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Next-Generation Navigational Infrastructure and the ATLAS Event Store

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The ATLAS event store employs a persistence framework with extensive navigational capabilities. These include real-time back navigation to upstream processing stages, externalizable data object references, navigation from any data object to any other both within a single file and across files, and more. The 2013-2014 shutdown of the Large Hadron Collider provides an opportunity to enhance this infrastructure in several ways that both extend these capabilities and allow the collaboration to better exploit emerging computing platforms. Enhancements include redesign with efficient file merging in mind, content-based indices in optimized reference types, and support for forward references. The latter provide the potential to construct valid references to data before those data are written, a capability that is useful in a variety of multithreading, multiprocessing, distributed processing, and deferred processing scenarios.

This paper describes the architecture and design of the next generation of ATLAS navigational infrastructure.

Summary

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