

Cross-Federal Geospatial Information Sharing Framework

Leveraging the Federal Community to Create Business Solutions



Kevin J. Kirby
EPA Enterprise Data Architect
December 4, 2008

Presentation Agenda



Introduction, environmental business links, (John Sullivan, EPA)

Overview of the Fed. geospatial data themes (Wendy, EPA)

Overview of Authoritative Data Sources (Colleen Coggins, DOI)

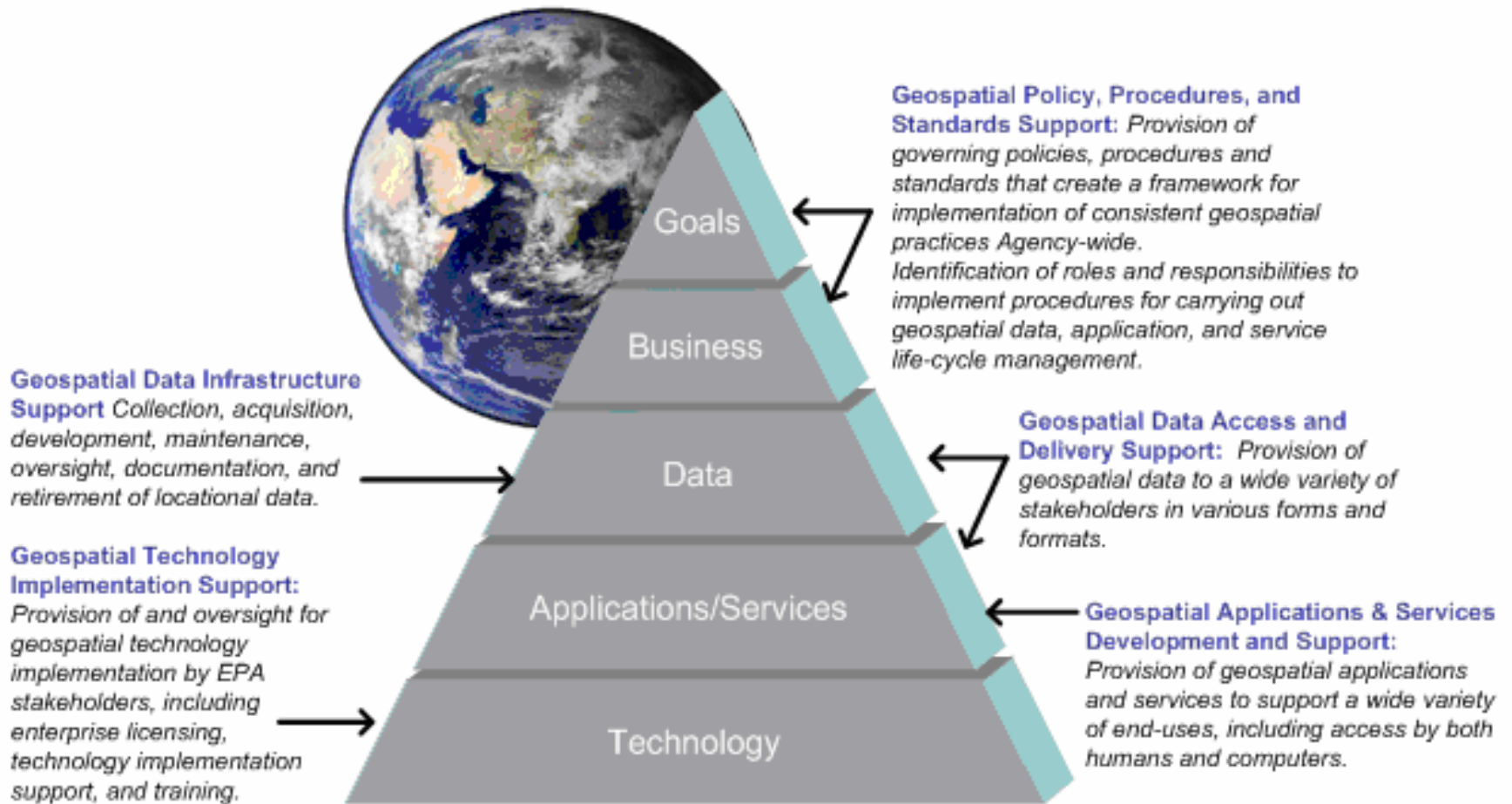
Overview of the Geo Water Network (Vince Allen, EPA)

