The interface between operations and controls (brief summary of the lunchtime discussion)

R. Bailey, CERN, CH-1211 Geneva 23, Switzerland

1 INTRODUCTION

Following a session of talks devoted to operational aspects, participants were invited to stay on through lunch for discussion on the interplay between controls and operations. A surprising 150 people felt it worthwhile to make do with pizza in order to participate, and plenty of people had plenty to say. After more than an hour we were obliged to stop for the conference program to continue, but there is clearly lots of interest in this area.

The discussions were based around four questions that had arisen either during earlier presentations or during informal discussions throughout the conference. This summary is from memory several weeks after the conference; no detailed record of the discussion was taken.

2 SUMMARY OF MAIN POINTS DISCUSSED

A. Is there really any difference between the needs of 'operations' and 'accelerator physicists' ?

This question arose following the first two talks of the conference, where two different viewpoints were presented. Everyone agreed that accelerator users fall mainly into three categories;

- operators who do the 24hr a day running of the machine for physics production
- accelerator physicists who come to do machine development sessions
- equipment specialists who come to debug and fix equipment

However, the definition of what an operator really does varied considerably from laboratory to laboratory, and this difference of culture gives rise to quite a range of opinion on what the respective requirements of the operator and the machine physicist are.

At one extreme, some labs felt that the operator should be given everything possible to help him optimise the machine, with full access to all utilities available. Indeed in these labs physicists and engineers are recruited into operations, and participate in machine development activities. In this case the needs of the operators and the machine physicists are clearly quite similar.

At the other extreme, there were labs which wanted to restrict the operator to a subset of facilities that were considered (by the accelerator physicists) to be 'safe' for the machine. In this case the needs of the two parties are rather different, and can well give rise to a conflict in terms of requirements.

B. How do we go from commissioning to routine operation ?

The applications software needed during the commissioning phase can be quite different from that required for long-term operation of the machine. For example, the commissioning team wants flexibility in order to change the way things are done as the understanding of the accelerator evolves, much in the same way as in machine development sessions. Furthermore the friendliness of the applications is not SO important because the commissioning phase should be short and done by specialists. Operations, on the other hand, want stability, reliability, uniformity etc. The question that was discussed was whether it is best to go from one to the other by the usual route of gradual evolution, or to undertake a major rewrite after a year or so of operation. No conclusion was reached, but it was felt that in either case the management should be well aware that software effort will be needed and plan accordingly.

C. Why don't controls get more involved ?

Well, from the discussion it was made clear that in at least one lab they do, and with impressive results. In this case the importance of establishing and maintaining good relations between controls and operations was emphasised, as was a clear definition of responsibilities. It was felt essential that the controls group held overall responsibility for the software used to drive the machine, and any developments made from outside controls were done according to clear guidelines.

However from several labs there were expressions from operations of a certain reluctance for controls to get involved in applications programming. Many possible reasons, from both sides of the fence, were suggested. Among these were;

- ‘the operators never know what they want’
- ‘the operators are never satisfied’
- ‘the 3AM telephone call’

There was a lot of discussion on the first point, which is essentially concerned with the ability of operations to express their requirements, or conversely for controls to find them out, as discussed in the next point.

D. How do controls find out what is needed ?

One of the participants, working in controls, had actually taken a year ‘out’, working shifts along with the operations group in order to find out what the issues really were. While impressive, this was an isolated case and is unlikely to catch on. More realistically, to recruit into controls from operations is a way of putting hands-on experience in the right place. In some cases the movement has been the other way round, with controls personnel moving into operations and acting as liaison between the groups. Other than moves of this kind, establishing and maintaining good relations is of course again of great importance here.

On the technical side, formal development methods should help in defining what is needed. However the use of such techniques in accelerator labs is very limited. Why ? It is quite interesting to note that in one lab where formal techniques have been applied, it was on the initiative of operations, not controls.

3 CONCLUSION

The way in which operations is performed varies considerably between the different laboratories, and this has a profound impact on the way the operations and controls groups interact. Moving from commissioning to routine operation is a recognised problem area, and not just in the realm of controls. Setting up the correct framework for controls to understand what applications are needed is often underestimated, with the result that in many laboratories this is considered a neglected area. Formal methods are generally not considered as a useful approach.

There was obviously considerable interest in these and other points, which continue to provide controversy and difficulty for both operations and controls personnel. In the future, similar, workshop-style discussion sessions can only do good.