, in line with the recommendation of Task Force 3, and new missions within existing contracts are only authorised in exceptional circumstances.
2. Re-tendering of important Industrial Services contracts, including S072/S073 (technical support) is being prepared, in accordance with new tight specifications.
3. The opening of vacancies for permanent staff posts is restricted, pending the outcome of the manpower planning review.
4. The Human Resources Review Board, which is the forum for preparing personnel and industrial services policy and monitoring the implementation, started work in May 2002.

8.3 Human Resources Plan

Cf. ERC p.44 (3), (4), (6)

In July of this year, the Management launched a CERN-wide manpower planning review for the period 2003-2010, within the overall programme and resourcing framework set out in the present MTP 2002.

In line with the new approach towards P+M management of resources and the new control tools that are being implemented, this review will provide a comprehensive breakdown by activities and by all types of human resources :

- staff members,
- fellows and associates,
- industrial services.

It will also contain estimations concerning the category of 'Locally Recruited Staff' (LRS) which is under study (§. 8.4 below). Furthermore, it will provide the opportunity for optimisation of various aspects regarding the different types of human resources, including:

- a clear time table for the re-tendering/elimination of Industrial Services, manpower contracts,
- identification of potentially lacking skills and the establishment of plans to redress these situations by succession planning,
- achieving the appropriate balance between different professional specialities and types of staff on short-term and long-term contracts.

After preparatory work ensured by the newly-created Human Resources Review Board, detailed analyses were conducted at Divisional level over the summer, and will be consolidated at Sector level by the end of September. Consultations and clarifications of these analyses will be completed in October, providing input required for an in-depth review at a dedicated workshop of all Directors and Division Leaders, which is to be held at the end of October. The outcome of this manpower planning review will serve as the basis for drawing up the Organization's Human Resources Plan in November, which will be presented to the Council in December this year.

8.4 Locally Recruited Staff (LRS)

Cf. ERC p.44 (2)

The concept of LRS, originally put forward by internal Task Forces 3 & 4, met with general support at TREF and the ERC, as reported by their respective Chairmen to the June Committee meetings. This support, however, is subject to the Management pursuing feasibility studies of financial, legal and social security aspects, some of which are quite complex. The introduction of "P + M" and its flexibility is essential for the introduction of such a scheme.

These studies progressed over the summer so that first orientations could be debated at TREF in the Autumn. **The Management aims at presenting a proposal for discussion at TREF in October and the detailed texts of modifications to the Staff Rules & Regulations in November, for approval by the Finance Committee and Council in December this year.**

The time scale is important as it permits implementation of LRS in 2003, in parallel with the adjudication next spring of industrial service contracts replacing present manpower contracts, which would then enter into force in October 2003.

8.5 Mobility

Cf. ERC p.44 (5)

The restructuring of the Accelerator Sector concerns about one third of the staff member population. It is progressing rapidly and final details, including the attachment of all staff members to the new groups, are now being settled to ensure that the new structure will be operational as of January 2003. **The Organization**

introduced a scheme to encourage internal mobility at the individual level – both at the initiative of the Management and of the staff. This new scheme was launched in June, under the auspices of the Human Resources Review Board, for a first series of LHC vacancies. The situation will be assessed at the end of September, before proceeding with an extension of the internal mobility scheme.

8.6 Contract Policy

Recommendations by internal Task Force 4 for modifications of CERN's staff contract policy were presented at TREF in May. This mainly concerns the optimisation and simplification of long-term contract policy and its application, as well as modifications that could be required by the introduction of LRS. The Human Resources Review Board is now in the process of finalising a study of the former aspects, which will be examined according to the internal concertation process. Any resulting modifications to the Staff Rules & Regulations will be presented to TREF later this year.

8.7 Training Plan

Considerable effort is also being invested into re-focussing training and development of the staff. In the light of new requirements, including particular LHC-related aspects, the internal mobility scheme, and the new Merit Advancement and Promotion Scheme, the Organization's training programmes are being adapted accordingly this autumn.

