

The Geo-Web: Enabling GIS on the Internet

IT4GIS

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In the Beginning

- GIS was independent
- The GIS analyst or manager was typically a one-person shop
- He/she created the data, analyzed the data, and printed the maps

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Along Came the Internet

- The proliferation of networks and the Internet caused a chain-reaction
 - GIS data became *easier* to share
 - Increasingly *larger* datasets were shared
 - GIS data was stored (self-service) on the network



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Old Habits are Hard to Break

- Centralized GIS on the network
 - Clearinghouses
 - One-stop-shops
- Someone was in charge



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But the One-Stop-Shop Broke

- What now?
- Re-invent the one-stop-shop
 - There are now more than 100,000 GIS clearinghouses
 - Each state, large agency, and large company
 - Why so many one-stop-shops?
 - “Data incompatibilities”
 - “Data standards”
 - (Control issues)

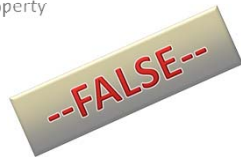


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Control Issues and Fallacies

- Protect trade secrets
- