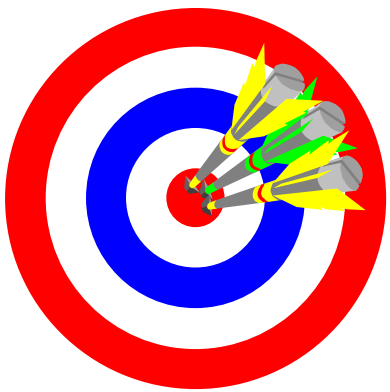
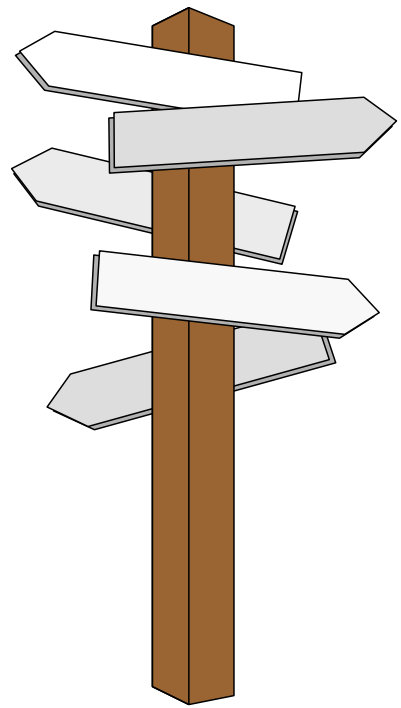
Interesting to look at
our programme of work
16 months ago

Some views on t ROOT future

ROOT Workshop 2001

June 13 FNAL



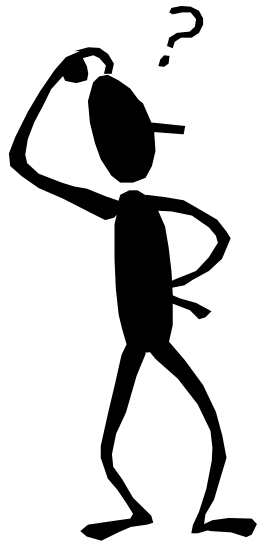


René Brun

CERN

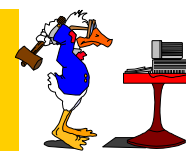
General remarks

- In 1995, we had planned less than 50% of ROOT 2001.
  - - importance of dictionary, RTTI
  - - Automatic Schema Evolution
  - - effort in GUI
  - - Online requirements (Threads, Timers, Sockets, etc)



- Development of a system is driven by:
  - - ideas from authors
  - - ideas from users
  - - new ideas and techniques in computing
  - - OS development. In 1995, push for Windows, Linux not here
  - - language developments (eg template support, exception handling, Java)
  - - cooperation with other systems (ex Objy, Oracle, Corba, Qt, etc)
  - - manpower (see next)

Users expect stable and working systems. Quality of a system should improve with time. Often in contradiction with major developments.



General remarks

- Authors spend more than 50 % of time in maintenance, trivial improvements, documentation, user support.
- Manpower situation and support for ROOT at CERN
  - Support for ROOT requested by the CERN Computing Review
  - New Computing Organization (LHC computing project) being decided now.
  - Fons : more stable position within Alice
  - Hoping to get at least one or two more persons.
- Excellent relationship CERN<-->FNAL
- Very good cooperation with major labs
- More prospects for cooperation between developers following HEPVIS2001 in Boston

Current Ideas

- Short Term (2001)
- Medium Term (2002)
- Long term

Not a commitment !

Items may be moved from Short to Long term and vice-versa

Short Term
(coming 6 to 8 months)

- Reimplement TTree::Draw to use the new TSelector machinery
  - New classes TTreeDrawSelector & TTreeDrawSelectorPROOF
  - This point is urgent. It blocks the development of PROOF.

