

JAS3 + WIRED

intro + demo
status & plans

Dmitry Onoprienko

SLAC - SCA

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Foreword...

Most of this talk's content is in demo, so...

JAS3:

home: <http://jas.freehep.org/jas3/>

download: <http://jas.freehep.org/jas3/download.html>

WIRED 4:

Can be downloaded and installed through JAS3 plugin manager

home: <http://wired.freehep.org/>

GLAST web start version: <http://glast-ground.slac.stanford.edu/DataPortalWired/?tab=Wired>

SVN: <svn://svn.freehep.org/svn/wired/trunk> (head updated frequently)

Interactive analysis shell based on FreeHEP Application Framework.

Written in Java. Lightweight framework.

Provides services to plugins:

- Top level GUI: window, menus, status bar, etc. Customizable – plugins can add their own menu items, buttons and other components.
- Application services: component lookup, command processing, etc.
- Storage/retrieval of user preferences
- Help system
- Communications between modules and plugins.
- Management of plugins (installation, updates, removal). Plugins can be published on the Web as JARs with an embedded XML description file. Dependencies and versions can be specified.

Analysis functionality is provided by plugins.

JAS3 standard plugins

Built-in modules : (cannot be removed)

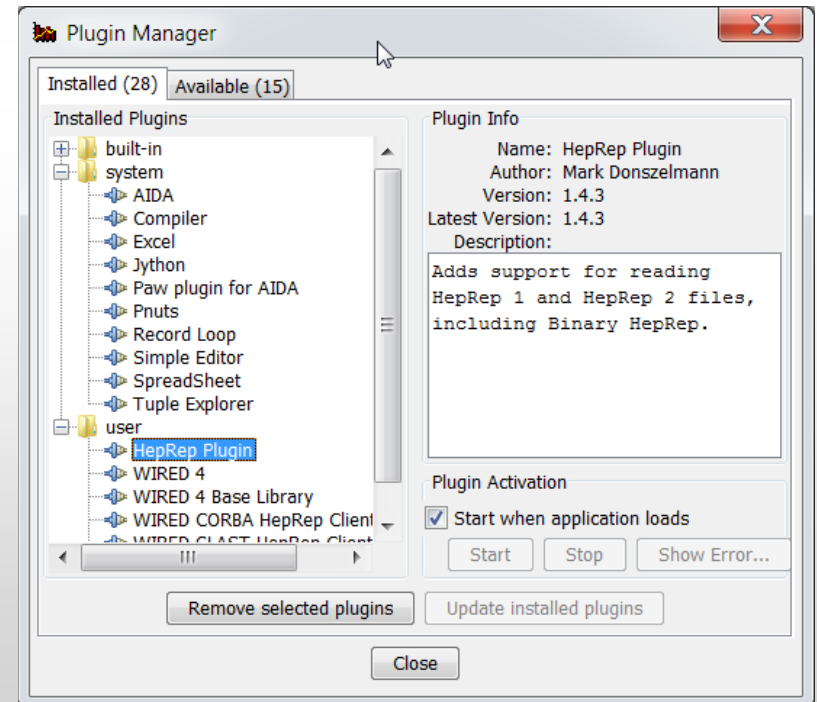
- Console
- Data Source
- File Opener
- Plotter
- Plugin Manager
- Preferences
- Save/Restore
- Status Bar
- Tree
- Web Browser

System modules : (come with JAS3 distribution)

- AIDA
- Compiler
- Excel
- Jython
- Paw for AIDA
- Pnuts
- Record Loop
- Simple Editor
- SpreadSheet
- Tuple Explorer

User plugins :

