

SANDIA NATIONAL LABORATORIES

SNL ADTM

FY20Q2 report for ATDM AD projects to ECP

March 2020

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Prepared for:

ECP Confluence updates

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Accomplishments / Milestones Delivered During This Period

OS/R: Use the simulation framework developed for quantifying MPI resource usage to characterize ATDM workloads and examine the relationship between MPI resource usage and application performance and scalability.

Kokkos: Performance Portability with Kokkos Bootcamp. This training was intended to teach new Kokkos users how to get started and to help existing Kokkos users to further improve their codes. Over 40 individuals attended this bootcamp, including 30 from Los Alamos National Laboratory, where Kokkos is gaining traction, especially with their ASC applications

Kokkos: The first stage of incremental testing is merged into main-line Kokkos enabling more productive activities of developing new backends

Kokkos: The initial HIP support is merged into main line Kokkos with capabilities on track with expected development plan (including parallel loops, reductions and initial hierarchical parallelism support).

Kokkos: Initial SYCL support is in a branch with a PR for Kokkos main line.

Next Steps

OS/R: Develop a sustainable framework for ASC application containerization that aligns with the new containers project in ECP but focuses specifically on ATDM needs, including scalability studies, runtime development, and investigation of security models appropriate for ASC applications and workflows.

VTK-m: Performance tuning of VTK-m on ASC/ATS hardware.

Challenges

Outreach and Communication

OS/R: Establish working group on user-level packaging (containers and Spack) within the COMPASS (customer HPE/Cray engagement) organization.

OS/R: Representing SNL in the El Capitan COE system software working group, and representing us in the messaging working group.