8.8 Policy Concerning Fellows/Associates/Students

The policy presented in the 5-yearly review of the Fellows/Associates/Students (FAS) Programme (CERN/2356), approved in Council's December 2000 session, is being modified in view of the constraints and opportunities which have arisen since then. The major changes are the following:

- A 20% reduction (41MCHF) of the Fellows and Associates allocations is applied from 2003 to 2010 rather evenly across all divisions, with a guideline to minimize the impact on LHC.
- The flexibility in the balance between Fellows and Associates, already mentioned in CERN/2356, has been further facilitated to optimise the efficiency of resources. From now on, two committees held each year will simultaneously select Fellows and Associates, to allow divisions to make the appropriate adjustments.
- Before each session of the Fellows and Associates selection committees, the Divisions' proposals will be scrutinized to ensure that CERN priorities are properly taken into account. If necessary, corrections will be requested.

The new procedure providing for scrutiny of divisional proposals by the Director in charge should reinforce the effectiveness of ensuring priority on the LHC.

CERN will apply for the status of Host Laboratory for EU Marie Curie Fellows as soon as the call for proposals is issued around November 2002. The goal is to increase the number of Marie Curie Fellows at CERN in areas such as : accelerator technology, GRID computing, particle and field theory. **CERN, at the request of**

the EU, will organize and host a Marie Curie Fellow Workshop to be held on 3-4 October 2002.

Some Member States fund specific programmes for their nationals when it is in the best interest of the development policy of these countries and is mutually beneficial to all parties. This concerns the employment at CERN of Students, Fellows, Associates or young engineers. The Management will encourage and organize such initiatives, with a view to significantly increasing this type of funding before the next 5-yearly review of FAS programmes.

9. FINANCIAL ISSUES

9.1 Implementation of the Savings Plan

A severe savings plan was prepared at the beginning of 2002. The MTP 2002 (i.e., table B, page 8) shows a total saving of 512.9 MCHF. The 2003 Preliminary Draft Budget is prepared on the same basis. Related savings recommendations of the Task Forces are taken into consideration. For instance, important reductions in industrial services are being achieved, and the budget for 2003 now foresees some 140 MCHF, which is well below the total expenditure for that heading in 2001.

9.2 Financial Control

Cf. ERC p.35/36 (6)

Several measures to enforce financial control have been put in place at various levels, starting from November 2001.

- 1. The creation of the position of Director of Finance as from 1 July 2002 was approved by the Council in its June Session.** A direct reporting line to the Director-General is now in place, thereby enhancing the control function of Finance. Invitations to tender are cleared by Finance Division before issue. The Personnel Budget is closely monitored by Finance Division including a monthly authorisation of vacancies to ensure that sufficient funds are available.
- 2. An automatic budget control procedure has been activated from the beginning of the year in the financial system** in order to prevent the issue of new orders where the budget could be exceeded. Exceptions are dealt with by the Director concerned and the Director of Finance.
- 3. A thorough review of all outstanding commitments for the LHC has been performed in February/March** A similar exercise will be repeated in September/October, based on the very detailed information collected in the framework of EVM.
- 4. In addition to quarterly reports sent to the Management, Finance Division now sends monthly reports to all divisions.**

9.3 Cash Requirements

A first document CERN/FC/4569 "Cash requirements 2003-2010, information on additional funding resources" was presented to Finance Committee and to Committee of Council in June 2002. As indicated, CERN will make use of:

- A long-term loan from the European Investment Bank (EIB) from 2003 to 2009/2010.
- Short-term loans and overdraft facilities from various commercial banks.

The first instalment will be needed towards November 2003.

Negotiations are progressing well with the EIB with a view to signing an agreement by the end of 2002, after approval by the Council.

Discussions are also ongoing with commercial banks in order to secure short-term funds covering a number of months every year, during the period concerned.

An up-dated document will be submitted to Finance Committee in November 2002, with a view to approval in December 2002.

The status of the cash-flow position will be reported regularly to Finance Committee.

10. TOOLS

10.1 Programme Project Activity ("PPA") Codes

Cf. ERC p.35/36 (4) b)

A new set of Programme Project Activity ("PPA") Codes has been defined. This scheme will enter into force on January 1st 2003. The MTP 2002 and the 2003 Preliminary Draft Budget have adopted this new breakdown. Amongst other advantages, this allows more coherence between the documents presented to Finance Committee.

