4 June 2008

CERN-Korea Committee

Minutes of the 3rd Meeting held at CERN on Monday, 14 April 2008

PRESENT:	CERN	T. Camporesi (co-chairman), J. Ellis, D. Jacobs
	Korea	J-H. Choi/MEST (co-chairman), Y-I. Choi/CMS, Y-W. Baek/ALICE (for D-W. Kim)
	Observers	D-M. Lee/KICOS
	Invited	J. Schukraft/ALICE, T. Virdee/CMS
Apologies:	J-P. Delahaye/CERN, D-W. Kim/ALICE, K. Song/KICOS	

Closed Session

1. Introduction

T. Camporesi welcomes those present. He notes the apologies sent by J-P Delahaye (CERN Accelerators and Beams Department), in which he expressed his continued hope that the cooperation with Korea could, at some stage, broaden into aspects of accelerator R&D. He notes that Y-W. Baek is present with two roles – representing D-W. Kim for ALICE and also the CERN-Korea Team Co-ordinator K. Song. D.M. Lee has become the KICOS Observer on the committee.

He notes that, in the spirit of the 2007 Protocol (P086/LHC), the CERN-Korea Team Co-ordinator is indeed a member of the Committee but is not necessarily a Korean government representative. The essential element is that he/she should have time to follow-up actions between Committee meetings

J-H. Choi responds that K. Song is Co-ordinator because he is head of the project. MEST and KICOS work closely together and so either can well represent Korea.

At J. Ellis' request it is agreed to insert a point on accelerator R&D under A.O.B.

J-H. Choi notes that there are some errors in the CMS papers distributed for the present (14-16 April) RRB session. T. Camporesi assures him that these have been noted and will be corrected in the RRB minutes but J-H. Choi insists on seeing corrected papers before the end of the RRB session.

It is agreed to exchange items 5 and 6 on the agenda in order to bring the report on CMS computing close to the status report on the experiments themselves.

Open Session with the ALICE and CMS representatives

2. ALICE Status Report (J. Schukraft) Overheads

J. Schukraft gives a short update on the progress of the experiment (a full account is given in the RRB papers), concentrating on aspects linked with Korea.

The most important Collaboration news is the addition of five new Institutes, of which two are from Korea – Yonsei (working on the TRD and physics) and Pusan (physics). He thanks the Korean side for their constructive attitude towards these additions.

Within ALICE, Korea is active in the construction and operation of the TOF (Kangnung) and TRD (Yonsei) systems, as well participating in computing (Sejong) and physics analysis (all, with the addition of Pusan). The ALICE Tier-2 centre in Korea is provided by KISTI. For ALICE overall, the last large structures (EMCAL support and "mini frame") were lowered into place in November 2007. The experiment is essentially now in the

commissioning phase, having completed already a 2-week run with cosmics, during which tracks were recorded passing through the TOF and TRD. Running with cosmics will shortly re-start and will continue until beam is available. The initial running configuration will still lack most of the PHOS, TRD and PMD, as well as 20-30% of the DAQ/HLT. These parts will be completed over the next 1-2 years.

TOF construction has been a major activity in the last year, during which 10 of the 18 supermodules have been built. The three last supermodules will be installed before the end of May.

Regarding computing, the cluster at Sejong delivered in 2007 twice as much capacity as promised. It operates with high efficiency. KISTI, which signed the LCG MoU at the end of 2007 as ALICE Tier-2 in Korea, is still in the setting-up phase and the availability has not yet reached production level. There is an upgrade plan in place for KISTI resources including some more processors and use of the Supercomputer that is about to be installed. The latter has yet to be tested with ALICE software.

Kangnung is preparing for physics with pp collisions – the measurement of Λ^0 polarisation, which gives information on the Λ^0 production process. It is hoped to repeat this measurement later with Heavy Ion collisions. Pusan has installed the ALICE grid analysis software and is setting up for physics analysis. They will also participate in the activity with the KISTI supercomputer. They aim to study Λ_c^+ decays, firstly with pp collisions and then with Heavy Ions.

Yonsei is collaborating with the German groups on TRD supermodules. From previous work at PHENIX they have good experience with physics analysis and are working on improvements of the algorithms related with the TRD data.

