

# 2001 ROOT Workshop

## The Summary

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### Content (cont.)

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### Most Requested

- An area where good examples, add-on, libraries can be collected and distributed.
  - lot's of different maintenance models of how they can be supported by the developers
  - should be search-able
  - is the current root engine good enough for this?
  - don't want to run all for each release
  - developers should place an abstract and a link to their own web site where it is maintained.
  - guide lines for authors
- Using cvs-branch to distribute patches to previous versions.
  - this is something I would be very interested in (Pasha). How do we maintain experiment specific builds? How are other experiments coping with this issue?
  - Brookhaven – we are checking out the binaries – not our own build. We have no customized version. We would like to see CVS branches. We move to the pro versions.
  - Rene – star model. Branching is an incentive for people to stay with a branch and delay the major upgrade.
  - Phinix – we stayed with a branch a few times, but that was not a problem.
  - Rene – people are very reluctant to use a version pre – production. When we are 1 months away we would like to see the large collaborations to start testing the new

- release. Otherwise as soon as it is blessed, everything breaks. I would like to see more collaborations test their software with the new version.
- Martin P. – We don't use a lot of stuff and could not test it, but for the things we are using we develop a test suite. Rene you could identify the dependencies and then ask the collaborations to test these.
  - Rene – my primary concern is the stability of the I/O. I need a test for name space. I don't know how much work is involved.
  - Mark F. – it will double your maintenance.
  - Federico C – qualify it: if you do branches it must be clear to what version you apply the fix. You can not possibly have more than one active and more active development.
  - ?- each experiment will maintain a branch for its own use.
  - Phoenix and Alice don't do it.
  - Martin – I would contest the double man power statement. Especially merging everything back to the main division.
  - Rene – afs binaries are a night mare.
  - Somewhere you have to draw the line to include fixes.
  - It depends on what you work on, an event display will need very different things than an io subsystem.
  - Pasha: Leave the decision to propagate a fix to production version for future time.
  - Rene: I want to see how we will organize our selves, and we have to see how we can make progress. We could ask specific people to test certain areas.
  - BNL ? -We have a few people running with cvs head all the time.
  - Rhick – works well with us.
  - Kennedy – we have maintained a level of stability and have access to the bug fixes.
  - Philippe/Kennedy – CDF has to push root to 100 machines every time we upgrade. CDF is reducing the people available to do the testing
  - Rene – in the case of CDF I would have liked to have your header files to test with.
  - Kennedy – there needs to be a position in CDF to do root regression testing. We have 5 different niches that need to be tested.
  - no conclusion – need manpower assessment

## ■ Cross branches pointer reference.

- h1 has an implementation.
- Denis: this is really needed for analysis.
- Rene: I am aware of the h1 issues, and something will probably be done. Assuming we want a lazy pointer machinery
- Nick West: Pointers between branches of the same tree or across different persistencies (?) .
- Pasha: What prevents me in my analysis job to explicitly read the related hits?
- Nick: Yes, but users make their own little machinery, this would be a way to institutionalize it.
- Rene: could you send me a use case (Nick)?

## ■ ROOT and STL container?

- Rene: it is clear that we will not get rid of ROOT containers. STL containers are not persistent, so we need ROOT containers. STL for splitting should be supported. We need more feedback on examples. STL containers are still slower in the IO. We are discussing Clones Arrays for not TObjects. We need more experience with h1. Another example is the AliObjectArray (?) I also see abuse of STL for example a vector or vectors of vectors. We are currently not able to process STL containers without the classes, these are side effects to consider.

## ■ Geometry package.

- see previous discussions

## Most Requested (cont.)

- More test of backward compatibility.
  - Rene: this is related to what we discussed before.
- Improvement in template and namespace support (ClassDef, LinkDef).
  - Rene: we don't know how many people are using the ClassDef macro. Christoph, Minos, DO, and Babar, CDF (maybe) .
  - This is the kind of thing that introduces complexity into the system. I agree that it is elegant to use a specific solution, but may there is a simpler way which will be easier to explain in a few years. It easily gets too complicated.
- Better information about change in interfaces.
  - Rene: comment was about 'const' change.
  - If you change from one version to another (we do it every 3 months). We can not go through all the release notes.
  - Rene: we publish a release notes with the production release.
  - Martin Schulte-Wisseemann: old code broke because a function was removed.
  - Philippe: we may not have a list of all release not summaries.
  - Pasha : this issue can be solved by using the compile all option and tell people what has changed.
  - Conclusion: seems like this is not that important.
- Documentation of the GUI classes and widget.
  - Rene: Fons will never to write it. People want to see a gui builder, I don't believe this is a big job and I think I can find someone to do that. I believe this would be the best documentation.
- Need a better search engine for ROOT web pages.
  - Have you tried LXR? Yes, it is available.
  - We would like to see a better search engine for the web pages, not the source.
  - Fons: just suggest a better search engine.
- Improve the (online) documentation for in-line functions.
  - How big a deal is it? A big deal. We would have a tool roothtml, where we don't need to run the root.exe and instead of generating ps files, it would create interactive files. There is another long list of issues with THtml.
  - Doxygen stuff – is also a lot of work.
  - Pasha: the priority of this item is lower than having doc generated for a class that is split into two source files.
  - Inherited data members, why replace the current one?

- Because it is a night-mare to maintain.

## Request already satisfied

- Needs STL I/O support.
  - Need examples. For example the CDF files.
  - Need info from Axel N.
- Fix colors in X3DC on 16 bits displays.
- Fix OpenGL color indices greater than 10.
- Data only in TTreeView.
- Issue with the scope rules with files and canvas.
- Need TClass for interpreted class.

