



LHCb

06 August 2013

**Minutes of the 30th LHC Resource Review Board Meeting
(CERN, Geneva, 17th April 2013)**

Present

L. Serin (CNRS/IN2P3, France)
 R. Le Gac (CNRS-IN2P3, France)
 D. Vilanova (CEA/IRFU, France)
 H. Mahlke (BMBF, Germany)
 H. Prasse (Federal Ministry of Education and Research, Germany)
 U. Uwer (University of Heidelberg, Germany)
 A. Zoccoli (INFN – Sezione di Roma, Italy)
 F. Bedeschi (INFN, Italy)
 G. Passaleva (INFN – Sezione di Firenze, Italy)
 A. van Rijn (NIKHEF, The Netherlands)
 J. Królikowski (University of Warsaw, Poland)
 F.D. Buzatu (Institute of Atomic Physics, Bucharest, Romania)
 R. Muresan (IFIN-HH National Institute of Physics and Nuclear Engineering, Romania)
 A. Petrov (Permanent Mission of Russia in Geneva)
 V. Savrin (Moscow State University, Russia)
 V. Shevchenko (Kurchatov Institute, Russia)
 F. del Aguila ((Ministry of Economy and Competitiveness, Spain)
 B. Adeva (University of Santiago de Compostela, Spain)
 P. Fischer (Swiss National Science Foundation, Switzerland)
 O. Schneider (EPFL Lausanne, Switzerland)
 G. Blair (STFC, United Kingdom)
 A. Medland (STFC, United Kingdom)
 C. Parkes (University of Manchester, United Kingdom)
 S. Gonzalez (National Science Foundation, United States of America)

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P. Campana, C. D'Ambrosio, R. Forty, T. Gershon, R. Lindner, M. Pepe-Altarelli, B. Schmidt, A. Schopper

CERN

S. Bertolucci, P. Bloch, S. Foffano, T. Lagrange, R. McLaren, J. Salicio Diez, E. van Hove

Scrutiny Group

C. Touramanis, E. Iacopini

Excused

A. K. Maciel (RENAFAE, Brazil), F. Linde (NIKHEF, The Netherlands), E. Tsesmelis (CERN)

Documents can be found in the RRB indico pages; accessible via the LHC-RRB home page <http://cern.ch/committees/all/welcomeLHCRRB.html>

1. Introduction. S. Bertolucci, Director of Research and Scientific Computing.
S. Bertolucci welcomed delegates to the LHCb LHC Resource Review Board.

2. Approval of the minutes of the last meeting. S. Bertolucci, Director of Research and Scientific Computing.

The minutes of the last RRB CERN-RRB-2013-005 were approved without comment.

3. Status of the experiment and of the LHCb Upgrade. P. Campana, spokesperson CERN-RRB-2013-036 (report), CERN-RRB-2013-044 (Upgrade), CERN-RRB-2013-039 (presentation).

P. Campana's presentation focussed on the following topics:

- Tasks scheduled for the LS1
- Computing: recent production activities
- LHCb results in fall 2012
- The LHCb Upgrade
 - Status
 - LHCb detector modifications for the upgrade
 - Cost estimate from FTDR (CORE)
 - Economic requests to Funding Agencies
- Collaboration matters

He concluded that:

- Thanks to LHC performances and an efficient running, LHCb has collected $\sim 3/\text{fb}^{-1}$ in (pp) and $\sim 2/\text{nb}^{-1}$ (pA) in LHC Run 1
- LHCb accounts (already with $1/\text{fb}^{-1}$) for several world's best on a variety of measurements : φ_s , Δm_s & Δm_d , $B_s \rightarrow \mu\mu$, γ , D-D mixing, CPV in charm, ...
- pA physics is dawning at the horizon of LHCb with very interesting perspectives
- We are preparing 2015 with a lot of activities in the pit and outside, to improve our physics reach already in Run II
- The LHCb upgrade will contribute significantly to a full exploitation of LHC and to increase the opportunities of New Physics discovery in the next decades
- Entering the hot and challenging period of technological reviews and choices
- Hoping (and expecting) full support on upgrade from all LHCb Funding Agencies

A. Zoccoli explained that the economic challenges in Europe were imposing boundary conditions on their budget. He stated that whilst the Italian Funding Agency was supportive of LHCb, it was also participating in other experiments and the budget is common. A global view of all the Upgrades would be extremely useful in order to allocate, in the best way, the limited resources. Italy is committed to the LHCb Upgrade and they are discussing the envelope of the funds. More information on the spending profile would provide added

flexibility to the Funding Agencies. Referring to the table of requests to Funding Agencies (slide 31), the total request is ~ 60 MCHF. He understood that ~70% of the funds were committed. He asked if there was a strategy to deal with the situation if the remaining 30% of the requested funds were not forthcoming.

