



Federation of Earth Science  
Information Partners

MAKING DATA MATTER

# ESIP Federation Partners in Technology

Role of Collaboration in the  
Integration of Tools in  
Decision Making

March 20, 2007

# ESIP Federation

- Consortium of 100 Earth Science-Related Partners
- Formed in 1998 by NASA
  - NOAA and NASA funded
  - EPA, USGS and NSF also involved
- Data-centric
- Primary Interests
  - Making data usable and accessible
  - Create broad knowledge of earth and environmental science
  - Leveraging existing and new technologies to improve flow of data

# Continuum of Interests

**Global Land Cover Facility (UMD)  
EOS-Webster (UNH)**

**StormCenter Communications  
Earth Data Analysis Center (UNM)  
ESRI**



*Data Centers*

*Scientists/Researchers*

*Technologists*

*Applications Developers*

*Educators*

**EROS Data Center (USGS)  
National Climatic Data Center (NOAA)  
Oak Ridge National Lab (NASA)**

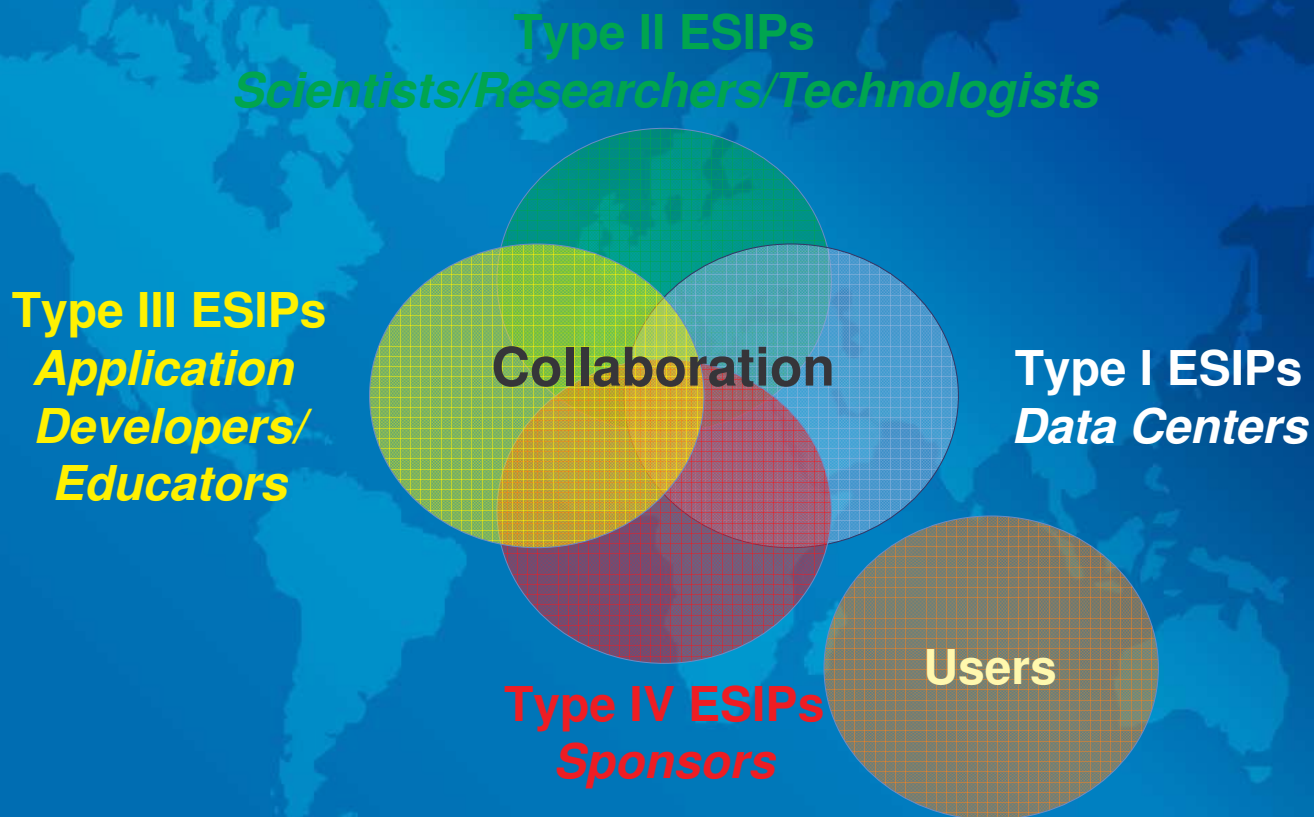
**ARIA (University of Arizona)  
University of Alabama in  
Huntsville (ITSC)**