10.2 Improvement of the Budget Holder's Toolkit (BHT)

and Contract Follow-Up (CFU)

Cf. ERC p.35/36 (5)

A powerful replacement tool for the Budget Holder's Toolkit (BHT) is being integrated with an enhanced version of Contract Follow-Up (CFU). The functionality available from this combination should fully satisfy the requirements expressed by the ERC. The implementation of this new application, CERN Expenditure Tracking ("CET"), is foreseen for November 2002. The improvements being made in CET and CFU are detailed in Annex F.

10.3 Earned Value Management ("EVM")

Cf. ERC p.35/36 (4) c)

CERN recognizes the need for an integrated project tracking system and has adopted the Earned Value Management (EVM) methodology. A project was launched in May 2002 and the specifications were approved early July. Some further details of the approach are given in Annex G.

The major Milestones will be :

<i>October 2002</i>	1st reporting cycle (test).
<i>December 2002</i>	version 1. pilot run.
<i>During 2003</i>	future versions including increased functionality.

As indicated in chapter 5.5, the implementation of EVM for the LHC Project (machine and experimental areas) is the first priority, but extension to other projects, in particular to CNGS, is already being prepared.

11. CONTROL AND REPORTING

11.1 CERN Programme Controller

CF. ERC P.60/61

The CERN Programme Controller already started his work in December 2001. His main tasks follow from the Terms of Reference approved in November 2001 (CERN/FC/4490/Rev.).

Directly reporting to the Director-General, he monitors whether, at any given time, resources are used in compliance with the agreed plan and whether all saving measures decided by the Management are fully implemented.

He signals problems and risks and advises the Director-General on managerial issues concerning the CERN programme. Particular attention is paid to the appropriate use of Industrial Services and of CERN personnel.

The CERN Programme Controller is assisted by a senior engineer with a broad knowledge of the Organization and its administrative tools and procedures.

The Management considers that the service fulfils its role as required. An enhancement of its mission or an enlargement of the team do not seem to be necessary, taking into account that the tasks of the Programme Controller are complemented by the tight financial control which is exercised by the Director of Finance.

11.2 Management and Control Structures

In March of this year, a package of envisaged measures was presented concerning the management and control structure of CERN (CERN/FC/4538). The changes included, amongst other measures, a sharpening of the internal decision making structure and responsibilities at the top management level by:

- introducing the concept of a Sector Resource Control Director,

- creating the position of Director of Finance,
- introducing a more transparent mechanism for translating the Medium-Term Plan into the Yearly Budgets.
- strengthening the role of Division Leaders as budget holders.

These changes have all now been implemented. The 2003 Budget is prepared in the new framework, which proved to work satisfactorily.

11.3 Independent Audit Committee

Cf. ERC p.60/61

At its last session, Committee of Council established an Implementation Group to submit proposals in September 2002 for the creation of a future Independent Audit Committee (CERN/CC/2457/Draft).

Membership of the Implementation Group is as follows: I. Halliday, GB (chair) M. Bovbjerg, DK, F Gruber, CH, W. Hoogland, NL, and F. Menzinger, IT. The Director-General, the Director of Administration, the Director of Finance and the Head of Internal Audit represent CERN Management.

The first meeting was held on 15 July 2002. During the meeting, draft terms of reference for a CERN Audit Committee were discussed. A further draft, which reflects the comments and suggestions made, will serve as a basis for the second meeting, which is scheduled for 10 September 2002.

11.4 Information to CERN Committees

CF. ERC P.35/36 (7)

New tools and Management methods should **increase transparency and the quality of information** given to Council and its Committees. This should in particular apply to the following documents:

- LHC Status Report.
- Medium-Term Plan.
- Annual Budget .

The format of each of these documents was already changed in 2002.

The LHC Status Report will be presented twice a year instead of once a year. From December 2002 onwards the reporting will also be based on the EVM methodology.

In addition to documents already provided, information will be given on specific financial issues:

- Reports on the cash position of the organization including borrowing requirements (4/y),
- The preliminary probable out-turn of the Budget (1/y).

These documents will be complemented by the reports of the External Auditors and of the Independent Audit Committee.

12. CONCLUSION

In this document, the Management presents an Action Plan and a time table aiming at coherent detailing and implementation of the ERC's recommendations.

