

**Date:** September 5, 2018

**To:** Rajeev Thakur

**cc:** PI, Jeremiah Wilke; PM, Robert Clay

**From:** Jeremiah Wilke, 2.3.1/SNL ATDM PMR

### **Milestone Deliverable — 2.3.1.04.14**

**Milestone Due Date:** 06/30/2018

**Milestone Completion Date:** 08/20/2018

#### **Description of Milestone:**

The DARMA many-task framework provides asynchronous communication and load balancing functionality. This functionality is embedded in standard, modern C++ through the use of the template wrapper classes similar to futures. DARMA previously functioned as a single, large repository. This simplified building and installation, but hindered agile development as individual components could not be easily updated or reused in other projects. DARMA components can now be developed independently and reused in other ECP projects. Through Spack and modern CMake, a complete DARMA package can be easily configured and installed with automatic dependency management for each of the configuration options.

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

The DARMA runtime library has been made available through the github repository at <https://github.com/DARMA-tasking/darma-futures>. A separate repository containing the Spack configurations and instructions have been made available through GitHub at <https://github.com/DARMA-tasking/darma-spack>.

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

This milestone completed the following tasks:

- Separated metaprogramming, serialization, header libraries, and applications into independent repositories.
- Implemented modern CMake package system for managing dependencies. Export complete DARMA dependency tree as a single CMake DARMA package.
- Implemented DARMA package installation automatically via Spack.

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

- Jeremiah Wilke, Sandia National Labs
- David Hollman, Sandia National Labs
- Aram Markosyan, Sandia National Labs
- Giulio Borghesi, Sandia National Labs
- Jonathan Lifflander, Sandia National Labs
- Nicolas Morales, Sandia National LAbS