

Roadmap for C++ Modules in ROOT

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Overview of C++ Modules

- C++ Modules are designed to minimize the reparsing of the same header content by providing an efficient on-disk representation of C++ Code
- They can be seen as a pch per library speeding up ROOT dictionaries, I/O and interpreter
- Details at: <https://github.com/root-project/root/blob/master/README/README.CXXMODULES.md>

The next ROOT release

C++ Modules will be default for ROOT on UNIX from v6.20

The next ROOT release. Impact on experiments

- ROOT will run with C++ modules-aware dictionaries on while experiment software should work as before
 - We expect no performance improvements but no performance degradation too.
 - Performance improvements will show up only when starting to modularize the external (to ROOT) software.
 - If you see performance degradation please let us know!

Migrating experiments' software to C++ Modules

- A module.modulemap is needed to describe the set of header files for a module
- Passing -cxxmodule to rootcling/genreflex
- Modularizing bottom up (from external dependencies upward) is the recommended strategy
- Details at: <https://arxiv.org/abs/1906.05092>

Tentative Timeline

- ROOT master currently works well with C++ modules (one can try it with `-Druntime_cxxmodules=On`)
- End Sep first release candidate — we hope experiments try it out and get back to us if something does not work straight out of the box
- Mid Nov second release candidate — we hope to have eliminated all issues and fix possible performance issues
- End Nov v6.20