Summary of Panel Discussion on Standards and World-Wide Sharing of Software

Organizer: P. Lucas (Fermilab)

Participants: C. Briegel (Fermilab, P.Clout (Vista), D. Gurd (SSCL), N. Kanaya (KEK), U. Raich (CERN)

It has been a dream in the accelerator community for some time that software developed for one control system be easily transferrable to and usable at another. Until recently this goal was seldom realized in practice. This has been primarily because the various control systems have been developed in-house with little standardization among them. The world of accelerators was dominated until a few years ago by very large machines constructed for doing high energy physics. The large laboratories could likewise afford large controls groups, which were able to build these complete systems from the ground up. However the accelerator scene has now shifted, with a large fraction of the new work being done at much smaller installations, installations which cannot afford the large staffs previously employed in control system production. Different approaches to this problem were outlined by P. Clout: having one or more smaller laboratories follow in the footsteps of a larger one, use of industry standards to such an extent that a significant amount of software is transferrable, or purchase of control systems from commercial vendors.

This discussion centered on the second of the points mentioned - that use of standards could foster transferability. Standards are becoming very important in the world of distributed computing as they allow the equipment of various vendors to interoperate on an integrated network. Since most accelerator control systems utilize such networks, they are indeed in the process of adopting various various standards. Among those mentioned, which have achieved to a lesser or a greater extent penetration of the accelerator field, are the Unix operating system, the X11 windowing system, the Motif presentation layer, and the TCP/IP networking protocol residing primarily on Ethernet but also on Token Ring physical layers. Most controls hardware being constructed resides in VME and to a lesser extent Multibus II, with a large installed base of Camac and its attendant driver software. The Oracle product is becoming a *de facto* standard for off-line database work, but no clear one is emerging for real-time databases. Similarly there is no standard for a microcomputer operating system, but at least there are a few commercial products being utilized, as opposed to the do-it-yourself philosophy espoused in the past.

The consensus of the discussion was that at the level of workstation console applications the prospects for shared software were good. Use of X11 and Motif have already allowed portability of some graphics widgets, an activity

which is expected to continue. At levels of control lower than that of operator interaction, the prognosis is not so good. Much of the low level software of any system revolves around the database, an area in which there is no standardization as to product used or even as to the nature of the data stored.

At a less involved and more practical level it was suggested that a computer bulletin board could be initiated on which control system problems and insights could be made available to the community.

It was also noted that for software to be shared effectively it must be documented well. Although there were differences of opinion on who could best document any software and on what sort of documentation was most appropriate, there were none on the blanket statement that this is an area in which we should all strive to do better.

597