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International Open Government Data Conference

Enabling Geospatial Killer Apps—Interfaces, Visualizations and APIs—Imaging the World

Jim Barrett, *Data.gov Geospatial Architect*

Pat Cummins, *Government Strategist, Esri*

Rob Dollison, *National Geospatial Program, U.S. Geological Survey, U.S. Department of the Interior*

Jerry Johnston, Ph.D., *Geospatial Information Officer, U.S. Environmental Protection Agency (Moderator)*



National Geospatial Program Office

Geospatial One-Stop (GOS) *Lessons Learned for Open Data*



geodata.gov
U.S. MAPS & DATA

Your One Stop for Federal,
State & Local Geographic Data

First International Open Data Conference
November 16, 2010

U.S. Department of the Interior
U.S. Geological Survey

Rob Dollison
rdollison@usgs.gov

President's Open Government Initiative



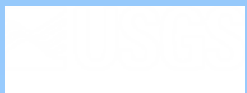
Three Pillars - Transparency, Participation and..

- **Collaboration** improves the effectiveness of Government by encouraging partnerships and cooperation within the Federal Government, across levels of government, and between the Government and private institutions.

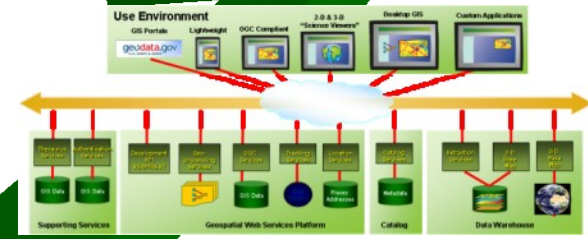
Open Government Design Principles

- Share As Much Data As Possible
- Access to Authoritative Source Data
- Access to Current Data
- Make Data Widely Accessible
- Ensure Data is Machine Readable
- Use Open Formats

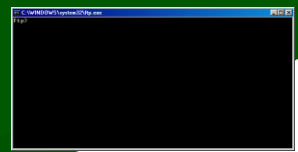
How has the Geospatial Community worked at this goal?



Features Services Architecture



File Transfer



Geospatial One-Stop (GOS)

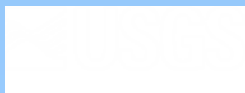
- Provide online discovery and access to geospatial resources (data, applications, web sites) across all levels of government
- Develop standards and models to support the exchange of data and facilitate web services
- Promote partnerships among Federal, state, and local agencies
- Reduce redundant investments and facilitate cost sharing

Make it easier, faster and less expensive to find and use geospatial data



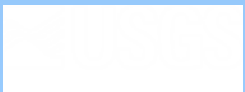
Challenges for the roles of metadata

- From understanding the data to enabling consumption
 - **Information** about the data set (source, accuracy, intended use etc.)
 - Enable **search** and discovery
 - Support an **inventory** view
 - Enable access and **consumption**



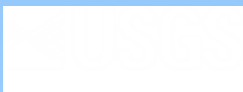
Obstacles encountered

- Agency commitment in a voluntary NSDI
- Priorities varied among partners
- Auto Classification of Data
- Open specifications – specific enough?
- Movement of data



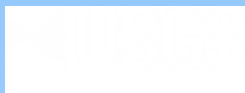
Lessons Learned

- **Quality** of Metadata Important
- **Easy tools** needed to encourage participation
- **Web Map Services** must be available for long periods of time
- **Maturity of Standards** vs. Operational Demands
- **Text + Geospatial Search** tricky

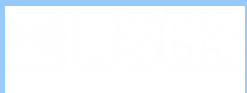


Lessons Learned

- **It's not about the website**
- **Groups should be self-forming**
- **Facilitate access to **National Federal Sources****



**Good Concepts and Functions
Implemented in GOS that have
relevancy moving forward**



Search Results Visualization

Gos 2.2 search

Search Results

Refine Search Download Results

1 2 3 4 5 6 7 8 9 10 >

[Selected Types](#) [Live Data and Maps](#) [Downloadable Data](#) [Offline Data](#) [Documents](#) [Applications](#) [Geographic Services](#) [Clearinghouses](#) [Geographic Activities](#)

Results 1 - 12 of more than 500 records (0.697 seconds)

- Tampa Bay CUES**
Tampa Bay Comprehensive Urban Ecosystems Studies is a prototype implementation of The National Map for the Tampa Bay watershed to demonstrate the depth of scientific analysis and discovery that is possible when a fully-populated, multi-scale geograph...
- Hillsborough County (FL) GIS - Public Viewer**
This system offers information covering more than 1,000 square miles that make up the County including: A graphical representation of land, water and infrastructure environments. Descriptive data about the information displayed. Contact addresses and...
- Critical Infrastructure (DEMO)**
Critical Infrastructure in Tampa FL. This is for demonstration purposes only...
- Palm Beach County (FL) Geospatial viewer**
epzmaps is a public GIS web mapping service for Palm Beach County, FL
Publishing Organization: Palm Beach County GIS
- Framework Data from Southwest Florida Regional Planning Council (FL)**
This metadata describes basic information returned to the NSGIC in response to a 1998 Framework Data Survey. This collection represents a Regional organization response. Themes include: transportation features (roads, waterways, airports, ports) col...
- SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT LANDS**
This dataset contains boundaries of Southwest Florida Water Management District acquired and proposed lands.
Publishing Organization: Southwest Florida Water Management District (SWFWMD)
- USGS Tampa Bay Comprehensive Urban Ecosystem Studies (CUES)**
The U.S. Geological Survey supports the Tampa Bay

My Geography

Where: (Geographic Footprint, e.g. Harrison, NY)

Find More... Reset

0 87mi

Legend:
Metadata boundaries Data requests Planned acquisitions

Featured Map Mash-ups

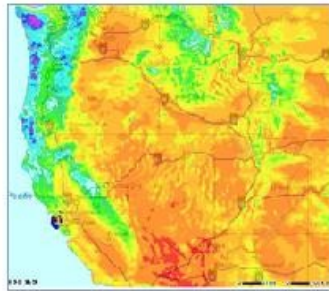
Popular Maps

[US Maps](#) [US State Maps](#) [Regional Maps](#) [Local Maps](#) [Map Stores](#) [About](#) [Discussion](#) [Members](#) [Customize](#)

US Maps



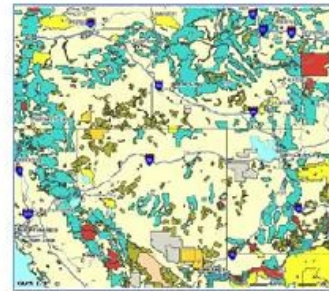
[Basic Base Map](#)



[Climate](#)



[Coasts](#)



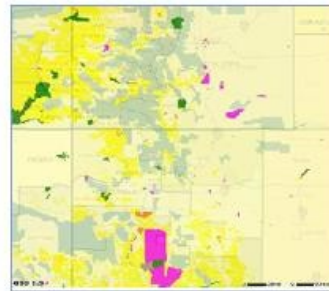
[Conservation](#)



[Environment](#)



[Federal Energy Activities](#)



[Federal Lands](#)



[Geology](#)



[Hazards](#)



[Human Geography](#)



[Hydrology](#)



[National Hydrography Dataset](#)

Mashing-up Federal-State-Local

The screenshot shows a web browser window displaying the geodata.gov Map Viewer. The browser's address bar shows the URL: <http://gos2.geodata.gov/arcexplorer/arcexplorer.jsp?origid=&isDefault=false>. The page title is "geodata.gov Map Viewer (Projection: GCS_WGS_1984) - Microsoft Internet Explorer provided by Westchester Co...".

The map viewer interface includes a toolbar with various navigation and tool icons. On the left, there is a legend panel with the following items:

- kccproperty
- BLM_MAP_PLSS
- eimweb

The map displays a geographic area in Washington state, showing cities such as Shoreline, Redmond, Duvall, Carnation, Bellevue, Issaquah, Renton, Kent, Auburn, Black Diamond, and Enumclaw. The map is overlaid with a grid and various colored regions. At the bottom of the map, there is a scale bar showing 0 to 5 miles and 0 to 8 kilometers, and the text "GOS 2:3".

Below the map, there are buttons for "REFRESH MAP", "LEGEND", and "Overview". The browser's status bar at the bottom shows "Done" and "Internet" with a 100% zoom level.

On the right side of the browser window, there is a sidebar with a "Log in" and "Sign up" button, and a "Help" button. Below this, there is a section with the text "(GCDB) ... nicator.gov) ... is available ... al, state, and ... ator.gov, ... LSIS_wms".

At the bottom of the browser window, there is a navigation menu with the following items:

- Cultural, Society and Demographic
- Elevation and Derived Products

Facilitate Data Partnerships

The screenshot displays the geodata.gov website interface. At the top, the navigation bar includes 'Home', 'Search', 'Maps', 'Marketplace', 'Communities', 'Statistics', and 'Help Center'. The main search area is titled 'Search Marketplace' and contains a search box with the text 'lidar', a 'Search' button, and filters for 'Content Type', 'Publisher', 'Sort By', and 'My Geography'. The 'Where' section is set to 'Florida'. Below the search filters is a map of Florida with various colored overlays representing data boundaries, requests, and acquisitions. To the right of the map is a 'Search Results' panel showing 12 of 48 records. The first three results are:

- LIDAR Elevation Data (2007)**: Laser beach mapping uses a pulsed laser ranging system mounted onboard an aircraft to measure ground elevation and coastal topography. The laser emits laser beams at high frequency and is directed downward at the earth's surface through a port opening...
Publishing Organization: National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), NOAA Coastal Services Center (CSC)
- LIDAR or IF SAR elevation collection**: Coverage area will include portions of the U.S. coastal zone (specific location is unknown at this time): Format will be raw elevation points (x, y, z) with ability to grid (binary raster, ASCII raster), according to user specifications: airborne lig...
Publishing Organization: NOAA Coastal Services Center
- (NASA) CALIPSO - Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations**: The CALIPSO satellite was developed to help scientists answer significant questions and provide new information about the effects of clouds and aerosols (airborne particles) on changes in the Earth's climate. Understanding these components will provi...
Publishing Organization: Global Change Master Directory

The bottom of the page features the USA.gov logo and a list of links: Privacy | Policies | FOIA | DOI | USGS | Accessibility | Contact Us | FAQ | E-GOV.

