

An Objectivity/DB Browser & Management tool for BaBar

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Yemi@slac.stanford.edu

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Why?

- We need an interactive Objectivity/DB utility, for physicists and administrators
- The bundled "ooolmgr" program offers limited functionality and does not scale

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Key Software Requirements

- Browse capability for common users:
 - View hierarchies within federations
 - Traverse associations
- For administrators (privileged) users:
 - Monitor/remove transaction locks
 - View performance-related statistics
 - Control physical location of DB files

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Paths To A Possible Solution

- There is no shrink-wrapped product!
- Candidates for re-use:
 - RD-45's DRO-Tool (CERN)
 - MICRAM's HUDSON (commercial)
- Alternative is to embark on development

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The Existing Packages

- DROTool - features for managing database distribution and fault tolerance
- HUDSON - provides a choice of views to browse classes, containers, etc.
- Both DROTool and HUDSON are built on:
 - Objectivity/Java binding
 - Sun JDK1.1.5 + swing GUI components

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BaBar's Functional Demands

- Scalability! - 10k databases (users do not wish to scroll for eternity)
- Presenting the right abstraction
 - No general external product is BaBar-aware
 - A logical, BaBar database hierarchy needs to be incorporated

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Language Constraints

- Task initially appears well suited for Java
- Objectivity/Java binding has problems with C++ template names
- BaBar's Java policy somewhat conflicting:
 - Recommends Java for thin-layer apps only
 - IPC should be based on CORBA

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CORBA

- A STANDARD for distributed inter-object communication (<http://www.omg.org>)
- ORB's form the middleware layer along with the IIOP
- Java/C++ ORB bindings readily available

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ORBs Currently Under Evaluation

- Visibroker (Inprise)
 - Well documented with C++ and Java interface
- JavaIDL (Sun)
 - Will become part of JDK1.2
- TAO (freeware)
 - C++ ORB CORBA 2.2 compliant (POA)
- JacORB (freeware)

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The Prototype

- Proof of Java/C++ ORB interoperability
- Java client - GUI based on JDK/swing
- C++ server - Provides GUI with Objectivity/DB summary information

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Working ORB Combinations

- Visibroker (Java) <--> Visibroker (C++)
 - JavaIDL (Java) <--> Visibroker (C++)
 - JavaIDL (Java) <--> TAO (C++)
 - JacORB (Java) <--> TAO (C++)
- Tested on Solaris & Windows NT4.0

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Today's News

- A re-use solution is the preferred option
- ORB marshalling overhead 'insignificant'
- Objectivity and HUDSON have a fix for C++ template class access from Java
- HUDSON are willing to address scalability and integrating the BaBar logical hierarchy

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Looking Ahead

- Work with MICRAM and RD45 to address our current needs
- Will MICRAM really deliver?
- New version of HUDSON due out ~5 weeks (should include template fix)
- Prototyping will help us reveal new requirements

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Yemi@slac.stanford.edu

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