Telescience wg update
Pragma 31
Report back

Shinji Shimojo

Fang-Pang Lin

Update

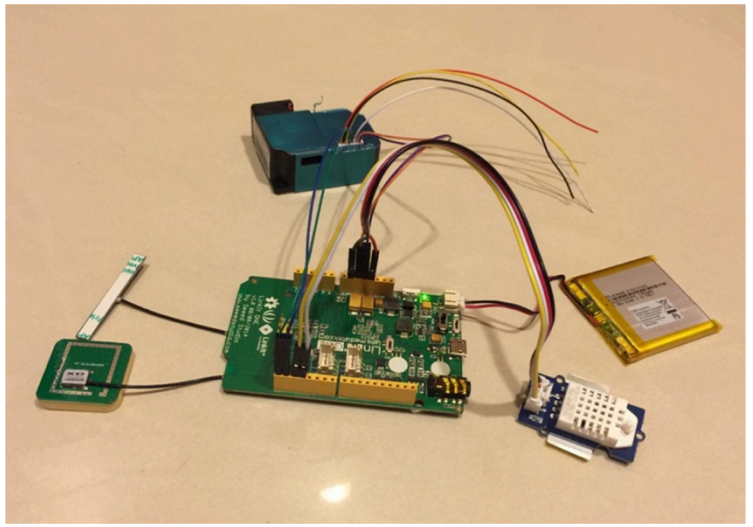
- Whey Fone “Synchronized disaster data”, NARL lab
- KunWon Cho, KISTI, “The immersive visualization”
- Bert Mendoza, “ASTI Data Storage Service”, (Philippine)
- Jeng-Go Lee (NCHC), “Big Data Sharing”
- Meilan Jiang, “Real-Time Aquatic Environmental Monitoring”, (South Korea)
- Jose Fortes, “Aquabox”

Discussion

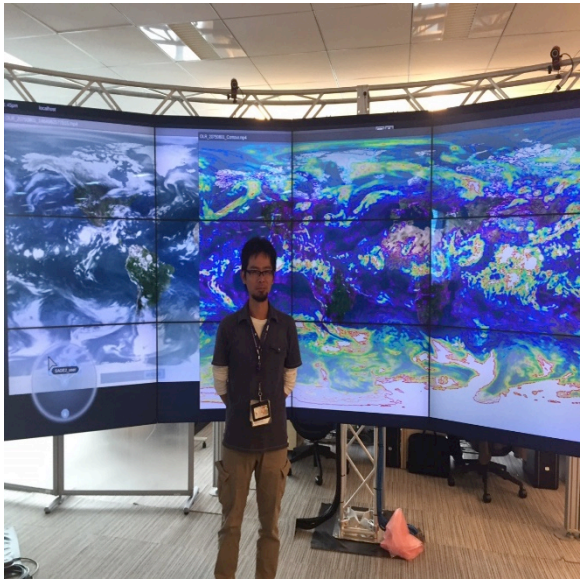
- Airbox: Crowd sourced data science
  - Airbox vs simulation
  - Global aspects, share open data
  - Need for global data architecture
    - PID and use of RDA standard in airbox (NCHC)
    - Data Model for domain scientists
  - Big Data storage platform (such as iRods, ph)
    - Metadata, ownership, access control, Big Transport
    - Interaction with resources, may use of pragma-ENT
  - Ecosystem
    - Do things new way – airbox, aquabox
    - Need for domain scientists