- Discover New Data Acquisition Plans

- Post Data Requests

- Contact Owners – build partnerships and leverage investments

Notifications About New Data

Places

- Geospatial One-Stop Geor...
- Most recently updated metadata documents:
- Arkose Topographic dat...
- National Oceanic and Atmospheric Administration
- United States Geological Survey, Saint Petersburg,...

Layers

View: Core

Primary Database

- Geographic Web
- Roads
- 3D Buildings
- Borders and Labels
- Traffic
- Weather
- Global Awareness
- Places of Interest
- More
- Terrain

Pop-up Window:

LIDAR data collection data of field activity 08LTS02 (A-2-08-LA) in Lower Atchafalaya Basin, LA from 12/08/2008 to 12/16/2008

United States Geological Survey, Saint Petersburg, Florida, Center for Coastal and Watershed Studies, Coastal and Marine Geology Program. LIDAR data collection data of field activity 08LTS02 (A-2-08-LA) in Lower Atchafalaya Basin, LA from 12/08/2008 to 12/16/2008

[Download Contact Details Metadata](#)

Browser Window:

geodata.gov
U.S. MAPS & DATA

Your One Stop for Federal, State & Local Geographic Data

LIDAR data collection data of field activity 08LTS02 (A-2-08-LA) in Lower Atchafalaya Basin, LA from 12/08/2008 to 12/16/2008

Content Citation

Title: LIDAR data collection data of field activity 08LTS02 (A-2-08-LA) in Lower Atchafalaya Basin, LA from 12/08/2008 to 12/16/2008

Content Type: Downloadable Data

Publishing Organization: U.S. Geological Survey (USGS), Coastal and Marine Geology (CMG)

Publication Date: 2/10/00127

LIDAR data collection data of field activity 08LTS02(A-2-08-LA) in Lower Atchafalaya Basin, LA from 12/08/2008 to 12/16/2008

Enable Web Map Services for a variety of viewers

The image shows a screenshot of the geodata.gov website interface. On the left, the search results page is visible, displaying a list of records. A context menu is open over the first record, with a red arrow pointing to the 'Add to Globe' option. The main part of the image is a 3D globe map showing a dense distribution of colored points (yellow, green, blue, red) across the Earth's surface, representing the data from the selected record. The globe is viewed from a perspective that shows the Americas and parts of Europe and Africa. The map includes navigation controls like a compass and zoom buttons. At the bottom, there is a copyright notice for Google and other providers, and a scale bar indicating 100% zoom.

geodata.gov
U.S. MAPS & DATA
Your One Stop State & Local

Home Search Maps Marketplace Communities State

Search geodata.gov

Search Results

Refine Search Reset Download Results

1 2

[Selected Types](#) [Live Data and Maps](#) [Downloadable Data](#) [Offline Data](#) [Documents](#) [Applications](#) [Geographic Services](#) [Clearinghouses](#) [Geographic Activities](#)

Results 13 - 23 of 23 records (0.526 seconds)

Atlas of the Cryosphere: Southern Hemisphere Web Coverage Service (WCS)

The National Snow and Ice Data Center (NSIDC) Atlas of the Cryosphere is a map server that provides data and information pertinent to the frozen regions of Earth, including monthly climatologies of sea ice extent and concentration, snow cover extent,...

Publishing Organization: National Snow and Ice Data Center

Atlas of the Cryosphere: Southern Hemisphere Web Map Service (WMS)

View Summary
View Full Metadata
Go To Website
Add to Map
Add to Globe
Contact Owner
Zoom To
Close Menu

ata Center (NSIDC) Atlas of the that provides data and information ns of Earth, including monthly ant and concentration, snow cover dional Snow and Ice Data Center

AGS with satellite imagery that is above 1:2 million), EarthSat 150m scales (below 1:2 million), and U.S. so includes reference data, includ...

tem is a collection of private, state, rces associated with the geography of on (1803-1806). Data has been compiled from key partners including NASA - John C. Stennis S...

WaterWetlands_NWI

VCGI downloaded NWI quads from the US FWS web site and reprojected to VCS NAD83. NWI digital data files are records of wetlands location and classification as developed by the U.S. Fish &

Image NASA
© 2007 Europa Technologies
© 2007 Tele Atlas
Image © 2007 TerraMetrics
Streaming 100%

© 2007 Google™

Eye alt 9372.30 mi

Availability of Map Services

Log in

geodata.gov
U.S. MAPS & DATA

Your One Stop for Federal,
State & Local Geographic Data

Home Search Maps Marketplace Communities Statistics Help Center

Search geodata.gov

Search Results



Refine Search

Reset

Download Results

1 2 3 >

Records 1 to 12 of 34 documents (25.374 seconds)

Publishing Organization: U.S. Geological Survey



San Diego Satellite Imagery

This map service presents a series of satellite imagery from Space Imaging for the San Diego, California. The map service includes 180, 25, 4, and 1 meter resolution per pixel imagery for the San Diego area. Zoom in to the San Diego area to see the h...

Publishing Organization: ESRI Inc.



California Roads (BTS)

An auto-generated metadata file for a single layer in The National Map (see <http://nationalmap.gov>). The first onlink reference is an OGC-WMS getCapabilities request suitable for binding with the map service that provides this layer. The second onlin...

Publishing Organization: USGS Catalog Support Unit



NRL GIDB Portal: California DOT Maps

This is a data source provided by NRL in WMS format. This data may originate at NRL but much more likely it is a remote data server that NRL's GIDB connects to via the Internet using various protocols. The GIDB server provides adapters such as WMS to...

Publishing Organization: Naval Research Laboratory (Stennis)



'MarineMapper' - Pacific Coast Groundfish Essential Fish Habitat (EFH) Map service

Pacific Coast Groundfish EFH web mapping service is a cooperative project of the Pacific States Marine Fisheries Commission (PSMFC), NOAA Fisheries, and the Pacific Fishery Management Council. The service presents data developed and compiled to suppo...

Publishing Organization: Pacific States Marine Fisheries Commission



'MarineMapper' - Pacific Coast Groundfish Essential Fish Habitat (EFH) Map service

Pacific Coast Groundfish EFH web mapping service is a cooperative project of the Pacific States Marine Fisheries Commission (PSMFC), NOAA Fisheries, and the Pacific Fishery Management Council. The service presents data developed and compiled to suppo...

Publishing Organization: Pacific States Marine Fisheries Commission



Managed Areas Database

This map service presents the Managed Area Database created by the Remote Sensing Research Unit (RSRU), University of California at Santa Barbara. MAD is a comprehensive GIS database for the conterminous United States which includes all types of mana...



Managed Areas Database (Virtual Campus)

This map service presents the Managed Area Database created by the Remote Sensing Research Unit (RSRU), University of California at Santa Barbara. MAD is a comprehensive GIS database for the conterminous United States which includes all types of

Search Criteria

What: California

Search in: geodata.gov

Content Type: Live Data and Maps

Sort By: Relevance

Intersects: N:42.47, S:32.06, W:-126.19, E:-112.3

My Geography

Where: (Geographic Footprint, e.g. Harrison, NY)

California

Find

More...

Reset



Metadata boundaries Data requests Planned acquisitions

Report - Windows Internet Explorer
 http://registry.gsd.org/statuschecker/ServiceDetail.php?ClientId={5F49560A-4293-459D-A2BD-7074E5953EEE}

fgdc Service Status Checker
 Federal Geographic Data Committee

Home Print Report Help

Service Analysis Report for 12-30-08

GOS Service Registration Information

The following service information was registered through the Geospatial One-Stop (GOS) portal.

ID: {5F49560A-4293-459D-A2BD-7074E5953EEE}

Name: Kentucky GAP Land Stewardship (Public Lands)

Registered Service:


Service Type: IMAGE


Service Name: kypublands

Service Owner: [View](#)

Service Metadata: [View](#) [View XML \(publish Info\)](#)

Service Report Card



 Valid Registration


 GetImage Status

99.98%
 GetImage Score (0-100)

Registration Validation


The following test determines if the registered service URL is valid or invalid.

Registered Service: 




This is a valid registration. An Image service must provide a service URL and service name.

Daily Test Results


The objective of an Image service is to provide map images to clients. For this reason, the GetImage test is the main operation tested and scored.

TEST	STATUS	INTERACTIVE TEST	RESPONSE	SCORE(0-100)
GetImage:		Test Now	0.22 sec	99.98%

The following table summarizes the full suite of tests performed on this service:

TEST	STATUS	INTERACTIVE TEST	ERROR ID
HTTP:		Test Now	-
GetServiceInfo:		Test Now	-
GetImage:		Test Now	-

Interactive Map Layer Viewer

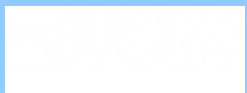


Click [here to View all Layers](#) from this Service

Detailed Report from FGDC

- Report Information:
 - GOS Registration Information
 - Health Test Results
 - Reliability Rating
 - Responsiveness Rating
 - Potential Service Issues
 - Recommendations

Data catalog as a Web Service



Customizable Search Widget

The screenshot shows a Windows Internet Explorer browser window displaying the Delaware Geographic Data Committee (DGDC) website. The address bar shows the URL <http://stateplanning.delaware.gov/dgdc/catalogue.shtml>. The page features a header with the State of Delaware logo and a navigation menu. A search widget is prominently displayed, titled "A Delaware Spatial Data Catalogue". The widget includes a search box and a list of data catalogues. A pop-up window titled "Search geodata.gov - BETA" is overlaid on the page, showing a search interface with a "Find:" field and a list of search results.

