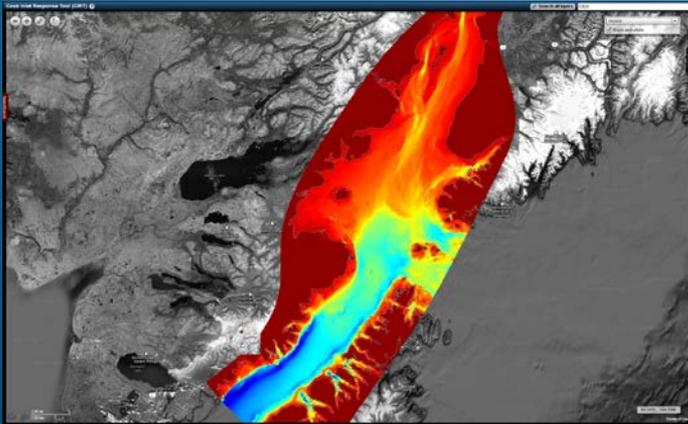




Holistic Cyber-Infrastructure for Ocean Data



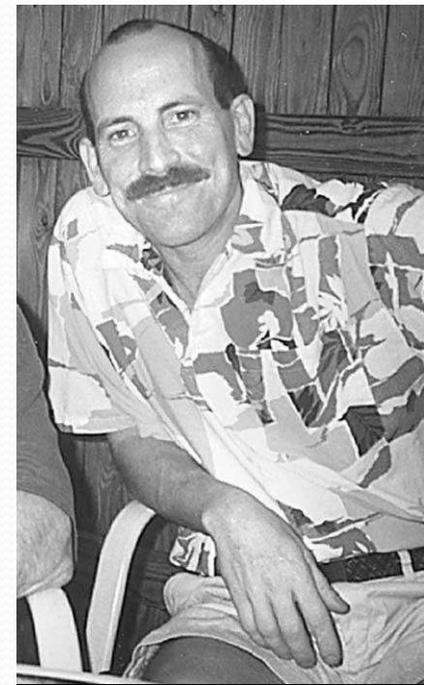
Rob Bochenek
Information Architect

Summary

- Background – Exxon Valdez Oil Spill Restoration and Monitoring Program
- Lessons Learned
- System Data Flows
- Architecture and Infrastructure
- Demonstrate Data Management Tools
- Demonstrate Data Integration Tools

Background- Exxon Valdez (2002-2006)

- 1 Billion \$ restoration/research program started 1989
- 250 Million \$ Gulf Ecosystem Monitoring Program (GEM)
- Interact intimately with high profile data managers, administrators and scientists
 - Phil Mundy, Steve Hankin and Peter Cornillon
 - Access to Charles Falkenberg files/memos
- “Great Incubator”