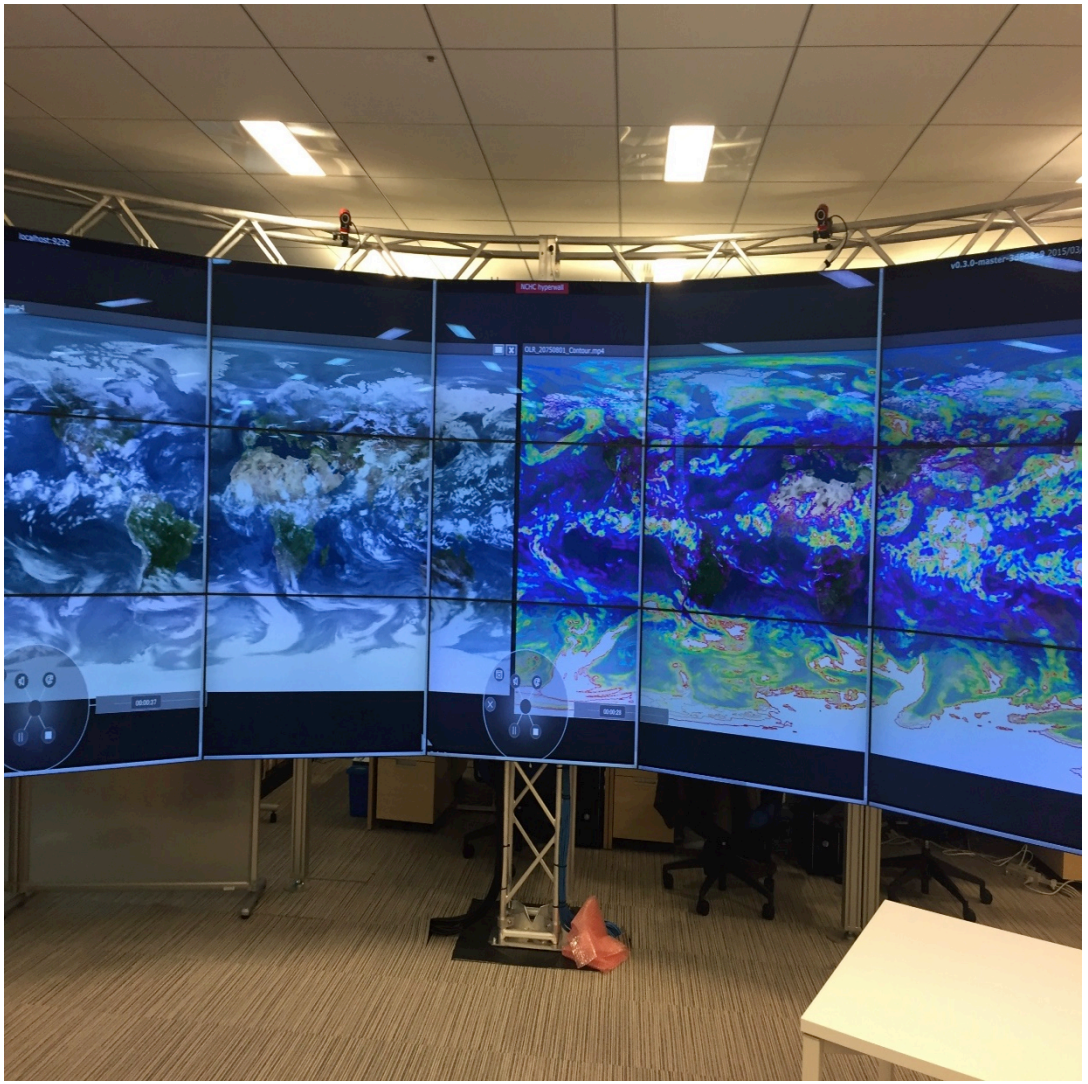
Airbox

- Led by Dr. Ling-Jyh Chen
- Grass root approach but open hardware, software, and data
- Webinar and Tutorial was held
- 13 airboxes are distributed.



Synchronized visualization data (Jason Leigh, Jason Haga, Whey-Fone, Ming-Der, Yoshiyuki) Experiment at Osaka Cyber-media Lab



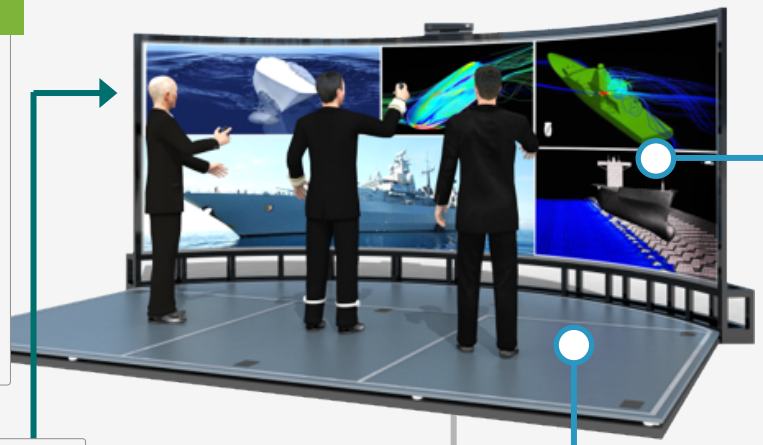


III The Immersive Visualization Technology for Virtual Towing Tank by Kum Won Cho