Delaware.gov | Text Only Governor | General Assembly | Courts | Elected Officials | State Agencies

State of Delaware
The Official Website of the First State

RAINBOW | PHOTO BY STEVEN LONG

Your Search... **SEARCH** Phone Numbers Mobile Help Size Print Email

Office of Management and Budget : Budget Development, Planning, and Administration : Office of State Planning Coordination

HOME

SERVICES

- Livable Delaware
- Equity in Agriculture
- State Strategies
- The PLUS Process
- Municipal Annexation
- Regional Planning
- S. New Castle Co.
- Planning Assistance
- From OSPC
- From UD
- Grant Funding
- Geospatial Information
- GIS Coordination
- GIS Data Catalogue
- GIS Data Resources
- The DataMIL
- GIS Data Inventory
- Demographics
- 2010 Census
- Census Data Center
- Pop. Projections
- State Budgeting
- News Services

INFORMATION

A Delaware Spatial Data Catalogue

(BETA) Search for Delaware Data on the GeoSpatial OneStop

The widget below is still in beta testing, metadata has been published on the fed to limit searches to metadata for GIS data shape, however, you may see some res

Search geodata.gov

This is a test of this new widget, so please keep working with the Geospatial OneSt

A Listing by Data Categories

This is a catalogue of some of the key g are found on [the Delaware portion of the](#)

For each data set, we include a title, a d available) to metadata, a data web site, and direct data download. Where we don't have an appropriate link, you will find yourself on our ["oops" page](#).

This collection is based on searches of the Inventory and of GOS and on our knowledge of the data resources of the state. We're not perfect, however, and we do miss things. If there is data that you are aware of that is not listed here, please contact Mike Mahaffie at mike.mahaffie@state.de.us

Search geodata.gov - BETA

Find:

- Map and Aerial Photo Inventory
- Delaware Census 2000 SF1 ArcIMS Service
- Delaware Census 2000 SF1 WMS Service
- Delaware 1954 Orthophotography
- Delaware Orthophotography Tile Index
- State Boundary Monument Data Base
- USGS Delaware Roads
- Digital Line Graph, Hydrography Layer (Quad-based; 1:24,000-scale)
- USGS Delaware Contours

ware for which am and customized (Given our state's

Mike Mahaffie. We'll

Delaware spatial data

and links (where

<http://stateplanning.delaware.gov/dgdc/catalogue.shtml#PageContent> Internet 100%

Dashboard for Windows 7

2005 Bear Controlled Hunts
Geospatial One-Stop GeoRSS Fri Feb 4

24k version of Idaho Fish & Game's (IDFG) 2005 Bear Controlled Hunt Areas. This file was produced by IDFG from the legal descriptions available in the back of the published regulations. The following layers were used in this order to define new b...
[Download](#) [Contact Details](#) [Metadata](#)

Open with:

2005 Bear Controlled Hunts
Geospatial One-Stop ... Fri Feb 4 15:00:00 EST

2006 Bear Controlled Hunt Areas
Geospatial One-Stop ... Fri Mar 4 15:00:00 EST

2006 Bear Controlled Hunt Areas
Geospatial One-Stop ... Mon Apr 4 15:00:00

2007 Bear Controlled Hunt Areas
Geospatial One-Stop ... Mon Apr 4 15:00:00

ncouler
Benjamin
Everett
WASHINGTON
Tacoma
Yakima
Portland
Walla Walla
Spokane
Blackfoot
M O
Hale
Butte
Lewiston
Idaho
geodata.gov
U.S. MAPS & DATA

Stocks slip ahead of ...
MONSFC N... Mon Jan 12

Bush to ask Congress...
MONSFC N... Mon Jan 12

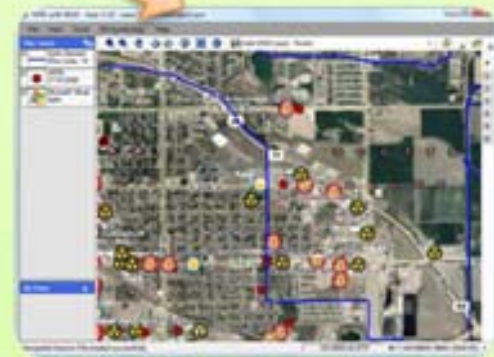
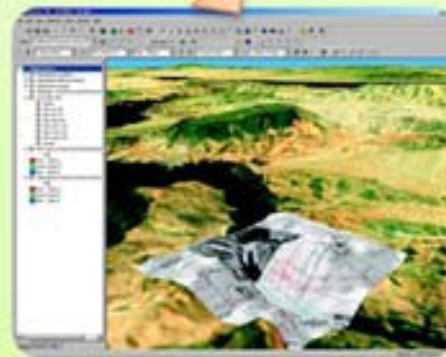
Bush defends policie...
MONSFC N... Mon Jan 12

Bush defends poli...
MONSFC N... Mon Jan 12

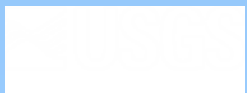
43°
Burlington, MA

Windows 7
For testing purposes only. Build 7000
4:04 PM
4/6/2009

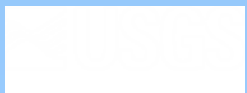
Workflows



Integrating with Data.gov



Geo & Data.gov – What's Next?





Open Government Geospatial Enablement

*Jim Barrett –data.gov PMO
November 15, 2010*



Outline

- Data Supply Issues
- Planning for geospatial improvements to data.gov
 - Catalog
 - Data Management
 - Platform
- Importance and Value

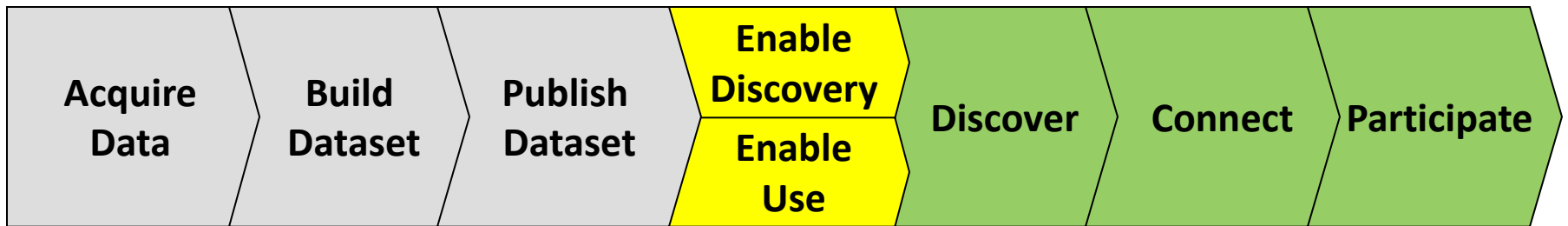


Data.gov - Information Value Chain

Community of Suppliers

Data.gov

Community of Users



Efficiency Measures

Effectiveness Measures



Architecture Principles – data.gov

- **Increase in data demand and user recognition will incentivize suppliers**
 - Increase in volume of contributions
 - Improvements in the quality and interoperability of the data asset
 - Preclude leveling off of supplier contributions
- **Communities of Use are self organizing and the trend is towards “push” models:**
 - Enable users in their comfort zone
 - Enable thru more powerful search – spatial, federated, services, vocabularies
 - Enable thru - Data Downloads, Interoperable Data and Map Services, open formats
 - Enable thru – Notifications and Syndication
- **Communities of Supply are not self organizing and the trend is towards “pull” models:**
 - Need to identify and develop targeted communications
 - Require strong communication, policy and investment to create buy-in
 - They need solutions that align with their business practices



Geo - Supply Side Barriers

- Islands of Data – Fragmentation of content
 - Stored locally, shelved or just tucked away
 - Project oriented
 - spatial – temporal – positional accuracy
- Data Supply Chain is still not tapped
 - Incentive to participate?
 - Seen as more work with little benefit
 - Numerous inventories of data not exposed (collections, series, imagery)
- Geodata; especially base data is often duplicative
- Lot of data still not spatially enabled



User Perspective:

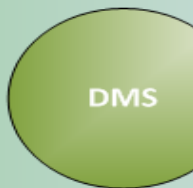
- Data Concerns:
 - Content quality, positional accuracy, copyright, and trust
 - Can I trust it?
 - Is it the latest the version over a geography?
 - Is it sufficiently described to understand it?
 - Is the data of sufficient positional quality?
 - Am I allowed to reuse the data?
 - If so - What do I need to do?
 - Is it in a usable form?

Enabling Dataset Discovery

Data Management Services



- Foster Supplier Relationships
- User Driven Publishing Rules for Data and Services
- Privacy and Security



Aggregation and Syndication



Catalog Services



- Expose Catalog for Distributed Search and Map Services
- Manage Catalog



• Enable Dimension Search by
• in, Temporal, Spatial,
• le
• and Cross-Reference
• assistance
• g Keyword Patterns
• ent Buzz
• ; With High-End
• Engines

