



Welcome to the Common Component Architecture Tutorial

CCA Forum Tutorial Working Group

<http://www.cca-forum.org/tutorials/>
tutorial-wg@cca-forum.org



Who Are We?

(And Where Did We Come From? ☺)

- ACTS Toolkit Interoperability Effort (Late 1990's)
 - Part of DOE 2000, Many Tool Integration Projects
 - “One-to-One”, Leading to N² Solutions... ☹
- Common Component Architecture Forum (1998)
 - Goal: To Develop a General Interoperability Solution
 - Grass Roots Effort to Explore High-Performance Components for Scientific Software
- SciDAC Center for Component Technology for Terascale Simulation Software (CCTSS, 2001)
 - Part of New DOE Scientific Simulation Program
 - Technology Development in Several Thrust Areas...

The Common Component Architecture (CCA) Forum

- Define Specifications for **High-Performance** Scientific Components & Frameworks
- Promote and Facilitate Development of Domain-Specific **“Standard” Interfaces**
- Goal: **Interoperability** between components developed by different expert teams across different institutions
- Quarterly Meetings, Open membership...

Mailing List: cca-forum@cca-forum.org

<http://www.cca-forum.org/>

3

Center for Component Technology for Terascale Simulation Software (CCTSS)

- DOE SciDAC ISIC (\$16M over 5 years)
 - SciDAC = Scientific Discovery through Advanced Computing
 - ISIC = Integrated Software Infrastructure Center
- **Subset** of CCA Forum
- Develop CCA technology from current prototype stage to full production environment
- Increase understanding of how to use component architectures effectively in HPC environments
- Participants: (Funded by the Office of Mathematical, Information and Computational Sciences (MICS))



Lawrence Livermore
National Laboratory

Los Alamos
National Laboratory

ornl
Oak Ridge National Laboratory

Pacific Northwest
National Laboratory

Sandia
National Laboratories



THE
UNIVERSITY
OF UTAH

Lead PI (Grand Poobah): Rob Armstrong, SNL (rob@sandia.gov)

<http://www.cca-forum.org/ccttss/>

4



CCTTSS Research Thrust Areas and Main Working Groups

- **Scientific Components**
 - Scientific Data Objects
Lois Curfman McInnes, ANL (curfman@mcs.anl.gov)
- **“MxN” Parallel Data Redistribution**
 - Jim Kohl, ORNL (kohlja@ornl.gov)
- **Frameworks**
 - Language Interoperability / Babel / SIDL
 - Component Deployment / Repository
Scott Kohn, LLNL (skohn@llnl.gov)
- **User Outreach**
 - David Bernholdt, ORNL (bernholdtde@ornl.gov)

5

Acknowledgements

- **CCA Forum Tutorial WG**
 - Rob Armstrong, David Bernholdt, Wael Elwasif, Lori Freitag, Dan Katz, Jim Kohl, Gary Kurfert, Lois Curfman McInnes, Boyana Norris, Craig Rasmussen, Jaideep Ray
 - ANL, JPL, LANL, LLNL, ORNL, SNL
- **And many more contributing to CCA itself...**
 - ANL - Lori Freitag, Kate Keahey, Jay Larson, Ray Loy, Lois Curfman McInnes, Boyana Norris, ...
 - Indiana University - Randall Bramley, Dennis Gannon, ...
 - JPL - Dan Katz, ...
 - LANL - Craig Rasmussen, Matt Sotille, ...
 - LLNL - Tom Epperly, Scott Kohn, Gary Kurfert, ...
 - ORNL - David Bernholdt, Wael Elwasif, Jim Kohl, Torsten Wilde, ...
 - PNNL - Jarek Nieplocha, Theresa Windus, ...
 - SNL - Rob Armstrong, Ben Allan, Curt Janssen, Jaideep Ray, ...
 - University of Utah - Steve Parker, ...
 - And others as well ...

6

Next: The Sausage Grinder Talk