

Component Technology for Terascale Simulation Software: Bringing Components to High Performance Computing

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



Common
Component
Architecture

Participants:

- ANL
- Indiana Univ.
- LANL
- LLNL
- ORNL
- PNNL
- SNL
- Univ. of Utah

Partners:

- Climate Modeling
- Quantum Chemistry
- Combustion Modeling

Currently DOE Apps Are:

- One-off, stove-pipe, few participants
 - Scalable, and low latency
 - Large & rich legacy investment
- But Also:**



Challenges

- Practical parallel HPC component model
- Integrate legacy software investment
- Connection to Grid components
- Multi-language

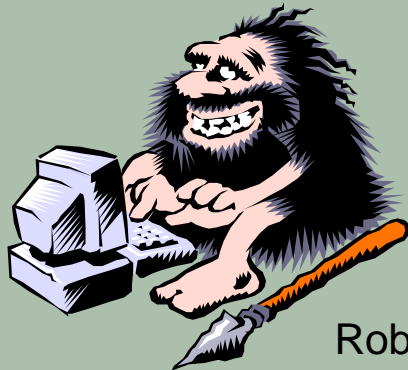


Goals

- Enable plug-and-play parallel simulations
- Establish component "marketplace" with applications partners
- Extend commodity component technology for HPC

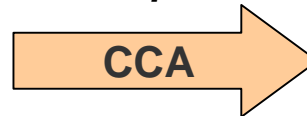
Today:

Single-purpose,
monolithic,
tightly-coupled
parallel codes



*High Performance
Component
Framework*

*Scientific
Components*



*"MxN" Parallel Data
Redistribution*

*Applications
Integration*

**Component-Based
Scientific Application**