Notifications

- Empower
- Provide One-
- Provide Direct

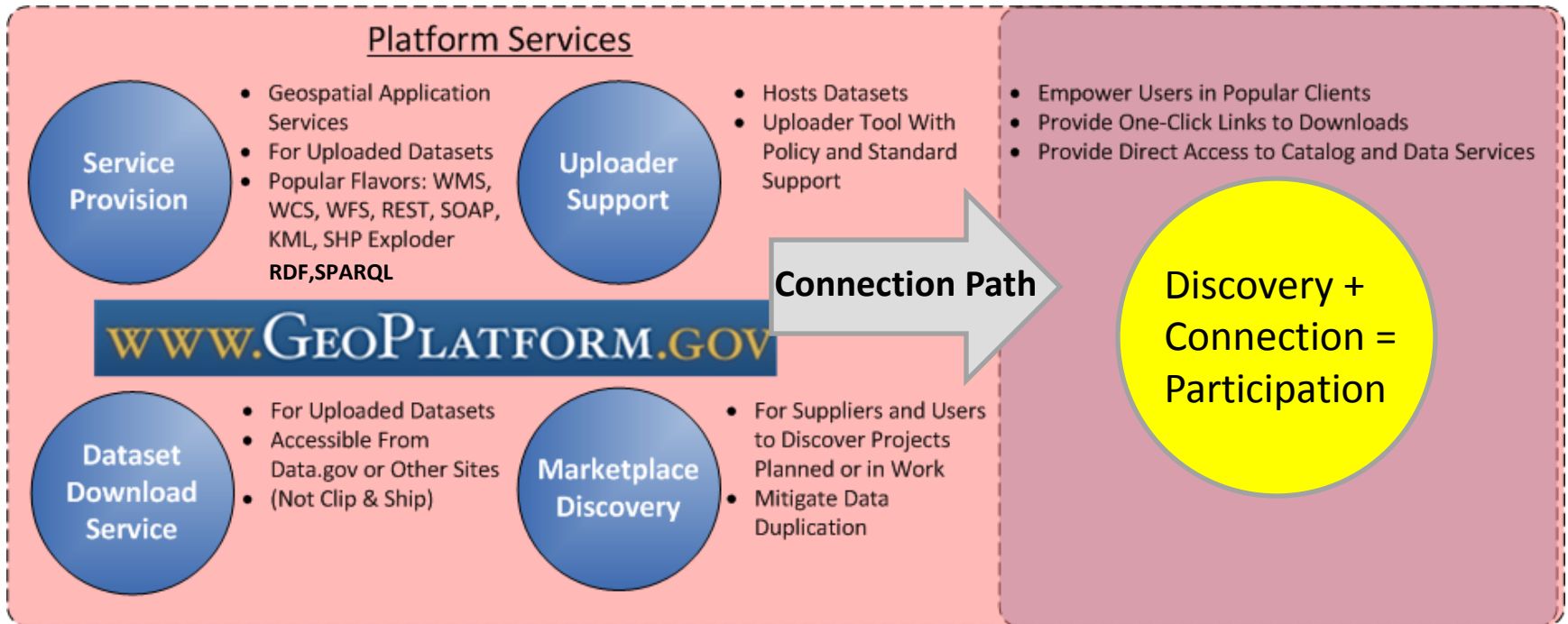


•Data.gov - Creates value via aggregation of a Complex Fragmented Supply Chain

•Data.gov – Promotes value in syndicating and personalizing consumer experience



Enabling Content Use – Platform Planning





What is Data.gov building towards?

- Improved Data Management Practices:
 - Ensure privacy and security
 - Ensure supplier participation and *data quality*
 - Organize to collections
- Simplification for Community of Supply
 - Implement automated harvester and reduce manual data management



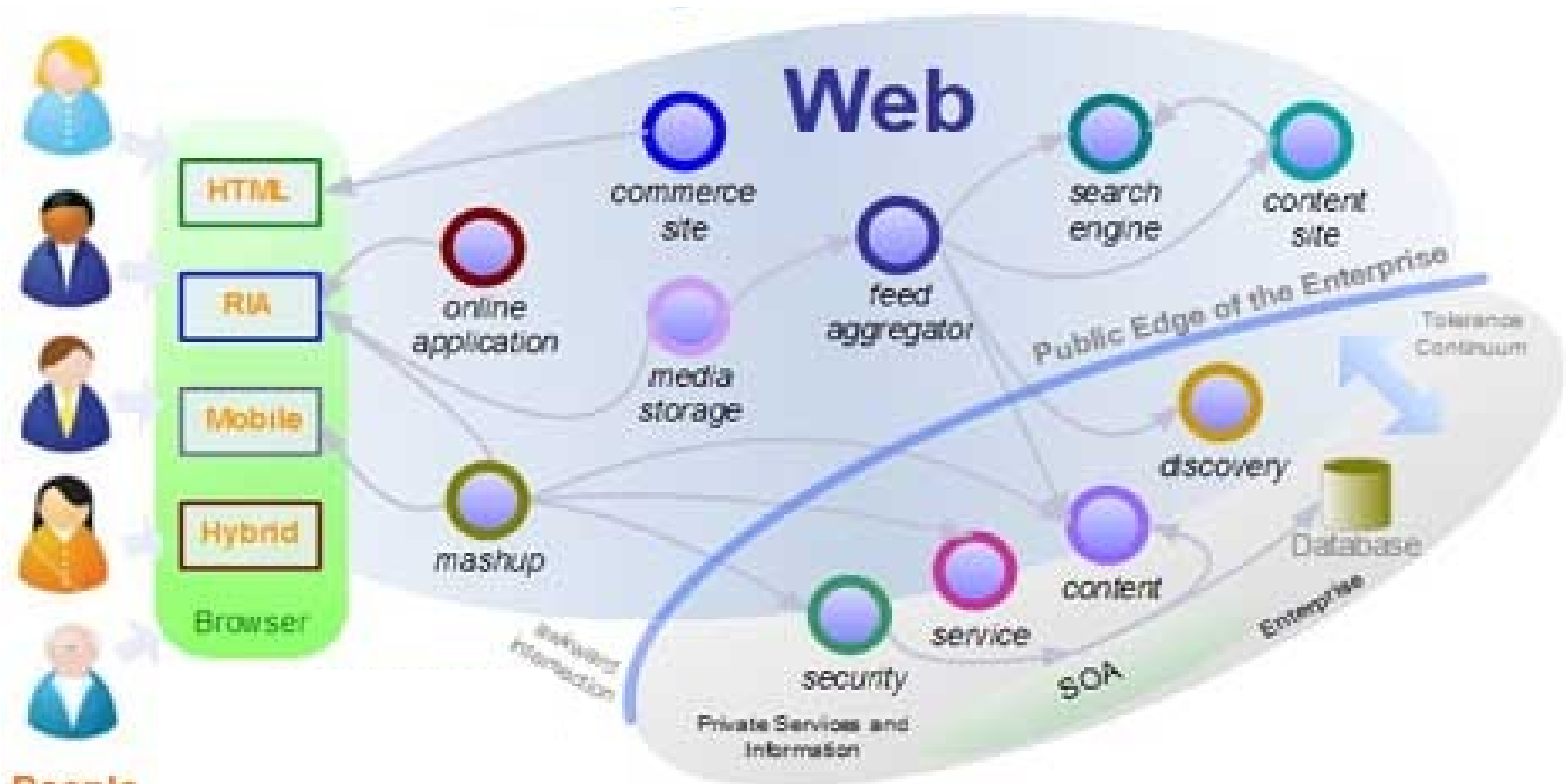
What are we building towards?

- Enable Visualization and Discovery - build data.gov as a service:
 - Catalog as Data service
 - Catalog as a Map Service
 - Open API support i.e. Open Search
 - Catalog - Federated and Distributed Searches
 - Harvestable catalog to support community specific or open government environments
- Spatial Search for Discovery:
 - Development of spatially smart search widget for end user environments to tap data.gov
- Standards based Map Services
 - Published Map Services
 - Enable Map Services for numerous client viewers



Why? Web Ecosystem – Geo

The Mashup Ecosystem:



Source <http://web2.wsj2.com>



Geo Forces at work – Creative Destruction

- Disruptive Technologies:
 - GPS, Remote sensing technologies, Real time sensing systems and monitoring systems
 - NETWORK – Internet – WWW – Cloud Computing
 - Lightweight application tools
 - Mobile Phones as Platform
- End User Empowerment - ***The individual can now be a the center of the data***
 - Geo-tagging all forms of data – video, pictures, text...
 - CROWD SOURCING – Mapping, Volunteer Geographic Information
- Commoditization of certain geospatial data
- Mashups
- Syndication - GeoRSS, RSS, Atom
- Virtual Reality, 3d Visualization, modeling
- Neogeography: Participatory GIS, Public Participatory GIS, Geo Hackers
- Semantics, RDF, OWL
- Web Services, Map Services
- Location Based Services
- SPATIAL Temporal Relationship – opportunity for pattern discovery, trends
- Imagery Datasets covering the globe



Discover

Connect

Participate

New Challenge

- Discussion used to be 80% of all data has a geospatial reference
 - How do we get that data exposed to make it geo smart?
 - How do we get that data into the enterprise?
 - How do we address the limitations imposed by technology, standards and computing
- Today the percentage is > 90%, its accessible and more prevalent thanks to:
 - Ubiquity of GPS/Smart phones platform
 - Spatial Aggregators of base mapping information and
 - Visualization and mapping tools available to the masses
 - Enterprise Service providers have made geo-coding services available to the masses
 - Routing, Navigation, Location based services
 - Geo-tagging services
- Today's questions is how are we going to get that data out of the organizations / enterprises into a value generating ecosystem that addresses:
 - Freshness
 - Consistency
 - Trust - to support sustainable reliable business practices
 - Reliable services or data exposure
 - Inter domain usability



Ecosystem - geo enablement and gov. data

Why is the geospatial supply side so valuable?

It has been and continues to feed the ecosystem

Its a lot about existing government data and services!



It is about the Crowd crowd source Mapping - Open Street Maps – Gov. data

OpenStreetMap | Changesets within -87.2265,38.8899,-87.1578,38.9283 - W

http://www.openstreetmap.org/history?bbox=-87.2265%2C38.8899%2C-87.1578

OpenStreetMap | Changesets within -87.2265,38.889...

OpenStreetMap

The Free Wiki World Map

View Edit History Export GPS T

Changesets

Changesets within -87.2265,38.8899,-87.1578

« Previous | Showing page 1 | Next »

ID	Saved at	User
#6330626	(still editing)	xybot
#6327723	November 09, 2010 13:08	xylome
#6325442	November 09, 2010 07:41	mfM
#6324995	November 09, 2010 03:20	mfM
#6324993	November 09, 2010 01:17	xybot
#6324945	November 09, 2010 01:22	mfM
#6324917	November 09, 2010 01:18	mfM
#6324553	November 09, 2010 01:06	mfM
#6323685	November 09, 2010 00:38	xybot
#6323088	November 08, 2010 22:28	Bilbo
#6322452	November 08, 2010 17:48	Walter Schögl

OpenStreetMap is a free editable map of the whole world. It is made by people like you.

OpenStreetMap allows you to view, edit and use geographical data in a collaborative way from anywhere on Earth.

OpenStreetMap's hosting is kindly supported by the [UCL VR Centre](#) and [bytemark](#). Other supporters of the project are listed in the [wiki](#).

