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The ATLAS Event Index: The Architecture of the Core Engine

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The global view of the ATLAS Event Index system has been presented in the last ACAT. This talk will concentrate on the architecture of the system core component. This component handles the final stage of the event metadata import, it organizes its storage and provides a fast and feature-rich access to all information. A user is able to interrogate metadata in various ways, including by executing user-provided code on the data to make selections and to interpret the results. A wide spectrum of clients is available, from a set of linux-like commands to an interactive graphical Web Service. The stored event metadata contain the basic description of the related events, the references to the experiment event storage, the full trigger record and can be extended with other event characteristics. Derived collections of events can be created. Such collections can be annotated and tagged with further information. This talk will describe all system sub-components and their development evolution, which lead into the choices in the current architecture. The system performance, the development, the runtime environment and the interoperation with other ATLAS software components will be also described. The problems and mistakes made during the development will be explained. And the lessons for the future evolution of the Event Index software and the general data analysis framework will be summarised.

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