NSF Grant Number: CCR-0331645
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Title: ITR: Virtual Grid Application Development Software (VGrADS)

Research Objectives:

The "Computational Grid" networks computers, databases, and people to solve scientific problems. VGrADS attacks the Grid programming problem – developing software tools that simplify development of highly efficient Grid applications.

Approach

Provide integrated abstractions including:
1. Virtual Grid (vgrid) architectures separating concerns between high-level services and the Grid's inherent complexity.
2. Programming models and tools supporting creation of Grid applications.
3. Core software for Grid computations , including performance-efficient scheduling, fault tolerance, and economics-based resource management.

Broader Impact:

Improved usability will greatly expand the community of Grid users, allowing new science to be accomplished in partner applications (biology, meteorology, logic).

Significant Results:

Developed new scheduling method for workflow applications, up to 20x better than previous random planners for heterogeneous platforms. Advantage comes from explicit modeling of computation and communication costs of Grid components.

Graphic:
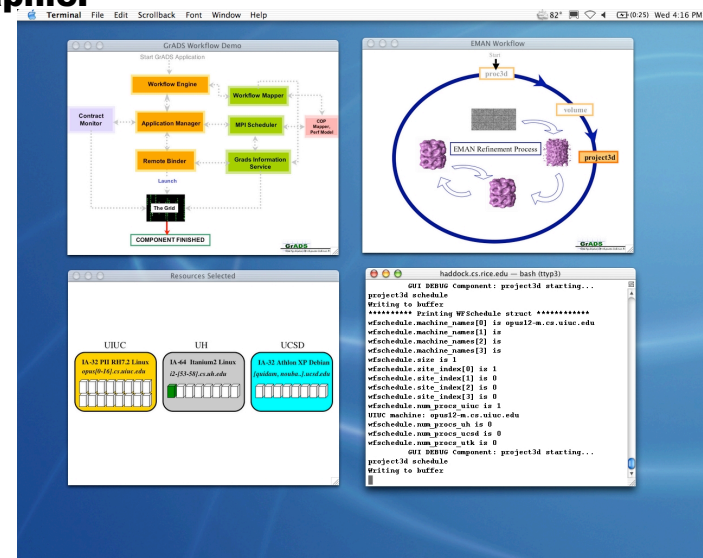
Snapshot of bioimaging application under VGrADS