Karlsruhe Institute of Technology

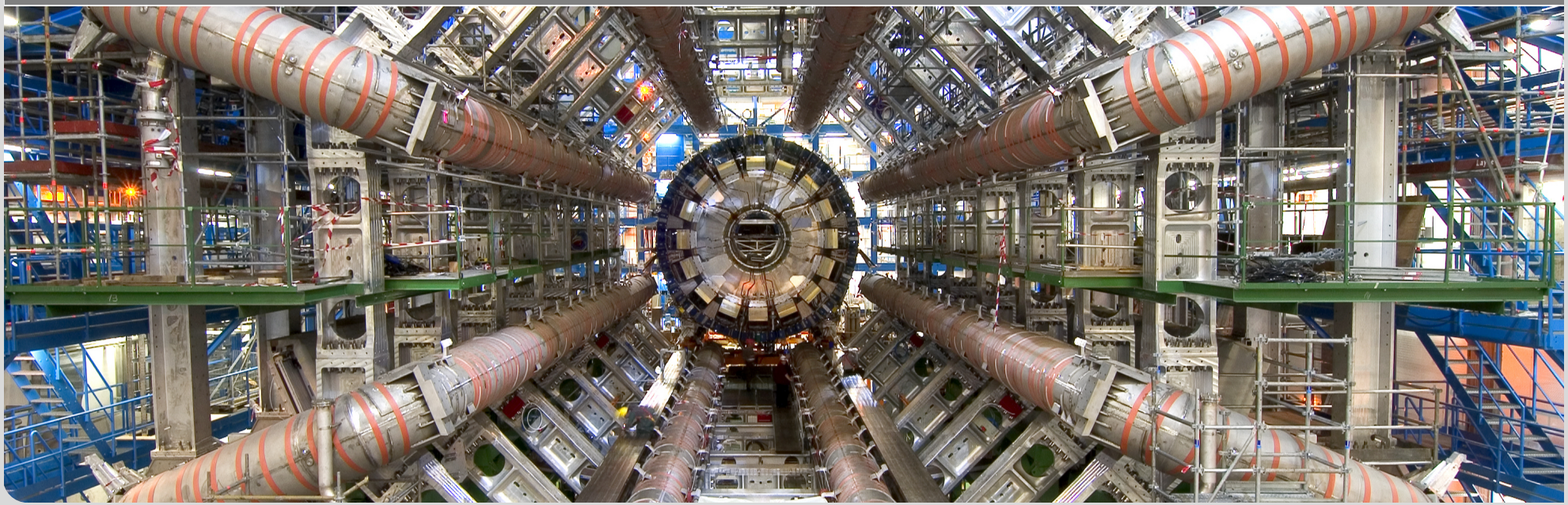
Steinbuch Centre for Computing

rootJS - Specification

PSE - Software Engineering Practice

C. Wolff, M. Früh, S. Rajgopal, C. Haas, J. Schwabe, T. Beffart | December 14, 2015

STEINBUCH CENTER FOR COMPUTING



Purpose

Product usage

rootJS will be used to create web-applications that can:

- Expose processed data (that might otherwise be hard to access) and then visualize it locally
- Interact with data both stored somewhere accessible for the server or streamed via remote procedure call (RPC)
- Run on any platform that supports a browser

Audience

Most users of rootJS will be used to working in Linux and with web servers. At the very least, they will be able to install ROOT and also be proficient in programming languages like JavaScript and C++.

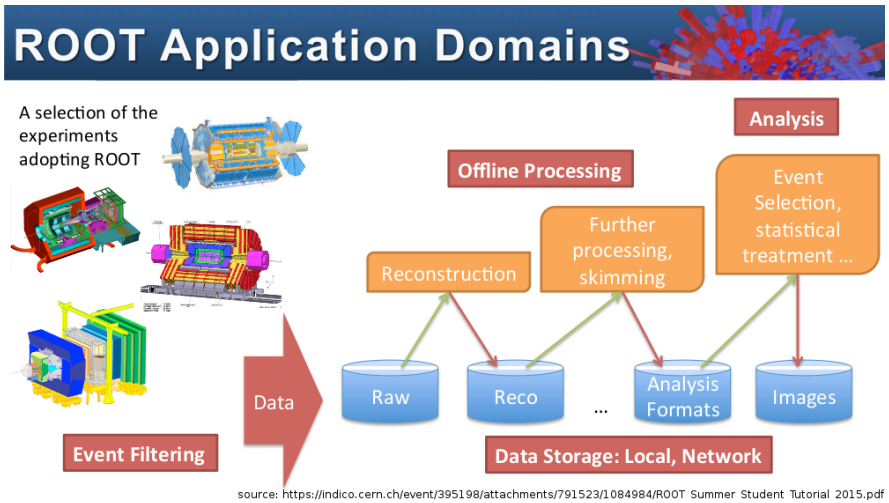
- Scientists (e.g. particle physicists)
- Researchers
- Web-developers interested in creating applications based on ROOT