- Automatic folders when connecting Trees created from Folders

2003

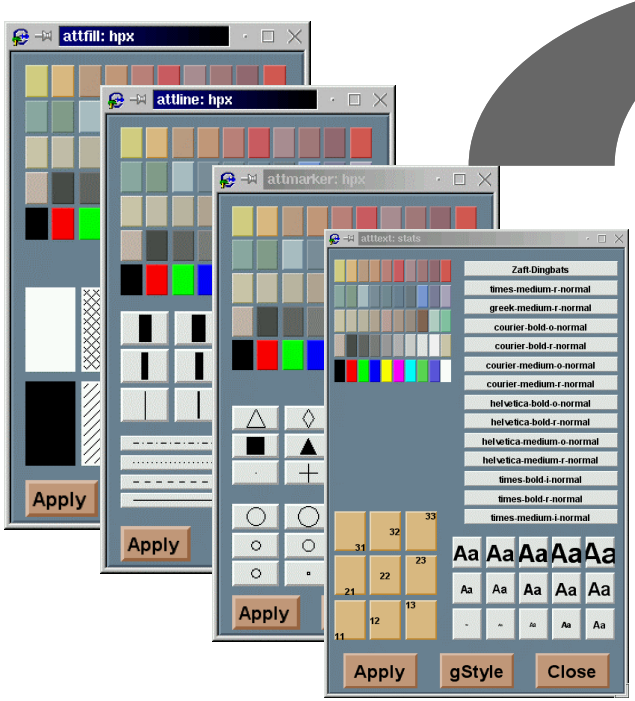
- Geant4 classes with rootcint

2003

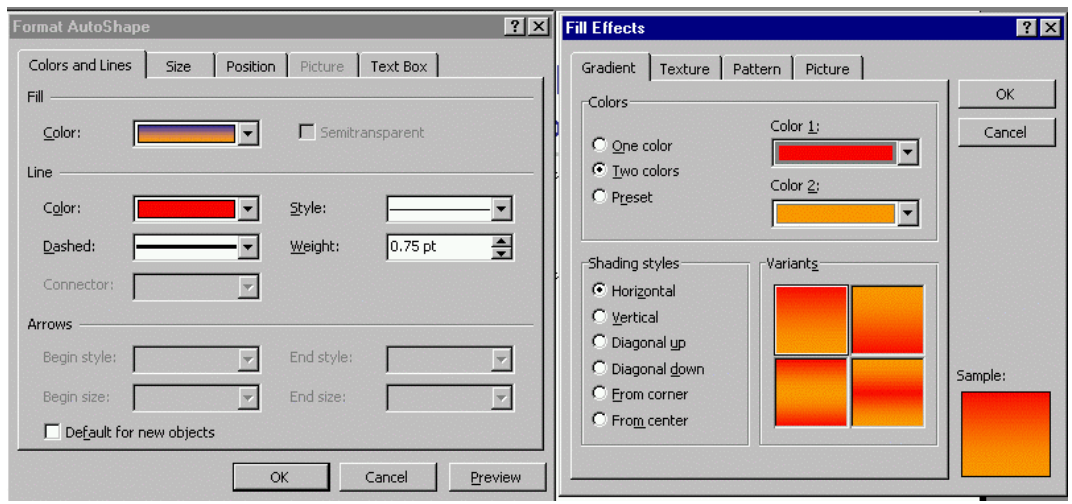
- Support for foreign classes not instrumented with ClassDef ✓
- Improvements in ROOT + CINT + STL (eliminate side-effects) ✓
- First operational PROOF working on Trees ✓
- TreeViewer developments ???
- TTreeFormula improvements ..... ✓

Short Term
(coming 6 to 8 months)