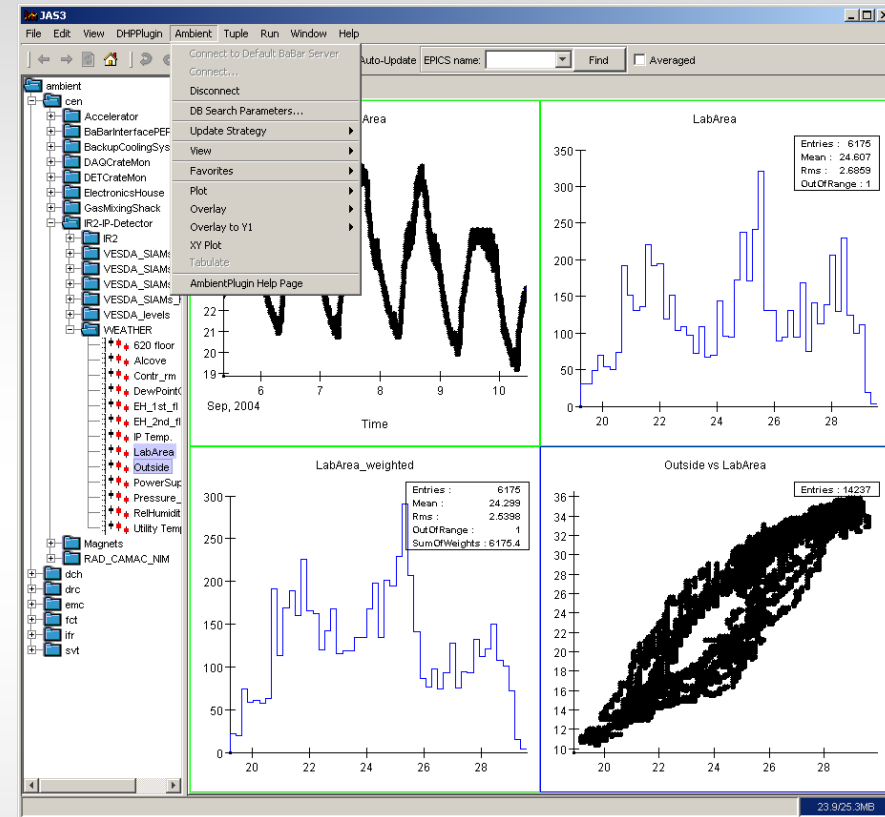
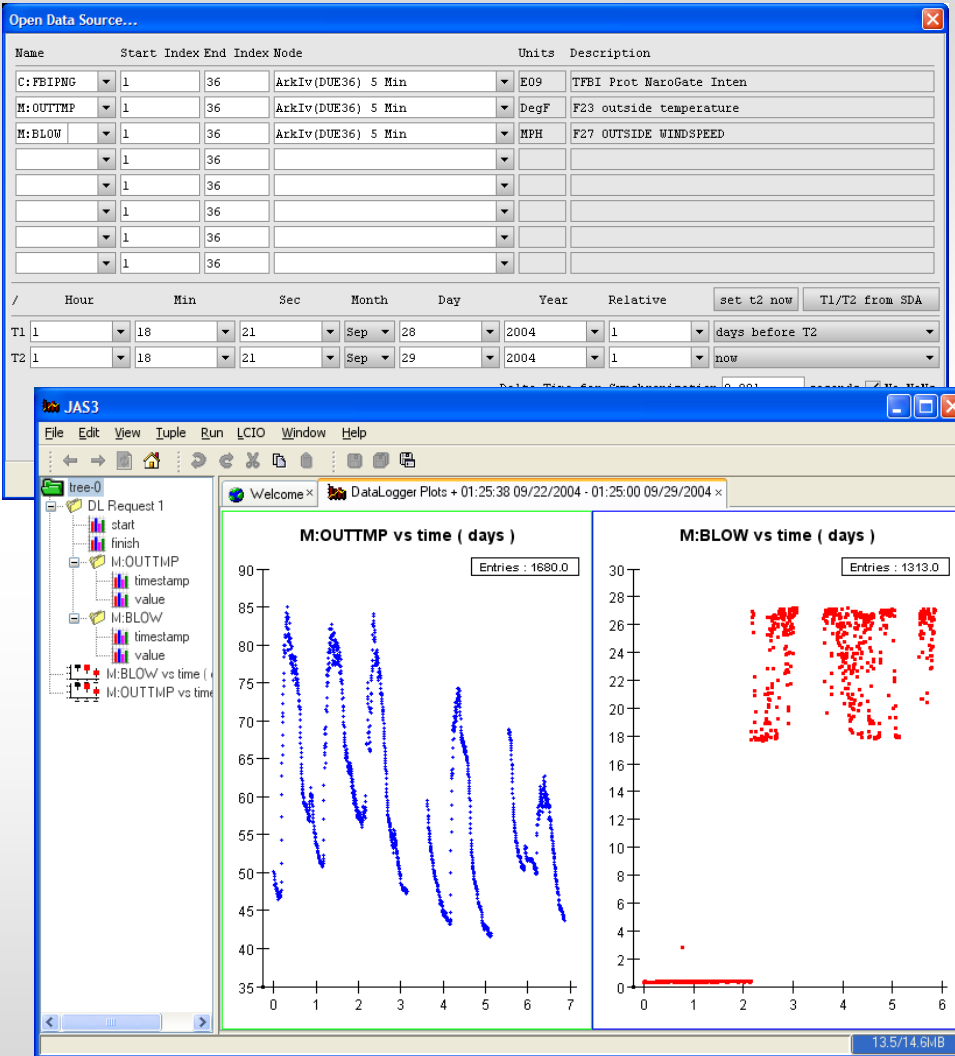
Generic, experiment specific, private...



JAS3 - user plugin examples

FermiLab's Accelerator Control

BaBar's Ambient Data Explorer



Easy to add: inherit from Plugin class, add XML description file to the JAR, drop the JAR into JAS3 classpath.