Regarding payment of the 50kCHF Institute Fee to the Common Fund, Kangnung and Sejong have paid 50kCHF in 2007 and will pay the remaining 50kCHF in 2008. Yonsei has paid 17kCHF and must pay the remaining 33kCHF in 2008/9. All Cat A M&O payments due up to and including 2007 have been made. The M&O Cat A contribution for 2008 is 76kCHF, due for payment this year, and the preliminary estimate for 2009 is 79kCHF (subject to fluctuation due to changes in physicist numbers at other institutes). The amount will be finalised at the Autumn RRB meeting.

Overall, ALICE is in a good position for the start-up of the LHC. The participation of Korea is viewed as very successful, including the contribution to Grid computing. The collaboration with the new groups at Yonsei and Pusan has started smoothly.

Y-I. Choi asks if Pusan is being regarded as a new institute. J. Schukraft responds that it replaces Pohang, which was inactive, and so does represent an increase in activity. For now Yonsei and Pusan are represented jointly on the Collaboration Board but appear separately in publications. If Pusan wishes to become a full member institute then the 50kCHF Institute Fee will be applied. Y-I Choi points out that in this case the University would have to pay the Institute Fee itself.

3. CMS Status Report (T. Virdee) Overheads

T. Virdee notes the impressive progress being made by CMS, referring members to the RRB papers for more details.

University of Seoul has applied for full membership of CMS, replacing Seoul National University of Education. Although this means that the 150kCHF Institute Fee will not be levied, the Collaboration Board still has to vote formally on admission in June. Two FTE's will be working on software/computing (part of the 80-90 asked from the Collaboration), their activity being counted as a Cat B M&O contribution.

In the DAQ area, since the last CERN-Korea Committee meeting, all of the monitoring flat screens provided by KNU have been delivered and installed. Of the remaining

contribution of 400 kCHF, 200 kCHF are expected this year (and should be paid soon because of the falling exchange rate) and 200 kCHF next year. J-H. Choi comments that he heard the full 400 kCHF had been paid but T. Virdee assures him that the 200 kCHF for next year has only the nature of a pledge.

All of the RPC's needed for the initial detector have been installed and are working. Six RE1/1 chambers have also arrived and work goes on to install them.

T. Virdee welcomes the 2 computing FTE's from Seoul and underlines that more would be welcome. He is in contact with Y-I. Choi on this.

Thirteen Korean scientists are working on CMS physics at CERN. They are starting to make their mark, in addition to the work they are doing for their home institutes.

T Virdee is currently discussing with Y-I. Choi how to reinforce the effort for commissioning and operation of the RPC's. He is confident that CMS can look forward to the effective participation of Korean scientists. The establishment of funding for them to be at CERN has been a big help.

Serious planning has started for LHC upgrades. The first phase, thought to extend to 2013 and after, should see a doubling of the initial Luminosity (i.e. to $2*10^{34}$ $cm^{-2}sec^{-2}$). A second phase could see a further growth to about 10^{35} $cm^{-2}sec^{-2}$, 5-10 times the initial Luminosity, on the timescale of 2017. Both increases will necessitate detector changes, which CMS is currently studying and will report on at the next RRB. All of this underlines the long-term nature of the project.

Thanks are due to MEST (formerly MoST) for pledging 552 kCHF for the outstanding CtC2 contribution (147 kCHF) and for all three steps of restoration of the forward RPC system. The funding data for the October 2008 RRB will show this additional pledge in the context of contributions from other agencies.

4. Discussion of Items 2 and 3

J. Ellis asks what CMS detector upgrades are needed for a 2× Luminosity increase. T. Virdee recalls that the CMS design Luminosity is 10^{34} $cm^{-2}sec^{-2}$. Replacement of the Pixel detector will be necessary after 1.5-2 "nominal" years (probably about 4 calendar years). Thus a new Pixel detector is being planned with a 4th layer. Other planned improvements include: better HCAL sampling, better photodetectors and triggering improvements based on FPGA's. The associated costs will be estimated and reported to the October RRB meeting. For the Luminosity envisioned in 2017, the big item will be a Tracker upgrade.

5. CMS computing in Korea (Y-I. Choi) Overheads

Y-I. Choi emphasises that the CMS Tier-2 at KNU has no MEST funding to acquire hardware, only operations funding. KNU must thus provide the hardware itself.

The selection of KNU follows a review of proposals from two candidate sites. The decision was made public at the start of April.

Y-I. Choi gives details of the installation at KNU, which is under the leadership of Prof. Dongchul Son at CHEP. It functions as a Tier-2 and Tier-3 centre for CMS and has participated in the various Readiness Challenges.

