Minutes of the CALICE WP Managers' meeting

4 March 2008

Present: MGG (chair), DB, PD, DW, NW.

Apologies:

Minutes

The minutes of the meeting of 7 January 2007 were agreed.

Matters arising

None not on agenda.

The funding crisis

There was a discussion of our response to the consultation process. We need to coordinate our response with that of both LCFI and LCUK,

Staffing

Anne-Marie will be moving to CMS within Imperial over the coming weeks

Financial issues

Gantt charts

There was no discussion of the Gantt charts at this meeting.

Risk register

There was no discussion of the risk register at this meeting

Next meetings

The next meeting was confirmed as Monday 5 May at 9:30 by phone and a preliminary date for the following meeting was set as 7 July 2008.

M G Green
24 April 2008

Appendix

CALICE-UK Contingency Plan

The current CALICE-UK grant consists of five workpackages. We assume in the following that the RG staff associated with CALICE-UK will be available to continue working for FY08/09, probably paid from fEC funds by the Universities themselves (although this assumption is not know to be valid). We present a programme where STFC funding for RAL staff, CALICE-UK-specific RAs and equipment is reduced in FY08/09 to the level of around 5FTEs-equivalent, which we take to be £500k, although all figures are approximate.

1. **WP1: Beam Test Programme.** CALICE has been testing "physics prototypes" of calorimeters in beams at DESY and CERN over the last two years and this will continue at FNAL throughout 2008 and into 2009. These are prototypes to measure the particle showers produced and to compare then with simulation. Hence, they are generic R&D studies with wide application outside of the linear collider community. A large dataset has already been taken and is currently being analysed. CALICE-UK is responsible for the data acquisition of the beam test systems and leads several aspects of the data analysis. Given the investment of effort and equipment in this area, it would be nonsensical not to reap the benefit of the results so we will need to continue with analysis until it is published, which will be within FY08/09. This will take around 0.6FTE of RA effort. We would then need to completely minimise the UK contribution to the future beam test programme. However, it cannot be reduced to zero; it is effectively impossible for the data acquisition responsibility to be passed onto a non-UK group as the expertise only exists within the UK. Unless this is continued until the finish of the beam test programme, the UK will be seen to be destroying the main part of the overall CALICE collaboration programme. However, this task can be done mainly using academic time together with a small amount of RG effort and hence has no additional cost to STFC. The UK also provides real-time monitoring of the data and this will need 0.2FTE of RA effort. We should also in principle take shifts but this would clearly be a significant cost and we will have to drop this contribution. Despite these reductions, in particular the last item, we hope this absolute minimum level of support will allow the UK to analyse the data taken in 2009 if there is effort to do so available in FY09/10 and beyond. Total cost to STFC in FY08/09: £80k.
2. **WP2: Long Term DAQ.** CALICE-UK is in a world-leading position with regard to studies into practical applications of DAQ for a linear collider. The concept in this workpackage is to use cutting-edge technologies as a basis for DAQ systems rather than the traditional bespoke solutions previously used in HEP. This concept will be tested and used on large test-beam prototype detectors, thereby validating the approach. This approach is expected to be applicable for other types of sub-detector or a detector in general in any HEP experiment and so the whole workpackage is highly generic. The completion and demonstration of this concept is therefore beneficial to the UK groups in DAQ systems throughout HEP and not just the ILC. Work is being pursued by some of our groups on the use of our DAQ systems for LHC upgrade projects. It is therefore vital to demonstrate this approach in order to maintain our lead position and potential to build DAQ systems for any future experiment. This workpackage significantly overlaps with and contributes to the EUDET collaboration programme, where the UK has major deliverables and significant international partnerships. Funding from the EU relies on the current matching funding from STFC, both legally and scientifically. Any withdrawal from delivering the DAQ system for the planned large-scale "technical prototypes" would be very damaging for the UK's reputation as a reliable partner. As we have important international partnerships with the delivery of a major part of a detector system, any cuts would seriously impact on our ability to meet these contracts. We may be able to negotiate with our

international partners for their taking over certain aspects, such that we would be able to remain involved at a lower level without full withdrawal in the next FY, in the hope that a generic R&D future proposal could be in place for FY09/10. The minimum programme for FY08/09 would require 0.9 FTE of RA effort and £60k for equipment. Total cost in FY08/09: £150k.

3. **WP3: MAPS Sensors.** The UK is developing a novel and unique approach to electromagnetic calorimetry, where active pixels (incorporating the pixel readout into the sensors) are used to produce a binary readout calorimeter of very high granularity. This has the potential to give very significant improvements in resolution at lower cost. In addition, as part of this work, a CMOS device processing step has been developed which has wide application to many areas of sensor development not only within particle physics but also to other areas of STFC science. To abandon this work at this point would be a major loss to UK leadership and would waste the resources already spent on the project. Hence, the aim here would be to complete a descoped version of the current workpackage, again with the aim of a generic R&D programme coming online in FY09/10 to develop the project further at that time. The first sensor was produced in the second half of 2007 and is currently under test, with a second design planned for early in 2008. The only way to continue the project at a reduced cost is slow down and also to produce a cheaper second sensor, specifically one much smaller than originally planned and with less new features. The RAL engineering effort needed to design and test this next sensor would be 0.7FTE. The fabrication of this sensor would then be in summer 2008 at a cost of around £50k. It would be tested during the rest of the year and around 1.0FTE of effort will be needed for this. This would be the absolute minimum viable level for continuation of this project and would delay the project by around one year compared to the original schedule. Total cost to STFC in FY08/09: £220k.
4. **WP4: Mechanical and Thermal Studies.** The CALICE-UK effort in this workpackage is coordinated with groups in France building the electromagnetic calorimeter "technical prototypes", as described under WP2 above. The staff effort for this is all RG or academic, so the main cost is the £30k needed for equipment. Again, this work cannot be stopped without reneging on the UK responsibilities to producing the EUDET calorimeter. Total cost to STFC in FY08/09: £30k.
5. **WP5: Physics Studies.** The UK has been performing studies of the physics potential of the ILC detectors. The main aim of these studies is to contribute to the detector optimisation which is needed before the EDRs are completed, currently on the timescale of 2010. These are ILC-specific studies and, although this is important work, it could be reduced to only academic and student effort without a major loss of UK influence and hence could be continued at no direct cost to STFC. Total cost to STFC in FY08/09: £0k.

For all workpackages, then some travel funds will be needed. We estimate that £50k would be sufficient to allow us to maintain contact in the critical areas.

We view the above as an absolute minimum programme to allow us to either sensibly finish ongoing programmes (and hence reap the benefits of the work already done), or continue longer-term generic programmes at the lowest possible level such that we could revive them when funding again becomes available.