



LIGO LABORATORY
MC 18-34
PASADENA CA 91125
TEL: 626.395.2129
FAX: 626.304.9834

Date: February 15, 2005
Refer to: LIGO – 050010-00-E

Dr. Sangtae Kim, Director
Division of Shared Cyberinfrastructure
National Science Foundation
4201 Wilson Boulevard
Suite 1145 S
Arlington, Virginia 22230

Dear Dr. Kim,

I am taking this opportunity to express LIGO Laboratory's strong endorsement of the Globus Project's suite of middleware applications that have become a cornerstone of our Collaboration's implementation of grid based production data analysis applications.

The LIGO Scientific Collaboration (LSC) has established a data analysis grid known as the LSC Data Grid that is used extensively for conducting collaboration-wide data analysis on computer resources distributed throughout the US and the world. A key component of the middleware software that is used to access these distributed computer resources and to distribute LIGO data is the Globus Toolkit. Globus allows LIGO to safely and securely share science data and computing resources to its distributed user community consisting of over 450 users at more than 35 institutions. Without the availability of Globus and its timely updates to new platforms and support effort, the LIGO Scientific Collaboration would need to invest significant effort into identifying and possibly developing an alternative solution to support this large a user community.

To date, LIGO has used Globus Toolkit to distribute several tens of TB of reduced level data from the main archive at Caltech to Collaboration Tier 2 centers at UW Milwaukee, Penn State, MIT, and the Albert Einstein Institute of the Max Planck Institute, Golm, Germany. Collaboration centers at Cardiff University and Birmingham University in the UK also have or soon will implement this infrastructure. Colleagues at the Australian National University are likewise planning to install infrastructure developed by the Collaboration that is built upon Globus.

In addition, LIGO Laboratory has embarked on a task to develop an API using Tcl to the Globus middleware. This effort is supported by an ITR2003 grant awarded to a consortium of LIGO Collaboration members. Much of the data analysis software developed by LIGO makes significant use of the TCL scripting computer language. This initiative, termed *Tcl/Globus*, is being developed to better serve the LIGO Scientific Collaboration's migration towards GSI (Globus Security Infrastructure) based certificates for authentication and authorization. The project will integrate the functionality of the Globus Toolkit into the TCL scripting language, allowing users of existing Collaboration software tools such as LDAS and LIGOTools to take full advantage of the common security and authentication mechanism already being used for account access and data movement on collaboration computing hardware. that is already based on Globus.

Without the underlying Globus Project middleware, the development of the Tcl/Globus API to provide this common authentication and access mechanism would not be possible and LIGO would have had to consider building an alternative framework *ab initio*.

NSF's past support of the Globus Project has led to widespread dissemination and adoption of this middleware. It is critical that NSF now continue to support deployment, R&D and improvement efforts for the middleware foundation upon which not only LIGO, but a large and growing number of other scientific enterprises have built their infrastructure.

Sincerely,

A handwritten signature in blue ink, appearing to read 'A. Lazzarini', with a stylized flourish at the end.

Albert Lazzarini
Data and Computing Group Leader
LIGO Laboratory

al:AL
cc: Document Control Center
C. Kesselman
I. Foster