GrADS Yr 3 Annual Report
PRODUCTS (Software or Netware)

(as published in Year 2 Annual Report)
All entered as Software (or netware)

Network Weather Service (NWS):
We have enhanced the Network Weather Service (NWS) to meet the requirements of the GrADSoft architecture. The Network Weather Service is a distributed performance monitoring and forecasting system for the Grid. It takes periodic performance measurements from Grid resources and uses fast statistical techniques to make short-term forecasts of resource availability. As part of GrADS, we have enhanced the system to interface with the Globus toolkit and we have improved the scalability of the system.

How Will Product Be Shared?
The NWS (with the GrADSoft enhancements) will be deployed as part of the GrADS macro-testbed. In addition, we are making the system available via anonymous FTP and the World Wide Web.

Autopilot:
Autopilot is a real-time adaptive control infrastructure which provides a flexible set of performance sensors, decision procedures, and policy actuators to realize adaptive control of applications and resource management policies on both parallel and wide area distributed systems (computational grids). As part of the GrADS project, the Autopilot software is being enhanced to support specification of performance contracts by the GrADS Program Preparation System, and to monitor grid applications for contract violations in real-time. When a violation is detected, the Autopilot system will work in concert with other components of the GrADS environment to maintain reasonable application performance under current operating conditions.

How Will Product Be Shared?
Autopilot software and documentation is distributed via the Pablo website: http://www-pablo.cs.uiuc.edu/Software/Autopilot/autopilot.htm. Enhanced versions of the software are shared with other GrADS participants and tested prior to being available to the general public. Some support is available via an email list and discussion group listed on the webpage.

ScaLAPACK:
We have enhanced some of the ScaLAPACK software to meet the requirements of the GrADSoft architecture. As part of GrADS, we have enhanced the system to interface with the Globus toolkit, and we have improved a dynamic system for linear algebra that tailors itself to the specifics of the system.

How Will Product Be Shared?
The software will be shared with other GrADS collaborators.

ATLAS:

Automatically Tuned Linear Algebra Software (ATLAS) is an approach for the automatic generation and optimization of numerical software for processors with deep memory hierarchies and pipelined functional units. The production of such software for machines ranging from desktop workstations to embedded processors can be a time consuming task. ATLAS has been designed to automate much of this process.

ATLAS is a portable package developed in part with the GrADS effort.

How Will Product Be Shared?

ATLAS is being employed by many users and being adapted by various software and hardware vendors. ATLAS software and documentation is available from Netlib at http://www.netlib.org/atlas.

PAPI:

The Performance API (PAPI) project specifies a standard application programming interface (API) for accessing hardware performance counters available on most modern microprocessors. Accessing these counters facilitates correlation between the structure of source/object code and the efficiency of the mapping of that code to the underlying architecture. PAPI provides two interfaces to the underlying computer hardware: a simple, high-level interface for the acquisition of simple measurements and a fully programmable, low-level interface directed towards users with more sophisticated needs.

PAPI is a portable package developed in part with the GrADS effort.

How Will Product Be Shared?

PAPI is being employed by users and being adapted by various software and hardware vendors. PAPI software and documentation is available on the Web at http://icl.cs.utk.edu/projects/papi.