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1 Problem Formulation

Environmental Management deals with the task of managing and analyzing huge amount of complex, real time data obtained from different sources and different systems in order to conduct their studies.

Even though there are many powerful information management systems designed to manage, analyze, and manipulate spatial and temporal geo-referenced data, they are not accessible to most users. Many of those systems are hard to learn and understand and most tasks or studies conducted by researchers require multiple applications to analyze and represent results in an understandable manner.

2 Proposed Solution

This research is part of the Human-Computer Interaction group within the WALSIP project. Our goal is to develop user interfaces and interaction paradigms that will facilitate the access and use of the complex applications and information managed by the project.

Project Objectives:

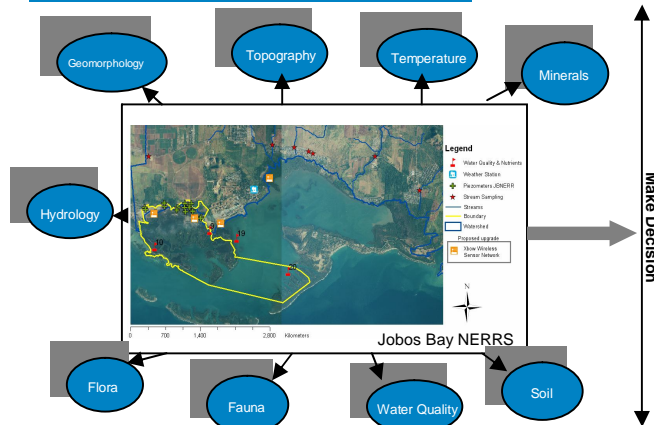
- Develop a Web-based integrated environment with a friendly user interface that will facilitate the access and use of the complex applications and information managed by the WALSIP project.
- Provide access to GIS tools and GIS-based applications in a Web environment.
- Provide tools to access and manage multiple layers of information.
- Provide access to data representing environment dependent variables generated from different sources.
- Create an environment that could be used by researchers to develop new models and predictions based on correlations and analysis of real time data and historical data.

3 Theoretical Framework

Target Environmental Variables

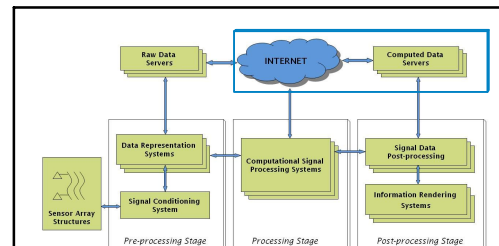
- Geomorphology
- Geometry
- Persistence
- Flow (Q) (in, out)
- Sediments
- Hydraulic conductivity of soil
- Human Influence
- Water table
- Precipitation
- Evapotranspiration
- Watershed Conditions
- Vegetation (type and condition)
- Species and condition
- Minerals and Metals
- Topography
- Tides (for marine wetlands)
- Size of outlet and inlet constriction
- Temperature
- Water Quality
 - ✓ DO
 - ✓ Chemicals
 - ✓ Nutrients
 - ✓ pH
 - ✓ Suspended solids
 - ✓ Turbidity
 - ✓ Conductivity

Representation of the Environmental Variables



Environmental variables data is obtained from different sources such as: sensors, satellites, digital maps, aerial photographs, and historical data.

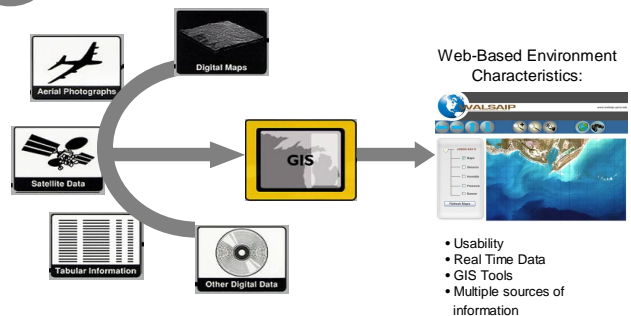
A Signal Based Automated Information Processing System



General Goal: Automated processing of signal-based information in a generalized distributed network infrastructure.

The HCI research group is located in the application services layer, allowing the acquisition of computed data from different resources and information display within a real-time and secure Web-Based Environment.

4 Image of Research Work



5 Ongoing Work

The present work is being conducted in the following areas:

- Task analysis with potential users in the area of the hydrological phenomena.
- Study of GIS and Web-GIS tools and environments.
- Study of Web development tools.
- Evaluation of tools to access large volumes of geographic data stored in both files and databases.
- Design and development of the user interface.

6 References

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