Help & Wiki

Copyright & License
News blog
Shop
Map key

Search [Where am I?](#)

Go ples: "Alkmaar", "Regent", "Cambridge", "CELESTIA"

Make a Donation

OpenStreetMap - Windows Internet Explorer

http://www.openstreetmap.org/

File Edit View Favorites Tools Help

OpenStreetMap

View Edit History Export GPS Traces User Diaries [log in](#) | [sign up](#)

OpenStreetMap

The Free Wiki World Map

OpenStreetMap is a free editable map of the whole world. It is made by people like you.

OpenStreetMap allows you to view, edit and use geographical data in a collaborative way from anywhere on Earth.

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Help & Wiki

Copyright & License
News blog
Shop
Map key

Search [Where am I?](#)

Go ples: "Alkmaar", "Regent", "Cambridge", "CELESTIA"

Done

<http://trac.openstreetmap.org/ticket/2501>

fix duplicate data (nodes, ways, relations) -132.524,-35.772,174.370,61.828 (big)

tagwatch Korrekturen -135.846,-36.186,180.000,69.806 (big)

Done

<http://www.openstreetmap.org/>

It is Real Time:

Real Time – Health Tracking – Haiti – government data failed!

Noula - Portail de gestion de crise - Haiti - Windows Internet Explorer

http://www.noula.ht/#

File Edit View Favorites Tools Help

Noula - Portail de gestion de crise - Haiti

SITUATION

- Origine des messages(14739)
- ▲ Sites d'hébergement(641)
- H Hopitaux(135)
- Q Associations de Quartier(25)

Alerte au Choléra!

Attention! :
Les messages enregistrés
doivent être vérifiés
par les responsables

Map Satellite Hybrid O.S.M.

Carrefour-Feuilles: 28

Google search the map Search

Rapporter un incident Centre d'appel : 177 or 3753-8500 Par SMS : 177 En Ligne : Cliquez ici

Nombre de messages par catégorie

Hébergement & Articles non-alimentaires	(674)
Alimentation	(422)
Education	(317)

Messages & Alertes Lieux Critiques

Les derniers messages postés

12 : 20 - HÉBERGEMENT ET ARTICLE NON ALIMENTAIRE, EDUCATION
Rappel de la demande en fournitures classiques, mobiliers, matériaux de construction, assistance financière, cantine scolaire et en réparation du bâtiment de l'école de la direction du Centre Educati ...

Internet 100%

It is extensible: Geonames – Linked Data – Government data

The screenshot shows the GeoNames website in a Windows Internet Explorer browser. The address bar displays <http://www.geonames.org/maps/showOnMap?q=Istanbul>. The page features a search bar with "Istanbul" entered, navigation links, and a map of Istanbul. A popup window provides details for the selected location:

Istanbul ca. 80 m
[Istanbul, Provincia de Estambul](#)
Turkey » Istanbul
first-order administrative division
population : 11581707
N 41° 2' 6" E 28° 58' 59"
41.03508 / 28.98331
GeoNameId : 745042

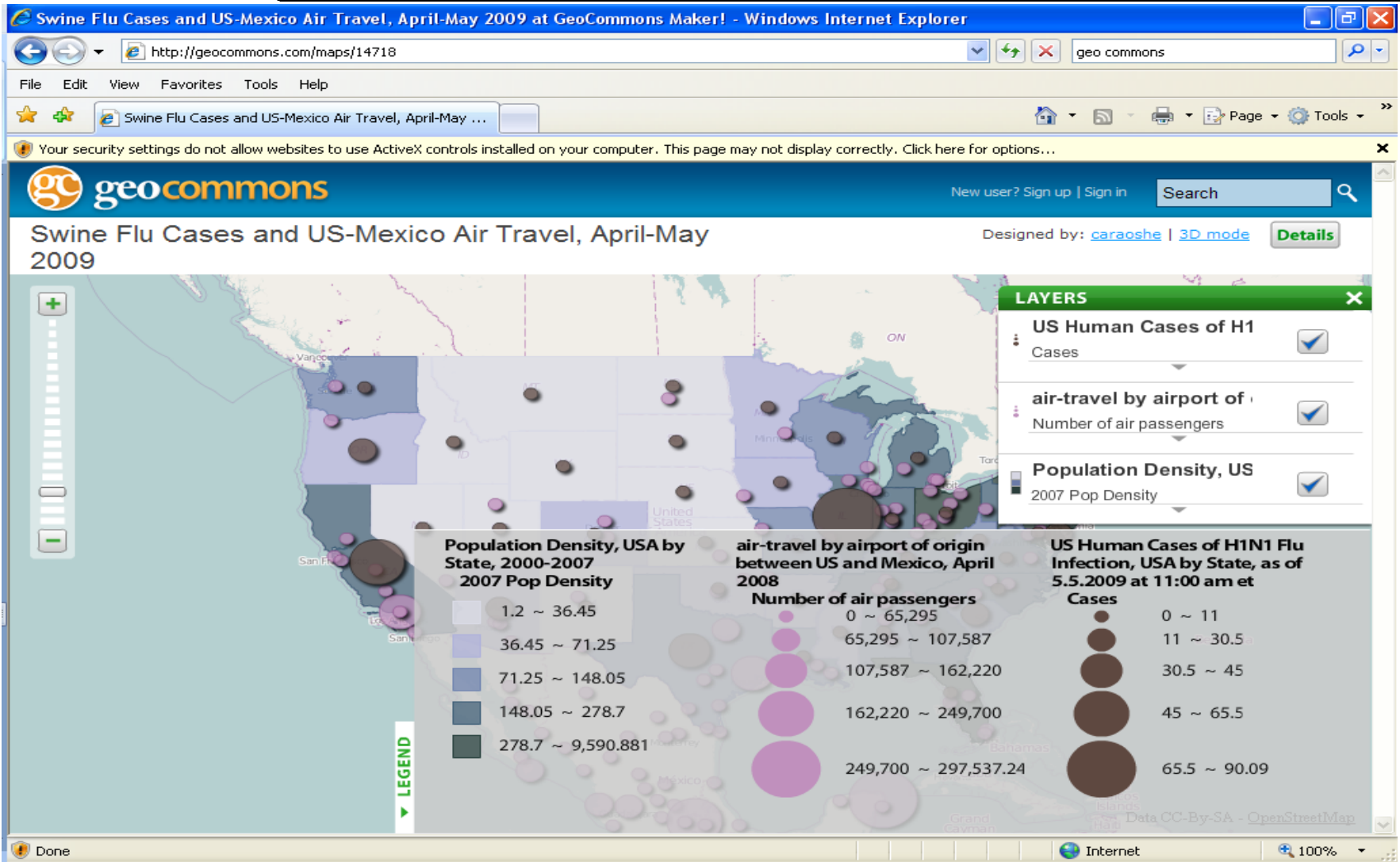
Below the popup, a table lists nearby locations:

	Name	country	feature	km to center
1	Istanbul	Turkey	seat of a first-order administrative division	418.82 km
2	Istanbul	Turkey	first-order administrative division	420.9 km
3	Esenyurt	Turkey	populated place	423.94 km
4	Selimpaşa	Turkey	populated place	431.03 km

The browser's status bar at the bottom shows the URL <http://www.geonames.org/745042/istanbul.html> and the zoom level at 100%.

<http://www.geonames.org/maps/showOnMap?q=Istanbul>

Information/Mapping – Geo Commons – Government Data



http://geocommons.com/maps/14718

Tagzania - Personalized Maps - value added data

The screenshot shows a Windows Internet Explorer browser window displaying a map of Istanbul. The address bar shows the URL <http://www.tagzania.com/near/41.014/28.95/>. The map interface includes navigation controls (back, forward, home, search), a toolbar with 'Map', 'Satellite', 'Hybrid', and 'Earth' views, and a 'feedback' button. A popup window titled 'Istanbul - Spice Market' is open, featuring a photo of the market and a '+ add to your map' button. On the right side, a 'Near' sidebar lists several items:

- Istanbul floods - September 2**
Worst flood in 80 years in Istanbul years ago ...
todaysplace
33 m
- Fatih Cami**
oge
617 m
- Istanbul - Spice Market**
nospuds
1.8 km
- Istanbul - Spice Market**

At the bottom of the page, there is a banner for 'Download Google Analytics' with the text: 'Gain traffic and optimize your site with Google Analytics. Free!' and the URL www.google.com/analytics. The browser's status bar at the bottom shows 'Done', 'Internet', and '100%' zoom level.

<http://www.tagzania.com/near/41.014/28.95/>



The End



Its Fun - Heywhatsthat.com – Mt. Ararat

Hey, what's that? - Windows Internet Explorer

http://www.heywhatsthat.com/

File Edit View Favorites Tools Help

Hey, what's that?

