A software framework for NOvA

Concepts, plans, projects

Plan

- Idea: to borrow the BaBar software framework
  - Written in C++
  - Highly flexible, performant
- Milestones:
  - De-BaBarization of the core modules
  - Working (reduced) prototype
  - Dev work to build the full NovA (offline) infrastructure

The BaBar framework: concepts

- Built on the concept of “module”
  - A module takes an event and process it
    - Various kinds of modules, e.g. input, processing, output
- A processing task:
  - Chooses some modules, in some order
    - Activates and configures them via a uniform interface (TCL scripts interpreted by the sw framework)
    - Scripts but also interactive command line

Modules

- A library which exposes a simple interface
  - Processing primitives (beginJob(), beginRun(), event(), endRun, endJob(), ...)
  - States
  - Parameters, depending on the module
  - Activation
- The parameters are not fixed. The author chooses the ones needed for his “new” module

Users... examples

- Physics analysts
  - Read data from a (standardized?!) ROOT file
  - Processing
  - Write output (e.g. n-tuples)
- Developers and Sysadmin
  - e.g. for event reconstruction in a farm:
    - Activates the appropriate modules
    - raw read
    - reconstruction
    - write a (standardized?!) ROOT file
- Exactly the same environment/tools

Events and data

- No upper limit to the number of modules. Modules are independent.
  - Dev phase can be parallelized
  - Product: an executable or a batch tcl script (or both)
- Event model based on the concept of typed dictionary
  - A set of typed couples [key, value] ev. nested in sequences build up an “event”
  - Efficient
  - A modification to the event model does not imply modifications or recompilation of existing modules

Where are we?

- Extraction of the core parts from the BaBar framework: done
- De-BaBarization of the core: done
- Relatively small (and boring) porting to STL: 90%
  - To avoid some outdated wrappers
- The core parts now compile (04 May 2006)
- Once the empty framework runs, a simple event model can be inserted immediately in the prototype

Memento

A prototype is a prototype!