1. Technology

The Immersive Visualization System For Virtual Towing Tank

Real-Ship Scale Analysis Data Verification



VR User Interface for Immersive Visualization

Real-Time Visualization Technology For Flow Visualization

Distributed Parallel Visualization Server

Virtual Towing Tank Visualization Cluster

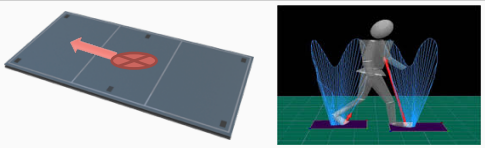
III 4. Virtual Reality User Interface for Immersive Visualization

Motion-Human Interface

- Development of Motion-Human Interface for Implementing Immersive Visualization Interactions

Wearable Motion Sensor Technology

Unwearable Motion Sensor Technology



Motion Plate Technology

VR UI For Virtual Towing Tank

- Development of VR UI Customized For Virtual Towing Tank

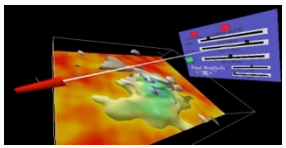
VR UI Core Technology

VR UI-Motion Plate connection Technology

Motion-Based Interface

- Development of Motion-Based Interface For Immersive Visualization

Motion Sensor Data Processing and Monitoring

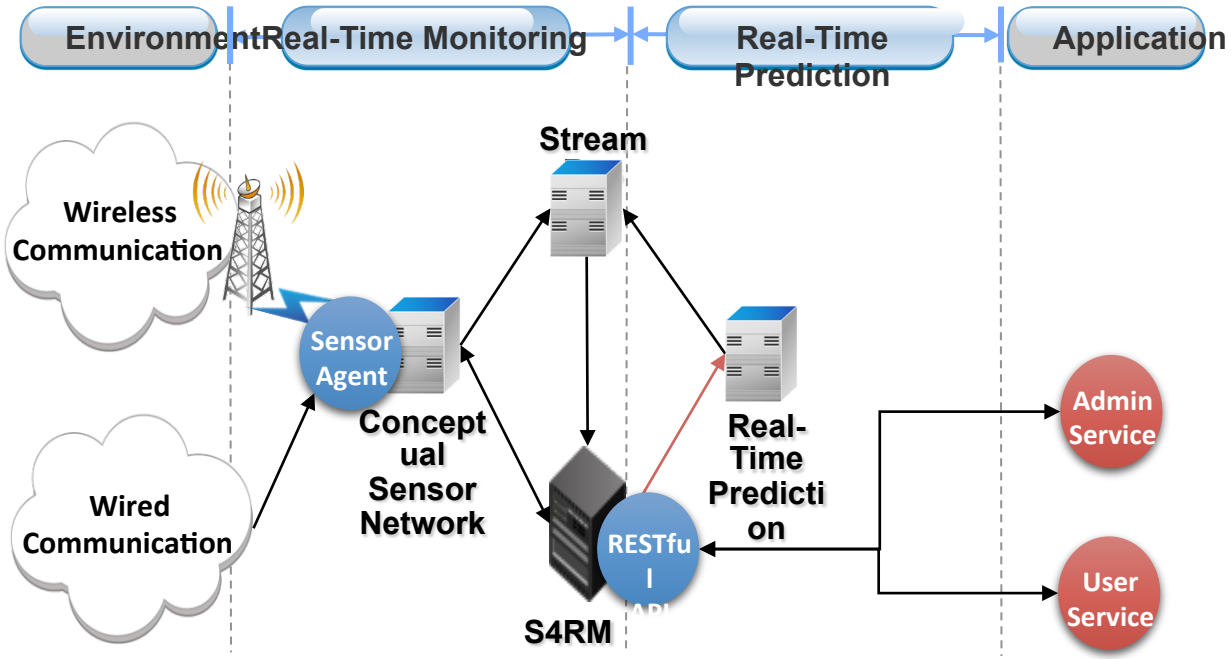


VR UI Emulation

VR UI Implementation

VR UI Test and Evaluation

Real-Time
Aquatic Environmental Monitoring



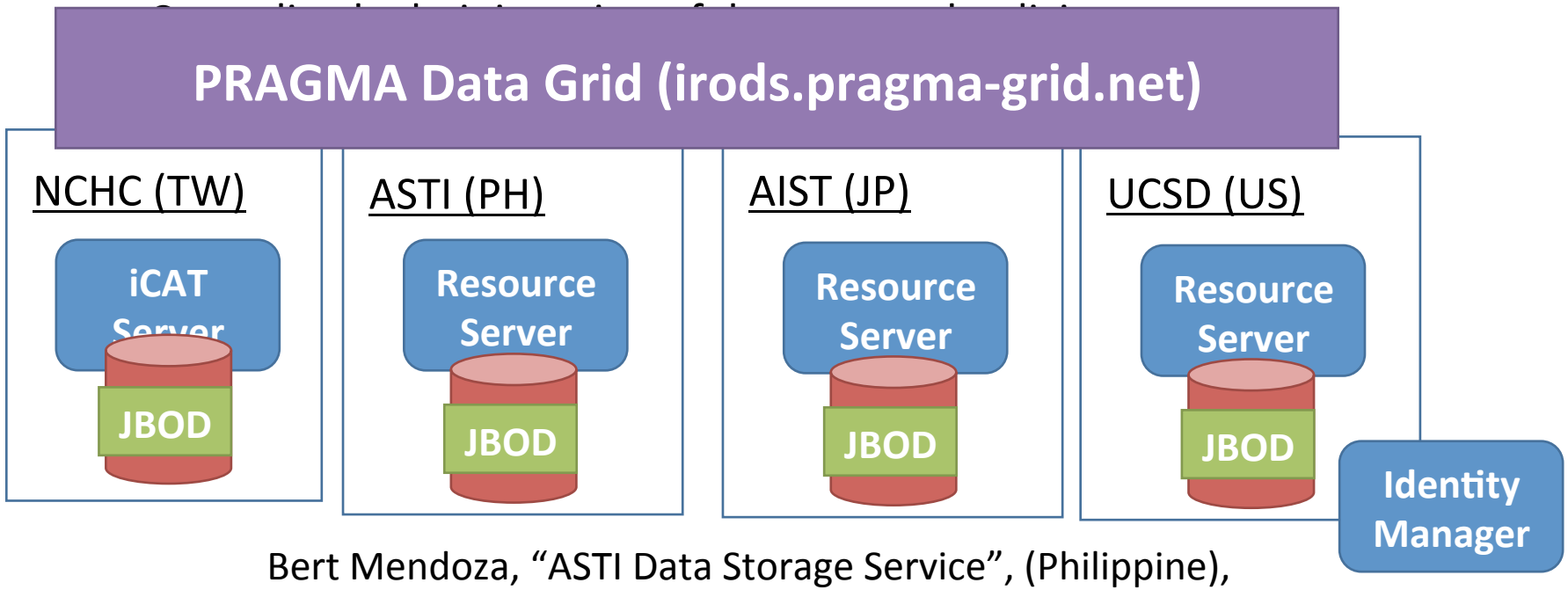
S4RM: Simple Sensor Data Stream Managemen

Meilan Jiang, “Real-Time Aquatic Environmental Monitoring”, (South Korea)

Visualization of Distributed Environmental Data

Recommendations [1]

- PRAGMA member insitutions can setup a single iRODS data grid domain
  - Aggregate disparate storage systems and capacity while introducing redundancy by replication
  - Unified namespace for access
  - User-defined access controls for sharing data

