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The future of event-level information repositories, indexing and selection in ATLAS

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ATLAS maintains a rich corpus of event-by-event information that provides a global view of virtually all of the billions of events the collaboration has seen or simulated, along with sufficient auxiliary information to navigate to and retrieve data for any event at any production processing stage. This unique resource has been employed for a range of purposes, from monitoring, statistics, anomaly detection, and integrity checking to event picking, subset selection, and sample extraction. Recent years of data-taking provide a foundation for assessment of how this resource has and has not been used in practice, of the uses for which it should be optimized, of how it should be deployed and provisioned for scalability to future data volumes, and of the areas in which enhancements to functionality would be most valuable.

This paper describes how ATLAS event-level information repositories and selection infrastructure are evolving in light of this experience, and in view of their expected roles both in wide-area event delivery services and in an evolving ATLAS analysis model in which the importance of efficient selective access to data can only grow.

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