



## ***Welcome to the Common Component Architecture Tutorial***

**CCA Forum Tutorial Working Group**

<http://www.cca-forum.org/tutorials/>  
[tutorial-wg@cca-forum.org](mailto: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 N<sup>2</sup> 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](mailto:cca-forum@cca-forum.org)

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## 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 LaboratoryLos Alamos  
National Laboratoryornl  
Oak Ridge National LaboratoryPacific Northwest  
National LaboratorySandia  
National  
LaboratoriesTHE  
UNIVERSITY  
OF UTAH

Lead PI: Rob Armstrong, SNL <[rob@sandia.gov](mailto:rob@sandia.gov)>

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## 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)

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## Acknowledgements

- **CCA Forum Tutorial WG**
  - Rob Armstrong, David Bernholdt, Wael Elwasif, Lori Freitag, Dan Katz, Jim Kohl, Gary Kumfert, Lois Curfman McInnes, Boyana Norris, Craig Rasmussen, Jaideep Ray, Torsten Wilde
  - 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 Kumfert, ...
  - 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 ...

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**Next: The Sausage Grinder Talk**