- Replace current Attribute widgets

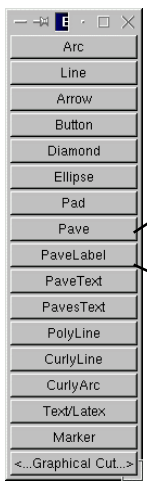


2003

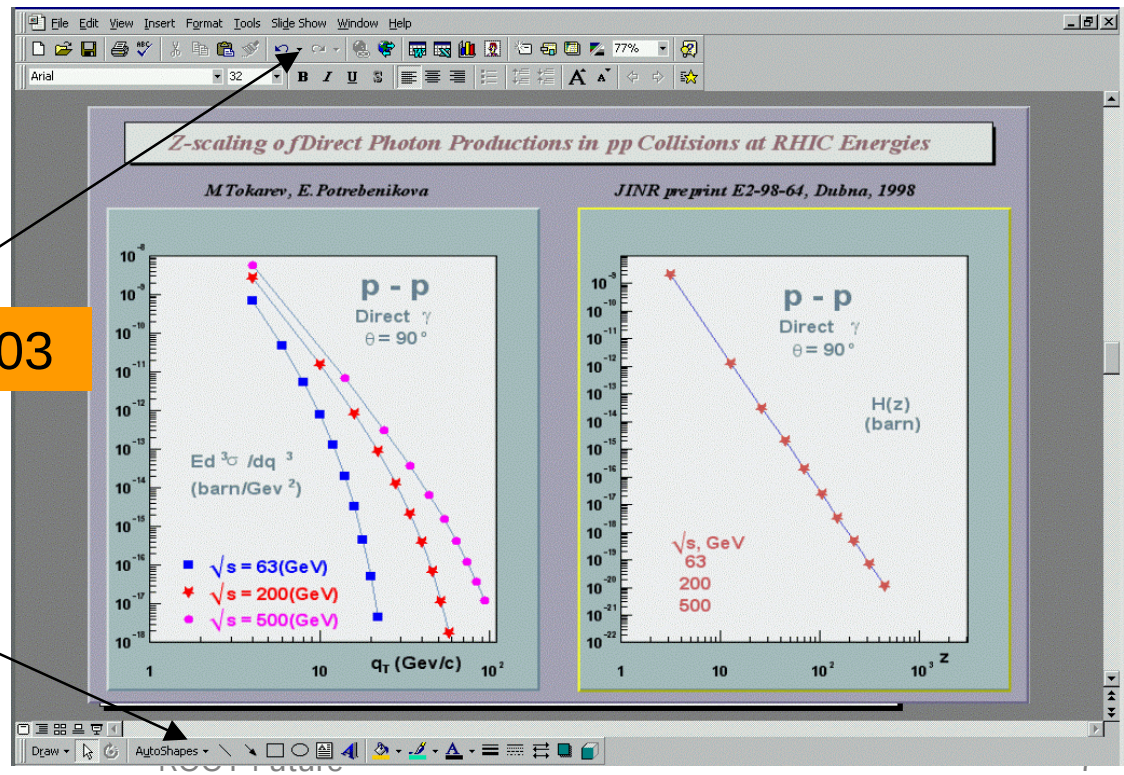


Short Term
(coming 6 to 8 months)

- Split TPad in 3 classes
  - TPad: pad management
  - TPadBasicGraphics with interfaces to
    - TVirtualX
    - TVirtualPS
  - TGraphicsEditor



2003



Short Term
(coming 6 to 8 months)

- Separate g3d in two categories
  - geometry
  - 3-d graphics primitives

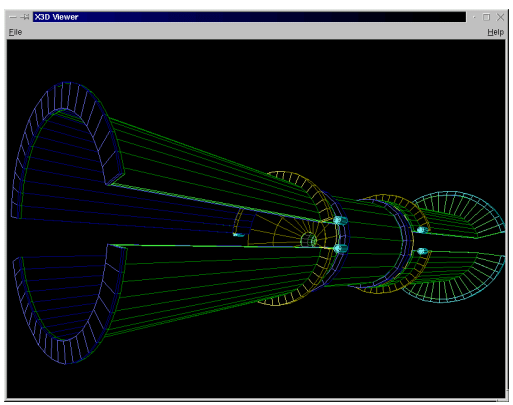
- Collaboration with Guy Barrand,etc on 2-d/3-d interfaces

