RNTuple Interface Review

RNTuple Format and Feature Assessment
2023-11-06

ROOT
Data Analysis Framework
https://root.cern

Purpose

- The ROOT team would like to ask HEP-CCE
  to conduct an inclusive API review of the RNTuple interfaces
  - Should assess functionality, consistency, safety, and usability in the context of HEP experiment software frameworks
  - The results of this review will guide further developments
- The request reflects the fact that RNTuple is one of the first ROOT 7 components and its interface will become part of long-lasting experiment framework code

Scope

- The review should include the RNTuple classes in the ROOT sources
- The ROOT team would in particular appreciate input on the following aspects:
  - Completeness: is the RNTuple API sufficiently powerful to support experiment I/O workflows?
  - Adherence to modern C++ best practices (e.g., core guidelines)
  - Error handling compatible with experiment frameworks
  - Future-proofing / evolvability: will we be able to evolve the interface in the future in a backwards-compatible way?
  - Usability for end users using C++ and/or Python
  - Compatibility: ease of migration from the TTree interfaces
  - Depending on the availability of a C library at the time of review: potential interoperability with other languages.

Deliverables & Timeline

- The main deliverable would be a short report closed by actionable recommendations
- The review would ideally start in Q1/2024 and finish in Q2/2024
- If desired, the review would be open to experiments' experts participation
- The ROOT team provides sources, tutorials, and a class architecture description; the ROOT team is available to answer questions from the review team.