It is planned to have 3 FTE's dedicated to the centre in the next year. Installed CPU should double (to 1000 kSI2k) by 2010, while disk capacity will increase from 160 to 240 TB. Network bandwidth of 22 Gbps will be available throughout the whole period. The capacity is dedicated to the Exotica group but there is also a strong desire to work with the Higgs and SUSY groups. Local support is provided for physics analysis tasks.

Y-I. Choi agrees with J. Ellis that it may be desirable to distinguish shareable (Tier-2) capacity from that which is private (Tier-3) but says that this has yet to be discussed in

detail. It will be done for LCG MoU signature. He underlines that the growth plans are only hopes. He has no information regarding an additional ALICE Tier-2 in Korea.

T. Virdee expresses concern about the uncertainty of future hardware funding at the centre. J-H. Choi expresses similar worries, noting that the review to decide on the location of the Tier-2 centre was based on the candidates' ability to operate such a centre. On this basis KNU was much better than Univ. of Seoul. T. Virdee agrees that the situation could be re-examined in October, by which time the Readiness Challenge planned for May will have taken place.

T. Camporesi concludes that the KNU centre should be given the message that it will be watched. Y-I. Choi is, however, confident, pointing out that there is a more than adequate infrastructure for power and cooling.

D. Jacobs notes that it would be much appreciated by the LCG project management if the Korean Tier-2's could join the regular LCG availability and reliability reporting scheme as soon as possible.

6. New Korean Government Structure (J-H. Choi) Overheads

J-H. Choi presents in a number of overheads the structure of the newly-created Korean Ministry of Education, Science and Technology (MEST) formed at the end of February by a merger of the Ministry of Education and Human Resources Development (MOE) and the Ministry of Science and Technology (MoST). The result is a very large ministry in which responsibility splits immediately under the Minister into Education and Science & Technology parts each with a vice-Minister. The Science and Technology part has an Office of S&T Policy with an Officer responsible for Big Science (such as participation in ITER and Space Science). The co-operation with CERN, however, is not handled here, coming rather under the Director-General for International Cooperation in an activity called "Cooperation with the Americas and CERN".

It is hoped that funding for cooperation with CERN may expand as the new DG (Y. Lee) understands the issues.

T. Virdee underlines that the new DG would be welcome at CERN, should he care to visit.

J-H. Choi explains that K-Y. Huan, who has expressed an interest in visiting CERN, is an accelerator specialist, whose interest is likely in the context of domestic machines.

J. Ellis points out that an invitation to attend the LHC inauguration will shortly be sent to the Minister in charge of MEST. Although J-H. Choi feels it likely that the 2nd vice-Minister will come instead, T. Camporesi is confident that the Minister will attend as he also want to visit his *alma mater* – Grenoble.

Closed Session

7. Korean activities and plans for ALICE (Y-W. Baek) Overheads

Y-W. Baek lists the ALICE publications and the ALICE-related conference presentations in 2007-8 to which the Korean team has contributed. He also recalls the ALICE projects in which the various Korean institutes are involved.

The 2008 team budget includes 90 kCHF for the long-term stay at CERN of one researcher with PhD and one student (about half of which is for TOF commissioning and maintenance). There is also 75 kCHF for short-term visits (distributed amongst the Korean institutes in proportion to their numbers of PhD's in ALICE) and 50 kCHF for the Common Fund contribution of Sejong Univ.

In 2009 it is planned to send ~9 PhD's and ~9 students for stays of 1-12 months, totalling ~75 m.m. of effort.

8. Korean activities and plans for CMS (Y-I. Choi) Overheads

Y-I. Choi recalls that six Korean institutes are involved in CMS, with 12 professors, 10 PhD researchers and 26 students working on CMS for more than 50% of their time. Two Korea-CMS collaboration meetings are held each year, along with 4-6 workshops with theorists. A review of the activity is planned for end-March 2009.

The total research funding granted for 2008 was the equivalent of 0.75 MCHF but has been hit by a worsening of the exchange rate. Y-I. Choi lists the uses to which this is being put, mainly for travel and subsistence payments, along with computing equipment and support for the meetings and workshops.

In conclusion, Y-I. Choi lists the various Korean research group activities for CMS with the names of those involved. For the Korea-CMS Tier-2 centre at KNU he re-emphasises that the funding request to MEST is for operation only, starting in 2009. It is hoped to sign the LCG MoU for the centre on the occasion of the October-2008 RRB meeting.