Overview of Geo Data Assets for Fire (Keith Larson, NRCS)

Overview of the AirNow data network (Tim Dye, STI)

Challenges to information Sharing (Gustavo Limon, NWS)

Structure of the Geospatial Architecture



Geo Links with the Business Reference Model (BRM)



Business Area	LoB FEA BRM 2.0 as of May 2005	Sub-Function 1 FEA BRM 2.0 as of May 2005	Sub-Function 2 EPA BRM 4.6
<p>Services to Citizens</p>	<p>108 - Environmental Management</p>	<p>- 023 Environmental Monitoring & Forecasting</p>	01 Air Monitoring & Forecasting
			02 Water Monitoring & Forecasting
			03 Land Monitoring & Forecasting
		<p>- 024 Environmental Remediation</p>	01 Site & Area Evaluation & Cleanup
			01 Manage Air Quality
		<p>- 025 Pollution Prevention & Control</p>	02 Manage Water Quality
			03 Ensure Safe Drinking Water
			04 Manage Hazardous and Non-Hazardous Wastes
			05 Manage Environmental Risk from Substances
			06 Prevent Pollution
07 Compliance & Enforcement			
08 Environmental Stewardship			

Overview of Federal Geospatial Data Management and Sharing

Where Are We ?



- **OMB Circular A-16 (Coordination of Surveying, Mapping, and Related Spatial Data Activities)**
 - Provides guidance for federal agencies that create, maintain, or use spatial data directly or indirectly
 - Establishes the National Spatial Data Infrastructure (NSDI)
 - Creates governance through the Federal Geographic Data Committee (FGDC)-33 Department/Independent Agencies
 - Lists 34 “nationally significant” geospatial Data Themes
- **Although hundreds of millions of dollars spent annually on geospatial data**
 - Slow progress in completing many national geospatial data sets
 - Uncertainty by stakeholders of data status and location
 - Appearance of widespread gaps and/or development duplication
 - Uncertainty about reliability/data quality and authoritative a data sets

Overview of Federal Geospatial Data Management and Sharing

Lessons Learned



- High level definition of themes, processes, and roles as well as lack of robust reporting and performance measurement in OMB Circular A-16 **hinders**
 - Cross organization resource coordination/leveraging
 - Use of Common Business Drivers and streamlined development processes
 - Timely completion of critical data sets to meet business needs
 - Accountability and assessment of return on investment
 - Setting cross government priorities based on largest set of common needs
- Structured and transparent management framework critical
 - To maximize sharing and investments partnerships
 - To set and complete priority data sets
- Culture and Business Process Change
 - Take time and energy
 - Require trust –objective and transparent processes
 - Must utilize communities of Interest to fullest

Where are We Going?



- Issuing Supplemental Guidance to OMB Circular A-16 December 2008
 - Advocates lifecycle based-portfolio management
 - Clarifies :
 - Key definitions
 - Roles and Responsibilities
 - Standard Data Lifecycle Process
 - Common Lexicon
- Re-examining Nationally Significant Geospatial Themes in Appendix E of OMB Circular A-16
 - Driven by business requirements
 - Focus on Federal, State and local business reference models
- Designating “Reliable Data Sets” for use in protecting national security and meeting common needs across multiple lines of business and organizations starting with
 - 150-160 data sets associated with the 34 A-16 themes
 - 420 data sets associated with 18 sectors that are part of the Homeland Security Presidential Directive

Why Stewardship?



