CHEP 2001

Controls Track Summary

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Controls seems to attract much more interest from the accelerator community than from experimental physicists, and the accelerator controls people tend to go to the ICALEPCS[1] conference series, rather than to CHEP. Thus, at CHEP, controls seems to be rather a minority interest which is evident from the modest number of contributions. I suspect that this may be due to compartmentalisation into "Slow Control", "DAQ Control", "Run Control", and so forth, rather than realising that there is a great deal of overlap between these areas which I believe to a large extent could use many similar tools and techniques.

There were eleven papers and posters contributed at this conference, plus a plenary talk on the LHC Joint Controls Project, JCOP, and a live demonstration. Of the contributed papers, several discussed interlock and safety systems, one supervised by LabView; one paper dealt with supervision of calibration; one the supervision of a computer farm; and two discussed applications developed with EPICS. Another contribution mentioned CDEV, which was originally a technology developed at Jefferson lab in order to unify different control systems with EPICS. Five papers mention systems developed using commercial SCADA tools, and a paper from ATLAS discussed how to link purpose-built Run Control with a SCADA system. Finally, Clara Gaspar from LHCb bravely gave a live demonstration of 'Partitioning, Automation and Error Recovery in an LHC Experiment" using the SCADA system chosen by the LHC Joint Controls Project.

Thus, the topics covered a wide area, from classical hardware monitoring and supervision, to interlock systems and supervision of computing farms. Like all areas of HEP, controls software has historically been home-made. However, an unmistakable trend is now towards the use of Supervisory Control And Data Acquisition (SCADA) systems. One of the first of these used in HEP, EPICS, was developed originally at Los Alamos. However, just as we no longer write our own operating systems and compilers (which was still the case when I arrived at CERN), the use of home-made tools for building controls systems is slowly being overtaken by the use of industrial software. The crucial developments which permit this are the features of the latest generations of SCADA software which provide scalability to very large distributed systems and support for object-oriented, or device-oriented, development.

This movement towards industrial software tools is, perhaps, the major conclusion for the future: rather than putting our effort into building purpose-designed tools, we should use tools we can buy and put our effort into solving our controls problems. The cost of implementing and supporting a purpose-built tool is no longer commensurate with its added value. Although not a subject from the conference, it is also worth mentioning that in some areas, such as cryogenics, power distribution and safety, complete systems are now being out-sourced to industry.

Finally, although I must admit to a possible bias, I want to mention the progress reported by Wayne Salter on the LHC Experiment's Joint Controls Project. Not only is this showing that commercial components can be used in many HEP applications, but also that it is possible for experiments to reduce their development and maintenance costs by working together.

[1] International Conference on Accelerator and Large Experimental Physics Control Systems