Design of the ProtoDUNE experiment data management infrastructure

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The Deep Underground Neutrino Experiment (DUNE) will employ a uniquely large (40kt) Liquid Argon Time Projection chamber as the main component of its Far Detector. In order to validate this design and characterize the detector performance an ambitious experimental program (called "protoDUNE") has been created which includes a beam test of a large-scale DUNE prototype at CERN. The amount of data to be collected in this test is substantial and on par with the LHC experiments in LHC Run 1. The protoDUNE experiment will require careful design of the DAQ and data handling systems, as well as mechanisms to distribute data to a number of the DUNE distributed computing sites. We present our approach to solving these problems by leveraging the expertise and components created at Fermilab, in a broader context of integration with the systems at other National Laboratories in the US as well as at CERN and other European sites.

Tertiary Keyword (Optional)

Secondary Keyword (Optional)

Computing models

Primary Keyword (Mandatory)

Data processing workflows and frameworks/pipelines

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