Watershed Boundary Dataset (WBD) Example

- Watershed Boundary Data set for the conterminous U.S.A. and Hawaii complete by end of calendar year 2008; Alaska completed by late spring
- USGS, NRCS, EPA, BLM, USFS, USFWS and others have worked to ensure a consistent high quality “certified” Watershed Boundary Dataset (WBD)
- Need a standardized approach for long-term maintenance to protect the \$20 million investment and ensure business needs continue to be met
- Work with state and federal partners to ensure collaboration on implementation- DOI is investigating a WBD authoritative dataset

Suggested National Stewardship Roles

WBD



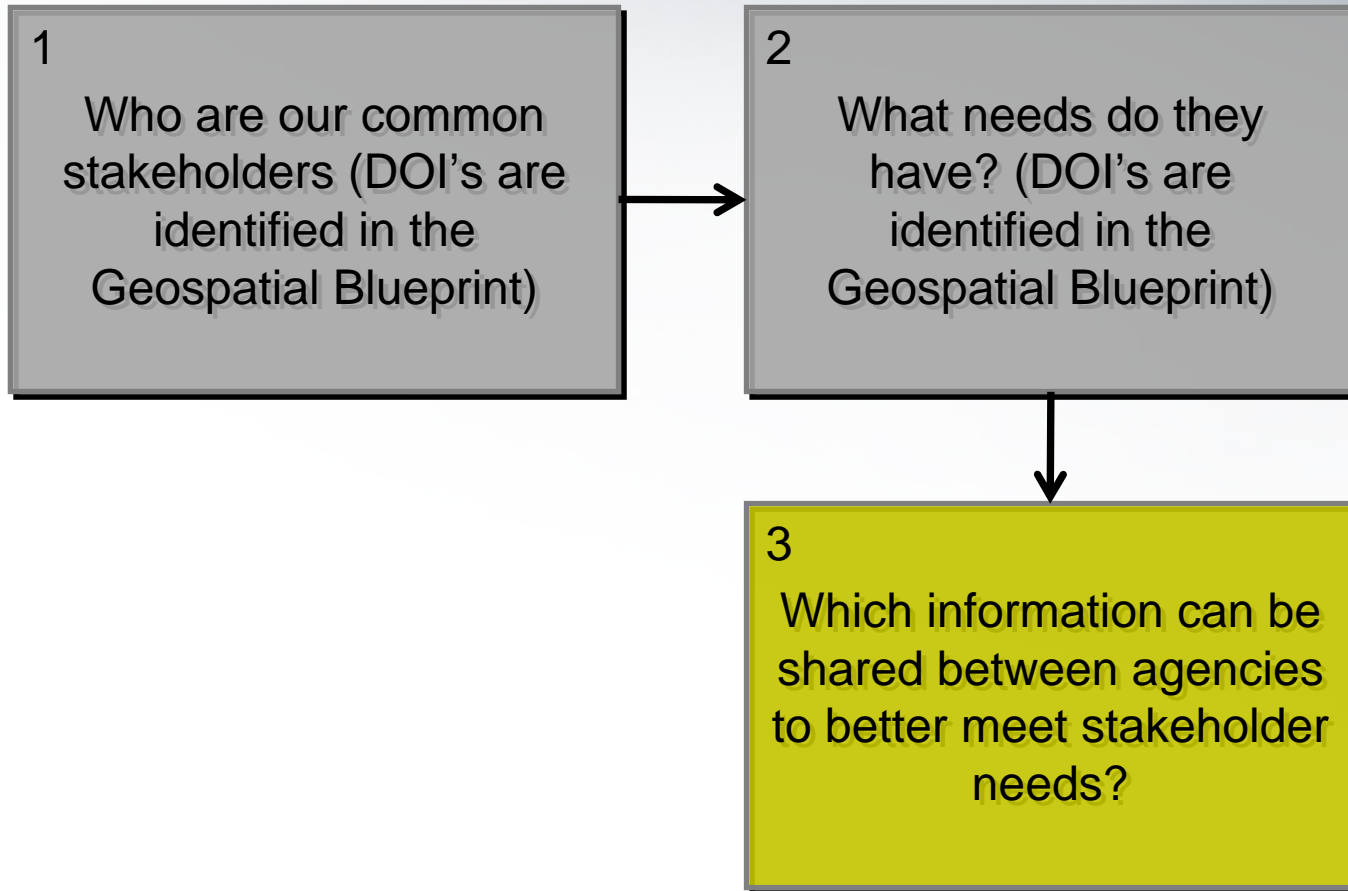
- Provide program leadership and management
- Provide standards and continuity
- Involve ALL interested cooperators with regard to change and provide effective mechanisms for discussion of stewardship topics
- Maintain data model
- Provide guidance and training
- Perform centralized edit transactions
- Provide official portals to serve certified data to user community
- Provide coordination with national interagency oversight committees 9