**TERC  
New Media Studio  
Museum of Science**

# Managing Broad Interests

- Historically Organized Around ESIP Types
  - Type I - Data Centers
  - Type II - Researchers/Tool Developers
  - Type III - Application Developers
  - Type IV - Sponsors
- Also Organize By GEO Societal Benefits
  - Air, Water and Disaster NTOs Have Triggered Interest

# What Makes ESIP Unique



# Internal Activities

- Committees
  - Products and Services
  - Information Technology and Interoperability
  - Education
- Working Groups/Clusters
  - Air Quality
  - Water Management
  - Disaster Management
  - Coastal Management
  - Semantic Technologies
  - Web Services
- Semi-Annual Meetings
  - July 17-20 in Madison, Wisconsin ([www.esipfed.org/events](http://www.esipfed.org/events))

First 4 Working Groups  
Are Related to US GEO  
Societal Benefits Areas

# External Activities

- Advisory
  - NASA Earth Science Data Systems Working Groups
  - NOAA CLASS User Workshops
  - EPA/NASA - Community Input into Air Quality Program
- Coordinating - Collaborating
  - Interagency Meeting Ground
  - Federal-State-Local Partnership Building
  - Earth Information Exchange Portal

# ESIP Federation As A Catalyst

- ESIP Federation does not create products...we make them better because we
  - Represent broad interests of partners
  - Focus on networking
  - Purposeful matchmaking
  - Provide a forum for these things to happen
- Outcome Is:
  - Innovation
  - New collaborations
  - Necessary stakeholders

# Technologies & Decision Making

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- Leverage Off Partner Work and Activities of Internal Communities
  - Technologies - Web Services, Semantic Technologies, GIS
  - Funded Research Activities
- 2 Examples Follow

# Shenandoah River Consortium

- Water Resources is Central Issue
- Regional Consortium
  - 10 Counties in Virginia
  - 2 Counties in West Virginia
  - Virginia Department of Natural Resources
  - George Mason University
  - Old Dominion University
  - USGS, NASA, NOAA
  - Foundation for Earth Science
- Opportunity Found Us
  - Linked it to member project
  - Facilitated bringing in of additional team members

# Shenandoah River Issues

- Primary Drivers
  - Water Availability - Drought
  - Water Quality - Agricultural Impacts, Development
- Scope of Environmental Interests
  - Water Resources (quality, quantity, surface and ground water)
  - Air Resources (quality)
  - Land Resources (land cover, agriculture)
  - Ecological Health (impact on human and fish populations)

# Shenandoah River - Approach

- Regional Planning Group Adopted Strategic Plan in 2006
- Requires Development of a Science Plan for the Shenandoah River Valley
  - Science Plan Will Address Understanding of Ecosystem & Its Components (Land, Air, Water, Life)
  - Science Plan Will Inform Policy Decisions
- Invited USGS to Address High-Level Science Questions
  - Foundation for Earth Science invited NOAA, NASA, and EPA to Support the USGS-Led Effort
  - Fall 2007 Seminar to Identify Federal Data Resources in Support of Science Plan
  - EPA Scientist to Oversee Collaboration

# Shenandoah River Opportunity

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- High-Profile Case Study of Data Integration
- Excellent Example of Federal-State-Local Partnership
- Outcome: Science Will Inform Decisions

# DataFed (<http://datafed.net/>)

- DataFed is led by Stefan Falke and Rudy Husar of Washington University in St. Louis (NASA REASoN)
- DataFed is web services-based software integrates distributed data
- DataFed's goals are to:
  - Facilitate the access and flow of atmospheric data from provider to users
  - Increase the efficiency of data delivery to the air quality management and science

# DataFed Architecture

- Provides Standard Interfaces to Heterogeneous Distributed Data ~ 50 AQ-Related Data Sets
- Fosters Data Integration and Use with Processing Services, Visualization and Analysis Tools
- Collects Metadata and User-Feedback on the Federated Datasets
- Maintains a Community Workspace to Foster Interaction Among Providers and Users

# DataFed in Decision Making

- Demo: Wildfire/Smoke Scenario from 2006
- Used Data from:
  - NOAA (fire occurrence, smoke plumes)
  - NASA (aerosol model, satellite observations of aerosol optical thickness and NO<sub>2</sub>)
  - EPA (air pollution concentrations)
- DataFed used for integration, visualization, processing and analysis
- GoogleMaps mashup demonstrated how open, standard data access interfaces allow for data to be used in many tools

# ESIP's Role



- Interlocking Leadership Between DataFed and ESIP Air Quality Cluster
- Leveraging Web Services Technologies from ESIP Partners
- Providing Interagency Forum to Work on Air Quality

# Questions?

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