

Python usage in High Energy Physics

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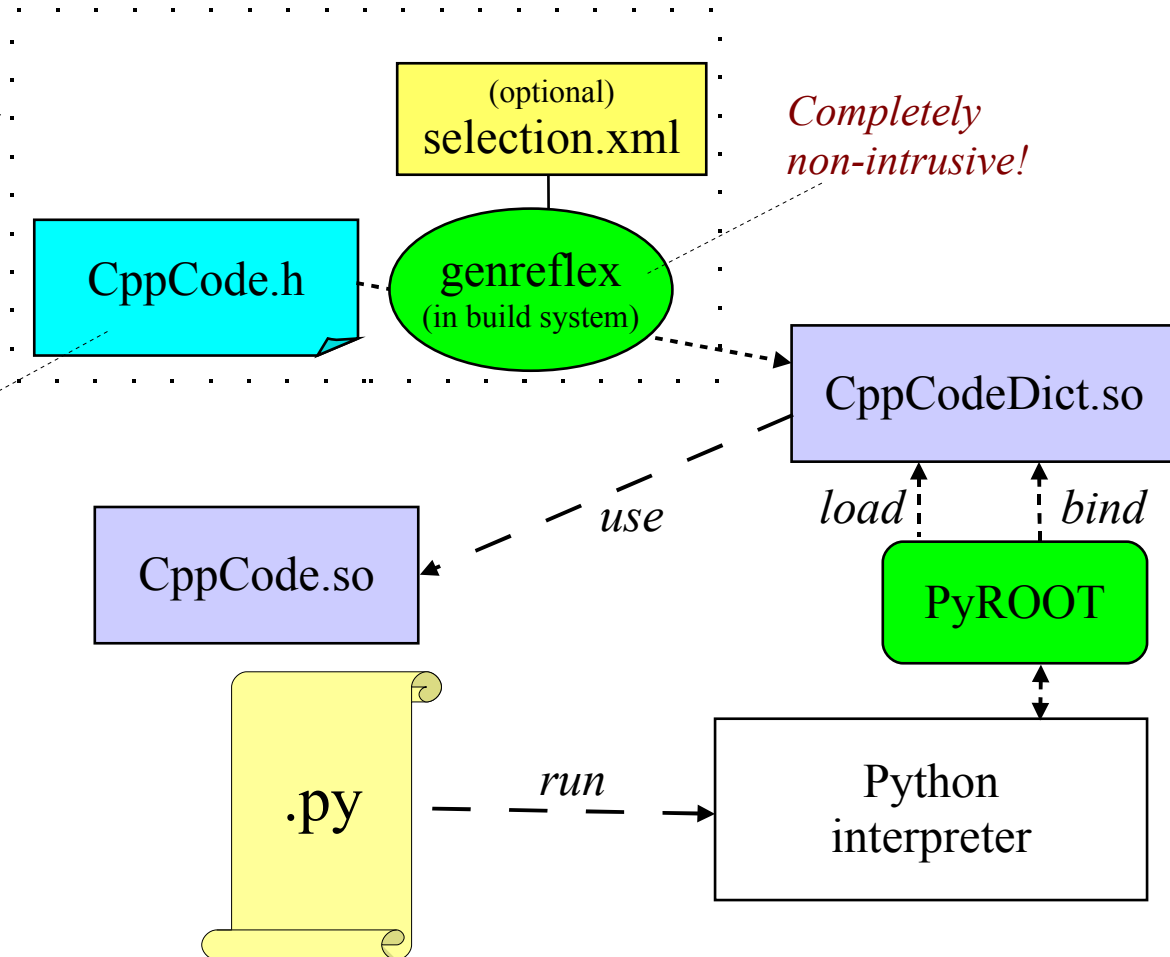
- **Bindings available to major HEP packages**
 - Based on C++ reflection (from persistency)
 - I.e. all scientific data automatically accessible
 - Python used to “glue” applications together
- **For common framework (Gaudi/Athena):**
 - Scriptable job configuration
 - End-user analysis, interactivity, components
 - The last by deriving from forwarding C++ classes
 - Event-based parallel execution
 - Database and workspace utilities

CRD Reflection-based Bindings

Automated process, and often already provided by developers (e.g. for use with persistency)

Completely non-intrusive!

Class definition (header file)



- Python does not scale, various solutions:
 - Make use of event-based nature of the data
 - Fork the main application → event based
 - Poor-man's threading after initialization
 - ParallelPython → run/dataset based
 - All reflection-based bound instances can be pickled
 - PROOF (C++) → run/dataset based
 - Forwarded calls from C++ base class (data fed)
 - Use Python as high-level “description of intent”
 - Analyze using PyPy, generate targeted code
 - Reflection info used for details about C++ extensions