Authoritative Data Sources



- Common Decision Framework
- Authoritative Data Sources
- Where we are,
What we share,
Where we're going...

Common decision framework to select our most urgent needs.



Leveraging DOI's Authoritative Data Sources (ADS) for Geospatial Assets



Federal Community could work together to mirror the DOI approach:

- DOI's Geospatial Core Team selected top candidates for ADS designation.
- The evaluation looked at functional reuse, stewardship, standards implementation, and data characteristics.
- This evaluation led to identification of the best available candidate ADS to manage an asset of DOI-wide interest, ranked using the following criteria:
 - ✓ What is the reuse potential to the DOI business?
 - ✓ Is there the authority to effect change on the asset?
 - ✓ How well did it score against the qualitative ADS criteria?

EPA Water Information Sharing



Where We Are Today.....

- EPA OW is currently implementing Enterprise Architecture best practices to improve data sharing

Enterprise Architecture Value

- Provides an accurate inventory of OW data and IT investments
- Defines and documents data gaps, needs, and issues that directly support EPA OW goals
- Helps define “Where you want to be” and “What you need to get there”
- Supports improved OW strategic planning and investment decisions
- Improves data consistency, accessibility, and quality
- Leverages the use/reuse of data and information

WATERS – A Geospatial Data Architecture

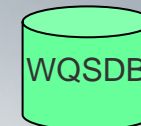


(Watershed Assessment, Tracking & Environmental Results)
(www.epa.gov/waters)



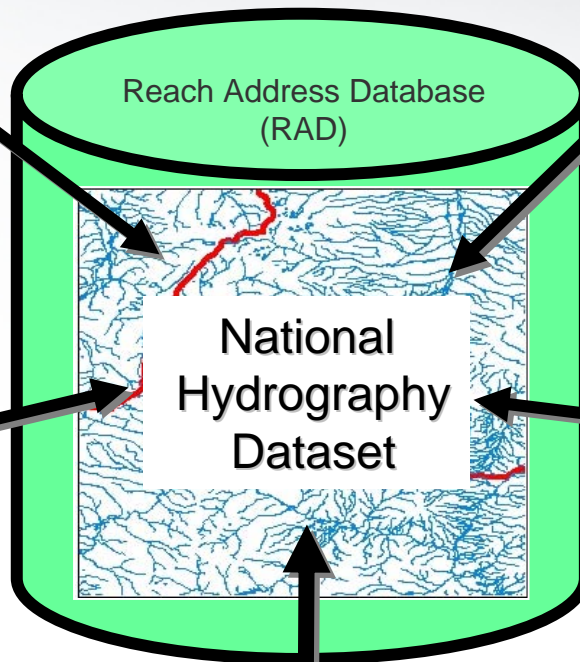
GRTS

Nonpoint Source Grants



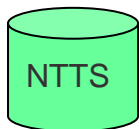
WQSDB

Water Quality Standards



Reach Address Database
(RAD)

National
Hydrography
Dataset



NTS

Impaired Waters &
Total Maximum Daily Loads



STORET

Water Quality Monitoring



ADB/NAD

Water Quality Assessments

Federal Data Partners:
USGS, USACE, NRCS,
USFWS

EPA Water Information Sharing



What We're Sharing....

