



## 1 WALSAIP Project Description

The **Wide Area Large Scale Automated Information Processing (WALSAIP)** project is developing a conceptual framework for the automated processing of information arriving from physical sensors in a generalized wide-area, large-scale distributed network infrastructure. The project is focusing on **water-related ecological** and **generalized environmental** applications.



Jobos Bay NERRS (Left), located at Aguirre, PR, serves as a local Testbed.

Jobos Bay's **unique characteristics** have made the reserve a special part of the WALSAIP Project.

### Environmental Surveillance\* Monitoring (ESM)

It deals with the **gathering** and **processing** of appropriate environmental information to aid in the process of effective decision making!

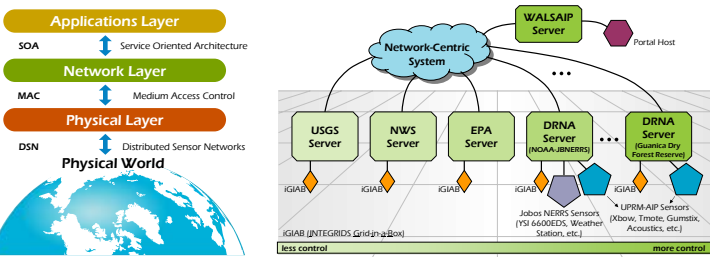
#### ESM-Adaptive Management Concept



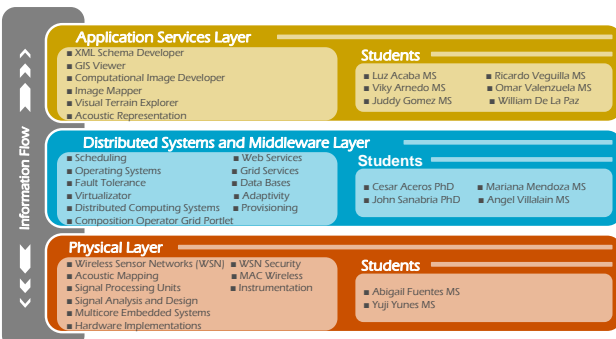
\*From: sur- 'over' + veiller- 'watch'

## 2 WALSAIP's Cyberinfrastructure (CI) Framework

### A CI Framework Formulated as a Community Resource



## 3 WALSAIP's Students Layered Research

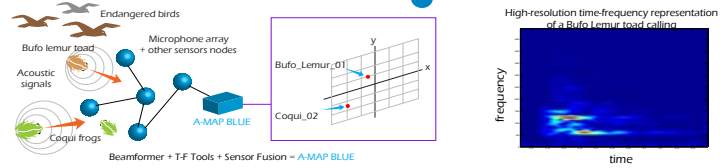


Graduate students are supporting the WALSAIP project in multidisciplinary research endeavors which are classified into three main layers, namely, the physical layer, the distributed systems and middleware layer, and the application services layer

## 4 WALSAIP's Research Results

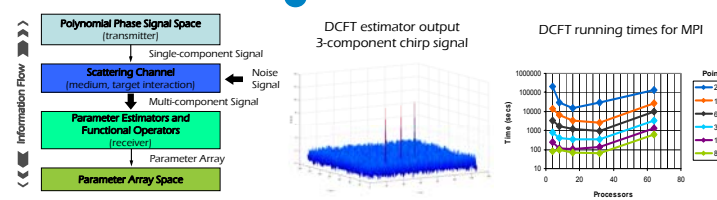
### Distributed Sensor Signal Acquisition, Analysis, and Representation for ESM Applications

Yuji Yunes, MS Student



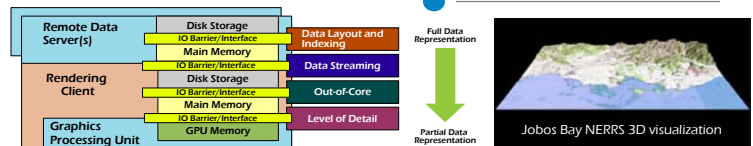
### Signal Operator Algebras Framework over Distributed Signal Processing Systems

Cesar Aceros, PhD Student



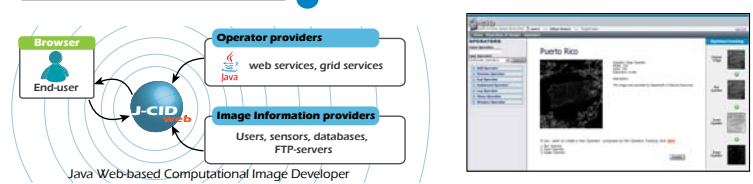
### A Java-based Tool for Accurate, Interactive 3D Terrain Visualization: Visual Terrain

Ricardo Vegaulla, MS Student



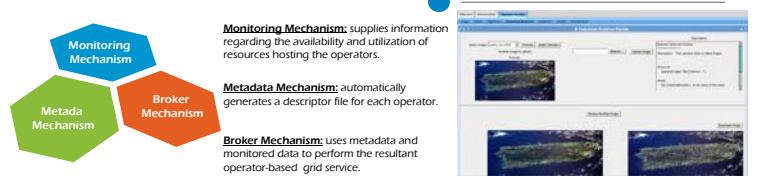
### An Operator Approach to Web-based Image Processing

Juddy Gomez, MS Student

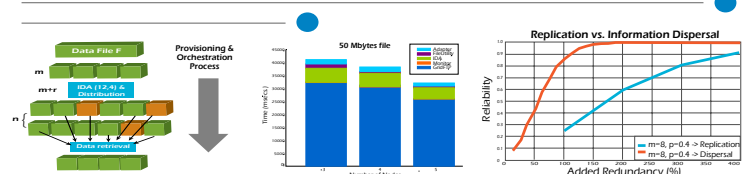


### A Grid-based Tool for the Composition of Distributed Signal Processing Operators

Mariana Mendoza, MS Student



### Provisioning and Orchestration in Distributed Wide Area Large Scale Infrastructures



## 5 WALSAIP Latest Student Publications

- [1] Nayda G. Santiago, D. T. Rover, Domingo Rodriguez, "A Statistical Approach for the Analysis of the Relation between Low-Level Performance Information, the Code, and the Environment." *Journal of Information*, vol. 9, no. 3, pp. 503-518, May 2006.
- [2] Abraham Diaz, Domingo Rodriguez, "Cyclic Convolution Algorithm Formulations Using Polynomial Transform Theory," Accepted for Publication, *Journal of Computers*, Academic Publisher, Finland, 2007.
- [3] K. Lu, Y. Qian, D. Rodriguez, W. Rivera, M. Rodriguez, "Wireless Sensor Networks for Environmental Monitoring Applications: A Design Framework", *IEEE Globecom 2007*, Washington, DC, Nov. 2007.
- [4] D. Arias, J. Sanabria, W. Rivera, "Grid Based Pervasive Distributed Storage" *Proceedings of IEEE ISWPC'2007*, San Juan, PR, February 2007.

