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Update of the Offline Framework for AugerPrime

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Work on the Offline Framework for the Pierre Auger Observatory was started in 2003 to create a universal framework for event reconstruction and simulation. The development and installation of the AugerPrime upgrade of the Pierre Auger Observatory require an update of the Offline Framework to handle the additional detector components and the upgraded Surface Detector Electronics.

The design of the Offline Software proved to be sufficiently flexible to accommodate the changes needed to be able to handle the AugerPrime detector. This flexibility has been a goal since the development of the code started. The Framework separates data structures from processing modules. The detector components map directly onto data structures. It was straightforward to update or add processing modules to process the additional information from the new detectors.

We will discuss the general structure of the Offline Framework, explaining the design decisions that provided its flexibility and point out the few of the features of the original design that required deeper changes, which could have been avoided in hindsight. Given the disruptive nature of the AugerPrime upgrade, the developers decided that the update for AugerPrime was the moment to change also the language standard for the implementation and move to the latest version of C++, to break strict backward compatibility eliminating deprecated interfaces, and to modernize the development infrastructure. We will discuss the changes that were made to the structure in general and the modules that were added to the Framework to handle the new detector components.

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