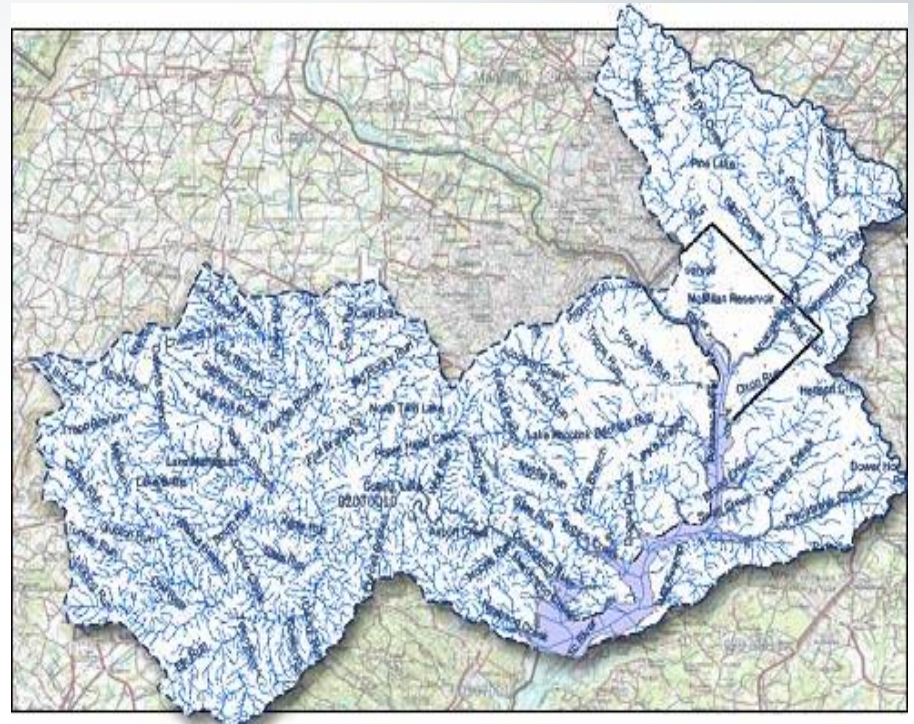
- Common framework in NHD allows us to perform analysis across Federal National Water Programs
 - Fish Habitat Studies
 - Wetland Data in support of permitting (USACE)
 - Water Quality Monitoring Data (USGS)
- Partnering to enhance the NHD
 - Catchments
 - Watershed Boundaries (WBD)
 - Stream Order
 - Upstream/Downstream Navigation

Water Information Coordination Program

Subcommittee on Spatial Water Data



- EPA Co-Chairs the Subcommittee on Spatial Water Data
- Purpose: partner to develop water resource components of the National Spatial Data Infrastructure
- Increase collaboration and data sharing in the Federal Water Segment



Subbasin 02070010 covering Washington DC

EPA Water Information Sharing



Where We're going....

- Continue to support our Federal partners in expanding the National Hydrography Dataset
- Continued collaboration around Wetland Mapping
 - Support of the Wetland Mapping Standard
 - Exchange of Wetland Permitting Data with the (USACE)
- Development of Web Mapping Services to increase data sharing with other Feds
- Exploring the concept of geospatial data marts

The use of watershed data for fire recovery management



- Where We are
- What We're Sharing
- Where We're going

USDA - Natural Resources Conservation Service (NRCS)



- NRCS Vision
 - Productive Lands
 - Healthy Environments
- NRCS Mission
 - Helping People Help the Land