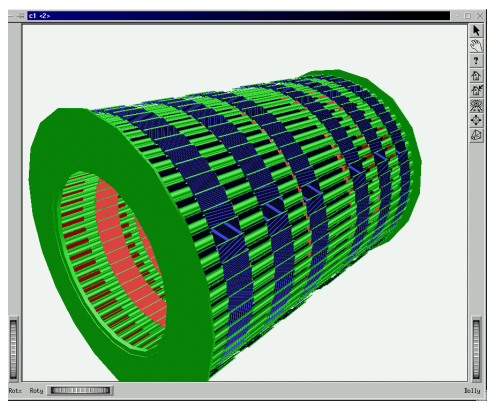
- OpenInventor picking
- Lego/Surface plots in 3-D

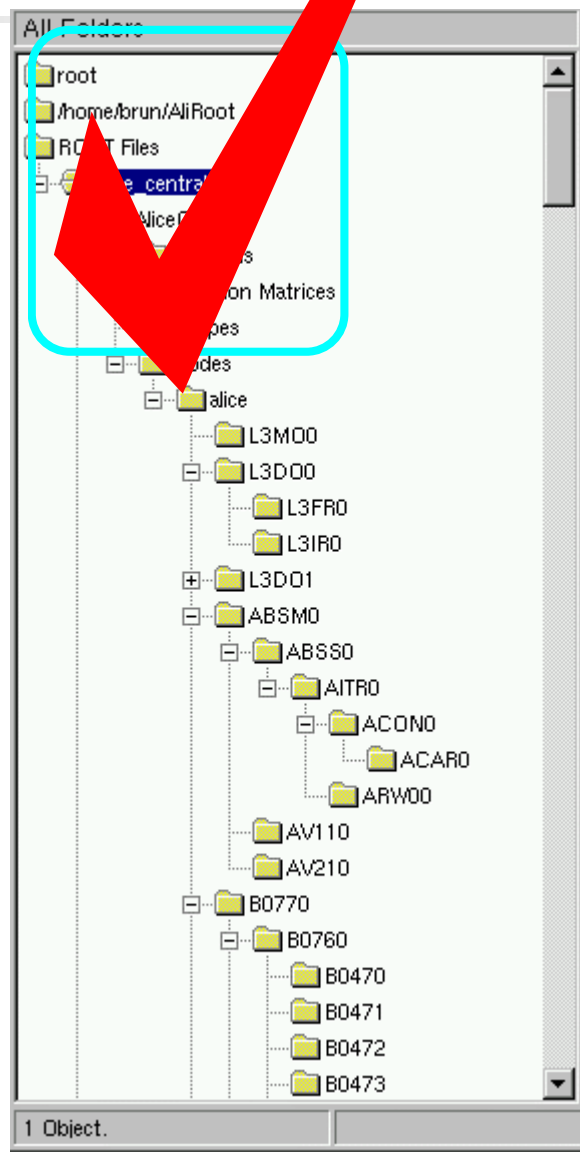
- Change color palette logic for 2-d graphics options ✓
- Zoom algorithm on TGraph x axis ✓
- String histograms TH1Str ✓

Medium Term (2002)

- Must have a geometry package with:
  - support for G3/G4 like modelling
  - boolean operations
  - Visualisation (2-D, 3-D, cuts, picking)
  - Where Am I. Distance to boundary
  - import/export to geom data base
  - export to G3/G4 modellers







Medium Term (2002)

- Abstract interface for Tree branches
- Recovery mechanism for Trees when the Tree header has not been written to the file.
- TTreeFormula-like class for C++ Event structures that could be used to simplify interactive selections in event displays.
- Integrated HELP (from common source) 2003
- Integration with GRID middleware
- support large files (> 2Gb)
- Atlas MDC0/1.
- Alice Data Challenge 4
- support split mode for STL vectors (like TClonesArray)

Medium Term (2002)

- MessageHandler: Could exploit this class much more.
- Event Generators interface: Possible convergence (HepMC, HEPPDT, etc)

- Math Library; GSL?, matrix package. Please help here 2003
- Better support for Windows 2003
- Reingeneering of, TStyle TGraph, TGaxis and like

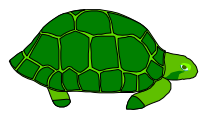
- TF3 graphics
- Stacked lego plots in several systems
- Add Image processing classes
- Interfaces to Algebraic manipulation systems (eg gTyBalt)

