News

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ROOT's Strategic Goals

Provide a unified software package for the storage, processing, visualisation and analysis of scientific data that is reliable, performant and supported, that is easy to use and obtain, and that minimises the computing resources needed to achieve scientific results.

The success of experiments and all ROOT users at large is our priority

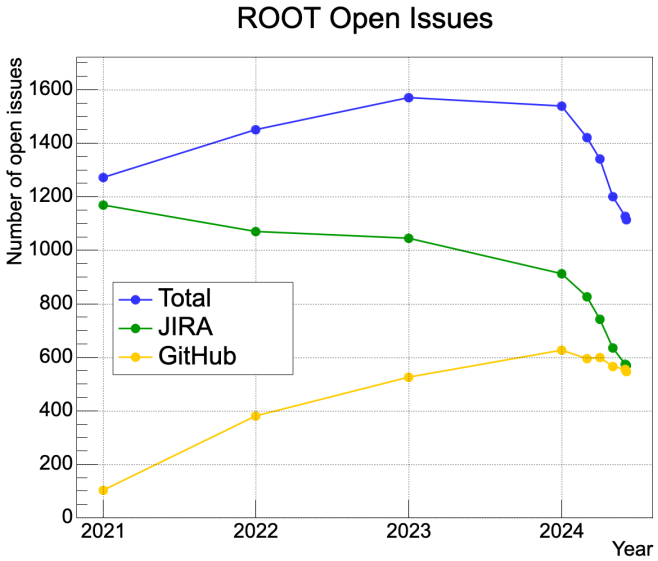
Stats and their Consequences

PoW Completion: https://cern.ch/root-pow

PoW Completion by "focus area":

- *50% Interpreters*
- *37% RooFit*
- *33% Extra items*
- *33% Builds and Binaries*
- *32% RNTuple*
- *25% RDataFrame*
- *25% Doc and Education*
- *21% Vis and UI*
- *14% Math*
- *10% I/O and TTree*

TOTAL: 28%



Please review the issues assigned to you or created by you.

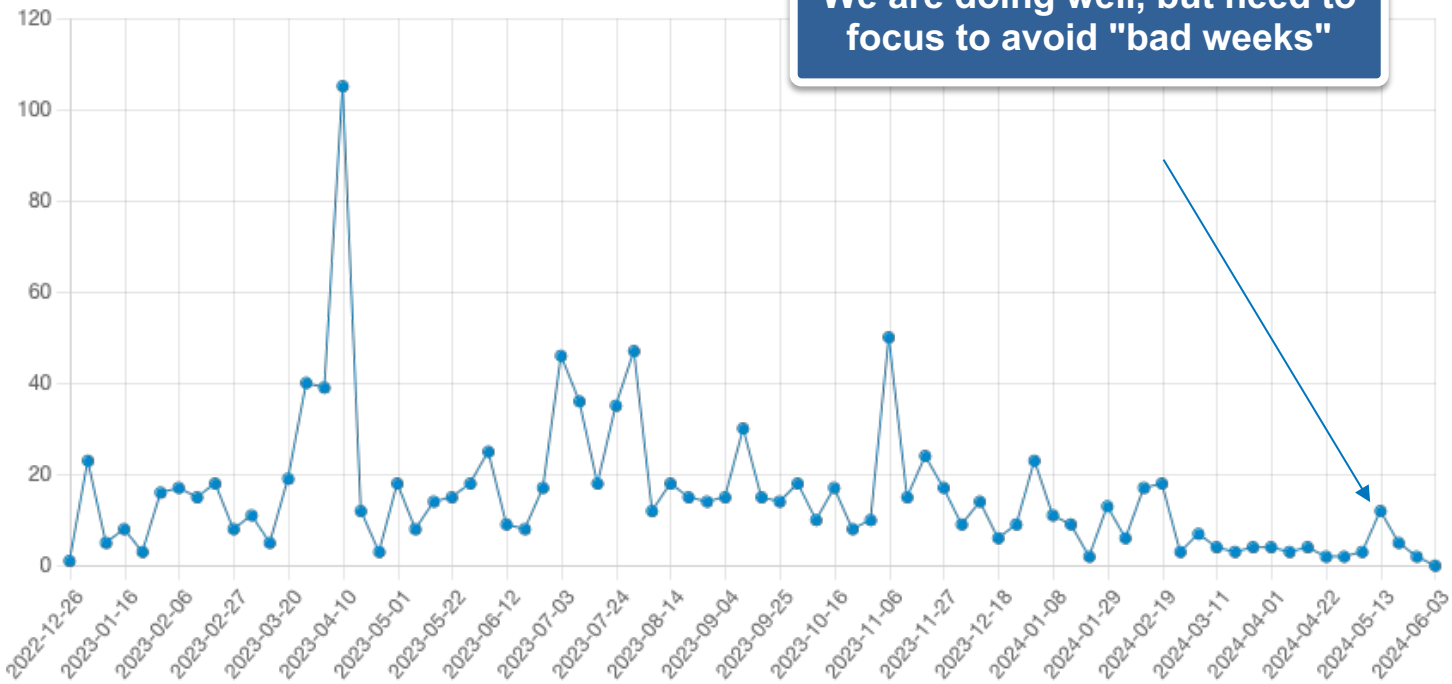
Please pick issues from GH and JIRA and address them (also in the Fixathon project)