Why JAS3 when we can use <...> ?

JAS3 is just a shell (though a good one) – it's all about compatible tools...

Quite a few advantages:

- Java
- Lightweight, open, flexible, extensible
- Jython for scripting
- Plugins provide a lot of functionality in a fairly generic form
- AIDA

Big disadvantages:

- AIDA
- Limited support

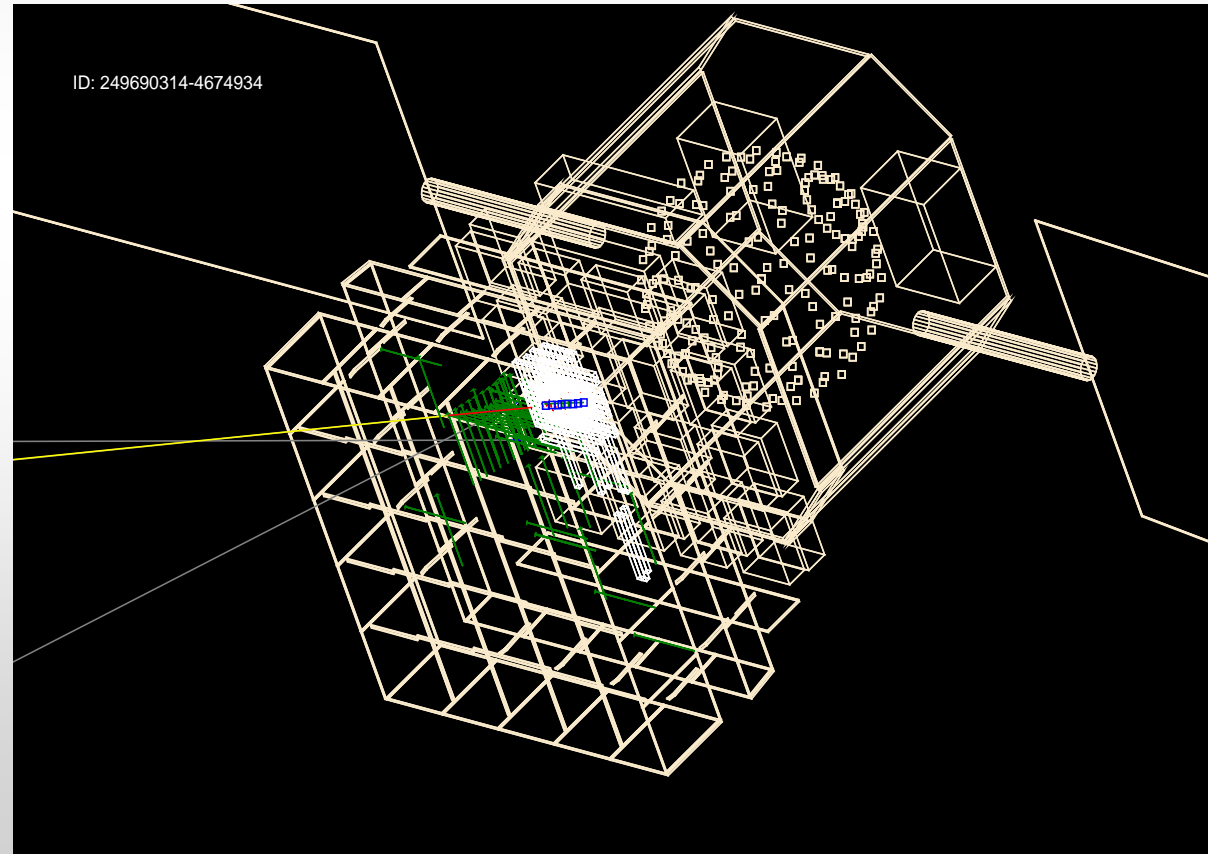
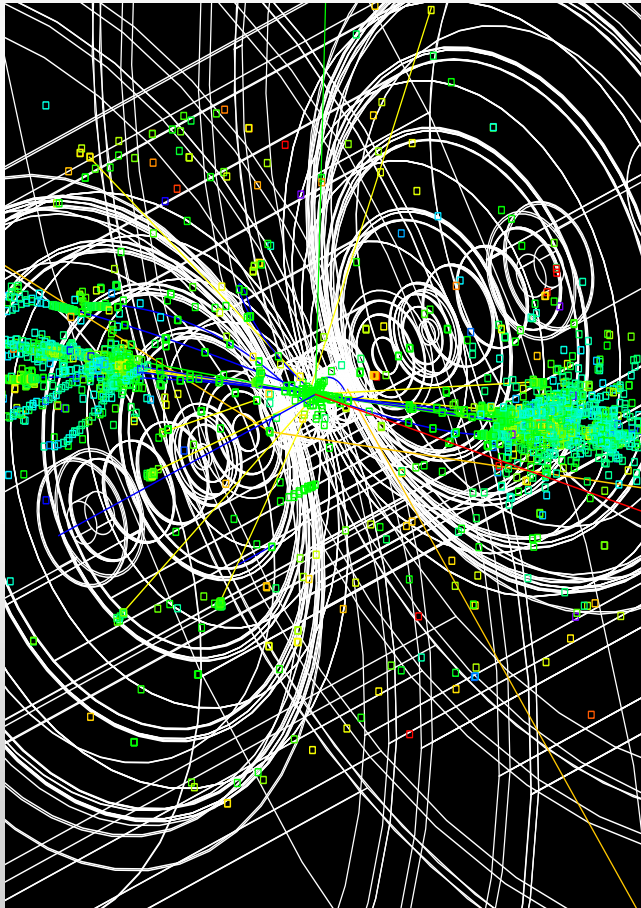
WIRED 4: Experiment-independent event display

