Oregon State University
Marine Technical Group

2009-2010 SUDS Upgrade

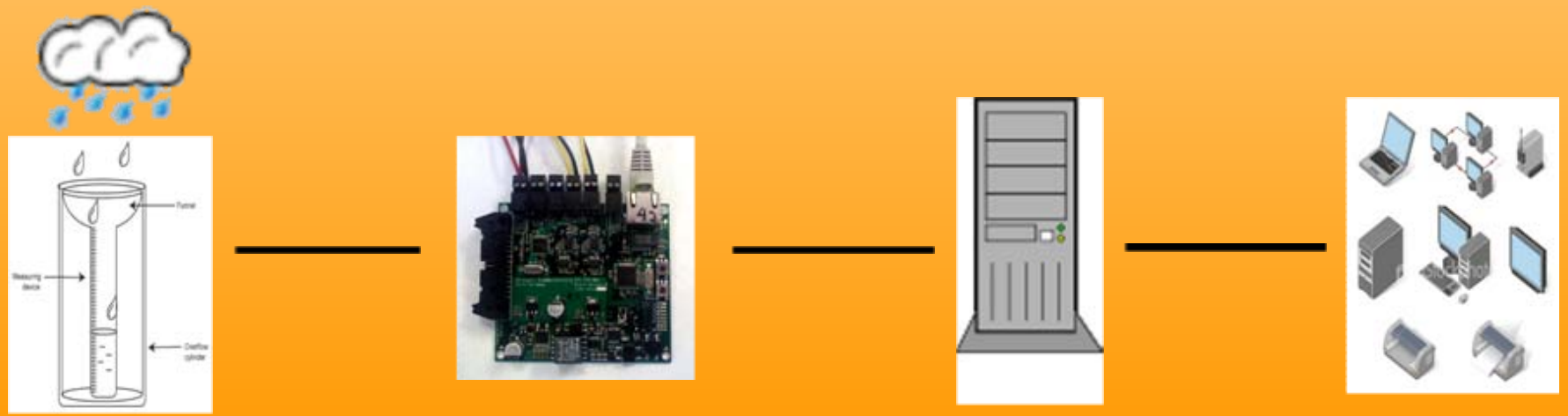
Oregon State University Ships Underway Data System

- OSU MTG Members
- Sponsor
  - National Science Foundation
- System Description
  - Measurement, Conversion, and Data Transmission Format
    -David O'Gorman
  - Transport, Recording, and Distribution
    -Toby Martin
- Questions

Oregon State University Ships Underway Data System

System Overview

Phenomenon
(Rainfall, Wind Speed, etc)
> Sensor > Electrical Signal
(Serial Stream, Voltage, Frequency, etc.)
> Conversion > Transmission > Recording
> Distribution



