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Dr. Pitts,


Over the last several years the High Performance Computing landscape has experienced dramatic change resulting from the continual price/performance improvements of commodity level computational hardware. Many projects have been funded for the creation of commodity based computational clusters. Funding has also been allocated for the creation of supporting middleware, including new scheduling software (e.g., Globus) capable of dispatching jobs across multiple clusters and even across heterogenous computing environments. Collectively, these technologies have come to be known as Grid Computing.

Notably absent from this evolving landscape is progress in underlying, enabling software technologies at the application programming level. While these hardware and middleware technologies show great promise, they still require that scientists know a great deal about the specific environments in which they intend their code to run. By and large, production supercomputing is used by researchers whose primary expertise is not, and should not, be computing science. In order to make effective use of the variety of computational environments, we at SGI agree that a need exists for advanced research into new programming methods, models, and ultimately software interfaces capable of enabling scientists to harness available Grid resources in the most efficient and intelligent manner possible.

As Grid Computing progresses, it is very likely that a world will evolve in which specialized nodes exist in support of more general purpose nodes. For example, nodes created specifically to handle long term storage of large data sets, nodes created specifically for visualization of computed results, nodes created as direct interfaces to specialized scientific instrumentation, and the more general purpose nodes created for high performance computation. Scheduling appropriate resource reservations spanning non-local Grid nodes should not require an individual application developer or researcher to have intimate knowledge of the current topology of the Grid. Methods for automated resource discovery and reservation negotiation will be necessary to gain the desired result of harnessing all available resources.

SGI would like to encourage the National Science Foundation to fund the Center for Grid Application Development Software (CGrADS). We are also willing and interested in participating in an Industrial Advisory Committee. We envision this participation taking the form of an assigned technical contact who would also attend periodic meetings to offer comments and guidance as desired by CGrADS. SGI would also entertain the idea of internships and other kinds of exchange and support for the Center as it matures.

Respectfully,

A handwritten signature in black ink that reads "Brad Reddersen". The signature is written in a cursive style with a long horizontal line extending to the right.

Brad Reddersen
Senior Vice President
SGI