Research Spending & Results

Back to Results

Award Detail

Awardee:	UNIVERSITY OF FLORIDA
Doing Business As Name:	University of Florida
PD/PI:	Erik Deumens (352) 392-6980 deumens@ufl.edu
Co-PD(s)/co-PI(s):	Jose Fortes Paul Avery Xiaolin Li Senthold Asseng
Award Date:	09/12/2012
Estimated Total Award Amount:	$ 385,405
Funds Obligated to Date:	$ 385,405 FY 2012=$385,405
Award Start Date:	10/01/2012
Award Expiration Date:	09/30/2014
Transaction Type:	Grant
Agency:	NSF
Awarding Agency Code:	4900
Funding Agency Code:	4900
CFDA Number:	47.070
Primary Program Source:	490100 NSF RESEARCH & RELATED ACTIVIT
Award Title or Description:	CC-NIE Network Infrastructure: 100Gig Connection to Florida LambdaRail (FLR)
Federal Award ID Number:	1245880
DUNS ID:	969663814
Parent DUNS ID:	159621697
Program:	Campus Cyberinfrastrc (CC-NIE)
Program Officer:	Kevin L. Thompson (703) 292-8970 kthompso@nsf.gov

Awardee Location

Street:	1 UNIVERSITY OF FLORIDA
City:	GAINESVILLE
State:	FL
ZIP:	32611-2002
County:	Gainesville
Country:	US
Awardee Cong. District:	03

Primary Place of Performance

Organization Name:	University of Florida
State:	FL
ZIP:	32611-8435
County:	Gainesville
Country:	US
Cong. District:	03

Abstract at Time of Award

The project is one crucial building block in a comprehensive strategy to create a highly functional cyberinfrastructure for researchers at the University of Florida (UF) and their collaborators in the state, the nation, and the world. Supporting collaborations means moving large amounts of data or providing interactive access to data and processing capability from remote locations. The University of Florida and its partner institutions in SSERCA (Sunshine State Education and Research Computing Alliance) are creating a collaborative framework on top of the Florida Lambda Rail (FLR) for geographically dispersed research teams to easily transfer data between institutions, analyze the same data shared via file systems mounted at their respective high-performance computing resources, and share data with colleagues across the world, with appropriate authentication and authorization as needed.

The award funds the acquisition of a switch capable of transmitting at the rate of 100 Gbps to connect the UF campus research network to the FLR regional network and to the newly built 100 GigE Internet2 network. Some of the ongoing collaborative projects that will benefit directly from this high bandwidth capacity are the following: 1) The Compact Muon Solenoid experiment at the Large Hadron Collider, searching for the Higgs boson. 2) The Agricultural Model Intercomparison and Improvement Project enhances the capability to accurately model both long-term climate evolution and crop growth to allow decision makers to prepare for ever changing weather patterns. 3) The Integrated Digitized Biocollections is a project to create the infrastructure for a national resource providing a searchable collection of data.

Project Outcomes Report

Disclaimer

This Project Outcomes Report for the General Public is displayed verbatim as submitted by the Principal Investigator (PI) for this award. Any opinions, findings, and conclusions or recommendations expressed in this Report are those of the PI and do not necessarily reflect the views of the National Science Foundation; NSF has not approved or endorsed its content.

The award allowed the University of Florida (UF) to purchase the netywork equipment to connect the campus network and the research "ScienceDMZ" network to the national 100 Gigabit Internet2 backbone. This network connection was part of a significant investment in infrastructure for research computing during the year 2013. Three complementary investments were: Upgrade the research network (ScienceDMZ) from 20 Gigabit to 200 Gigabit; open a new data center with 5,000 sq.ft. for research computing equipment; install a 16,000 core supercomputr called HiPerGator.

The combined infrastructure was put in production in August 2013. Since then researchers have used the infrasructure to solve new problems as well as work more efficiently on existing problems.

One example (see graphic) is the project of Prof Moroz, who is interested in the genetic mechanisms behind tissue regeneration, which has potential implications for curing Alzheimer and other degenerative diseases. Delicate creatures in the Caribbean show extraordinary regenerative capabilities: You cut them and they heal without a scar within hours. For this reason taking them back to a lab on land does not work: The gene sequence may not be the same. Therefore Dr. Moroz took his lab on a ship and extracts the genes within minutes after capture. Then the information is sent via satelite to HiPerGator on the UF campus for sequencing. The results are sent back within two hours and a half, allowing researchers to decide on the spot whether more samples are needed or not.

Other activities enabled by the infrastructure to which this award contributed include the establishment in 2013 of the Southeast Center for Integrated Metabolomics (SECIM) and the Center for Compressible Multiphase Turbulence (CCMT).

The first center allows researchers and clinicians to submit samples for comprehensive analysis of metabolmics processes. The data is then processed and made available for further analysis by the customers on HiPerGator or for download.

The CCMT studies the incredibly complex processes of fast moving gases mixed with small particles of debris such as occur in volcano eruptions and explosions. Because of the complexity, the numerical simulations can not be done with sufficient accuracy on current petascale computers, and the center is designing software for the next generation of exascale computers, even though such machine do not exist yet. In collaboration with the NSF-funded Center for Heterogeneous and Reconfigurable Computing (CHREC), the future exascale hardware behavior is simulated on special processors called FPGAs, for field programmable field arrays.

This NSF CC-NIE award has enabled many researchers at UF and their world-wide collaboration teams to tackle new problems.

Image

Last Modified: 08/23/2014
Modified by: Erik Deumens

Back to Results

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