consisting of only a few nodes. It contains already the main building blocks: Dedicated processing nodes, high speed data links, and a distributing switch. The test system will be used to evaluate different switching technologies and to simulate the architecture of a full scale system. It is used also to adapt the offline programs for event reconstruction and triggering which should be used on the farm and to perform benchmark tests for this programs. In the context the implementation of CERN libraries the usage of FORTRAN and the handling of system calls on the embedded system is a main issue.

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Experience on using Databases in the Aleph Data Acquisition and Control System

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The data acquisition and control system for the Aleph experiment has been running successfully during the last 5 years and needs to be maintained for another 5 years. Just to maintain such a system as it is is a challenge in itself, especially taking into account the reduced manpower available. We believe the only way we can survive is by re-engineering parts of the system to simplify and standardize as much as possible. For example, during the last year we undertook a major hardware upgrade by replacing 4 different types of in-house developed Fastbus processors by a unique commercial VME processor. More recently we have also made efforts to improve the tools and packages we use to manage our on-line databases and we are now seeing large benefits in the maintenance of our system and configuration management software.

The DAQ system management and configuration software relies heavily on the use of databases to hold descriptions of the detector, the readout, the trigger, control and data monitoring systems. It is important that the contents of these databases are described in a complete and consistent way and without redundancy. Using these databases makes our DAQ system completely "data driven", therefore changes in the configuration don't require any program to be re-compiled or re-linked. We have currently about 25 databases, each one specialized on a given domain of the on-line system. Examples of these databases include the Fastbus database, containing descriptions of the front-end electronics, the VME database, which describes the readout configuration, the trigger and slow control databases, as well as databases describing software components, such as the histogram database. We have estimated that at least 50effort for the Aleph DAQ system was put into development of these databases.

In this paper we are going to describe the problems we have encountered with the current system not too much on the conceptual design but mainly on the implementation. Some of these problems arise from the duplication of information in different databases, the direct coupling of some application code to the data, the difficulty of developing applications which need to navigate through several databases, etc. In addition, each database originally had its own application program interface (API) and utility tools, such as an editor, which were developed independently and require substantial maintenance effort.

We have recently developed a new database management tool (DBTool) which was designed to overcome the problems listed above. This new tool, which will be briefly described in the paper, allows to have a very simple and unique API (with C, Fortran and C++ interfaces) for each database in each domain and it also allows easily to make associations of objects in different domains, thus avoiding duplication. The data model of DBTool is object-oriented, it incorporates bi-directional associations, aggregation, inheritance among others.

We believe that the experience we have acquired during the years of running a large DAQ system at LEP can clearly be useful for next generation of experiments. It is clear that the read-out technology used in LEP experiments is not adequated for LHC experiments. However some of the practical lessons we have learned concerning system configuration and management are certainly relevant.

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Status of the ZEUS Expert System ZEX

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A. Description of ZEX

The ZEUS detector is controlled and read out by a highly parallel distributed online system. An expert system helps to increase both efficiency and reli- ability of experiment operation while reducing the required efforts and expertise of the shift crew. The task of the expert system is to detect anomalous behavior in any