Sierra Usability & UI Integration Proposal

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Input from ARDEC, Cubit, Sierra, Workbench Teams

TCG-1

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Sierra Usability FY11 Summary

1. Add DoD-requested geometry and meshing enhancements to CUBIT

2. Support translation from Abaqus to Sierra and ALE3D

3. Disseminate analysis guidelines for key capabilities

4. Complete SNLs ongoing roadmap for integrated Analysis/V&V/UQ/Optimization capability

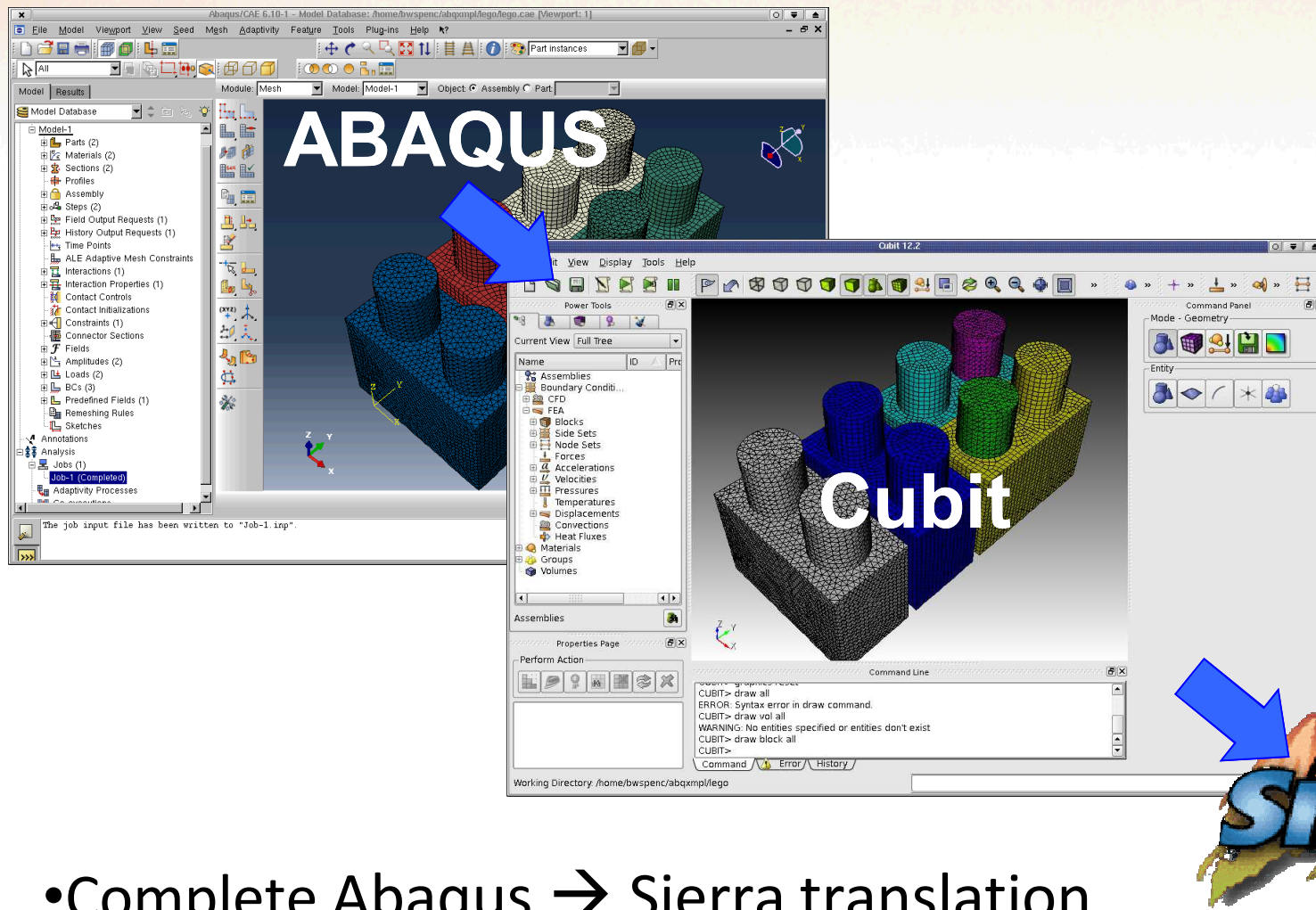**Total FY11 Costs: $250K / $250K**

DoD Geometry/Meshing Tasks

- Import part, assembly, and colors from STEP
- Geometry fixing
- Virtual topology
- Coloring improvements
  - Automatic color by mesh type
  - Color by part, volume, material, element type, etc.
- Partitioned cells remain associated with volumes
- Mesh statistic visualization
- Assignment of materials for Eulerian codes
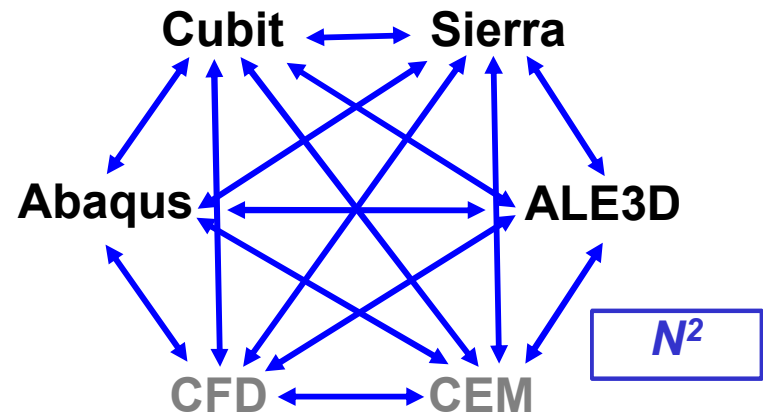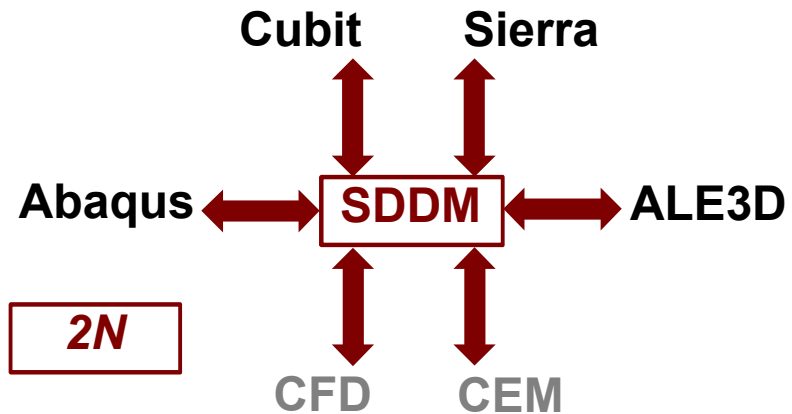
(blue text = in progress now)

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Translation Tasks: Abaqus

- Complete Abaqus → Sierra translation
- Support capabilities used in production analyses

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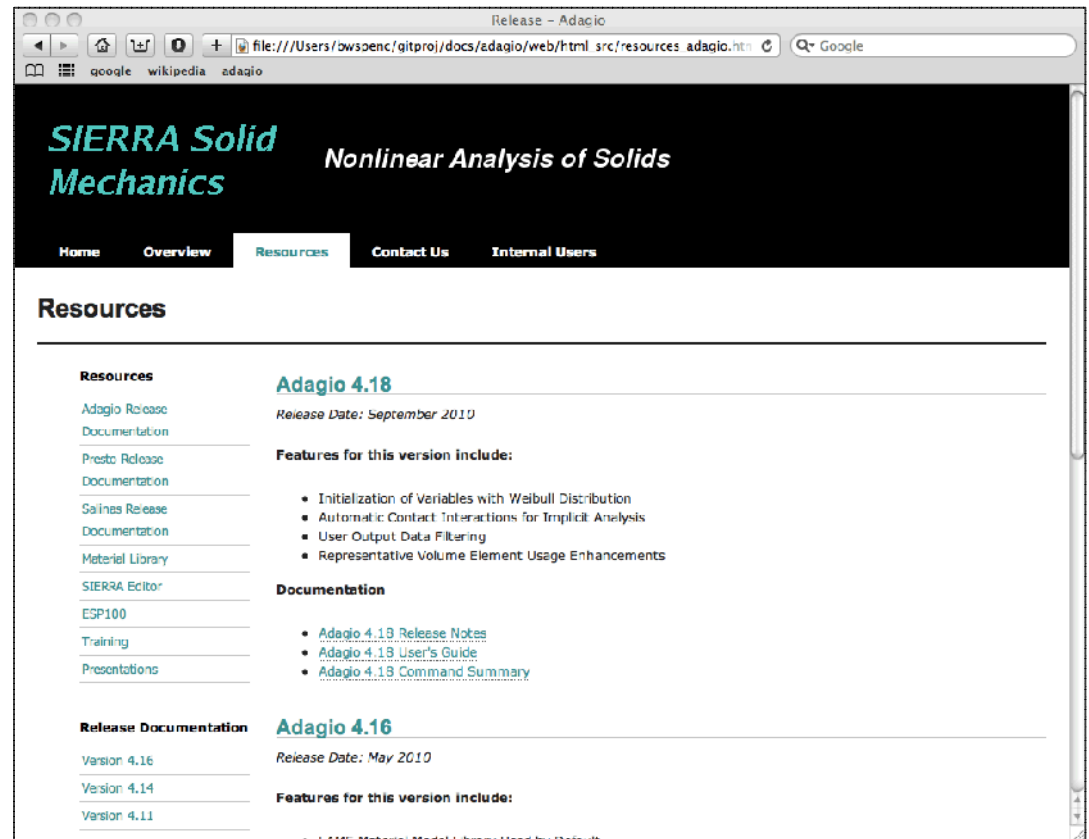Sandia National Laboratories

Translation Tasks: ALE3D

- Coordinate with ALE3D team to add support for ALE3D in Sierra Editor and Cubit via SDDM

- SDDM = Simulation Data Definition Model

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Disseminate Code Usage Guidelines

- Provide DoD users access to Sierra documents

  - Users manuals

  - Usage guidelines

  - Training materials

  - Example problems

  - Support information

Sandia Roadmap toward Sierra Usability Goals

Improve Sierra User Experience

User Experience comparable to expectation set by, e.g., Abaqus CAE, ANSYS Workbench

Amplify Sierra's Distinguishing Strengths

Realize the vision of integrated analysis, V&V, optimization, and UQ

Integration with a diverse computing environment local, remote parallel, & exascale computing

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Available Sandia Technology for Analysis/V&V/UQ/Opt

CUBIT
Geometry and Mesh Generation Toolkit

Paraview
Data Visualization and Analysis

Dart Workbench
Integrated tools to aid analyst productivity

DAKOTA
Design Analysis Kit for Optimization and Terascale Applications

Sierra Editor
GUI driven syntax editor for SIERRA input files

SDDM
Simulation data definition model

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Questions and Answers

And thank you for your consideration

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