

Preface

In late 1994, we decided to learn and investigate Object Oriented programming and C++ to better judge the suitability of these relatively new techniques for scientific programming. We knew that there is no better way to learn a new programming environment than to use it to write a program that can solve a real problem. After a few weeks, we had our first histogramming package in C++. A few weeks later we had a rewrite of the same package using the, at that time, very new template features of C++. Again, a few weeks later we had another rewrite of the package without templates since we could only compile the version with templates on one single platform using a specific compiler. Finally, after about four months we had a histogramming package that was faster and more efficient than the well-known FORTRAN based HBOOK histogramming package. This gave us enough confidence in the new technologies to decide to continue the development. Thus was born ROOT. Since its first public release at the end of 1995, ROOT has enjoyed an ever-increasing popularity. Currently it is being used in all major High Energy and Nuclear Physics laboratories around the world to monitor, to store and to analyze data. In the other sciences as well as the medical and financial industries, many people are using ROOT. We estimate the current user base to be around several thousand people. In 1997, Eric Raymond analyzed in his paper "The Cathedral and the Bazaar" the development method that makes Linux such a success. The essence of that method is: "release early, release often and listen to your customers". This is precisely how ROOT is being developed. Over the last five years, many of our "customers" became co-developers. Here we would like to thank our main co-developers and contributors:

Masaharu Goto wrote the CINT C++ interpreter that became an essential part of ROOT. Despite being 8 time zones ahead of us, we have the feeling he has been sitting in the room next door since 1995.

Andrei and **Mihaela Gheata** (Alice collaboration) are co-authors of the ROOT geometry classes and Virtual Monte-Carlo. They have been working with the ROOT team since 2000.

Olivier Couet, who after a successful development and maintenance of PAW, has joined the ROOT team in 2000 and has been working on the graphics sub-system.

Ilka Antcheva has been working on the Graphical User Interface classes. She is also responsible for this latest edition of the Users Guide with a better style, improved index and several new chapters (since 2002).

Bertrand Bellenot has been developing and maintaining the Win32GDK version of ROOT. Bertrand has also many other contributions like the nice RootShower example (since 2001).

Valeriy Onouchin has been working on several ROOT packages, in particular the graphics sub-system for Windows and the GUI Builder (since 2000).

Gerri Ganis has been working on the authentication procedures to be used by the root daemons and the PROOF system (since 2002).

Maarten Ballintijn (MIT) is one of the main developers of the PROOF sub-system (since 1995).

Valeri Fine (now at BNL) ported ROOT to Windows and contributed largely to the 3-D graphics. He is currently working on the Qt layer of ROOT (since 1995).

Victor Perevoztchikov (BNL) worked on key elements of the I/O system, in particular the improved support for STL collections (1997-2001).

Nenad Buncic developed the HTML documentation generation system and integrated the X3D viewer inside ROOT (1995-1997).

Suzanne Panacek was the author of the first version of this User's Guide and very active in preparing tutorials and giving lectures about ROOT (1999-2002).

Axel Naumann has been developing further the HTML Reference Guide and helps in porting ROOT under Windows (cygwin/gcc implementation) (since 2000).

Anna Kreshuk has developed the Linear Fitter and Robust Fitter classes as well as many functions in TMath, TF1, TGraph (since 2005).

Richard Maunder has contributed to the GL viewer classes (since 2004).

Timur Pocheptsov has contributed to the GL viewer classes and GL in pad classes (since 2004).

Sergei Linev has developed the XML driver and the TSQLFile classes (since 2003).

Stefan Roiser has been contributing to the reflex and cintex packages (since 2005).

Lorenzo Moneta has been contributing the MathCore, MathMore, Smatrix & Minuit2 packages (since 2005).

Wim Lavrijsen is the author of the PyRoot package (since 2004).

Further we would like to thank all the people mentioned in the `ROOTSYS/README/CREDITS` file for their contributions, and finally, everybody who gave comments, reported bugs and provided fixes.

Happy ROOTing!

Rene Brun & Fons Rademakers
Geneva, July 2007

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