

HepMC *Analysis*

A tool for MC generator validation

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Idea

Provide a framework for physics analysis of generated events for

- **generator validation**: regression tests, new generators
- **generator comparisons**: comparisons of the same distributions with different generators
- **Debugging** of generators or generator interface code
- **studies of generator distributions**

Technical design goals

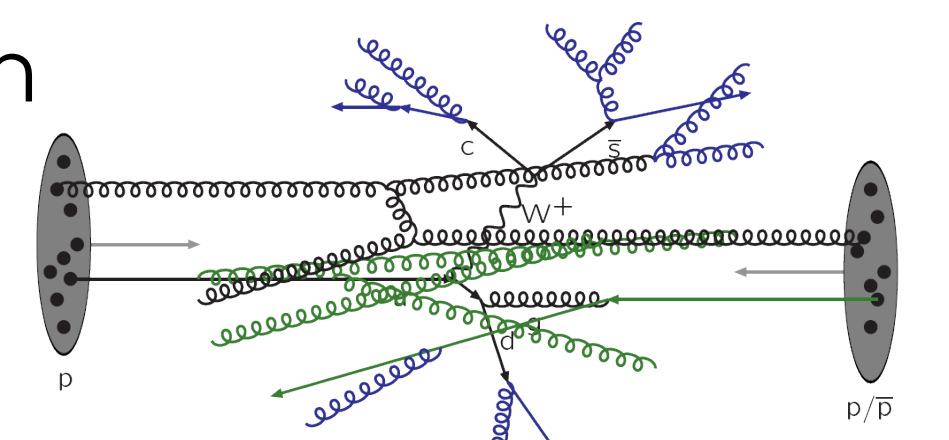
The framework software has to be:

- **Robust**: minimal dependency on other codes, only standard C++
- **Simple**: low framework overhead
- **Scalable**: easy to extend for user analysis or for other applications

Physics Analysis

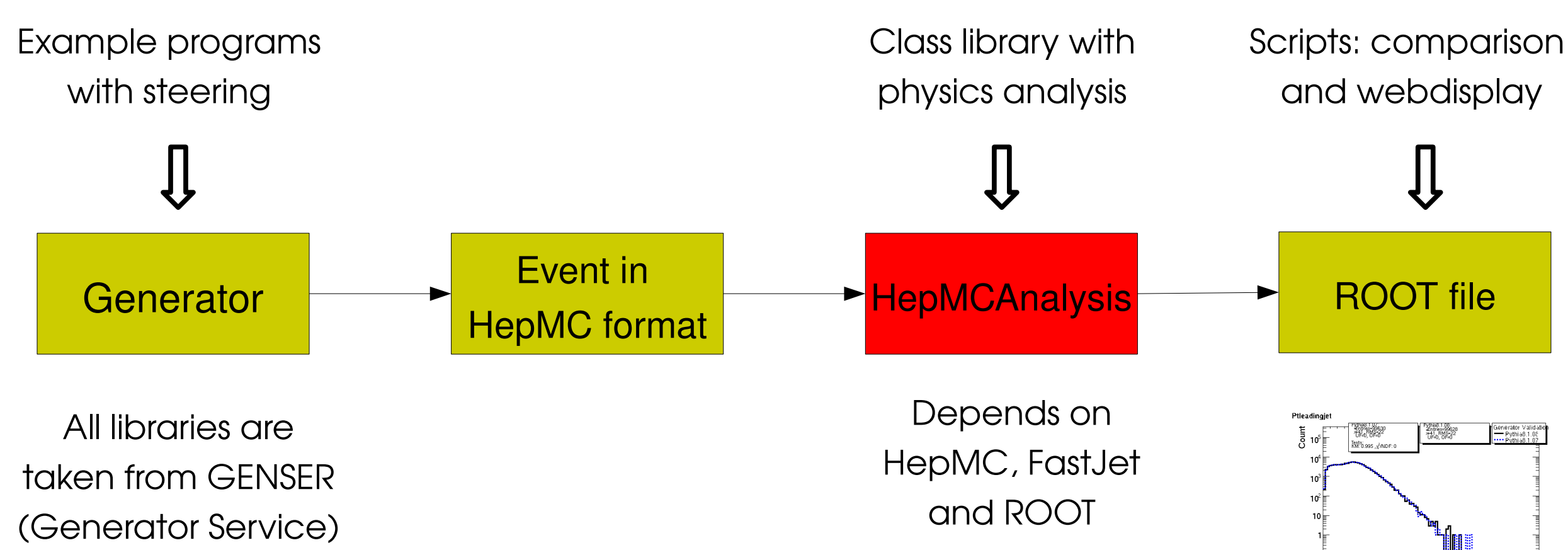
Covers all aspects of event generation, i.e.

