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CSSI Proposal Summary

Taking science data in nuclear physics and other medium-count-rate disciplines often requires creating highly-customized data acquisition software - and this represents an enormous loss of time for the scientific community. Although the data acquisition constraints and the final data on disk vary substantially, many scientists have shared needs. At minimum, we all need easy access to our data - which often must be stored in a custom format. Over and over, scientists write code to read their data, sinking isolated time into solving a common problem.

I propose to (1) define a core set of data-acquisition standards and (2) develop standards-based tools that are immediately useful to scientists taking and analyzing data. One example is a standard data-description language, along with a tool that could use a scientist's format description to provide basic data-reading and data-writing utilities. A tool that provides convenient access to data while requiring scientists only to describe their custom format in a standard way would be immediately useful at university-based experimental facilities and collaborations.

Standards allowing the medium-count-rate community to share work are increasingly needed as we move towards detector systems with multiple, specialized sensors. In addition, standards would make it significantly more likely that small, independent labs - which are less often able to support staff dedicated to software support - would be able to use community tools for their data acquisition needs.