

MICE Event viewer

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Overview



- Event viewer design
- Off-line event viewer
 - SimpleEVExporter
 - EventViewer application
- On-line event viewer
- Demonstration



Event viewer design



- Requirements
 - Off-line EV:
 - Allow users to open reconstructed root files and browse MICE events
 - Possibly extend to include detector geometry
 - Introduce event selection
 - On-line
 - Allow shifters to monitor MICE events as they are being reconstructed during data taking



Event viewer design



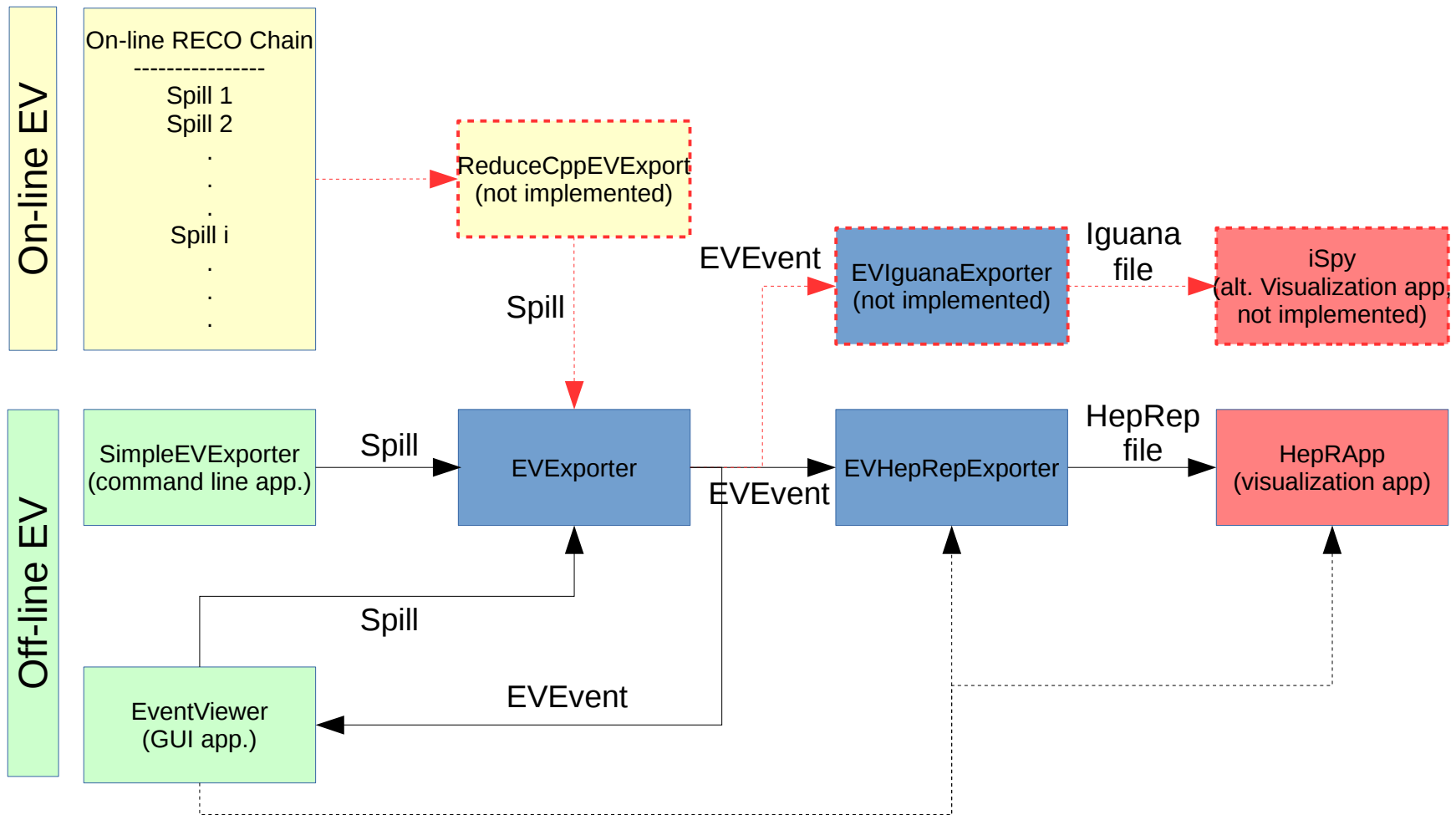
- Victoria's event viewer was an excellent starting point. Designed as a Qt GUI application and utilizing QCustomPlot was well suited for off-line use. Detector geometry was not supported and adding one seemed complicated. Also, how to modify it to be used for on-line monitoring was not obvious
- Possible alternative for visualization was HepRApp. Java app developed on SLAC. Based on HepRep (High Energy Physics REPresentables) file format. Lightweight, intuitive and relatively simple to use. Detector geometry can be easily exported to HepRep file from Geant, merged with MICE data and then displayed in HepRApp as 3D image that can be manipulated in real time. It is a good candidate for an on-line event viewer but also some users could find its features suitable for off-line use. Requires JRE to work
- Some rearranging of structures was needed in order to try and have some common code that would service all these needs



Event viewer design



- Organization of structures





Off-line event viewer - SimpleEVExporter



- Command line c++ application. No additional dependencies are required
- Exports MICE events to HepRep format (one file per event)
- Can export all events from a particular spill or range of spills
- Event selection supported (based on combination of detectors hit)
- Before running, some environmental variables need to be setup (specify output directory and detector geometry file used). This is done by modifying and sourcing configure.sh file



Off-line event viewer - EventViewer



- GUI application developed in QT. Needs QT to build
- Allows for easy navigation through spills and events
- Event selection supported (based on combination of detectors hit)
- Default display is 2D
- Exporting to HepRep and also displaying events in HepRApp is possible



On-line event viewer



- The idea is to implement a cpp reducer which would export events from the last reconstructed spill to HepRep format
- Files would be stored in a selected directory keeping only events (files) from the last reconstructed spill
- HepRApp would run independently in automatic update mode (iterates through all files in selected directory)

Thank You