Oregon State University Ships Underway Data System

Sensors

Direct - 32 Signals From 27 Sensors

Multiple Signals per Sensor - PIR, Mech. Wind

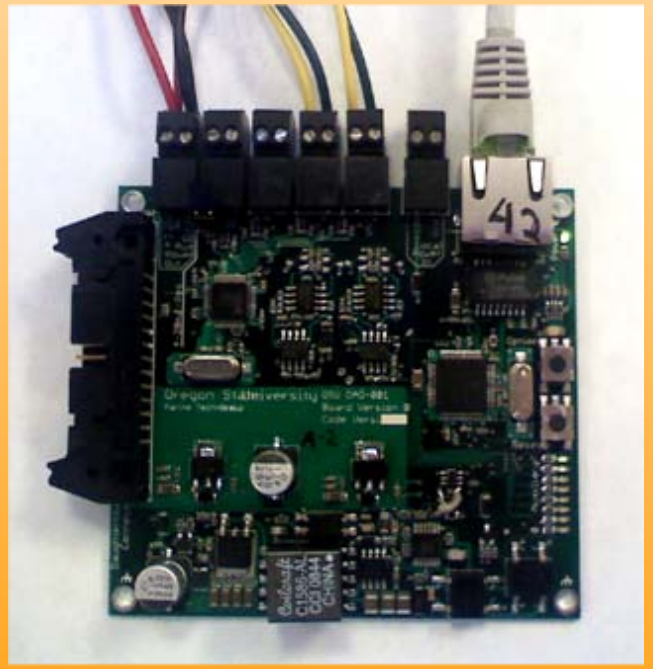
Multiple Sensors - Wind, Air Temp

Combined Metrics - Salinity, 'True' Wind

Oregon State University Ships Underway Data System

Digital Conversion

- Old
  - Keithley and Adam Modules
  - Direct Serial Links
- New
  - OSU DAS Boards
    - NTP Time Synced
    - Network Interface
    - Serial
    - Analog
    - Provide Local Power
    - Custom Adaptable



Oregon State University Ships Underway Data System

- Data Selection
  - Raw Values
  - Processed values
  - Meta Data
    - Location, name, etc.
  - Everything With Every Sample
- Data Formatting For Transmission
  - CSV, XML, KVP, SNMP
  - XML
    - Readability
    - Clear and Simple Association of data and Metadata
    - Large, but comprehensive

Oregon State University Ships Underway Data System

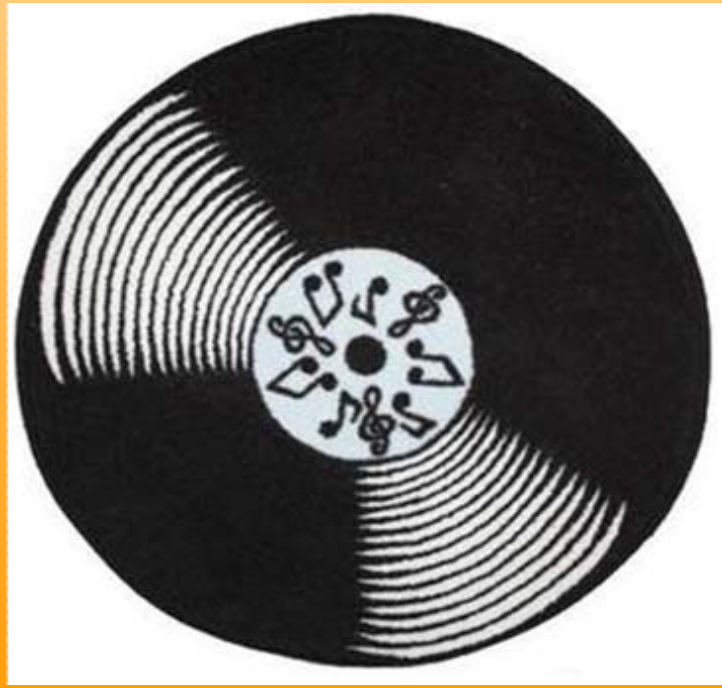
Transport

- Security (malicious, inadvertent)
  - Isolated Network
  - Redundant Aggregation
- Protocol (TCP vs UDP)
  - Reliability (Delivery Guarantee)
  - Flexibility
  - Scalability
  - Overhead

Oregon State University Ships Underway Data System

Recording

- Streaming Logs - Per Acquisition Board
- Sensor Files - Per Sensor (Primary And Virtual)
- File Partitioning - Convenience
  - Processing Interval
  - Offloading Interval
  - Time
  - Size



Oregon State University Ships Underway Data System

Distribution

- Local Sacrificial Servers - on user accessible network
- Onboard User Access
  - Files - Internal Archive
  - Graphs - Near Real-time
  - Streams - (TCP, Serial, ...) Near Real-time
- Dissemination Off Ship
  - Repositories
  - Archives
  - Special Users (VOS, SAMOS, R2R, per cruise,...)
  - Data Volume

Oregon State University Ships Underway Data System

Summary

- Network Sensor interface
- Increase Sample Frequency
- Ease of use for Users and Technicians
- Questions and Comments

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