Sandia National Laboratories

Exceptional service in the national interest

WELCOME TO HPSF / TUG MEETING!

Curt Ober

Trilinos Product Owner

HPSF/TUG Meeting

March 18-19, 2026

Chicago, Illinois

TRILINOS

U.S. DEPARTMENT of ENERGY | NNSA National Nuclear Security Administration

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THRUSTS FOR TUG THIS YEAR

- **Trilinos Introduction for New Users and Developers**
  - Overview of Trilinos capabilities and features
    - What is Trilinos?
    - What are its capabilities?
  - Wednesday Afternoon, March 18, 2026
    - **DevSecOps**: *How to Configure, Build, and Test Trilinos* - Samuel Browne
    - **Core Area**: *An Introduction to the Trilinos Core Products* - Roger Pawlowski
    - **Solvers Area**: *Linear Solver Capabilities in the Trilinos Project* - Jonathan Hu
    - **DnA Area**: *Overview of Trilinos Discretization and Analysis Capabilities* - Mauro Perego
    - **PyTrilinos2**: *Using Trilinos from Python* - Christian Glusa
- **Traditional Trilinos Users/Developers Meeting (TUG)**
  - A forum for users and developers to collaborate
    - Discuss current challenges and share experiences
    - Explore future directions and research opportunities
  - Thursday, March 19, 2026
    - Updates on Trilinos areas and packages
    - User presentations and shared experiences
    - Open Discussion

TRILINOS IS …

… a collection of capabilities to provide a framework for the solution of large-scale, complex multi-physics engineering and scientific problems.

- **Performance Portability** *(Kokkos, Kokkos Kernels, Tpetra)*
- **Linear Solvers** *(Belos, Amesos2, ShyLU, Adelus, Anasazi)*
- **Preconditioners** *(Ifpack2, FROSch, MueLu, Teko)*
- **Discretization Utilities** *(Intrepid2, Panzer, Phalanx, Compadre)*
- **Nonlinear, Transient, and Optimization Solvers** *(NOX, LOCA, Tempus, ROL)*
- **Automatic Differentiation** *(Sacado)*
- **Uncertainty Quantification** *(Stokhos)*
- **Partitioning and Load Balancing** *(Zoltan, Zoltan2)*
- **Mesh and Geometry Tools** *(PAMGEN, SEACAS, STK, Percept, Shards, Krino)*
- **Interfaces and Adapters** *(Stratimikos, PyTrilinos2, Piro, Thyra, RTOp)*
- **Utilities** *(Teuchos, Galeri, MiniTensor)*

TRILINOS LEADERSHIP TEAM AND WORKING GROUPS

Technical Steering Committee


Curtis Ober


Christian Glusa


Jim Willenbring

Responsible for Trilinos-wide decisions.

Continuous Integration Working Group


Anderson Chauphan


Sam Browne


Jim Willenbring

Bring together multiple efforts to create a CI service for HPC projects.

Operational Leadership


Curtis Ober
Lead


Sam Browne
DevSecOps


Roger Pawlowski
Core Area


Jonathan Hu
Solvers Area


Mauro Perego
Discretization and Analysis Area

Support package leads and developers, maintain day-to-day operations, interaction with stakeholders, and help plan Trilinos development over the next two years.

