Axom Documentation

LLNL

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Contents

Note: We recently changed our project name from "The CS Toolkit" to "Axom". As a result, you may hear either term used. However, they refer to the same project.

This web page is the main place to find information about Axom.

Axom is a project in WCI/WSC that is funded by ECP/ATDM. Its principal goal is to provide a collection of robust and flexible software components that serve as building blocks for LLNL simulation tools. The emphasis is on sharing core infrastructure software amongst applications rather than having different codes develop and maintain similar capabilities.

A key objective of Axom is to facilitate integration of novel, forward-looking computer science capabilities into LLNL simulation codes. Thus, a central function of Axom is to enable and simplify data exchange between applications and tools that Axom provides. To meet these objectives, developers of Axom components emphasize the following features in software design and implementation:

- Flexibility to meet the needs of a diverse set of applications
- High-quality, with well designed APIs, good documentation, tested well, high performance, etc.
- Consistency in software engineering practices
- Integrability so that components work well together and are easily adopted by applications

The main drivers of the Axom project are to:

- Provide the CS infrastructure foundation of the ECP/ATDM multi-physics application at LLNL
- Support current ASC and other production applications and as they continue to evolve
- Provide capabilities for LLNL research codes, proxy apps, etc. that simplify technology transfer from research efforts into production applications

CHAPTER 1

Quickstart Guide

The Axom Quickstart Guide contains information about accessing the code, configuring and building, linking with an application, etc.

CHAPTER 2

Axom Software Documentation

The following lists contain links to user guides and source code documentation for Axom software components:

2.1 Component User Guides

- Slic (Simple Logging Interface Code for integrated applications)
- Lumberjack (Scalable parallel message logging and filtering)
- Sidre (Simulation data repository)
- Slam (Set-theoretic lightweight API for meshes)
- Quest (Querying on surface tool)
- Mint (Mesh data model)
- Primal (Computational geometry primitives)

2.2 Source Code Documentation

- Axom
- Axom Utils
- Lumberjack
- Mint
- Primal
- Quest
- Sidre
- Slic

- Slam

Look for documentation to appear for new components as they are developed.

CHAPTER 3

Other Tools Application Developers May Find Useful

Axom developers support other tools that can be used by software projects independent of the Axom. These include:

- BLT (CMake-based buld system developed by the Axom team to simplify CMake usage and development tool integration)
- Shroud (Generator for native C and Fortran APIs from C++ code)
- Conduit (Library for describing and managing in-memory data structures)

CHAPTER 4

Resources for Axom Developers/Contributors:

- Axom Developer Guide
- Axom Coding Guidelines
- Axom Testing Coverage

CHAPTER 5

Communicating with the Axom Team

5.1 Mailing Lists

The project maintains two email lists:

- 'axom-users@llnl.gov' is how Axom users can contact developers for questions, report issues, etc.
- 'axom-dev@llnl.gov' is for communication among team members.

You can add or remove yourself from either of these lists via the LLNL E-Mail List Manager (ListServ)

5.2 Chat Room

We also have a chat room on LLNL's Cisco Jabber instance called 'Axom Dev'. It is open to anyone. You just have to log on to Jabber and join the room.

5.3 Atlassian Tools

The main interaction hub for the Axom software is the Atlassian tool suite on the Livermore Computing Collaboration Zone (CZ). These tools can be accessed through the MyLC Portal.

Direct links to the Axom Atlassian projects/spaces are:

- Bitbucket project/git repository
- Jira issue tracker
- Bamboo continuous integration
- Confluence (primarily for developers)

5.4 LC Groups

Access to Axom projects/spaces in these Atlassian tools requires membership in the *axom* group on LC systems. Please contact the team for group access by sending an email request to 'axom-dev@llnl.gov'.

CHAPTER 6

Axom Copyright and License Information

Please see the axom-license.

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