SAND2012-1576P

EXPLORE AND COLLABORATE
AMERICAN INDUSTRY AND AMERICA'S NATIONAL LABS
MODELING AND SIMULATION

The Trilinos Project

Enabling predictive science and engineering through software libraries for scalable computing

Billions of Equations, Millions of Processors

Care about climate prediction, nuclear surety, fuel efficiency? High-fidelity computational models tackle these problems, and many more. All of these problems have a common need: Solve a billion or more equations on up to 1 million processors. The DOE Trilinos Project solves these problems for thousands of computational scientists by providing production-quality, open source software used in hundreds of computational science applications.

Reusable, Interoperable, and Scalable

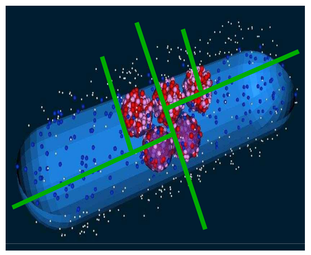
- Rich tool base for rapid development.
- Interoperable packages support use of any solver combination.
- Open architecture, compatible with other solvers.
- Designed from bottom up for scalable performance.
- Near-linear complexity for key problems.

Commitment to Quality, Portability, and Availability

- Innovative software architecture.
- Emphasis on software quality improvement processes.
- Extensive documentation and user support.
- Runs on PCs/Macs to the latest high-end machines.
- Freely available: BSD and LGPL licensing.

Broad Capabilities

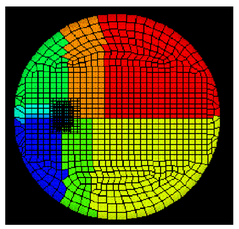
- Linear and Eigen Solvers
- Scalable Linear Algebra
- I/O Support
- Discretizations
- Meshes, Geometry and Load Balancing
- Embedded Nonlinear Analysis Tools



Geometric Partitioning in ChemCell Cell Modeling

Examples from Zoltan, one of 50 packages included in Trilinos 10.10.1.

R&D 100



Repartitioning in the SIERRA Adaptive FEM Framework

Widely Adopted

- Over 7,000 registered users.
- More than 23,000 downloads.
- Part of Cray's LibSci.
- Included in multiple Linux distributions.

http://trilinos.sandia.gov

U.S. DEPARTMENT OF ENERGY
Office of Science

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National Nuclear Security Administration
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