## Build and Distribution

- Cvs-branching
- Backward compatibility test
- Using autoconf-automake
  - Marting P. : I had this as a side item. If Fons is comfortable this way, it's ... (can no longer hear).

## Web Page

- Need a repository of contributed code
- Need a better search engine for ROOT web site
- Need a search engine for the release notes
- Fermilab documentation pages should be more prominent

## Information and Documentation

- Better documentation for GUI.
- Better announcement of interface changes.
- Better documentation of inline functions.
- More documentation on using gdb.
- Community should write more how-to.

## Information Documentation (cont.)

- Show inherited methods.

- Compress postscript files.
  - Rene: This could be a trivial addition.
  - Pasha: Is anyone looking at these? (1 hand was raised).
  - Rene: The problem is the ps file is too slow.
  - A click-able gif file would be much better.
- Index page per directory/package.
- Cross reference in auto-documentation from multiple directories.
- Auto-documentation without dictionary.
- Generate documentation for A class described in several source files.

## CINT and ROOTCINT

- Template and namespace support in ROOTCINT (and ROOT I/O).
  - LinkDef is very sensitive to template order.
  - ClassDef explosion.
- Separating I/O and non I/O part of dictionary to reduce coupling.
  - Kennedy: For forward declaration code hurts the interaction dictionary not the IO dictionary. If we could have that we could move off line to use some new features. You have to specify the header file one way or another. This is just one solution. If there is another way to solve the problem of having forward references, we are open to it.
  - Rene: related issue, I want a public member function .... (hu?)
  - Kennedy: we see many ifdef's now, and that could be of help. The main issue is the forward declarations and maintaining browsability.
- Generate executable version of history files.
  - Is there anyone else interested – Rene: has several requests for this.
  - Rene: The idea is to show the history file in the editor.
- Customized error logging in CINT.
  - Already exists.
- Ability to use templates in signal/slot.
  - We need some examples of how it fails – no failure but an extension.

## CINT and ROOTCINT (Cont.)

- Possibility to rewind/undo ROOT actions.
  - This is difficult to implement. Is this undo one step or back to the beginning?

- Masa: It is in pure CINT. If you feel like trying the capability, install and try it with pure CINT.
- Rene: We have TROOT::Reset() where we clear all globals.
- Masa: In CINT you can return to the point where the last error was.
- Garbage collection and leakage control.
- Possibility to execute C++ macro from memory buffer.
  - Masa, I am providing a function that writes to a temporary file but from the user's point it looks like it runs from memory. The only difference is the speed.
  - Valeriy: I would like to load the macro not execute it.
  - Masa: That is a very different story. You need to keep parity so that CINT can dynamically load and unload the file. To do that you need strict parity throughout the whole program – it is not so simple.
  - Rene: I don't understand this. You already have the lines in memory.
  - There is more to it. CINT is so dynamic if we want to make any changes we need to be careful about the parity of the entire thing. A small change can break everything. If you want to run something is easy, if you want to define something it is more difficult.
  - Can you just keep the file?
  - Yes I can do that.
- Need to make the system robust enough against crashes.
- Unloading code does not work well.
- Bugs: function with more than 10 arguments, zero pointer casting, #include behavior.

## GUI

- Produce gif file in batch mode
- Current design confusing/not professional.
- Need more widgets.
- Need tie low (see Brett Viren).
- Need to stay open to QtROOT style contrib.
- Access to several displays from one process.
  - ?
- Option to preserve TCanvas aspect ratio.
  - TPad resizing keeping the aspect ratio. Rene's part.
- Improve OpenGL support.

## GUI (cont.)

- Speed of graphics with 8 bits display and with Netscape is running.
  - nobody else had this problem
- Problem with overdrawing contents on a canvas; (Core dump when overlapping 2 pads).
  - More information on how to do canvas design.

- Rene: I am totally convinced that we need the GUI builder.
- Could use a canvas design tools and/or more guidance.
- A better way to list objects that does not include all ROOT functions, classes, etc.
- Windows support (GUI).
- Have a way to develop web version of the GUI classes.

## Data storage

- Cross branches pointer reference.
- Support for Block I/O.
  - This is what CDF is using to write
  - CDF does not want this broken
  - Kennedy: it is very useful for us, and not clear if it was supported officially by ROOT.
  - Rene: this is an interesting addition.
- Fine-tuning in I/O error handling.
- Namespace support.
  - Is there an issue about Nested Classes?

## Miscellaneous New Features

- ROOT container vs. STL container.
- Container for non-TObject.
  - Rene: It makes sense to have containers of non-TObject for very small objects
- Want PROOF.
- Poll select functionality in TSocket.
- Root/Cint quiet for purify.
- Generic interface for IDL.
- Upgrade of obscure interfaces (SetOptStat...).
  - comes with the new panels
  - I don't think it is very important
  - Maybe just need to improve documentation
- TObject::print and ostream.
- Eigen-value and Eigen-vector algorithm (D0).
- H2root lose message of fitted parameters.

## Comments

- Using CINT inside compiled code result in hidden dependencies.
- Gaudi should move towards using more realistic ROOT interface.
  - Yes we agree

- Upgrading ROOT frequently breaks template and namespace support.
- Would like recommendation or review of developer tools that work well with ROOT.
- ROOT should be more used in DAQ and slow controls software.
- TMapFile has a lot of problems.

Note:

Masa: Exception handling is already implemented and I can upload an example on roottalk.

Vallery: - something about installing root -

George Irwin: Needs RDBC to use the Apache server. What is the possibility of integrating RDBC and ?SQL.

Fons: When Vallery is done, we will consider interfacing.