Following discussions in the Finance Committee and Committee of Council in September, a final version of the Action Plan will be submitted to Council in December 2002.

ANNEX A1

LHC MACHINE & AREAS PROGRAMME

	PAST	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total 02-07
LHC Construction											
Machine construction	873.9	324.5	480.3	495.1	413.3	288.4	100.6	.	.	.	
Personnel	306.5	67.7	71.5	71.	68.	66.5	2.	.	.	.	346.6
Materials	567.4	256.8	408.8	424.2	345.3	221.9	98.6	.	.	.	1755.6
Exp. Areas Construction	195.1	59.6	51.8	30.1	1.	1.1	1.4	.	.	.	
Personnel	24.1	.4	1.	.5	1.	1.1	1.4	.	.	.	5.4
Materials	171.	59.2	50.8	29.5	.	.	.	.	.	.	139.5
In-Kind Contribution	267.6	79.2	54.7	18.	17.8	6.3	.	.	.	.
Personnel	.	.	.	.	.	.	.	.	.	.
Materials	267.6	79.2	54.7	18.	17.8	6.3	.	.	.	.	175.9
LHC Tests, .., Pre-ops, M&O	76.1	17.9	34.6	41.2	60.	54.7	135.4	131.4	135.3	135.7	
Personnel	37.7	.5	1.6	3.1	15.2	10.6	74.6	69.4	69.8	69.5	105.7
Materials	38.4	17.41	33.	38.1	44.7	44.1	60.8	62.	65.5	66.2	238.2
<i>included under Materials:</i>											
<i>Operation</i>		10.4	11.4	18.1	27.1	32.9	43.4	62.0	65.5	66.2	
<i>Supplement. infrastructure</i>		7.0	21.6	20.0	17.6	11.2	17.4	.	.	.	
Technical support		31.3	31.6	31.2	31.5	22.6	14.1	22.6	22.7	22.6	
Personnel		31.3	31.6	31.2	31.5	22.6	14.1	22.6	22.7	22.6	162.2
Materials		.	.	.	.	.	.	.	.	.
TOTAL LHC Machine & Areas	1412.7	512.5	652.9	615.6	523.6	373.1	251.5	154.	158.	158.3	
Personnel	368.3	99.9	105.6	105.8	115.7	100.7	92.1	92.	92.5	92.1	619.8
Materials	1044.4	412.6	547.3	509.8	407.8	272.3	159.4	62.	65.5	66.2	2309.2

Over 2002-2007 the planned materials total amounts to 2309 MCHF, not including contingency estimated at 140 MCHF in MTP 2002.

The ERC assumes a 200 MCHF "margin of risk" and 29 MCHF "items staged". Apart from these differences, the two estimates are in agreement.

Over the same period, the planned personnel total amounts to 620 MCHF (some 5 MCHF above the 615 MCHF quoted in the ERC Report, due to additional staff made available to LHC by the 2005 PS shutdown).

LHC INJECTORS (MCHF, 2002 Prices)

	Past	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total 02-07
LHC Injectors											
Personnel		17.4	19.5	18.9	13.6	6.3	4.6	4.3	4.3	4.3	
Materials		10.4	10.6	9.2	8.1	4.6	4.3	4.3	4.3	4.3	
		35.2	7.	8.9	9.6	5.5	1.8	.3	.	.	33.1

ANNEX A2. LHC Machine Budget-to-Completion – Breakdown into Work Packages

LHC MACHINE HARDWARE, INSTALLATION & EXPERIMENTAL AREAS COST-TO-COMPLETION, Excluding Prototyping

