Partnership for International Research and Education
A Global Living Laboratory for Cyberinfrastructure Application Enablement

FIU – FLORIDA INTERNATIONAL UNIVERSITY
UdeG
FAU – FLORIDA ATLANTIC UNIVERSITY

LAGrid – Latin American Grid

A Web-Based Portal for Hurricane Mitigation

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NSF **National Science Foundation**

I. Research Overview and Outcome

Purpose

The purpose of this project is to facilitate remote access to the grid enabled WRF (Weather Research and Forecasting) system, via a web based portal. The portal is used by Meteorologists and provides services facilitating the uploading of WRF configurations, modification of relevant weather variables, and the submission, tracking, and retrieval of jobs.

Motivation

The instillation and configuration of WRF can be a tedious process for a meteorologist who is not well-versed in computer science. A web-based portal would allow them access to WRF without having to install it on their own local machines, allowing them to commit time and energy to research rather than setting up the system. In addition, the accuracy of a WRF run can suffer greatly from a lack of computing resources. By giving meteorologists access to a grid-enabled version of WRF, the system can automatically scale out to fit their needs. This is very beneficial in the use of ensemble forecasting, in which the results of several WRF runs are aggregated into a more accurate forecast.

Objectives

Authentication	*Use sessions to maintain user login status*
Job History	*Maintain a list of active and past jobs*
Job Management	*Create, start, stop, and receive status on jobs*
Account Management	*Create new users or change account info*
Visualization	*Generate weather forecasting images*
Database Management	*Maintain history, user information, and other information via a SQL database.*
Web Technology	*Use of Yahoo UI and JSP for presentation*

PIRE Influence

Working with our international partner was beneficial, because it gave us the opportunity to present our research problems to a fresh mind. The scrutiny and criticisms provided by our international partner helped us hone our own understanding of our end goal, and the steps needed to get us there.

II. Scenario

A common interest in WRF is to perform research by altering variables and seeing what changes occur in the forecast. For example, a researcher interested in turbulence affects during Katrina will wish to change a specific set of variables and then run WRF on this new set.

All jobs run by the user are stored in a SQL database, and the data files needed to perform the run are saved on the server. In order to perform a turbulence run, they may edit a run they have created previously, or create a completely new job.

If they opt to create a new run, the user gives a descriptive name to the job and uploads the met_em and namelist data files. In order to create a Turbulence job, they can select it from the Research Type list.

Once they have created a job, the user can then edit the namelist variables. If they have specified the run type, they will be presented with a smaller list of variables that are relevant to the job type.

Image From: www.mmm.ucar.edu
When the job has completed, the user has the option to download the result files from the web portal. In the future, the system will be able to use these files for visualization purposes.

III. International Experience

Downtown Guadalajara is filled with historical sites that make you feel as though you were in the heart of Spain.

Part of the international experience is going out and trying new things you never would have otherwise—and then loving the new flavors.

In nearby Tequila, many distilleries offer guided tours through their facilities. Aging casks of tequila, like these, smell surprisingly like molasses.
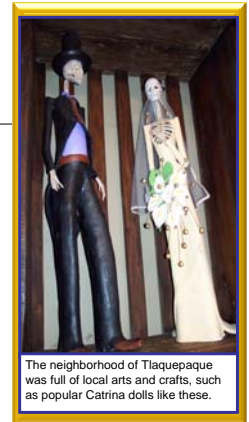
The neighborhood of Tlaquepaque was full of local arts and crafts, such as popular Catrina dolls like these.

GUADALAJARA

Visiting the Zoologico de Guadalajara gave us plenty of opportunity to interact with local families, as well as some of the more exotic wildlife.

Upon arriving at the Universidad de Guadalajara, we were given a tour of the beautiful campus by several helpful students.

Far from being cramped into small desks, we had an entire conference room to work in during our stay.
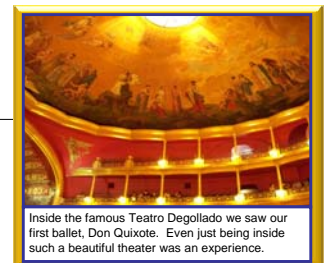
Inside the famous Teatro Degollado we saw our first ballet, Don Quixote. Even just being inside such a beautiful theater was an experience.

III. Acknowledgement