Long Term (2003-->)

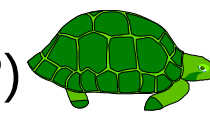
- Extend the development model
  - with more people taking responsabilities for major sub-systems
  - with more people discussing design/redesign issues
- Hoping CINT in C++ 
- Redesign TMinuit with extensions
- probably time to extend Trees with support for more container types 2003
- LHC data Challenges 2003
- more and more GRID stuff. Logical Data Sets (Catalog in RDBMS),
- Use GRID services ✓
- Huge effort in PROOF ✓

Long Term (2003-->)

- Major improvements in the graphics look and feel. 2003
- More graphics classes 2003
- More support for Event displays
- Graphics in WANs



- Probably major GUI developments; Root GUI, Qt, etc) 2003
- Drag and drop objects between applications. 2003
- More cluster analysis classes.
- Support for Exceptions , Namespaces?
- Root with efficient Web interfaces (TApache follow-on)
- Follow C++ development (hoping for a native RTTI)
- Root and Java (native Root classes in Java?) (coop with JAS ?)



- May be a new language (Microsoft ?)

Long Term (2003-->)

List from Philippe (1)

rootcint:

1. move to NOT link class by default
2. Enable the dictionary generation for template member functions

TTree::Draw implement

1. calling CINT function (or macro file)
2. allow arguments if function calls
3. int Index$(variable,dimension)
4. Add an interfact to pass the histogram by address rather than name

TTree::Draw fix the non working:

1. T->Draw("((TH1F*)(fWebHistogram.GetObject())).GetRMS()")
2. Handling of variable size array that happens to be of size 1.
3. With fTracks a TClonesArray of TTrack and
   fPoints an array of double inside TTrack:
   tree->Draw("fTracks.fPoints - fTracks.fPoints[][fTracks.fAvgPoints]");
4. a few odd problem with strings.

TTree::Scan

1. Update it to print at least N elements of the arrays inside an entry

List from Philippe (2)

I/O implement:

1. Add the ability to connect a hand-coded streamer to a class.
2. myNonTObject **myVarArr; //[index] [waiting to see what Viktor has designed]
3. Shadow class of nested types (need CINT upgrade)
4. Upgrade the 'Inspect' mechanism to allow for browsing of non-TObject classes
5. Add a default constructor for the shadow class where the non-instrumented class does not have a default ctor (see TPadOpenGLView.h)
6. Pursue the issue of TClonesArray as an embedded data member vs a pointer
7. Ability to set a data member from another one during the I/O
8. Update the TClass containers in TROOT and TClassTable for efficiency
9. Fix problem of TStreamer and templates

CINT

1. upgrade CINT/ROOT so that cintdlls work on all platforms?

MakeProject

1. upgrade to work with namespace and templates.

TabCom

Make it work for nested class and for function result.

DrawTest:

1. get better statistics
2. add more test

Ilka Antcheva

GUI Documentation
new chapter in Users Guide

SavePrimitive for all GUI classes
to save a GUI like with SaveAs canvas.C

Make GUI classes persistent capable
to save a TGMainFrame in a Root file

GUI Editor/Builder

Redesign Attribute widgets

Redesign graphics editor (a la Powerpoint)

Olivier Couet

True Type Fonts 2
- work well advanced
- better fonts
- can be rotated
- better **GetTextExtent** (good for **TLatex**)

3-d graphics
- plan to work with **E.Tchernaev** algorithms for the geometry
- also for lego-plots visible in X3D/OpenGL

Revisit many 2-d graphics classes

Valeriy Onuchin

Win32GDK
work with the Threads problem reported by Bertrand
make win32GDK operational

TBrowser optimisations for navigation in containers with many objects

Carrot support and development

Fons

Basic infrastucture support and development
- Build system
- System classes

GUI development and Supervision

PROOF with Maarten

GRID support and interfaces

Rene

Try to coordinate the activities

Implement HELP system
root_help.root file generated by THtml
opportunity to improve the doc