Benchmark Working Group

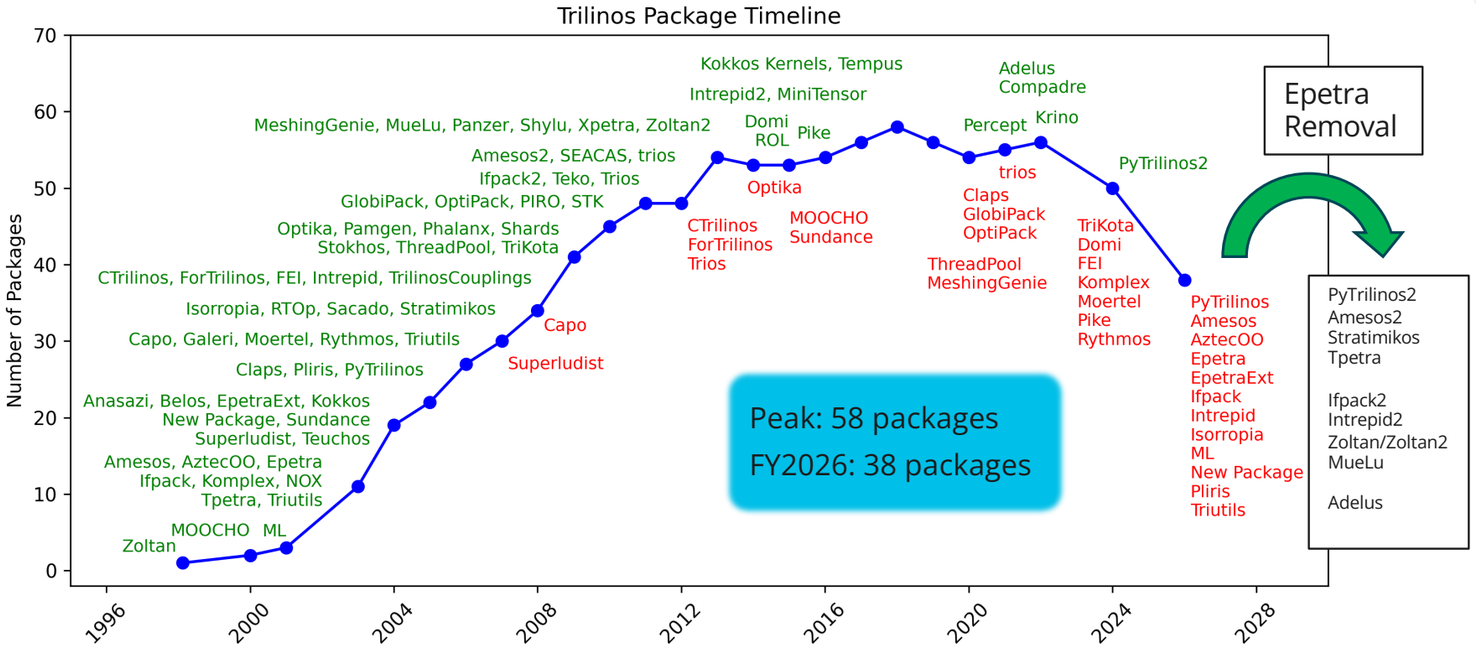

Jonathan Hu


Chris Siefert

Create an automated way to continuously test the performance of evolving HPC software stacks.