Lessons Learned

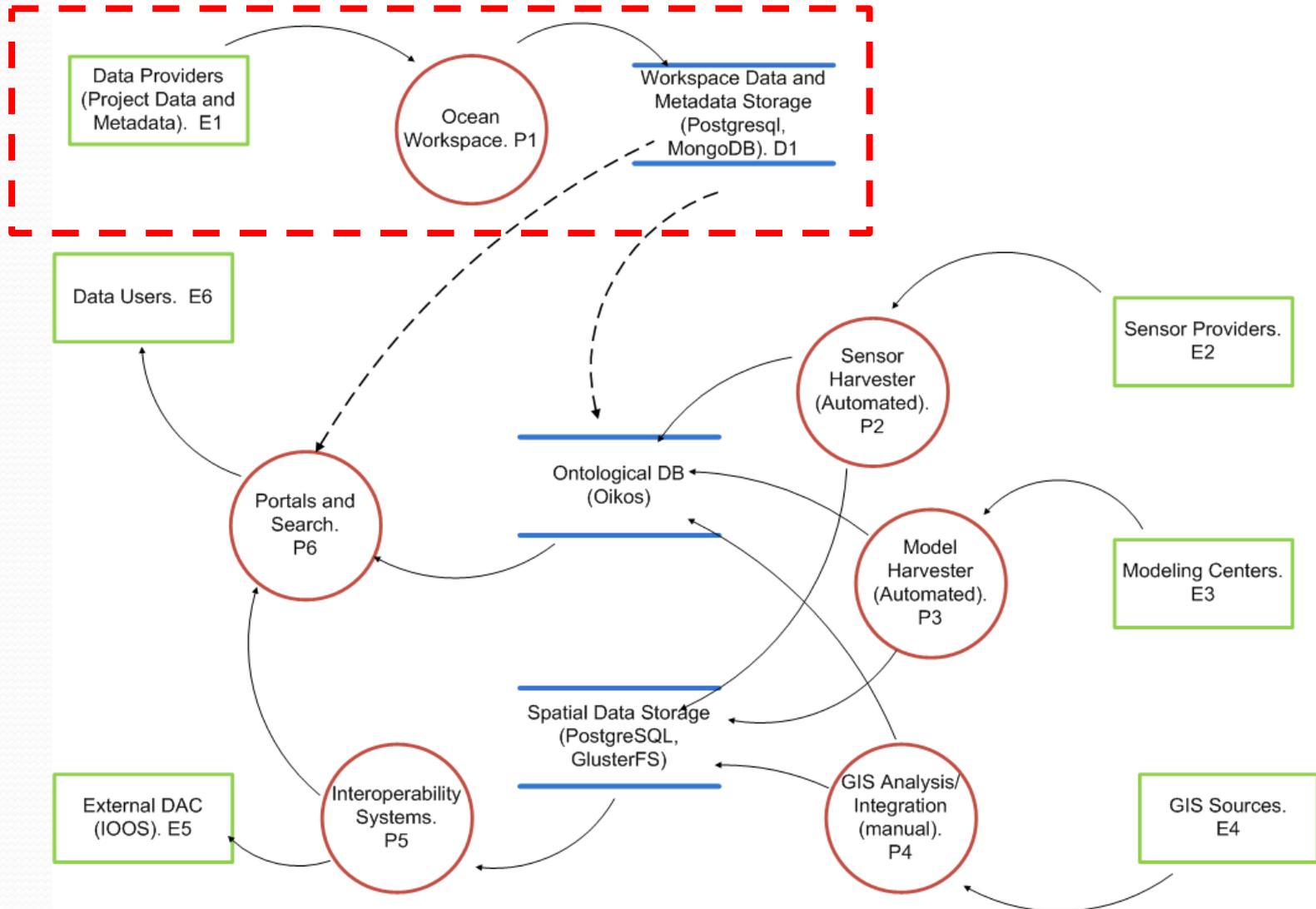
- Initiate DM activities at the beginning of projects not after
- Standards and requirements are not enough. Scientists need tools to effectively execute on their data management requirements
- Data integration and visualization are important for discoverability, assessment, re-use and management applications
- Two types of data (Structured/Machine Produced and Research Campaign Based). Each require unique approaches

