

HIGH PERFORMANCE DATA FACILITY (HPDF) Project: Partnership w/ Lawrence Berkeley National Lab (LBNL)

Cost Range at CD-0: \$300M - \$500M

Artist's Rendering



CURRENT CHALLENGES/ISSUES/RISKS

Requires a robust process to translate requirements into the design; additional power and cooling needed decoupled from the CEBAF.

PROGRAM, MISSION, SCOPE

PROGRAM : Advanced Scientific Computing Research (ASCR)

Location: Thomas Jefferson National Accelerator Facility (TJNAF)

MISSION NEED: The need for the HPDF arises from gaps in the existing capabilities and to fulfill the requirements of the SC programs and their Scientific User Facilities that will arise from planned upgrades in the coming decade. The rate and volume of data that is being produced indicates an urgent need to systematically approach the gaps and challenges in managing and processing streaming data. The facility bridges the gap between edge computing resources and centralized shared resources and the cloud.

PROJECT SCOPE: HPDF will be a unique facility that combines computation, including computational accelerators and programmable logic devices, with tiered storage and wide area networking resources to accommodate experimental workloads. Given the range of applications to be supported, this facility should explore the use of novel optical networking technologies to dynamically build virtual clusters most appropriate for the task at hand, with this virtualization capability possibly extending to the edge computing.

HPDF's TOP TAKE-AWAYS

- Introduces the opportunity for JLab to move beyond being a single purpose lab to a becoming a multi-program laboratory.
- Emphasis on sustainability with energy efficient design consistent with national objectives.