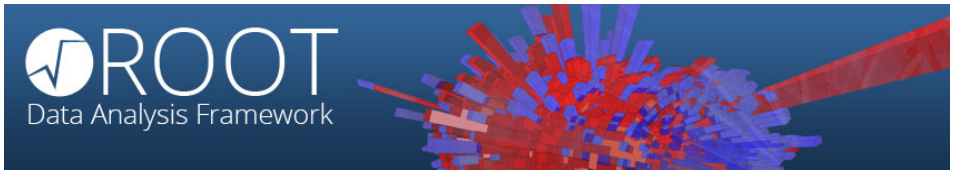

Contribution ID: **46** Type: **Presentation**

FairRoot

Tuesday 15 September 2015 16:50 (20 minutes)

The FairRoot framework is the standard framework for simulation, reconstruction and data analysis developed at GSI for the future experiments at the FAIR facility.
Originally developed only for the GSI experiments it is meanwhile also widely used outside GSI.
The framework delivers base functionality for simulation, i.e.: Infrastructure to easily implement detectors, fields, and event generators.
Moreover, the framework decouples the user code (e.g.: Geometry description, detector response, etc.) completely from the used MC engine, which is achieved using
the TVirtualMC interface of ROOT.
The framework also handles the Input/Output using the ROOT IO functionality
which allows to switch the output on or off in a simple and flexible way.
For reconstruction and/or data analysis the user code is organized in modular tasks
based on TTask. The execution order of these tasks is defined via a so-called steering macro.
This scheme allows a very flexible handling of the reconstruction and data analysis configurations, also allowing to mix the simulation and data reconstruction stage. The Reconstruction tasks can run separately after simulation or directly on the fly within the simulation.
The modular design of the framework has allowed a smooth transition from the
task based to a message queue based system, which makes it possible to parallelize the execution of the tasks without re-designing or re-writing the existing user code.
Breaking the monolithic design into separate processes only communicating
via messages has many advantages. For example it allows implementing the processes in different programming languages or on different hardware platforms.

The framework with a focus on the basic building blocks and the transition to the message queue based system will be presented.

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