- Injection of effort kicking in during H2 (Jack, Goran, GRAP-37, LD-55, Aaron, Martin)
- The next 6 months will be crucial to make substantial progress in the PoW completion
- **PoW: our guide, which has to be followed in the day to day activities**

	JIRA	GitHub	Total	Δ Ref	Δ Prev	% ref	% diff	Notes
Dec-20	1169	104	1273	266	0	82.7	17.3	
Dec-21	1071	380	1451	88	178	94.3	5.7	
Dec-22	1045	525	1570	-31	119	102.0	-2.0	
Dec-23	912	627	1539	0	-31	100.0	0.0	
Feb-24	826	596	1422	117	-117	92.4	7.6	54 issues migrated from JIRA to GitHub
Mar-24	739	601	1340	199	-82	87.1	12.9	10 issues migrated from JIRA to GitHub
Apr-24	635	566	1201	338	-139	78.0	22.0	
May-24	573	555	1128	411	-73	73.3	26.7	
Jun-24	569	546	1115	424	-13	72.4	27.6	

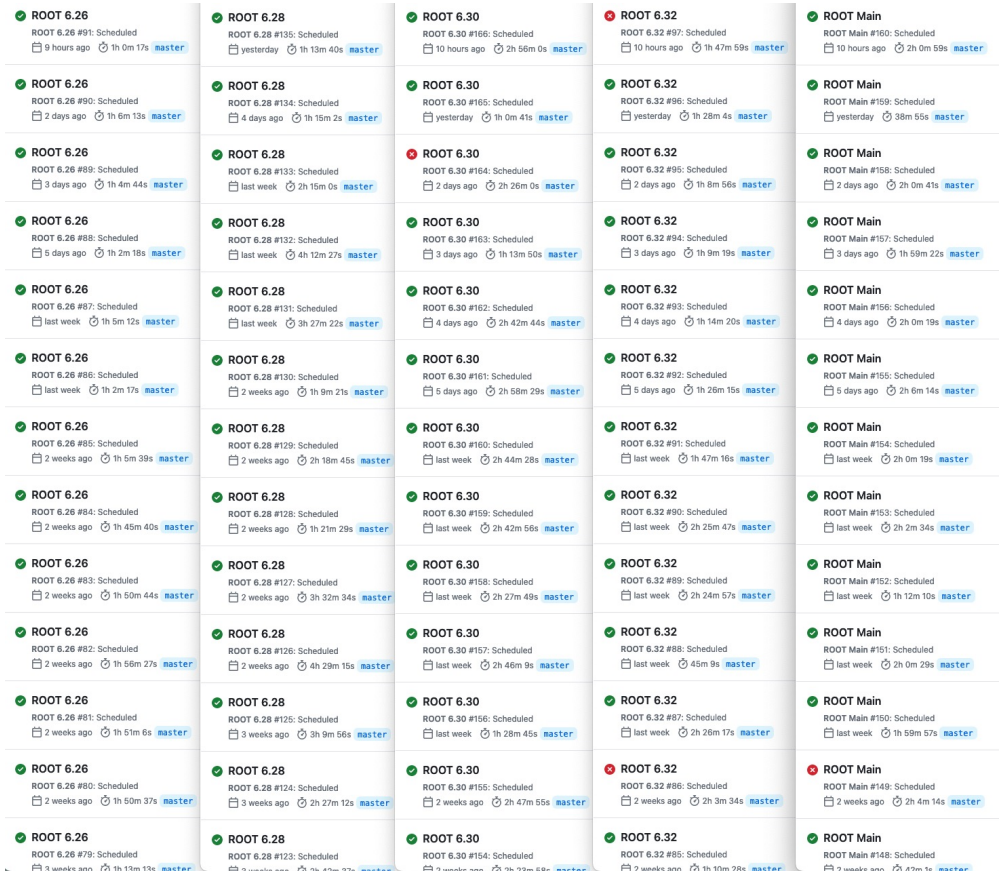
Forum: Time to Give a First answer

- 2023: 20 hours
- 2024 so far: 12 hours (no major holiday period yet)



Stats from the [Forum admin page]

Status of the Builds



- A good state of the builds: "basically green"
- An absolute prerequisite, **builds must always be green, on all platforms**
- master, 6.32, 6.30 built every night, 6.26 and 6.26 every other night