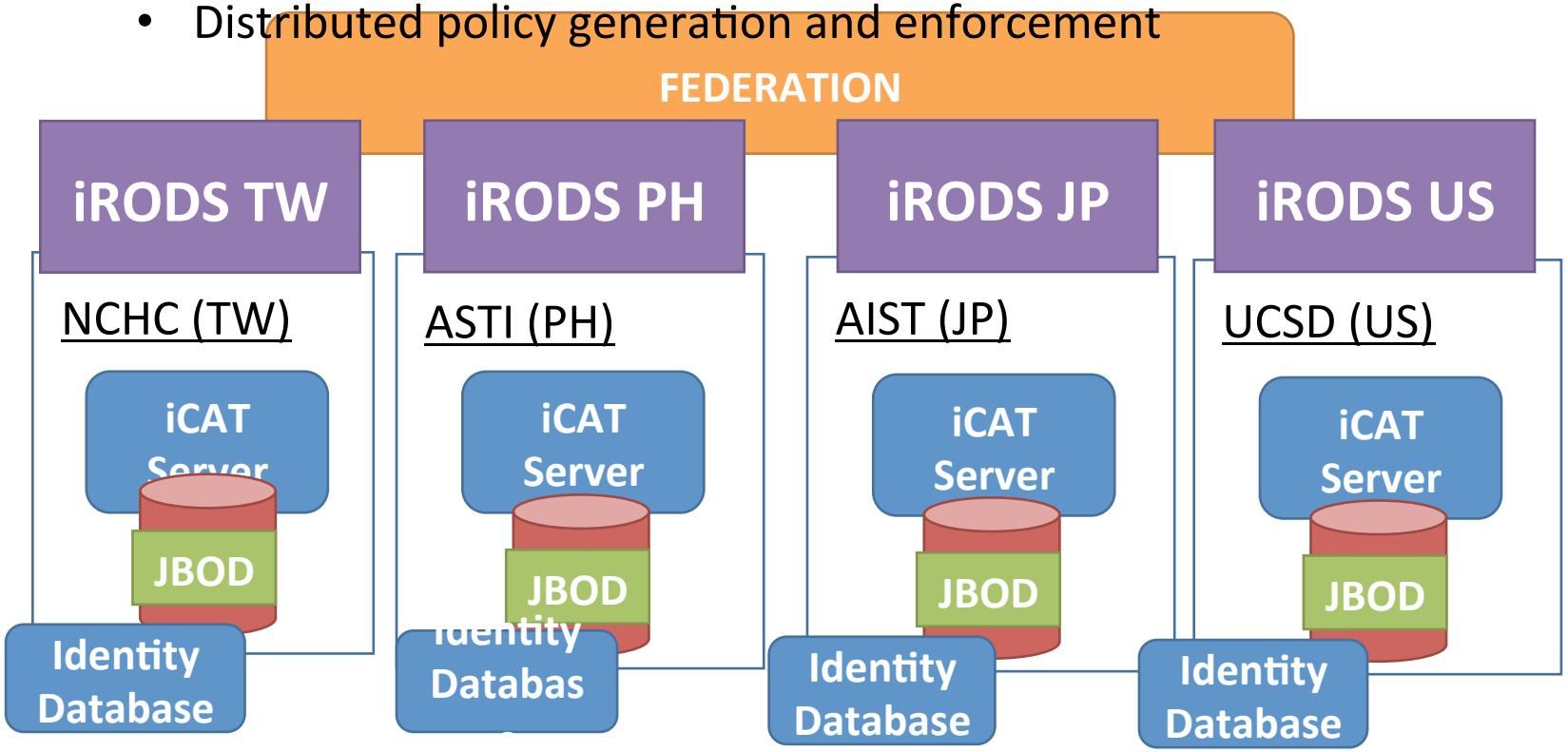


Bert Mendoza, “ASTI Data Storage Service”, (Philippine),

Bert Mendoza, "ASTI Data Storage Service", (Philippine),

Recommendations [2]

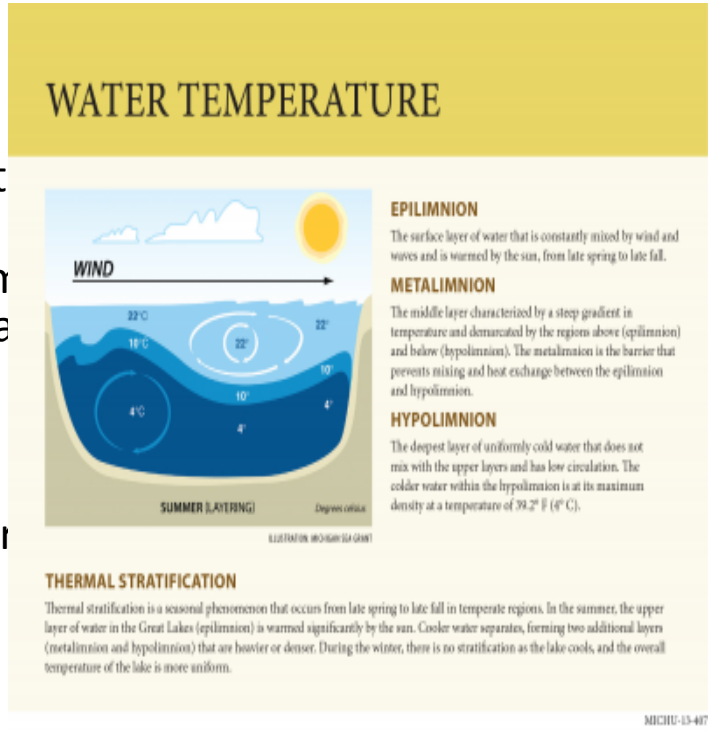
- Each member institution has its own iRODS Storage Grid that federates with iRODS instances of other institute
  - Each site must administer their own identity database and iCAT services
  - Access controls are determined by each site
  - Distributed policy generation and enforcement



