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otsdaq for Test Beam Infrastructure

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The Real-time Systems Engineering Department of the Scientific Computing Division at the Fermi National Accelerator Laboratory is in the process of integrating the instrumentation of the Fermilab Test Beam Facility into a common framework. Using *otsdaq* (Off-the-Shelf Data Acquisition System), a highly-scalable flexible data acquisition system, facility instrumentation, (such as scintillator coincidence logic, wire chambers, cherenkov detectors and the precision silicon tracking telescopes) could be connected using an Internet of Things style architecture united by the software framework provided by *otsdaq*. An open source library of configurable firmware blocks are provided as part of *otsdaq* to facilitate development with hardware, and the library can be contributed to by the *otsdaq* user community. *otsdaq* offers a platform-independent graphical user interface implemented with HTML5 and JavaScript which can be simultaneously accessed by multiple users through a web browser on any device. User interfaces for *otsdaq* are built on top of XDAQ, a generic data acquisition framework developed for the CMS experiment, and the data transfer and online analysis are based on *artdaq*, a data acquisition toolkit developed at Fermilab. This paper will discuss results from the initial integration of *otsdaq* into the Fermilab Test Beam Facility highlighting the flexibility and scalability of *otsdaq*.

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