- Jenkins scheduled nightly if new commits entered the branch
- We now have many more builds and tests: we discover intermittent, rare failures
- Failures are pointed out promptly by the shifter, first thing in the morning, every morning during the shift

Please follow up the failures of the tests the shifter assigns to you


Summer!

Students and Newcomers Material

- **Every supervisor is responsible for preparing a seat and a computer for the supervisee**
- Some computers are available in the various offices to be re-used
- SFT purchased 8 "Victus" machines
- Please do not hesitate to re-use available keyboards/mice/screens/cables
- Place an order through EDH for the rest of the material

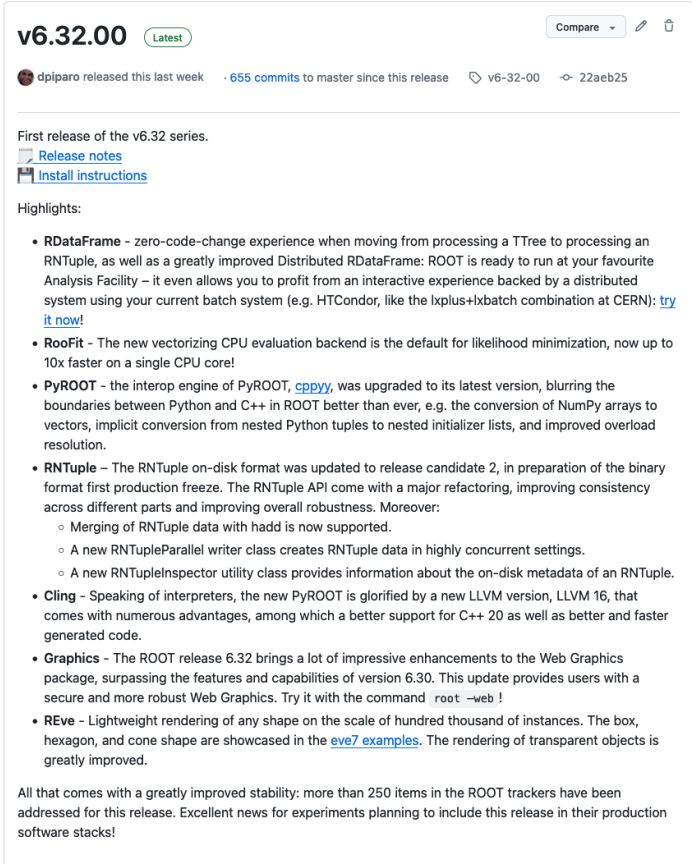
ROOT Summer Students Workshops

- ROOT Trainings for Summer Students
- Current dates and places
  - 12 June 40/S2-B01 (Big room but no tables)
  - 21 June 513/1-024 (very nice room but 50 seats)
  - 10 July 30/7-018 (Auditorium)
- In the process of upgrading any of those with the Training Centre (also to record trainings)


Releases

v6.32.00 is Out!