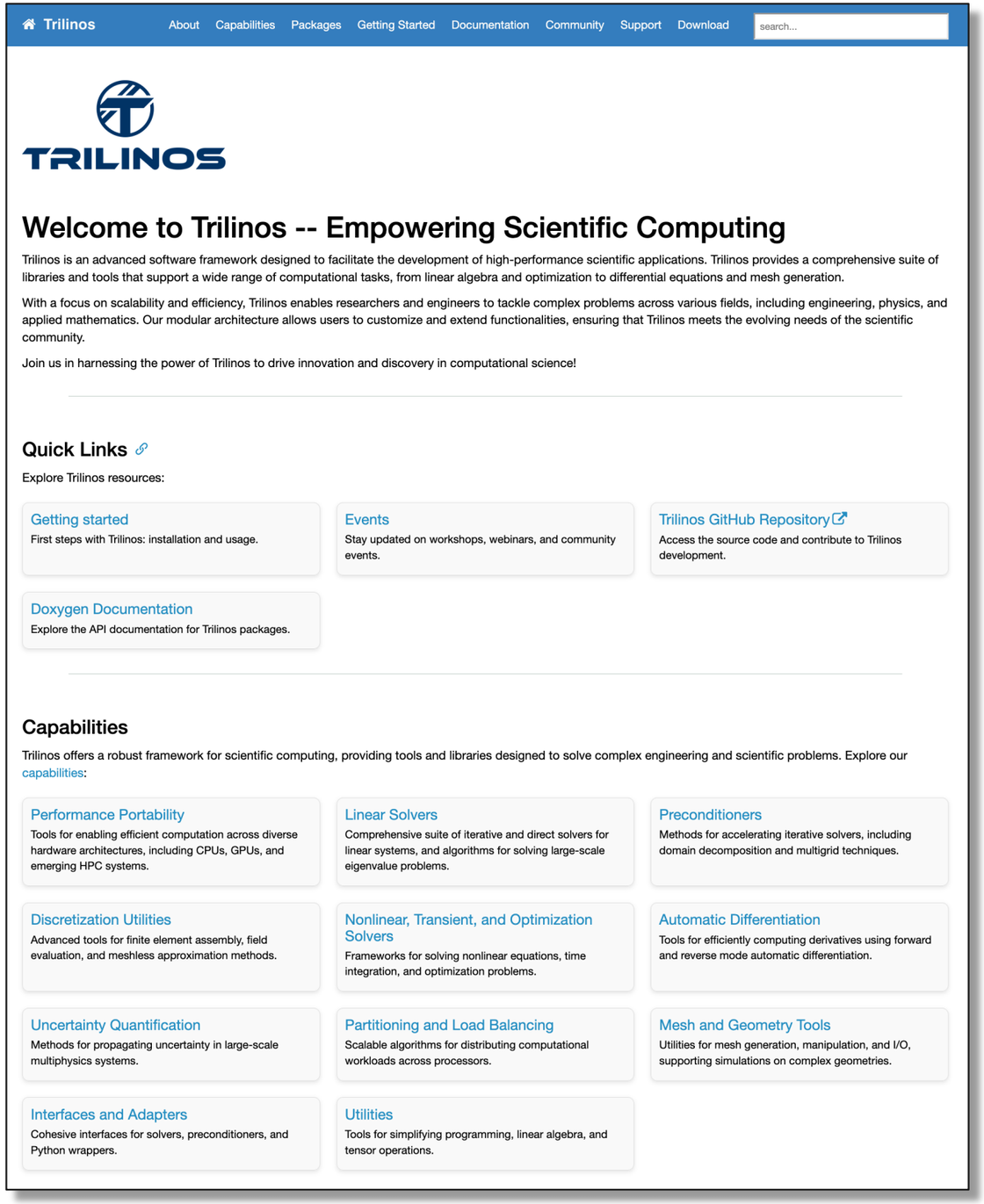
TRILINOS 17.0 RELEASE

- Released 2026/02/10
- Epetra Removal
  - 15 Epetra stack packages!
- Requires
  - C++20 compatible compiler
  - CMake 3.27 or newer
- Kokkos 5.0
- In-source Gtest package has been removed
- Plan to match major and minor releases with Kokkos.
  - Kokkos 5.1 is coming!



TRILINOS HOME PAGE

- Refresh of the Trilinos Home Page!
  - https://trilinos.org
- More Capabilities focused
  - Friendlier for new users/developers
- Links to package documentation
  - https://trilinos.github.io/packages-by-area.html
- Still making improvements
  - Canonical examples
  - Applications page
  - Feel free to make suggestions, and add content.



TRILINOS AGENDA

Wednesday, March 18

1:45pm CDT

Welcome to HPSF / TUG Meeting! - Curtis Ober, Sandia National Laboratories
OHIO RIVER

1:55pm CDT

How to Configure, Build, and Test Trilinos - Samuel Browne, Sandia National Laboratories
OHIO RIVER

2:25pm CDT

An Introduction to the Trilinos Core Products - Roger Pawlowski, Sandia National Laboratories
OHIO RIVER

2:55pm CDT

Linear Solver Capabilities in the Trilinos Project - Jonathan Hu, Sandia National Laboratories
OHIO RIVER

3:50pm CDT

Overview of Trilinos Discretization and Analysis Capabilities - Mauro Perego, Sandia National Laboratories
OHIO RIVER

4:20pm CDT

PyTrilinos2: Using Trilinos from Python - Christian Glusa, Sandia National Laboratories
OHIO RIVER

Thursday, March 19

9:00am CDT

Trilinos DevOps/CI Updates 2026 - Samuel Browne, Sandia National Laboratories
OHIO RIVER

9:20am CDT

An Update on the Trilinos Core Products - Roger Pawlowski, Sandia National Laboratories
OHIO RIVER

9:40am CDT

Recent Developments in Trilinos Linear Solvers - Jonathan Hu, Sandia National Laboratories
OHIO RIVER

10:00am CDT

An Update on Trilinos Discretization and Analysis Capabilities - Mauro Perego, Sandia National Laboratories
OHIO RIVER

10:45am CDT

Tracking Trilinos Performance - Chris Siefert, Sandia National Laboratories
OHIO RIVER

11:05am CDT

WARDEN: A New Software for Visualizing Subtimer Data - Dane Camacho, Sandia National Laboratories
OHIO RIVER

11:25am CDT

Lets Make 40 Trilinos Spack Packages? - Joe Frye, Sandia National Laboratories
OHIO RIVER

11:40am CDT

Block-based Algebraic Multigrid Preconditioners in Trilinos/Teko - Malachi Phillips, Sandia National Laboratories
OHIO RIVER

1:35pm CDT

Scalability and Performance of the Empire Plasma Physics Code on the El Capitan Platform - Roger Pawlowski, Sandia National Laboratories
OHIO RIVER

2:00pm CDT

Enabling Scalable Predictive Circuit Simulation Using Trilinos - Heidi Thornquist, Sandia National Laboratories
OHIO RIVER

2:25pm CDT

Leveraging Trilinos Scientific Computing Library for Computational Fluid Dynamics Applications - Marco Delchini, Oak Ridge National Laboratory
OHIO RIVER

2:50pm CDT

Trilinos in deal.II - Daniel Arndt, Oak Ridge National Laboratory
OHIO RIVER

3:40pm CDT

Multigrid Solvers for Maxwell's Equations in Trilinos - Christian Glusa, Sandia National Laboratories
OHIO RIVER

4:05pm CDT

Trilinos Open Discussion - Curtis Ober, Sandia National Laboratories
OHIO RIVER

OPEN DISCUSSION

Google Docs for Open Discussion QR Code

4:05-5:00pm Thursday, March 19th

- **Feature Requests**: What feature(s) would you like to see in Trilinos?
- **Challenges**: What has really tripped you up and you wish someone would change it?
- **Success Stories**: Do you have a success story to share?
- **Pain Points**: What are your main pain points?
  - How can we make it easier for the wider Trilinos community to contribute to Trilinos?
  - How can we make Trilinos easier to configure and build for first-time users?
  - Are the current distribution mechanisms (source code & Spack) sufficient? If not, what is missing (e.g., containers, packages)?
- **CI Coverage**: Are there use cases that the Trilinos CI process currently does not cover?
- **Performance Tracking**: Would you find having access to internal Sandia performance tracking data useful?
- **Your ideas**: Add your own discussion point!

QUESTIONS?