NRCS Core Business



NRCS Core Business

- Conservation Planning / Technical Assistance
- Conservation Programs / Financial Assistance
- Soil Survey / Snow Survey

NRCS Primary Customers

- Farmers and Ranchers
- Other Land Owners
- Governments and Units of Government
- Non-governmental Organizations

NRCS GeoData Assets



National Datasets:

Soils: (Soil Surveys may contain more than you think)

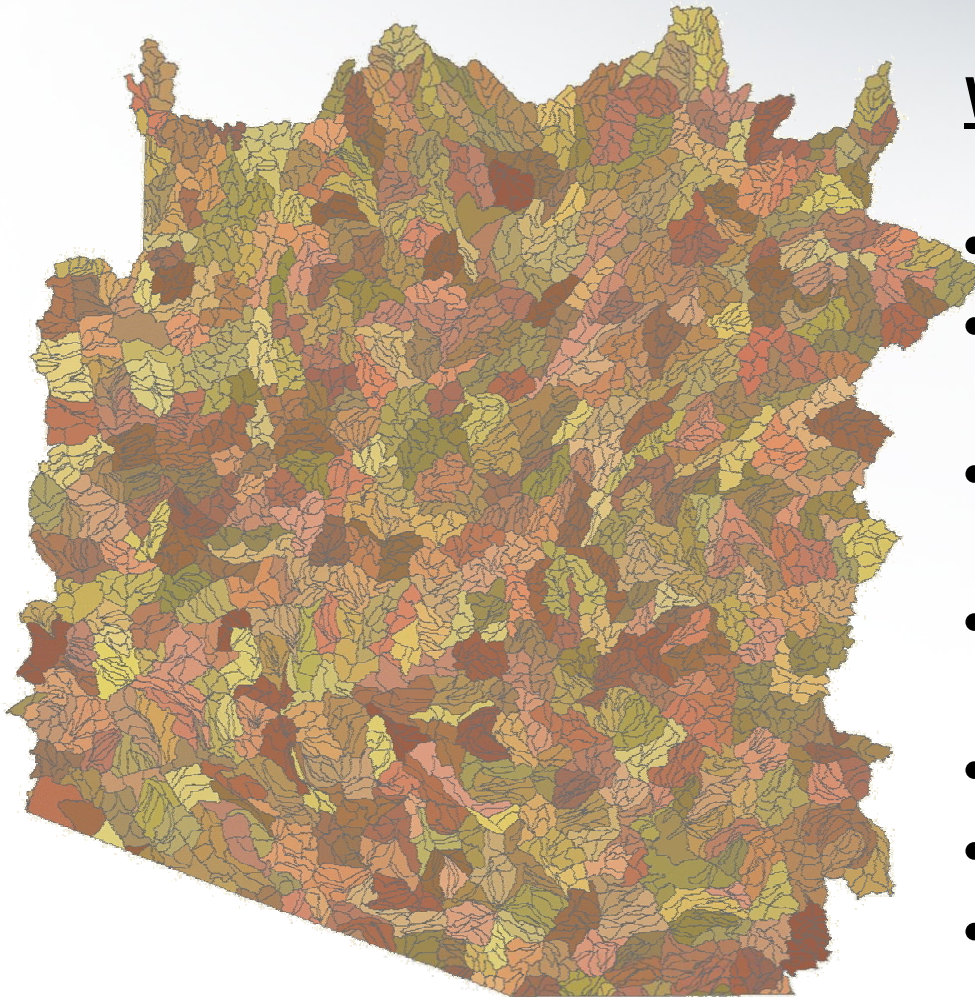
<http://soildatamart.nrcs.usda.gov>

<http://websoilsurvey.nrcs.usda.gov>

Watersheds: (Down to 6th level subwatersheds)

<http://datagateway.nrcs.usda.gov>

Watershed Boundary Dataset (WBD)



WBD Partners in Arizona

(6th Level Subwatersheds)