9. Discussion of the ALICE and CMS requests and of future physicist quotas for both experiments

Opening the discussion, T. Camporesi notes that he believes the Korean funding situation to be satisfactory as yet. Both presentations, however, raised again the question of the quota of "recognised" PhD physicists (6 for ALICE and 12 for CMS). He is still convinced that it was correct to establish such quotas but it is also natural to assume that more people will join as running proceeds. It was evident from the numbers of supervisors shown in the overheads and the numbers of students actually at CERN that the quotas are being exceeded. It is thus important that MEST should begin discussions on the budget for future years.

J-H. Choi acknowledges that there was a 9 month gap in setting up the research fund for CMS. He agrees that the situation must be re-examined over the next year.

T. Camporesi suggests 50% quota increases (to 9 and 18), a more realistic reflection of interest. He recalls that these quotas regulate the number of Korean signatures on experiment publications.

J-H. Choi understands that many professors are planning activities in CMS but insists that further review is required in Korea to establish which can really commit their time and money along with their students.

T. Camporesi underlines the very visible and real contribution of Korean students to the experiments. The Korean community is becoming visible outside the bare framework of the MoU commitments. Y-I. Choi can better judge the contribution of the supervisors.

J-H. Choi expresses his satisfaction that the collaboration is going well. The 2009 budget will be prepared at the end of June. He is presently trying to double the amount of money available. A good sign is that the new DG for International Cooperation is positive towards increased involvement in CERN. A useful impetus would be given to the process if the Minister can indeed visit CERN. J. Ellis suggests that J-H. Choi should talk further with T. Camporesi outside the meeting in order to inform himself further on what the Koreans are doing at CERN. In this context, T. Camporesi presses for a strengthening of the effort for commissioning and running of the CMS forward RPC's, which were built in Korea. Y-I. Choi adds that an RPC commissioning group is indeed being put together.

10. Summary and future actions

Summarising the meeting, T. Camporesi recalls that note is taken of the consolidation of Korean computing for both ALICE and CMS, and of the requests to MEST to fund the operating costs of the Tier-2 centres, for which there is presently no money.

It is also noted that the applications of new groups to join ALICE and CMS are going ahead with favourable advice.

Both the ALICE and CMS activities have well-defined research plans and realistic associated funding plans for them.

The need to review the physicist quotas for ALICE and CMS is recognised **[action: Korean side]**, hopefully with an increase taking effect from 2009.

Present at the LHC inauguration will be Heads of State or Government from the Member States (the French and Swiss Presidents will attend), the six Observer States and a few non-European non-Member States (3 of which have made significant contributions to LHC). The invitation to the Minister responsible for MEST will be followed up **[action: J. Ellis]**.

Y-I. Choi emphasises that the institute plans are still under evaluation but T. Camporesi welcomes the new arrangement into themes – a well-appreciated move.

11. Any Other Business

T. Camporesi reiterates that CERN is also interested in collaboration with Korea on accelerator activities. There was a recent visit by Prof. D-P. Min who was interested in acquiring knowhow from ISOLDE. D. Jacobs notes that the most concrete interest is for upgrade of the LHC injector chain. J. Ellis adds that there many examples of exchange of accelerator experts. He explains that the "Observer States" are those which have contributed substantially to CERN infrastructure (i.e. accelerators). There is a real interest in including Korea in the work to upgrade the injector chain. A good first step would be to send some good young people to learn about accelerator operation. An example of such collaboration is that with Japan, where much is being done for LHC (but with the funds being spent in Japan). Korea could not hope to become an Observer State without some commitment to CERN infrastructure.

There being no other business, T. Camporesi thanks those present and closes the meeting.

David A. Jacobs

Action list

	Raised	Item	Who	For	Status
1.	10/07	Propose a new Korean Co-ordinator as provided for in P68/LHC	Korean side	a.s.a.p.	Closed: K. Song nominated
2.	10/07	Confirm in writing to MEST that no additional construction contribution is implied by an increase in the number of Korean PhD's in ALICE	J. Schukraft	a.s.a.p.	Closed
3.	04/08	Review the physicist quotas for ALICE and CMS, with a view to an increase in 2009	Korean side	a.s.a.p.	New
4.	04/08	Follow-up the invitation of the Minister of MEST to the LHC Inauguration	J. Ellis	a.s.a.p.	New
5.		Next item			