ORB then forwards my request to your software and returns any results, handling the language mapping at both ends.

Services commonly required by many objects-lifecycle services, persistence services, query services, and others are the subjects of standardization specifications as well.

Is this environment appropriate for high-performance physics applications? If the physics community ignores these approaches, does it do so at its own peril?

Among the questions that must be addressed are these:

o Is the Interface Definition Language rich enough to capture the interfaces required by data-intensive physics applications?

o Is the performance penalty of brokered interactions inherently too great?

o Can we use an ORB simply to connect our applications, and then get it out of the way?

o If the ORB does get out of the way, do we lose language-independence, and are we back to home-grown low-level interfaces?

o What is the appropriate level of granularity for brokered interactions?

o The potential location transparency provided by an ORB is appealing, but will performance considerations require that I provide a "smart proxy" to run on your machine when you invoke software on my machine, in order to sustain brokered interactions at a reasonable cost?

o If so, is proxy support a nightmare for providers of general-use software, or can proxy generation be standardized or automated?

o What are the implications of proposed persistence services specifications in this environment?

We explore these and other issues in a case study, in which we use commercially available request brokers in an examination of a variety of potential implementations of a statistical computation on physics data extracted from a persistent data store.

ABS_2

RD45 - Object persistency for HEP - Status report

JAMIE SHIERS (CERN)

RD45 is a CERN project to investigate the issues concerning the storage and manipulation of a persistent objects for LHC era HEP experiments. Objects are typically created by a given process and cease to exist when that process terminates. Such objects are called Transient objects. Persistent objects, on the other hand, are those which continue to exist upon termination of their creating process.

There are a number of existing efforts committed to the exploration of Object Oriented (OO) techniques in a wide variety of key areas for HEP computing in the LHC era. All of these projects will need to handle persistent objects but none of them are addressing this question directly.

The goal of the RD45 project is to address the requirements of these projects and of the LHC experiments themselves in terms of object persistency.

An important theme of the project is the use of standards. We start by identifying the standards involved, we explain their interaction and examine their suitability for HEP computing environments. We then describe the various prototyping activities that we have undertaken and present the results that have been obtained so far. Finally, we examine future directions and discuss the impact of the proposed technologies on HEP computing in general.

B.3 DATA MANAGEMENT AND DATABASES

ABS_116

Experience using a distributed Object Oriented Database (OODB) for a DAQ system

B. JONES (CERN)

To configure the RD13 data acquisition system, we need many parameters which describe the various hardware and software components. Such information has been defined using an entity-relation model and stored in a commercial memory-resident database. During the last year, Itasca, an OODB, was chosen as a replacement database system. We have ported the existing databases (hw and sw configurations, run parameters etc) to Itasca and integrated it with the run control system. We believe that it is possible to use an OODB in real-time environments such as DAQ systems. In this paper, we present our experience and impression : why we wanted to change from an entity-relational approach, some useful features of Itasca, the issues we meet during this project including integration of the database into an existing distributed environment and factors which influence performance.