- hard process
- parton shower
- underlying event
- hadronisation
- pdfs



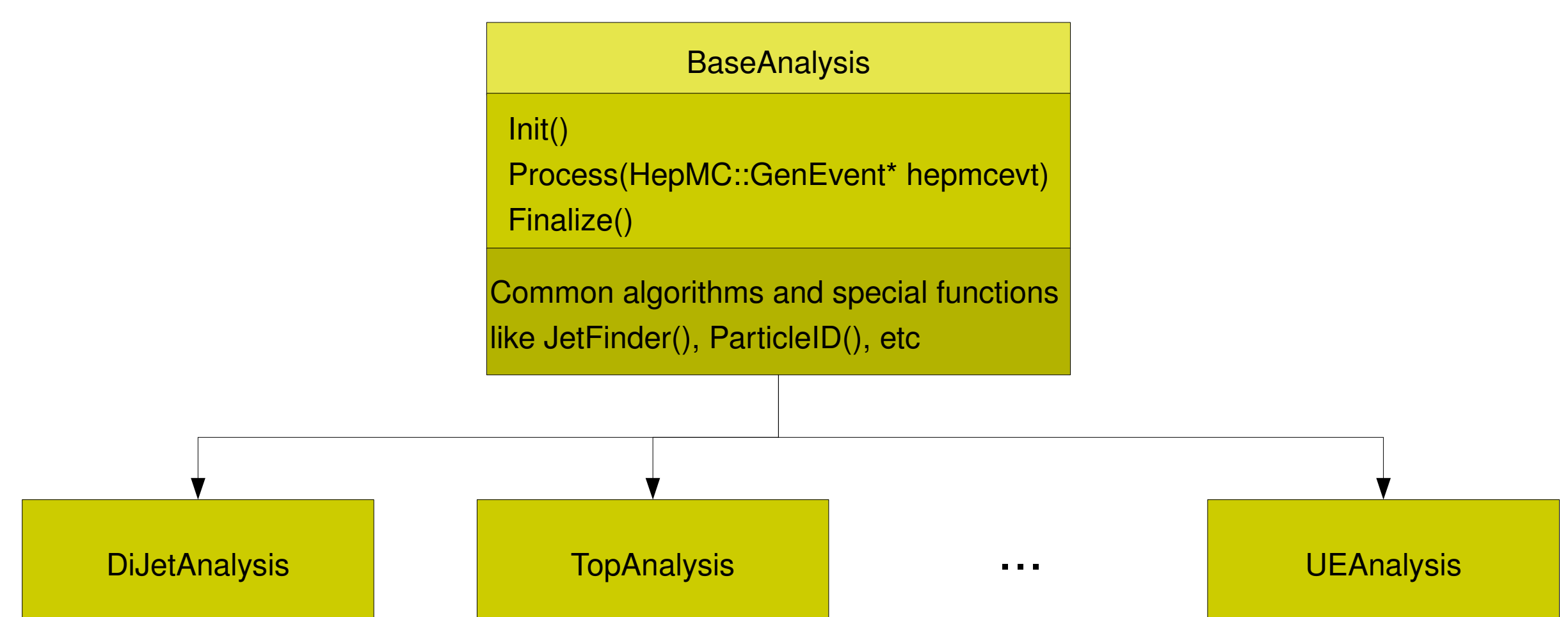
Picture from Torbjörn Sjöstrand "Event Generators" Lecture 1 and 2, 22.09.2008

Technical Implementation



Class Implementation

- One class for each physics analysis topic, e.g. TopAnalysis, JetAnalysis, TauAnalysis, WAnaysis, UEAnalysis, PDFAnalysis ...



Web display

Installation

- checkout package or get tarball
- **execute setup.sh**
- Automatic configuration for all GENSER supported platforms at both locations
- Simple Makefile and configuration file (total ~34 lines)
- distribution via web-site and GENSER: hepmcanalysistool.desy.de

Application

- Use by GENSER for histogram based validation of generators
- Use in ATLAS for generator validation
- Use for generator studies in privat physics analysis