			MCHF	F.T.E.
Div.	Groupes	Systemes	Materials	Staff
AC	AC-DI	- Technical Coord.	39.5	226
AC Total			39.5	226
EST	EST-ISS	- Informatics system	0.1	61
EST	EST-LEA	- Infrastructure	19.9	198
EST	EST-ME	- Mechanical Equip.	24.7	625
EST	EST-SM	- Surface & materials	0.0	98
EST	EST-SU	- Survey	20.4	129
EST Total			65.1	1111
IT	IT-CS	- Infra communications	0.9	20
IT Total			0.9	20
LHC	LHC-ACR	- Cryogenic system	361.4	344
LHC	LHC-CRI	- Magnets system	187.8	115
LHC	LHC-DLO	- LHC Division L. office	1.7	74
LHC	LHC-ECR	- Cryogenic system	5.3	65
LHC	LHC-IAS	- Industrial controls	10.4	154
LHC	LHC-ICP	- Magnets system	246.8	221
LHC	LHC-MMS	- Magnets system	1,114.1	427
LHC	LHC-MTA	- Magnets system	20.1	201
LHC	LHC-VAC	- Vacuum	99.0	256
LHC Total			2,046.6	1856
SL	SL-AP	- Accelerator physics	0.2	99
SL	SL-BI	- Beam instrumentation	46.7	121
SL	SL-BT	- Beam dump	45.4	122
SL	SL-CO	- Controls	10.4	98
SL	SL-CT	- R F (CT, ECT, HRF)	40.3	207
SL	SL-DI	- SL Division L. office	1.3	13
SL	SL-MR	- Main ring	1.8	99
SL	SL-MS	- Magnets system	74.1	106
SL	SL-PO	- Power converters	74.1	219
SL Total			294.2	1084
ST	ST-CE	- Civil engineering	427.1	160
ST	ST-CV	- Cooling	107.0	175
ST	ST-EL	- Power distribution	58.2	149
ST	ST-HM	- Handling & manutention	20.5	42
ST	ST-MA	- Alarm & Access	10.4	80
ST Total			623.2	606
TIS	TIS	- Radiation control	7.2	154
TIS Total			7.2	154
Grand Total			3,076.7	5057

ANNEX B. Risk Assessment and Management Unit for the LHC Construction (machine and experimental areas)

Purpose

- Identify and assess risks concerning cost and schedule of LHC construction,
- Identify the options available to react to the risks and assess their impact on LHC cost and schedule,
- Identify the early signals that indicate the need of action by LHC and CERN Management and, in case, propose a range of possible actions,
- Function as a Crisis Unit in case of emergencies, with additional members if needed.

Composition:

- Horst Wenninger (Convenor)
- Pierre Bonnal (for the LHC Project Management)
- Theodor Tortschanoff /LHC magnet group
- Anders Unnervik /SPL
- Patrick Geeraert /FI

Reports to CERN Directorate

Keeps a register of the risks

Makes one annual report for the December LHC Status Report

ANNEX C. Annual LHC Cost and Schedule Review

J. Peoples (Chair, FermiLab)
M. Pannier (Finance)
M. Harrison (RHIC)
Wrulich (PSI, light sources)
Cox (Culham, fusion)

Start : October 21, 2002

Style: DoE reviews

Aims:

- update cost-to-completion, in standardized form
- recommend use of contingency
- assess schedule

ANNEX D. Cost of the LHC Detector Construction (CERN share) :**CERN Share of LHC Detector Construction and Operation
(MCHF, 2002 prices)**

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Detectors Construction + C&I									
ATLAS	34.9	53.5	25.8	19.4	18.8	10.6	.	.	.
Personnel	19.7	21.5	19.6	18.6	18.4	10.6	.	.	.
Materials	15.2	32.	6.2	.8	.4	.	.	.	.
CMS	32.7	42.9	28.6	22.4	19.2	11.	.	.	.
Personnel	19.2	20.9	19.2	18.3	18.1	10.5	.	.	.
Materials	13.5	22.	9.4	4.1	1.1	.5	.	.	.
ALICE	15.6	16.6	12.9	11.8	9.7	5.5	.	.	.
Personnel	9.1	10.1	9.5	9.4	9.1	5.4	.	.	.
Materials	6.5	6.5	3.4	2.4	.6	.1	.	.	.
LHCb	10.8	14.1	12.	10.7	8.6	4.6	.	.	.
Personnel	8.3	8.6	8.	7.9	7.7	4.3	.	.	.
Materials	2.5	5.5	4.	2.8	.9	.3	.	.	.
TOTEM	.5	.6	.4	.3	.3	.2	.	.	.
Personnel	.3	.5	.3	.3	.3	.2	.	.	.
Materials	.1	.2	.1	.	.	.	.	.	.
Common Construct., C&I, M&O	23.6	30.3	29.8	27.8	25.8	49.7	75.8	75.7	76.1
Personnel	6.3	6.8	6.3	6.1	6.	31.	61.3	61.3	61.4
Materials	17.3	23.5	23.5	21.7	19.9	18.7	14.5	14.4	14.7
TOTAL LHC Detectors	118.	158.1	109.5	92.4	82.4	81.6	75.8	75.7	76.1
Personnel	62.9	68.4	62.9	60.5	59.5	62.	61.3	61.3	61.4
Materials	55.1	89.7	46.6	31.8	22.9	19.6	14.5	14.4	14.7