(vertical scale exaggerated 10x)

Map Satellite Hybrid **Terrain**

Visibility cloak Contours

31° Murghuz Len
42° K'asha't'agh L
89° Böyük İşıqlı C
96° Salvard Dağı
106° Ghazangyol I
122° Kīāmki Dāgh
133° Qūch Golī Dā
155° Kūh-e Bī Dāğ
198° Cat Dağ

Done Internet 100%

<http://www.heywhatsthat.com/>

Its about the Person: Foursquare – *Personalization of Geography*

The screenshot shows the Foursquare website in a Windows Internet Explorer browser window. The browser's address bar shows the URL <http://foursquare.com/>. The website's header includes the Foursquare logo, a search bar with the text "Find places, people, tags" and a "SEARCH" button, and a "Log In" link for existing members. The main content area features a large blue banner with the text "CHECK-IN FIND YOUR FRIENDS UNLOCK YOUR CITY" and a "JOIN NOW" button. Below the banner, there are three sections: "RECENT ACTIVITY" with three entries, "GET IT NOW" with mobile app links, and a "DONE" button at the bottom left. The browser's status bar at the bottom shows "Internet" and "100%" zoom.

foursquare - Windows Internet Explorer

http://foursquare.com/ Foursquare

File Edit View Favorites Tools Help

foursquare







Already a member? [Log In](#)

Find places, people, tags

**CHECK-IN
FIND YOUR FRIENDS
UNLOCK YOUR CITY**

Foursquare on your phone gives you & your friends new ways of exploring your city. Earn points & unlock badges for discovering new things. [LEARN MORE](#)

RECENT ACTIVITY

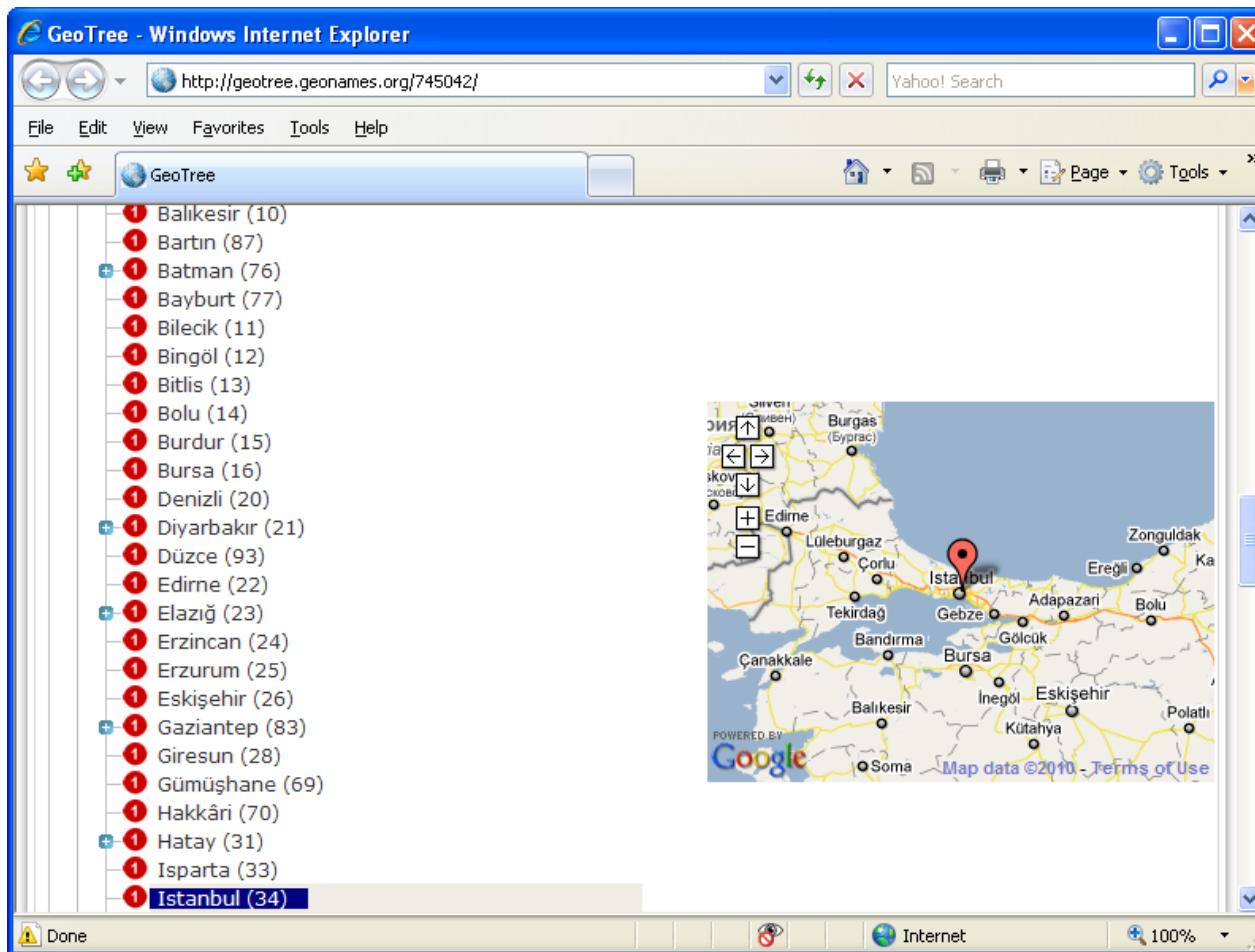
-  **Erik M.** in Burlington, Washington: became the mayor of [Bank of America](#). 
-  **Boston Phoenix** in Boston, MA: wrote a tip @ [Waterville Valley Resort](#): The two double-black-diamond trails here are mogul runs, so you're either going to be totally stoked or your knees will hate you by lunchtime. 
-  **Carolyn G.** in Atlantic City, NJ: unlocked the '[Superstar](#)' badge. 

GET IT NOW

- iPhone**
- BlackBerry**
- ANDROID**
- palm**

Done Internet 100%

Names Tree Structure – Gov data



The screenshot shows a web browser window titled "GeoTree - Windows Internet Explorer". The address bar displays the URL <http://geotree.geonames.org/745042/>. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The address bar contains a search box with "Yahoo! Search". The main content area shows a list of Turkish provinces with their respective counts in parentheses. The list is as follows:

- Balıkesir (10)
- Bartın (87)
- Batman (76)
- Bayburt (77)
- Bilecik (11)
- Bingöl (12)
- Bitlis (13)
- Bolu (14)
- Burdur (15)
- Bursa (16)
- Denizli (20)
- Diyarbakır (21)
- Düzce (93)
- Edirne (22)
- Elazığ (23)
- Erzincan (24)
- Erzurum (25)
- Eskişehir (26)
- Gaziantep (83)
- Giresun (28)
- Gümüşhane (69)
- Hakkâri (70)
- Hatay (31)
- Isparta (33)
- Istanbul (34)**

To the right of the list is a map of Turkey with a red pin marking Istanbul. The map includes labels for various cities and regions such as Bursa, Ankara, Izmir, and Antalya. The map is powered by Google and includes a copyright notice for 2010.

The browser's status bar at the bottom shows "Done", "Internet", and a zoom level of 100%.

<http://geotree.geonames.org/745042/>

It is flexible: Mashups- ArcGIS.com Gov. Data

The screenshot shows the ArcGIS.com webmap viewer interface. The browser window title is "ArcGIS - My Map - Windows Internet Explorer". The address bar shows the URL "http://www.arcgis.com/home/webmap/viewer.html". The page title is "ArcGIS My Map". The search bar contains "Mt Shasta". The search results list 38 items, including "Environment Data (Washington DC)", "California Earthquake Hazards", "NHSS Weather - USA Weather Warni", "US Weather Watches & Warnings", "Pennsylvania Department of Environi", "California Tsunami Risk", "California Flood Hazards", and "Wyoming Earthquake Database". An "Identified Features (1)" popup is open, showing the feature "Shasta" with the layer "GVP_Holocene Volcanoes / Holocene Volcanoes". The map displays a satellite view of a mountainous region with several red and orange hazard polygons labeled "Tennant" and "Jack".