Implemented as a plugin for JAS3, relatively lightweight

Generic – does not care where the HepRep2 came from

Extensible – new projections, controls, services, etc. can be added.

Portable – written entirely in Java.



Data access

WIRED4 uses HepRep 2 format internally.

- consists of information such as tracks and hits
- adds representations: lines, cylinders, ...
- adds attributes: drawing properties, physics info...
- geometry and event data can be separated so that geometry is not reloaded every event
- hierarchy of types and instances
- layers

Sources:

- Read HepRep 2 XML file
- Read HepRep 1 XML – has a built-in converter
- Talk to HepRep CORBA server
- Generate in-memory HepRep using one of the converter modules.

Experiments/Projects use:

- BaBar - HepRep 1 XML and HepRep 1 CORBA
- GLAST - HepRep 2 XML and HepRep 2 CORBA
- LCIO / LCSim - LCIO to HepRep 2 Plugin
- Geant4 - HepRep 1 XML and HepRep 2 XML

Features

Projections: parallel, fish-eye, ρ -Z, composite. Custom projections can be defined.

Scaling, Rotation, Translation

Flexible visibility controls: by type, instance, level in a tree, layer.

Dynamic cuts based on attribute values.

Graphical picking. Multiple ways to select, highlight, and examine objects.

Most edits are undoable / redoable.

Output to multiple graphics formats.

User / developer extensible.

Let's see if it works in demo...

Issues / Bugs / Feature requests

1. Fix heprep object tree display/controls/synchronization.

Multiple problems here. Customized SWING tree code is broken – no obvious way to fix. Numerous synchronization / event processing issues.

2. Synchronize picking and instance tree view + related problems and requested enhancements.

This requires significant changes to the way WIRED handles its components and communications between them.

3. Fix filtering pickable objects.

At the moment, pickable types tree loses its state once the mouse moves away from it – not very useful.

4. **Actions: run through a pre-defined set of events and execute a set of commands (like saving a jpeg) for each event.**

Allow use of currently configured views.

5. Show mouse coordinates when in a view where this makes sense.

6. Full screen mode.

Make it possible to minimize each of the 3 parts of an MDI app ?

7. Keyboard shortcuts.

8. Sharing settings between WIRED views. Initial settings for newly opened views.

Should be easy once item 2 is done.

9. Should be possible to override default color map.

Issues / Bugs / Feature requests

10. Should be possible to override default color map.

11. Fix cuts-related functionality, allow type specific cuts

Multiple GUI problems here, logic errors, disabled functionality, random bugs, requested features hard to implement – need to rewrite.

12. Better handling of user preferences

13. Projection – specific problems.

14. Miscellaneous small bugs...

There is also a number of requests related to choosing/replaying events – those are actually a Jas3/Gleam issues.

Feel free to add to this list: <https://jira.slac.stanford.edu/browse/LWRD>

Done so far...

- ✓ Type/Instance tree package rewritten. All requested features implemented.
- ✓ Refactoring: (**Not quite finished**)
 - All state associated with a WIRED plot is moved to plot model. A model can be shared by multiple plots
 - All communications between control panels and plots go through the model.
 - All components are notified of global events in a standard way
 - Control Panels are decoupled from Interaction Handlers.
- ✓ Selection is synchronized between various modes and control panels.
- ✓ Selection of invisible objects enabled
- ✓ Type-filtered picking fixed.
- ✓ Cuts-related package rewritten, new functionality added.
- ✓ Miscellaneous bugs fixed, more found...

Let's try the new version...

Next steps

Finish and release the updated version (few days ?)

Go through the remaining WIRED-specific JIRA tickets.

Better scripting support – need user input.

HepRep validation/fixing.

Many enhancements possible – need to prioritize based on users needs.