- US Geological Survey (USGS)
- Bureau of Land Management (BLM)
- US Environmental Protection Agency (EPA)
- Arizona Geographic Information Council (AGIC)
- US Forest Service (USFS)
- Department of Defense (DoD)
- Navajo Nation

NRCS Use of WBD



- Emergency Watershed Protection (EWP) Program for Fire Rehabilitation
- Integrates WBD to prioritize areas for treatment



The AirNow Information Sharing Network



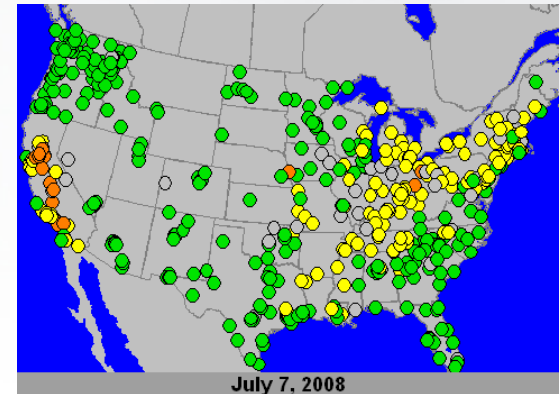
- Where We are
- What We're Sharing
- Where We're going

AIRNow – Where We Are



AIRNow is a national framework for acquiring and distributing air quality information

- Started in 1998
- Collects, quality assures, and transfers real-time and forecasted air quality information to the public
- Gathers data provided by 120+ federal, state, and local air quality agencies
- Communicates air quality with the AQI
- Issues weather/air quality news stories
- Partners with NOAA, NASA, Forest Service
- Partners with national media
- Provides air quality education and outreach