<http://www.arcgis.com/home/webmap/viewer.html>



Map Tube: Digital Cartography – Gov. Data

MapTube Map - Windows Internet Explorer

http://www.maptube.org/map.aspx?s=DLHLGAYxgMI8ClwscscmcClwscscECwKXByxyx

File Edit View Favorites Tools Help

MapTube Map

home about login search help casa

Link to this map a place to put maps

KML Map Satellite Terrain

English Population

- <50
- 51 - 100
- 101 - 150
- 151 - 250
- > 251

more information

51 - 100

101 - 150

151 - 250

> 251

more information

Google search the map Search

Map data ©2010 Google, Tele Atlas - Terms of Use

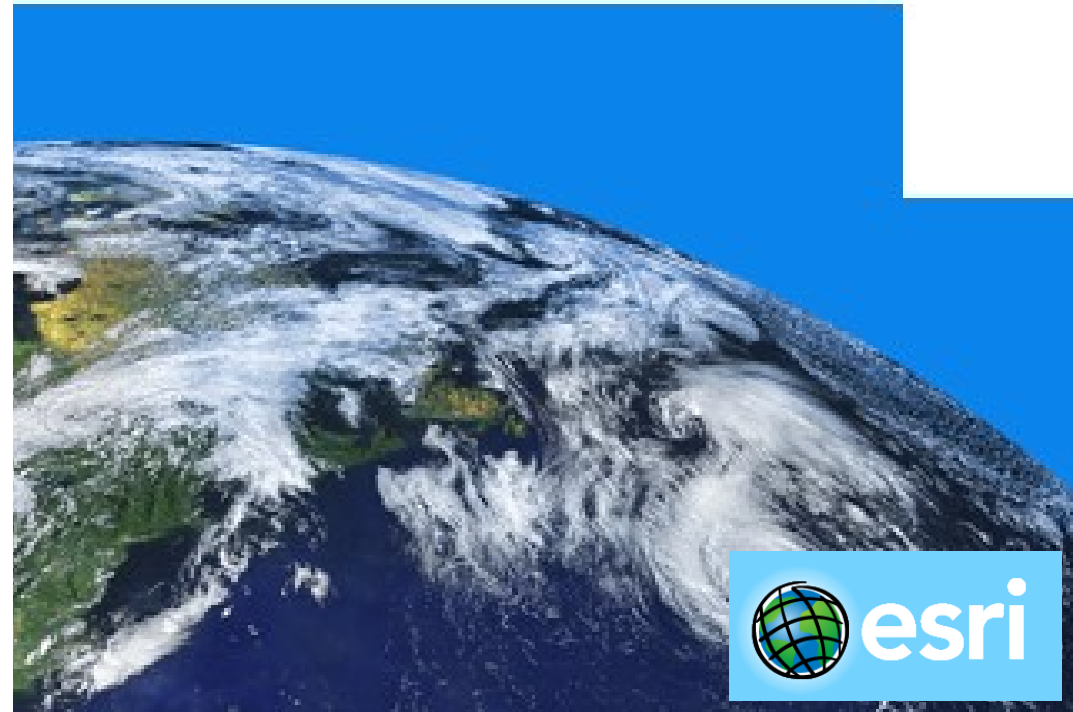
Internet 100%

http://www.maptube.org/map.aspx?s=DLHLGAYxgMI8ClwscscmcClwscscECwKXByxyx



Creating Geospatial Apps

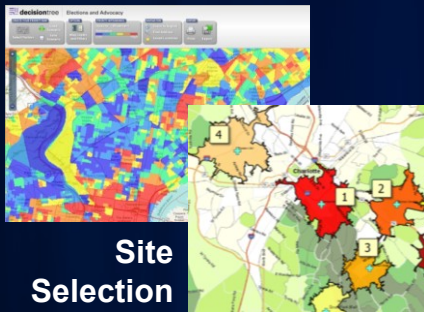
In The Context of Open Data



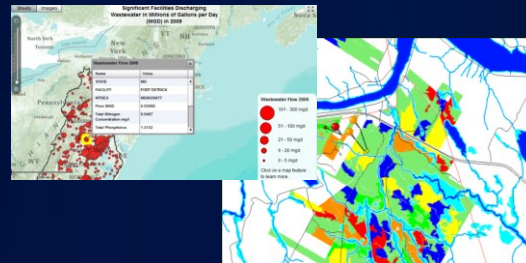
GIS Is Already Successful In Government

Thousands of Systems - Improving How We Manage And Make Decisions

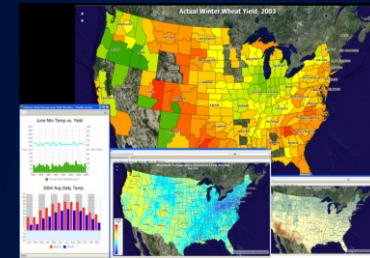
Socio/Economic Analysis



Environmental Management



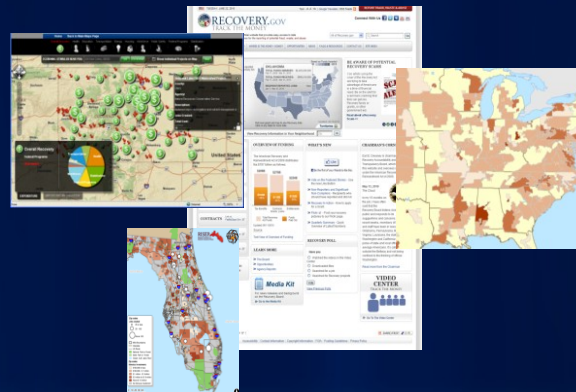
Agriculture



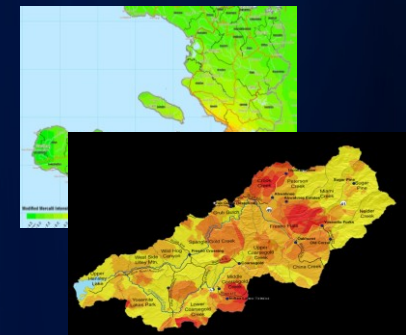
Public Housing and Social Risk



Transparency & Accountability



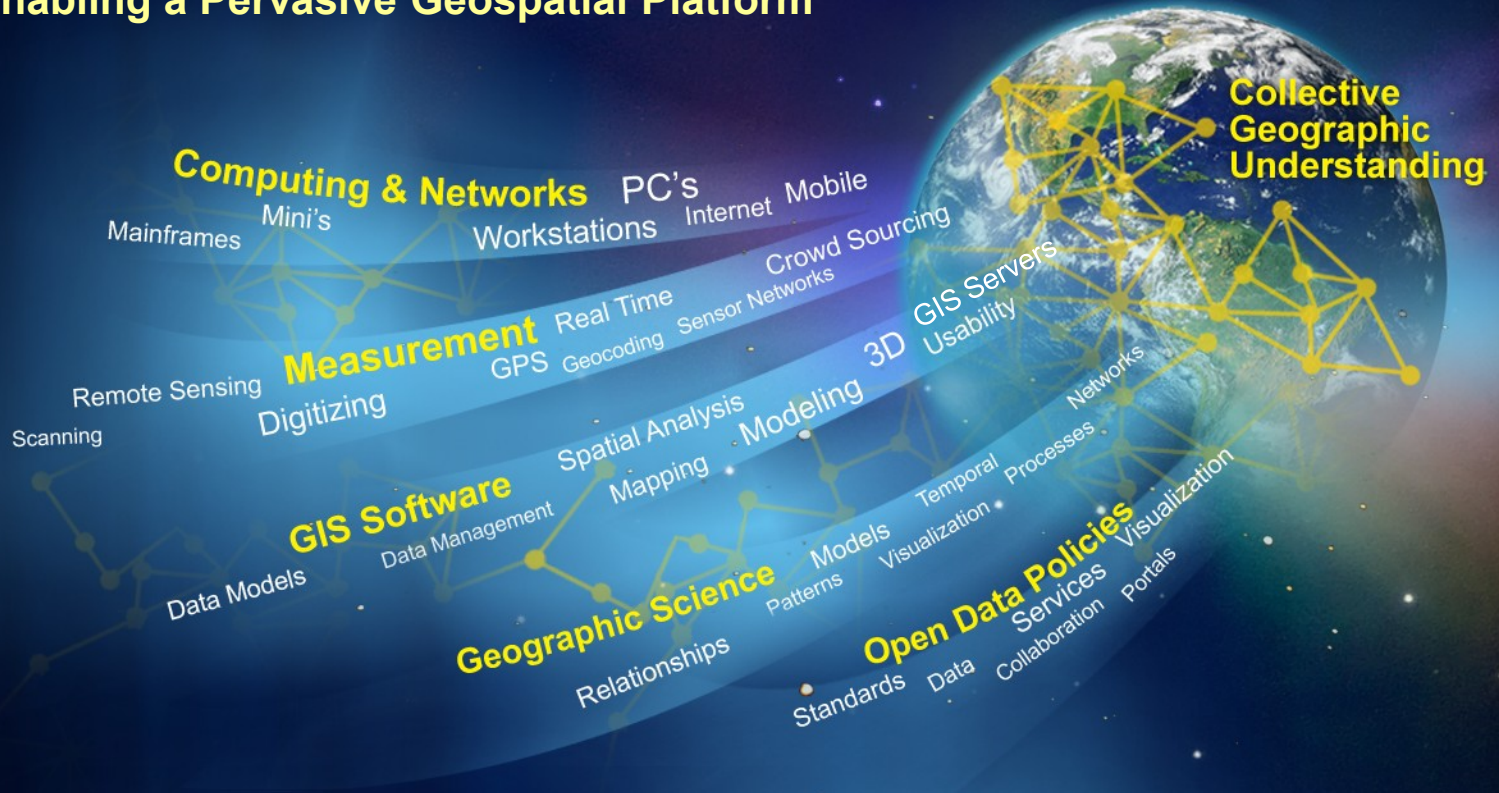
Disaster Response



*Creating An Enormous Repository Of Geographic Data . . .
. . . A New Type Of Societal Infrastructure*

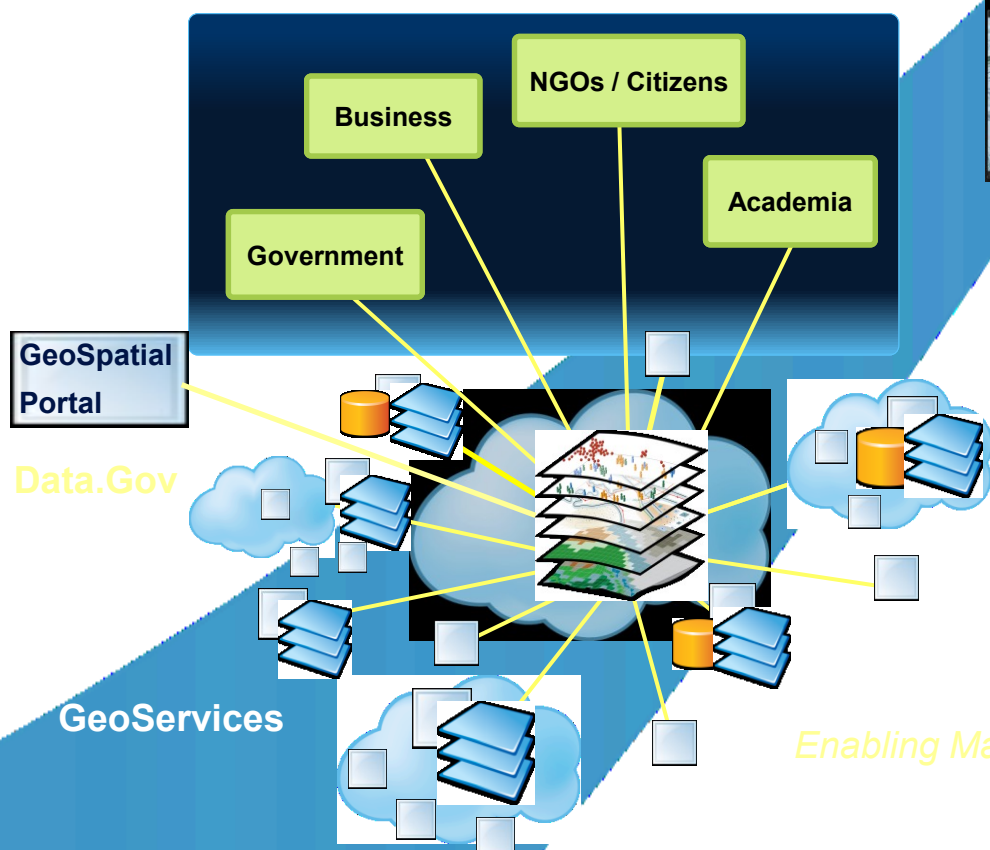
Many Forces Are Converging

Enabling a Pervasive Geospatial Platform



... Opening Our World to Everyone

A Distributed Network of Data and Services . . .



