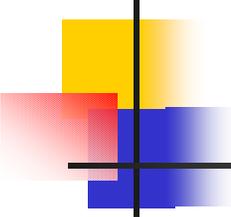


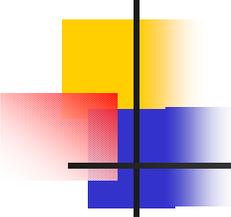
CCS-2 Scientific Computing

Doug Kothe
Acting Group Leader



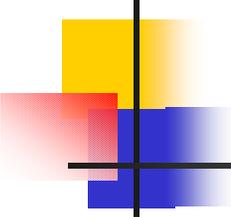
Scientific Computing Mission

- Using software as a tool for science, we bring a mix of numerical methods—new and advanced, physical models, and software engineering—to bear on the Los Alamos applications.



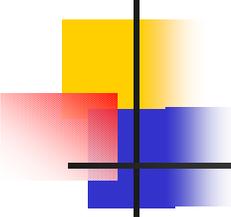
Funding

- Our portfolios is primarily (80-90%) ASCI
- Also have LDRD and some CHAMP funding



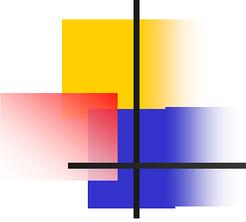
Group composition

- Members primarily from X-3, X-6, CIC
- Interdisciplinary—training backgrounds include
 - Engineers
 - Mathematicians
 - Computer scientists
 - Physicists



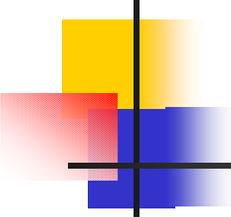
Group Capabilities

- Expertise in
 - Direct numerical simulation
 - Microphysics
 - Information technology
 - Validation
 - Verification



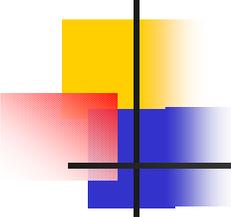
Near-term

- ASCI
 - Not just your traditional weapons performance application, but also materials manufacturing
- Climate modeling
 - Hope to expand in the future
- Work on deterministic systems where partial differential equations are either known or developed in the models
 - We think hard about how to solve these systems accurately on the large ASCI systems



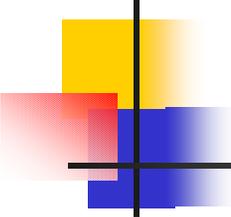
Future growth areas

- Over the next few years we'd like to grow as dictated by projects and capabilities into
- Stochastic modeling systems that don't have a deterministic nature
 - New areas like non-traditional analysis of areas like financial and economic modeling
 - Sensitivity analysis and optimization
 - Solving linear and nonlinear problems on the large machines



Goals

- One of our goals is to develop a better fundamental understanding through the simulation itself, but then develop modulization techniques that would then tie in to the larger application for codes.
 - In this group we see ourselves as really tying into and being an important part of the application codes



Now delivering in

- Primarily ASCI–building and developing better simulations tools with a focus on methods, algorithms, and software engineering techniques