**Common Construction, C&I, M&O
(Materials, MCHF, 2002 prices)**

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Construction		0.8	1.3						
C&I		2.0	1.3						
Compensation from LHC machine		1.1	1.1	1.1					
Teams ops + M&O	17.3	19.6	19.8	20.6	19.9	18.7	14.5	14.4	14.7
Total Materials	17.3	23.5	23.5	21.7	19.9	18.7	14.5	14.4	14.7

ANNEX E. Existing Review Mechanisms for Detector construction.

The experiments are regularly reviewed both financially and technically:

Resource Review Board (RRB) - financial review:

Function: Reviews financial status and projections, approves Memoranda of Understanding and budgets.

Meeting frequency: 2/year (April & October). Half day plenary, half day on each experiment. The April meeting hears presentations of the preliminary budget for the next year and the book-closing of the previous year. The October meeting agrees the budget allocations for the following year.

Membership: Funding Agencies - those involved with each experiment (all for plenary). CERN - Research Director for Collider programmes (Chair), Head of Finance, EP Division Leader, LHCC Scientific Secretary (see below), Management of each Collaboration. Others may be invited according to the agenda. The CERN Programme Controller has now been added as member, in view of his role in watching over the focus of the Laboratory's activities.

Topics at each meeting: Experiment progress (emphasising resource aspects) progress with projects funded in common by the agencies, proposals for in-kind contributions, financial problems, report from the LHCC on the technical status, status of Collaboration accounts at CERN, as well as approval and monitoring of budgets for construction, Commissioning & Integration (C&I), and Maintenance & Operation (M&O). To aid evaluation of C&I and M&O estimates, the RRB has appointed a Scrutiny Group that reviews annually in the summer the experiments' estimates for the following year and reports to the October RRB meeting.

LHC Committee (LHCC) - technical review:

Function: Reviews technical choices and progress, reports to the Research Board and makes recommendations to that body (e.g. for approval of technical choices).

Meeting frequency: 6/year. 2 days, split between plenary and closed sessions and 2 further days devoted to reviews of experiments as detailed below.

Membership: Appointed by the Director-General.

Method of working: From its members, the LHCC has appointed referees for each experiment, who report to LHCC meetings. It reviewed the experiments' Technical Proposals and has continued to review the more detailed Technical Design Reports (TDRs) for individual sub-detectors. It also reviews R&D projects associated with the experiments and plans for test beam use. To help it in its work, it has appointed a Cost Review Group (CORE) that checks the costs assigned to individual detector parts (deliverables), a Magnet Advisory Group (MAG) and a group of consultants (LCG) to assist the referees with particular tasks. The LHCC regularly reviews also progress of broader activity areas in the experiments, e.g. tracking or trigger. As each experiment reaches the phase with all sub-parts in construction, the LHCC has begun to hold annual in-depth Comprehensive Reviews, covering all aspects of the work over a period of two

days. The first such reviews took place for ATLAS in July 2000, for CMS in October 2000 and for ALICE in January 2001. For LHCb they will start in 2003. The outcome of all reviewing (particularly the Comprehensive Reviews) is reported to the RRB.

Other review mechanisms

In addition to these two main review mechanisms, experiment progress is reported annually to Council in December. The Director for Collider Programmes also meets each month with the Managements and CERN Team Leaders of each experiment (separately). For LHC Computing a separate RRB has been established. The LHC Computing Grid (LCG) project reports its progress to it, emphasising resource aspects. Technically, the LCG is guided by a steering committee (SC2). A Project Overview Board (POB) is also being created, of which the kernel (mini-POB) is already functioning.

ANNEX F. Improvements made to the Budget Holder's Toolkit ("BHT") and Contract Follow-Up ("CFU").