- Released last week (on GH, on the ROOT website)
- Impressive set of new features and fixes: all well summarised in impactful highlights and RNs (thank you!)
- The first release integrated only through the GH CI
- A few issues identified by our users and reported through the Forum or GH
  - All were fixed or are in the process of being fixed
- **Is it reasonable to schedule v6-32-02 in 2 weeks from now?**
- **Next major release: November, short lived cycle – *development release***



v6.32.00 Latest — Compare

dpiparo released this last week · 655 commits to master since this release · v6-32-00 · 22aeb25

First release of the v6.32 series.
Release notes
Install instructions

Highlights:

- **RDataFrame** - zero-code-change experience when moving from processing a TTree to processing an RNTuple, as well as a greatly improved Distributed RDataFrame: ROOT is ready to run at your favourite Analysis Facility – it even allows you to profit from an interactive experience backed by a distributed system using your current batch system (e.g. HTCondor, like the lxplus+lxbatch combination at CERN): try it now!
- **RooFit** - The new vectorizing CPU evaluation backend is the default for likelihood minimization, now up to 10x faster on a single CPU core!
- **PyROOT** - the interop engine of PyROOT, cppyy, was upgraded to its latest version, blurring the boundaries between Python and C++ in ROOT better than ever, e.g. the conversion of NumPy arrays to vectors, implicit conversion from nested Python tuples to nested initializer lists, and improved overload resolution.
- **RNTuple** – The RNTuple on-disk format was updated to release candidate 2, in preparation of the binary format first production freeze. The RNTuple API come with a major refactoring, improving consistency across different parts and improving overall robustness. Moreover:
  - Merging of RNTuple data with hadd is now supported.
  - A new RNTupleParallel writer class creates RNTuple data in highly concurrent settings.
  - A new RNTupleInspector utility class provides information about the on-disk metadata of an RNTuple.
- **Cling** - Speaking of interpreters, the new PyROOT is glorified by a new LLVM version, LLVM 16, that comes with numerous advantages, among which a better support for C++ 20 as well as better and faster generated code.
- **Graphics** - The ROOT release 6.32 brings a lot of impressive enhancements to the Web Graphics package, surpassing the features and capabilities of version 6.30. This update provides users with a secure and more robust Web Graphics. Try it with the command `root -web` !
- **REve** - Lightweight rendering of any shape on the scale of hundred thousand of instances. The box, hexagon, and cone shape are showcased in the eve7 examples. The rendering of transparent objects is greatly improved.

All that comes with a greatly improved stability: more than 250 items in the ROOT trackers have been addressed for this release. Excellent news for experiments planning to include this release in their production software stacks!

- **PTR7: Path to ROOT 7**
- A process to bring us to the 7th cycle
- See this document, circulated at the end of 2023 (see link on the Indico Agenda)
- **Proposal: first meeting next Tuesday, 16:00**
- Goals:
  - (Re-)Agree on the motivations for this endeavour
  - Together converge on an initial set of what we want to absolutely see in the new cycle (e.g. RNTuple, gDirectory, RDF, RooFit, TEntryList, Cling, raw pointers, new Histograms) and maybe a few things that we do not want to see

A Path To ROOT 7

v0.1 15-12-23

At the start of LHC Run 2, ROOT 6 represented a major modernisation of ROOT. The most visible element of this modernisation was Cling, the new LLVM based C++ interpreter, which replaced CINT and much of the type system that came with it. The new release cycle of ROOT, ROOT 7, started with the creation of RDataFrame, before ROOT 7 was released. A major modernisation of RooFit also took place, complementing the rich modelling capabilities provided by RooFit with seamless offloading of calculations on accelerating hardware devices - making RooFit the first accelerated component of ROOT. Those are not the only innovations planned for the new release cycle, the most prominent component of ROOT 7 will be RNTuple: the new column-wise storage of ROOT, which replaces TTree.

ROOT, and its 7th release cycle, is not just RDataFrame, the new RooFit and RNTuple, but also a great opportunity to discuss further modernisations, (backward incompatible ?) changes and new interfaces, improvements that ameliorate ROOT and address even better the needs of our community. **There is an opportunity to seize: thinking of ROOT 7 as ROOT 6 with RDataFrame and RNTuple is just the start.**

An effective way to converge on good solutions and improvements for ROOT 7 is through a process made of well scoped and result oriented blue printing discussions, involving at first ROOT team members, and later, our user community, including LHC experiments.

The goal of this document is to describe how, through a process, consensus can be reached about the upgrade of ROOT into ROOT 7, the release for the start of HL-LHC.

Introduction to the Process 2