P. Campana replied that he hoped the 70% would increase. One area that could be staged was the online system; a reduction in bandwidth could save between 5 and 6 MCHF. Also the introduction of new technologies, for example the move from Gigabit Ethernet to InfiniBand, could decrease costs.

A. Zoccoli asked if radiation hardness was a problem for the Silicon multiplier. P. Campana replied by showing the Fiber tracker viability assessment (see slide 27).

A. Medland congratulated LHCb for their impressive results and for the progress made on future plans. Looking towards the Upgrades, he remarked that there was a need for an optimal balance between delivering science and the available resources. Over the next five years, it would become increasingly difficult to maintain the level of funding needed for M&O, for increased computing resources and for detector Upgrades. These investments must be managed across a program which includes the other experiments. To allow Funding to be tensioned between competing requirements, it is important to understand the Upgrade plans and priorities in terms of the overall scope, cost and schedule. CERN, working with the experiments, should develop a coherent set of scientific and technical scenarios that can be adapted to fit future funding availability.

S. Bertolucci replied that, at the next RRB in October, there would be a presentation of the general scenario of our understanding of the Upgrade plans of all experiments. However, it is important to keep in mind that the timelines of the experiments are very different. ALICE and LHCb are planning only one Upgrade and have different levels of maturity compared with ATLAS and CMS. In addition, delays to the LHCb Upgrade would be particularly detrimental in terms of cost and motivation.

The Russian delegation congratulated the collaboration for their impressive results and work on the Upgrade program. It was felt that the Russian Federation had a clear view of the technical contribution and of the financial resources required. Currently they cannot pledge an exact sum of money but they are committed to the planning and implementation of the Upgrade.

S. Gonzalez added his congratulations and noted that US National Science Foundation (NSF) has increased the number of institutes participating in LHCb. He added that NSF will work with institutes and the LHCb management to define a scope for possible future US contributions. However these will be subject to review by the NSF.

4. LHCC Deliberations (paper only). S. Bertolucci, Director of Research and Scientific Computing (replacing E. Tsesmelis, LHCC Scientific Secretary).
CERN-RRB-2013-037

The LHCC considers that LHCb has made excellent progress in all aspects of the experiment and the Committee congratulates the LHCb Collaboration on its achievements.

The LHCC also congratulates the LHCb Collaboration for its success in being compliant with the upgrade milestones and hopes that this continues smoothly also in the very busy schedule expected next year.

5. Financial matters. T. Lagrange, Head of CERN Finance and Procurement Department
CERN-RRB-2013-038 (report), CERN-RRB-2013-052 (presentation)

T. Lagrange presented the updates to the Financial Report.

Outstanding contributions for the Construction Common fund are 13.7 kCHF from Ukraine.

The M&O-A account had received additional contributions from Germany (BMBF), Poland, United Kingdom, CERN, Brazil and the Ukraine totalling 1 MCHF. The outstanding M&O-A contributions from member states for 2013 stands at 1 MCHF with 123 kCHF outstanding from previous years. For non-Member States, an amount of 649 kCHF is outstanding for 2013 and 328 kCHF for previous years.

6. Construction Budgets. C. D'Ambrosio Resource Coordinator.
CERN-RRB-2013-040 (report). CERN-RRB-2013-041 (presentation)

C. D'Ambrosio reported that, at end February 2013, the Common Fund stood at 89 KCHF with 388 kCHF still uncommitted.

Most of the Core spending came to an end in 2006. Purchasing for DAQ and data storage has continued throughout 2010 with the 3rd “tranche” of the FARM, which has been achieved in December 2010 and which has been funded by Core and non-Core resources. No institute indicated that it has additional requests for funds to be presented to the RRB.

7. M&O Budgets. C. D'Ambrosio Resource Coordinator.

Turning to M&O A, D'Ambrosio gave a summary and forecast for M&O A budget, by sub-system, for the years 2008 – 2016. He then highlighted the main cost drivers in 2012 and gave details of the expenses. The book closing at the end of 2012 showed a budget of 2.5 MCHF, 13 kCHF of which had not been spent.

Continuing his presentation on M&O A the Resource Coordinator gave a breakdown, by Funding Agency, for the 2013 budget and for the preliminary budget for 2014.

D'Ambrosio concluded that the M&O Cat A budget has again shown to be well balanced over the recent years and after our second year of full operation. For the near future, we do not expect large fluctuations of the main expenditure lines inside an essentially constant total budget. However, the stress of running at very challenging conditions is visible and is requiring extra attention. A detailed technical and resources plan for the long shutdown of 2013 – 2014 has been finalized. We expect an increase in Cat.A expenditures around 5%. We will come back to it at the Oct. RRB.

He ended his presentation with the Cat. B M&O status giving details, by detector, of the budget and the Funding Agencies participating. The total is 1 MCHF.

8. Summary. S. Bertolucci, Director of Research and Scientific Computing.

There being no further business, S. Bertolucci thanked the delegates and closed the meeting. The proposed dates for the next RRB are 28-30th October 2013.