During 1992-2002 **BHT** provided means of examining expenditure in the financial system. BHT was however very budget-code-centric, i.e. it focused on expenditure predominantly from a budget-holder's perspective. With the large scale of the LHC Project and the numerous contracts associated with LHC it is clear that CERN requires a tool which, in addition to existing BHT functionality, provides for:

- Focus on the full contract lifecycle (incorporating information from CFU);
- Analysis of the consequences of technical/schedule changes on contractual commitments;
- Improved pluri-annual reporting;
- Differentiation between budget-code payments and payments made on invoices;
- Combination of financial & non-financial data to assist in helping re-alignment of commitments/cashflow forecasting;
- Broader range of financial reporting covering purchasing & finances' requirements in addition to those of the Divisions;
- Earned Value reporting.

The application **CERN Expenditure Tracking (CET)** is the replacement tool for BHT, which not only allows powerful analysis of the past but assists in forecasting the future.

Milestones

<i>August 2002</i>	1st test version covering full-contract lifecycle & enhanced multi annual reporting.
<i>September 2002</i>	2nd test version including Earned Value reporting capabilities.
<i>November 2002</i>	production CET released, replacing BHT.

The **CFU** application is available since 1998 and allows the entry and maintenance of data related to contracts and its related upstream purchase procedures (Divisional Requests, Market Surveys, Price Enquiries and Invitation to Tenders), allowing traceability of all elements of decision for the attribution, amongst others, of the LHC contracts. In addition to the management of data, CFU allows the storage of all electronic documents related to contracts. These data and documents are shared by all parties involved in the establishment of contracts, under the main responsibility of the Supplies, Procurement and Logistics (SPL) Division.

In order to improve data quality, a major effort has been made during the summer across all divisional Purchasing Offices to follow common internal procedures and ensure a timely and correct input of contract data. Training sessions have been organized by SPL, with the technical support of the AS Division. In collaboration

with SPL and the AS division, the contents of the online help facilities have been reviewed and updated to reflect SPL internal procedures.

CFU has been extended to include a module for the financial management of contract milestones (CFM). This module allows Budget Holders and Planning Officers in the LHC or in experiments to create a financial planning of their contract and to automatically transfer this planning into the accounting information system. This functionality ensures the quality of the data, which is transferred into the accounting application in addition to coherence with the contract information maintained in CFU. A CFU data warehouse has been created, which provides coherent and extensive contract related data to AIS applications such as PPT, CET and EDH. The CFU application now features reporting facilities on divisional requests and contracts used by the Divisions and SPL to manage all Purchase procedures. Finally an automated data quality control mechanism under implementation will alert the necessary authorities of potential data problems, thus ensuring the optimum quality of the CFU data.

Milestones

<i>August 2002</i>	Data loading of all contracts financial planning from Qualiact into CFU; Production release of the CFM module of CFU.
<i>September 2002</i>	Production release of CFU3.2 including modifications requested by SPL; Integration of the data quality management system for CFU.

ANNEX G. Earned Value Management.

For the LHC Project the difficulty resides in the fact that the Project is half way, and that the deadline for obtaining meaningful information from this system is set to be end 2002.

Maximum use is made of existing systems and components. The software will be based on the infrastructure and project tracking system already in place for the CMS and ATLAS collaborations. The application is a Web-based collaborative project tracking system, tightly integrated with CERN's ERP (Enterprise Resource Planning) systems. It will provide for data collection of work performed, allowing for comparisons with budget and schedule thus providing reporting according to the EVM methodology. Development and implementation work is being performed in three parallel tracks:

- Population of a networked and resource loaded work breakdown structure (WBS) covering the entire project.
- The implementation of a set of functions to collect progress information from the project managers supported by a repository to store work unit, deliverable, breakdown structure and scheduling information.
- Reporting in line with the EVM methodology, which is being implemented along various breakdown structures (organizational hierarchy, project breakdown structure, WBS).

Milestones:

<i>September 2002</i>	Data captured for a significant percentage of the planned value of the project. Minimal Functionality for capturing and keeping the EVM repository up to date.
<i>October 2002</i>	First reporting cycle (test).
<i>December 2002</i>	Version 1 pilot run.
<i>during 2003</i>	Future versions including increased functionality.