Clara: a contemporary approach to physics data processing

Content:

In traditional physics data processing (PDP) systems data is kind of static and is accessed and stored locally by analysis applications. In comparison, Clara (Clas12 Reconstruction and Analysis framework) is an environment where predefined data processing and data mining rules and algorithms, filter continuously flowing data. In Clara’s domain of loosely coupled services data is not stored, but rather flows from one service to another, mutating constantly along the way. Agents, performing complex event processing (CEP), can then subscribe to particular data/events at any stage of the data transformation, and come up with intricate decisions (e.g. particle ID) by correlating events from multiple parallel data streams and/or services. This paper presents a PDP application development framework based on service oriented (SO) and event driven (ED) architectures. This system allows users to design (C++ and Java languages are supported) and deploy data processing services, as well as dynamically compose PDP applications using available services. The PDP service bus (PSB) provides layer on top of a distributed pub-sub middleware implementation, which allows complex service composition and service integration without writing code. Examples of service creation and deployment, along with PDP application design will be presented. A comparative analysis of a Clara based distributed tracking application with monolithic, self contained tracking application will be made.

Primary authors: Dr. GYURJYAN, Vardan (Jefferson Lab)
Co-authors: Dr. ABBOTT, David (Jefferson Lab) ; Dr. HEDDLE, David (Christopher Newport University) ; Mr. PAUL, Sebouh (Christopher Newport University) ; Dr. TIMMER, Carl (Jefferson Lab) ; Dr. WEYGAND, Dennis (Jefferson Lab) ; Dr. WOLIN, Elliott (Jefferson Lab) ; Dr. HEYES, Graham (Jefferson Lab)
Presenter: Dr. GYURJYAN, Vardan (Jefferson Lab)

Session classification: --not yet classified--
Track classification: Event Processing
Type: Oral Presentation