AIRNow – What We're Sharing



Data/Info

Real-time Air Quality Data

US, Canada, Mexico
2000 sites
Hourly data

Forecasts

300 cities
Current and next day
Some multi-day

Maps

Static GIFS
Animated GIFS
100s of types

Information

News stories
Graphical outlooks

Methods

Air Quality Index



Files

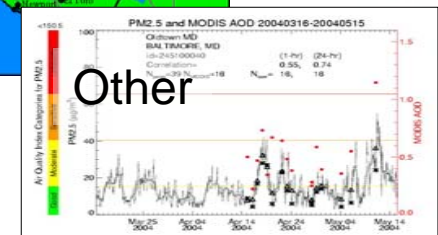
FTP

Web services

Websites

Weather providers

Who



AIRNow – Where We're Going



Data/Info

Real-time Air Quality Data

Forecasts

Maps

Information

Methods

Files

Standards-based
KML
XML
CSV
NetCDF
WMO (Grib)
Shape

FTP

Push & pull

Web services

OGC compliant
Exchange network

Websites

Weather Providers

Who

Public



Agencies



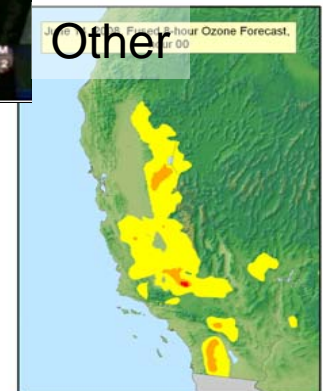
Media



Other



Other



AIRNow – Resources & Contacts



Resources

www.AIRNow.gov – public site

www.AIRNowGateway.org – data access

Contacts

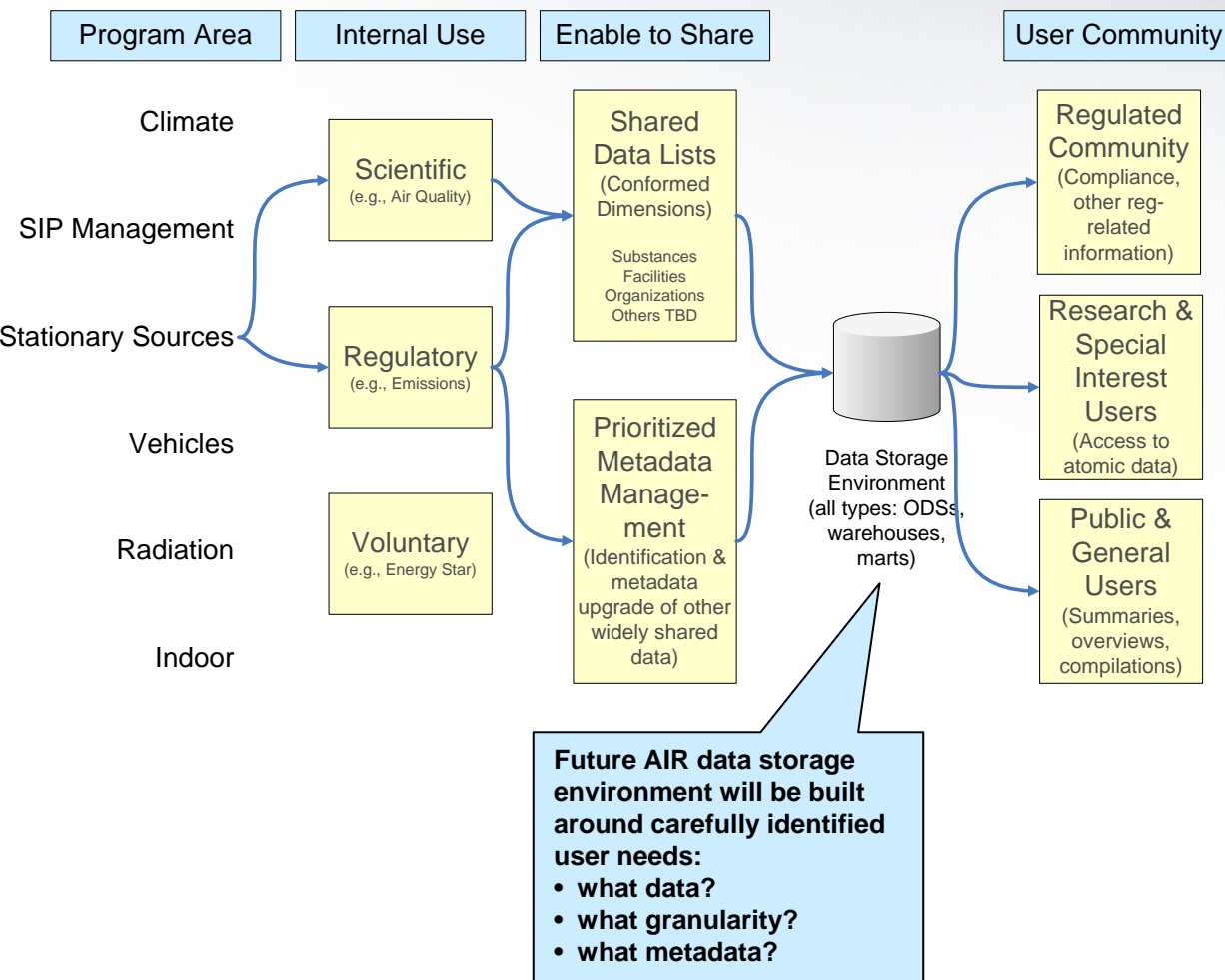
John White, white.johne@epa.gov

Scott Jackson, jackson.scott@epa.gov

Tim Dye, dye.tim@epa.gov

Alan Chan, chan.alan@epa.gov

Air Office Concept for Evaluating their Data Sharing Priorities



Air program data types

- Scientific data on atmospheric pollutants
- Regulatory data

Priority shared data

- “Most-shared” data entities
- Upgrading quality of associated metadata
- Servicing various users communities

Information Sharing with the National Weather Service



- Where We are
- What We're Sharing
- Where We're going