Research Campaigns

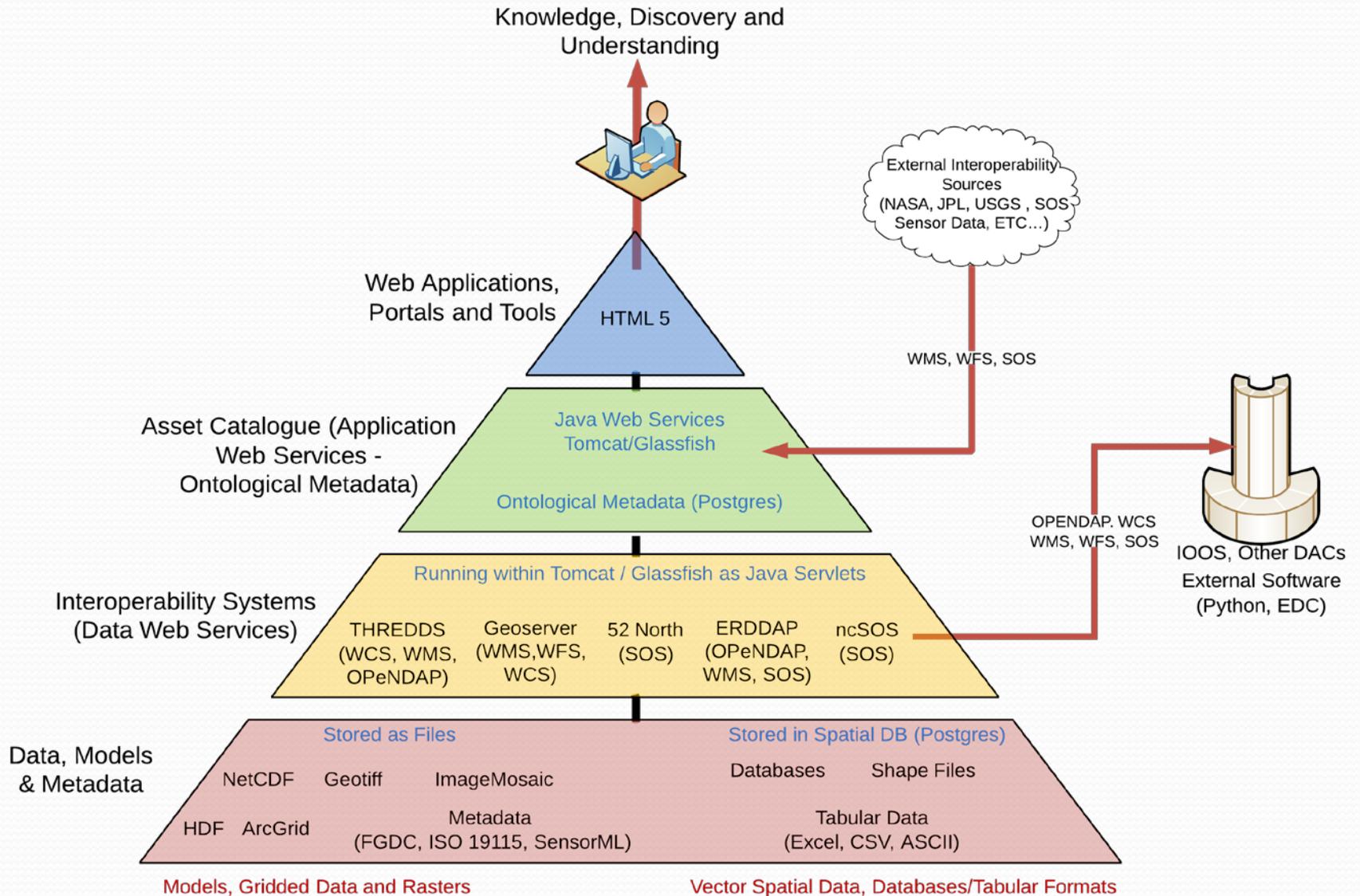
- Researchers
 - Need ways to securely share data and information products between study teams
 - Need tools to generate metadata and publish data to meet DM requirements
- Data Managers
 - Develop DM protocols in vacuum using own methods and systems
 - Difficult to execute job effectively (not very satisfying) resulting in staff turnover and other problems....
- Program Managers
 - Want more transparency to entire process

Data Flows

Level 1 (1.0) Data Flow Diagram
CeNCOOS



Architecture



Infrastructure

- Axiom operates two High Performance Computing Clusters (Portland, OR and Providence, RI) for data system geo-replication and high availability
- On the fly visualization and analysis of complex ocean data requires sophisticated hardware approach
- HPC provides horizontally scaling framework for compute, storage and bandwidth
- Shared infrastructure between NOAA Clients