Citizen Science

Citizen Reporting

eBird

our national parks

CRATER LAKE NATIONAL MONUMENT

iPhone Apps

Mapping

Government

RECOVERY.gov

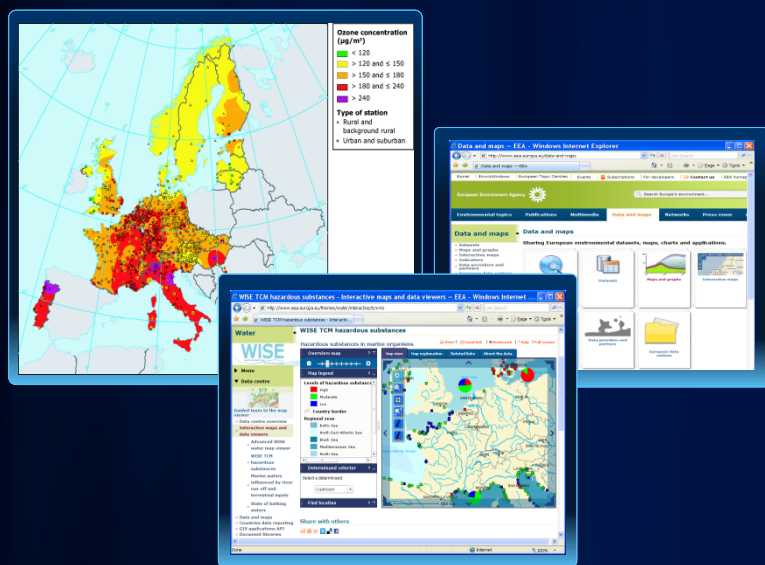
ESRI Gulf of Mexico Oil Spill Economic Impact

This block contains several screenshots of web-based GIS applications and mobile devices. At the top right is an iPhone displaying a map application. Below it are several web browser screenshots: 'eBird' showing a bird sighting map, 'our national parks' showing a park map, 'CRATER LAKE NATIONAL MONUMENT' showing a detailed map of a lake, 'RECOVERY.gov' showing a map of the United States with economic impact data, and 'ESRI Gulf of Mexico Oil Spill Economic Impact' showing a map of the Gulf of Mexico with economic impact data. The text 'Citizen Science' and 'Citizen Reporting' are positioned above the eBird and national parks screenshots respectively. 'Mapping' is positioned above the RECOVERY.gov screenshot, and 'Government' is positioned above the ESRI screenshot.

*Enabling Many New Types of Applications . . .
... Bringing GIS to Everyone*

This Is Already Being Implemented In Many Countries

Singapore



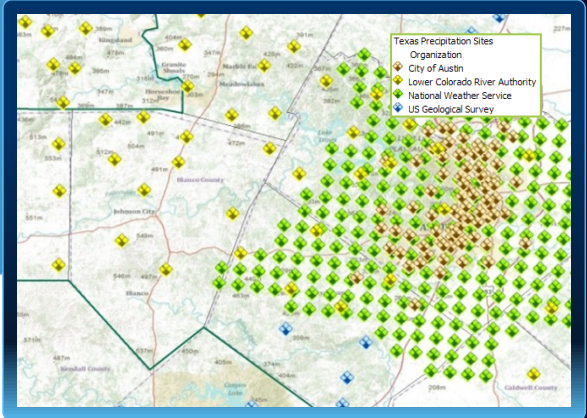
European Environment Agency



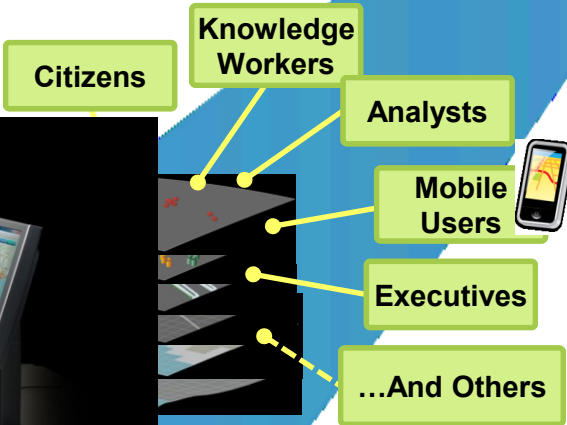
European Environment Agency

Creating Geographic Knowledge and Making it Available

-
-
-



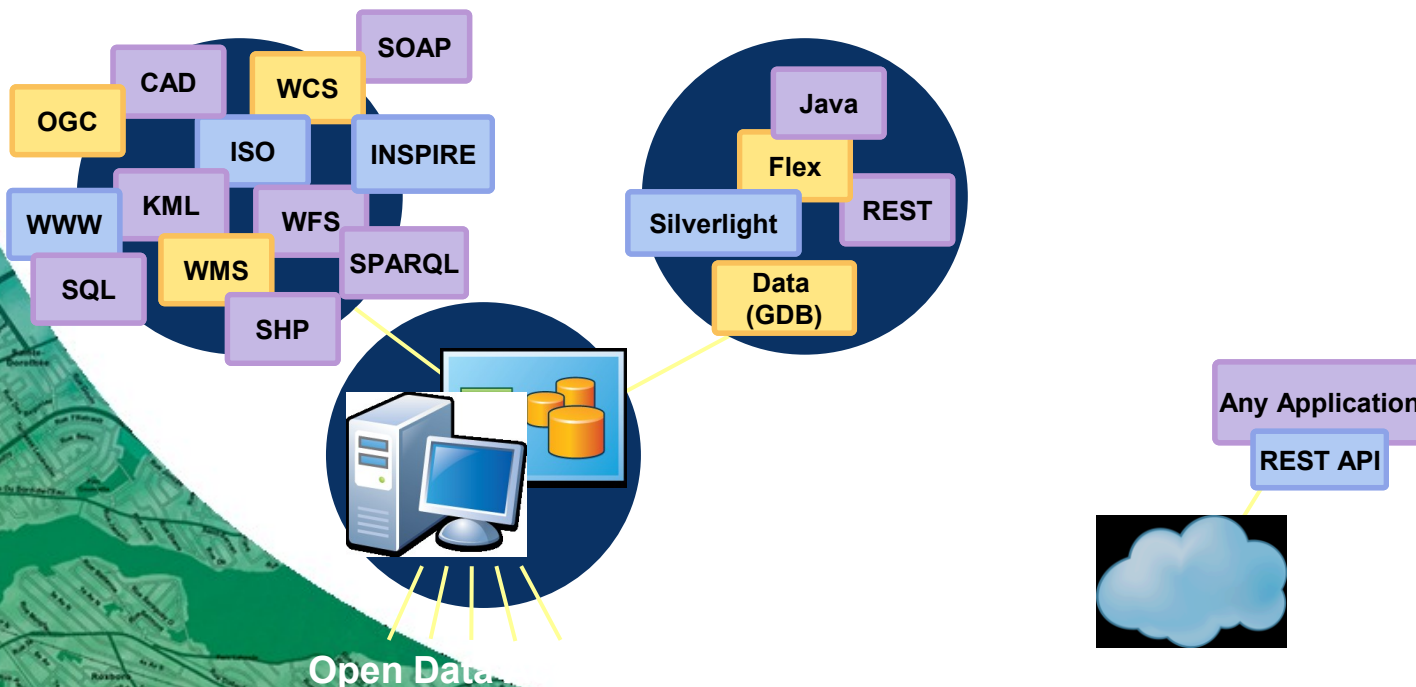
Real Time Multi Sensor Integration



... Using Maps as a Language to Engage Everybody

Open And Interoperable Standards Are Important

Expanding Access and Ensuring Integration



Creating a Vibrant Open Data Community

Open Policies And File Sharing Are Not Enough . . .

Publishing Geo-Ser

Data Integration

Semantic Integrati

Sharing and Disco

Software

Free and Simp

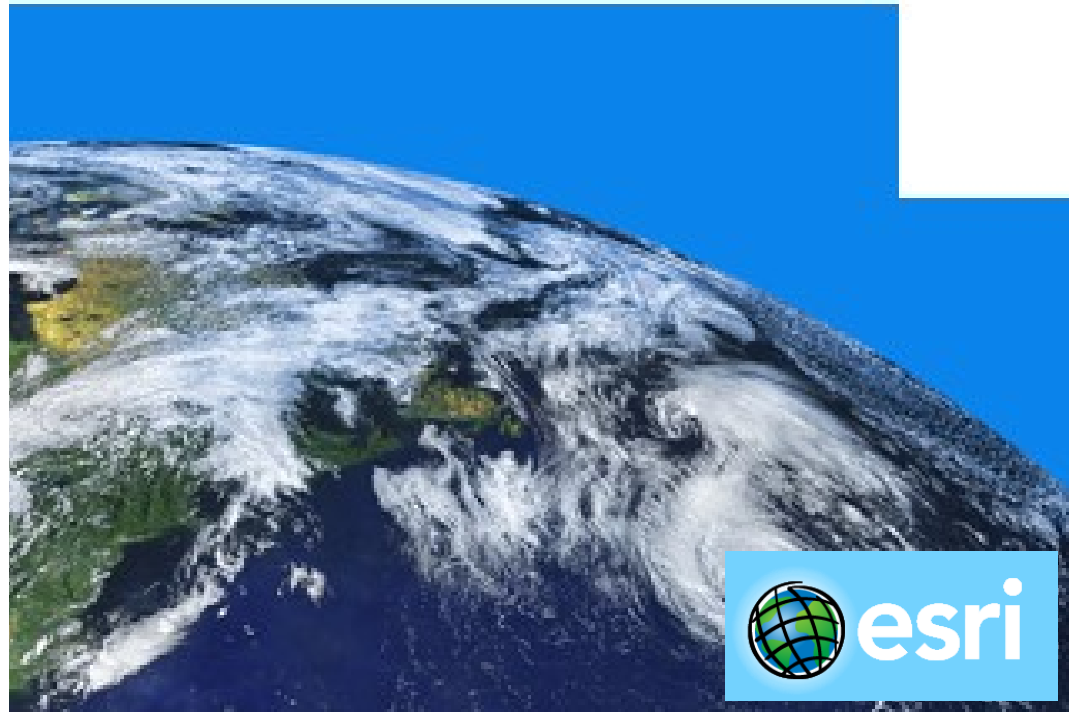
Open Tools For Developers

Full GIS Tools





Demonstrations



Take Away Points

What have you seen?

-

-

-