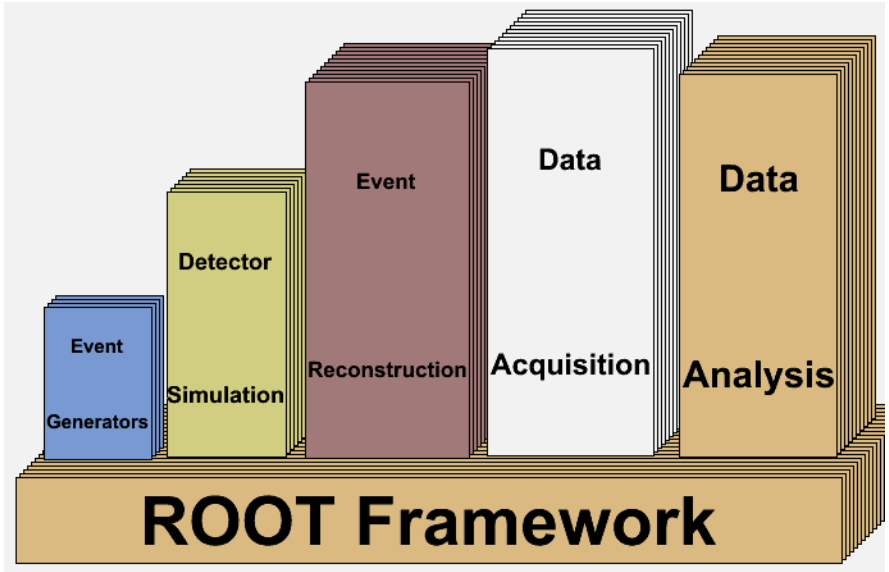
Operating conditions

- rootJS will be used on servers that run ROOT and have access to the required data sources.
- As ROOT 6 currently runs on Linux and OS X only, usage of the bindings is limited to those platforms.

ROOT

- process and visualize large amounts of scientific data (CERN)
- features a C++ interpreter (CLING) - i.e. used for rapid and efficient prototyping
- persistency mechanism for C++ objects





Node.js

- open source runtime environment
  - develop server side web applications
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  - develop server side web applications
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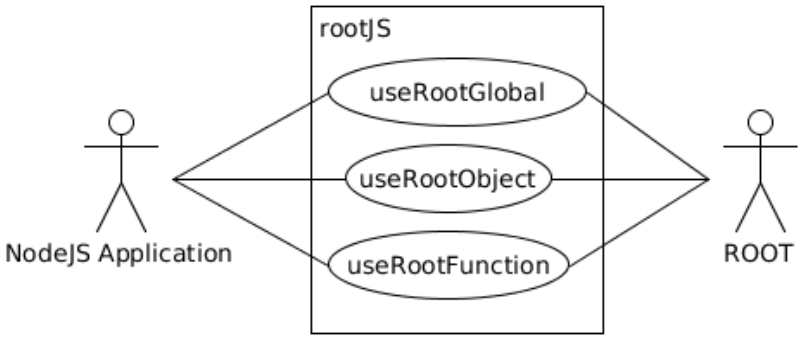
- Google V8 engine to execute JavaScript code
- rootJS bindings realized as native Node.js module written in C++

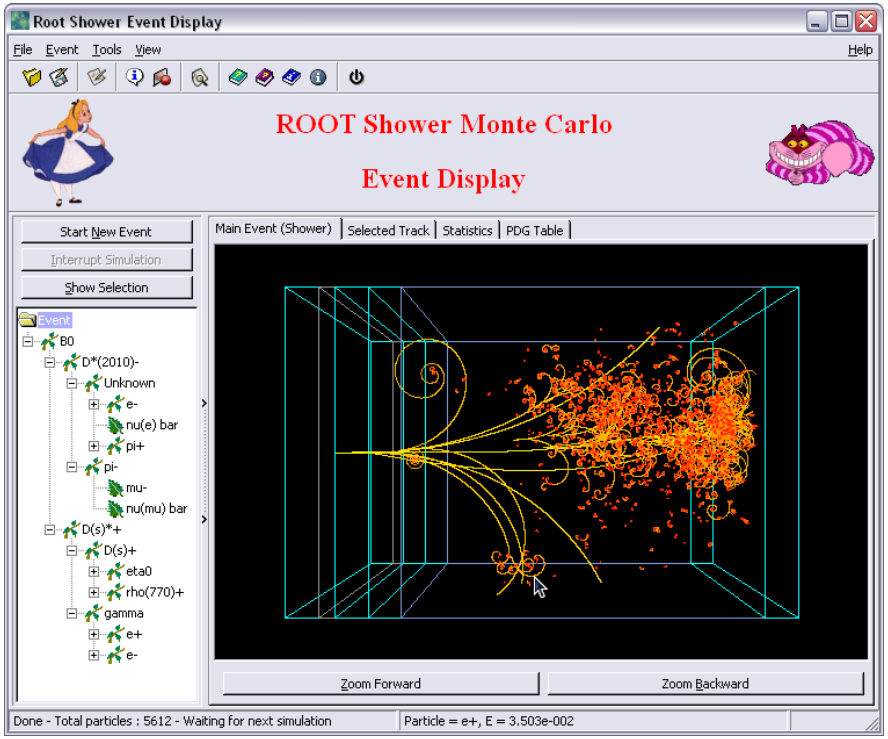
Hardware

Product data

Product interface and functions

Event Viewer





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Names

- Functions and classes have the same name as in Root
- Global variables can be called using Get[Variable] and Set[Variable] methods

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- By looking at the object type an corresponding v8::Handle will be generated and returned to node
  - If the result is an object this will be done recursively

Test Cases

References I