



Contribution ID: 3

Type: **Presentation**

Modern C++ Interfaces for ROOT

Tuesday, September 15, 2015 11:50 AM (40 minutes)

ROOT’s interfaces are mature - they have served us well for decades! But current C++ is different, and has properties that we need:

- ownership becomes type-safety
- concerns are decomposed, reducing interface clutter
- C++’s standard collections are ubiquitous and performant
- optimizers are at a different level than even 5 years ago (let alone 20)
- current students learn different syntax than students of 10 years ago

While we see the need to react, we do not see a backward compatible path into this future. This presentation will show what ROOT’s future interfaces might look like, as the basis for a discussion. It will also present how we plan the migration to these new interfaces. Interfaces that will be covered or at least sketched are

- histograms, showing the benefits of an interface with current C++
- smart pointers resembling ROOT’s ownership behavior
- TCanvas interplay as an example for ownership management

The goals are an increase in clarity and simplicity, a reduction of memory issues, and an increase in speed. Come judge!

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Session Classification: Presentations

Track Classification: Presentations