

**Date:** 11/12/2019

**To:** Rajeev Thakur

**cc:** Gabrielle Trujilo

**From:** Christian Trott 2.3.1.04 / SNL ATDM PMR

**Milestone Deliverable -** ST-PR-06-1251

**Milestone Due Date:** 2019-09-30

**Milestone Completion Date:** 2019-09-30

### **Description of Milestone:**

Engage the C++ standards committee to further the adoption of successful Kokkos concepts into the C++ standard, and provide feedback on proposed concurrency mechanisms such as the executors proposal.

### **Completion Proof of the Milestone:**

The latest version of the mdspan proposal is available at: <https://github.com/ORNL/cpp-proposals-pub/tree/master/P0009>.

The latest version of the BLAS proposal is available at: <https://github.com/ORNL/cpp-proposals-pub/tree/Pre-BEL2019-BLAS/D1673>.

An implementation of the mdspan proposal is publicly available here  
<https://github.com/kokkos/mdspan>.

An implementation of the BLAS proposal is privately available at:  
<https://github.com/kokkos/stdBLAS>.

### **Tasks to Complete the Milestone:**

We participated in all official ISO C++ committee meetings, retaining our voting right.

We collaborated in preparing proposals to transfer successful concepts from Kokkos into the C++ standard, or improving existing proposals. In particular we started leading a new effort to add linear algebra capabilities to the C++ standard, wrote the proposal, and implemented a reference library for the proposal.

We developed a production quality version of the mdspan proposal in order to serve as a replacement for the implementation details of Kokkos View.

### **Person(s) Responsible for Completing the Milestone:**



Christian Trott (SNL), Mark Hoemmen (SNL), David Hollman (SNL), Dan Sunderland (SNL). Sandia National Laboratories is a multimission laboratory managed and operated by National Technology and Engineering Solutions of Sandia, LLC., a wholly owned subsidiary of Honeywell International, Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA-0003525.