Things lake scientists come up with …

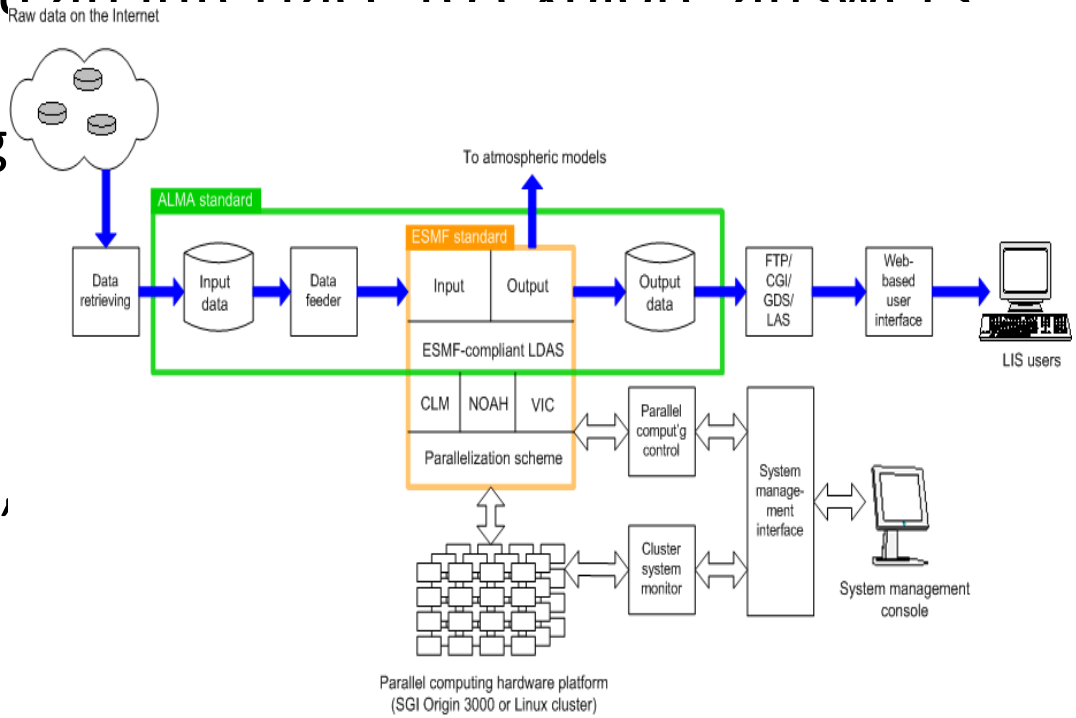
- Is there a relationship between air temperature and lake surface water temperature? Is this relationship universal? If not, what factors are involved?
- To answer this I need:
  1. air temperatures, preferably 1.5m above water/ground, within 100m from where wat temperatures are taken
  2. surface water temperatures, preferably 0.5m water depth, taken at about the same time a the air temperature
  3. Latitude, Longitude and some basic morphometric data of the water system
  4. If you have, some sort of water color measur i.e. secchi, absorbance, Forel scale or whatever.

FOR MANY LAKES AROUND THE WORLD!



Things a computer scientist outside PRAGMA might say …

- "EASY": If you know of databases with that information we can try to look at the data formats, convert them to a single one, bring the data sets together, georeference the data, build a search/query engine, build a web site and visualization and give you an interface to explore answers to your questions
  - Not as "EASY" as you mig



- If there are no databases,
  we have a problem

What a PRAGMA scientist would do

- Build an open-source device with air and water temperature sensors (and may be others such as GPS)
- Do open-source software to connect and manage the device to the Internet
- Send all the data to a commodity server with a uniform format and geolocation metadata
- Make all the data open, and allow anyone to query that data
- Use open software and/or service to visualize r
- Make all the above very inexpensive
  - Give devices away or price them very low

What is next ?

- Todo
  - SDN-IP
  - iRod data infrastructure
  - PID on airbox
  - Airbox deployment
- SEAIP (12/5-9)
  - SENSOR Hackathon?
- Pragma 31 (4/2017)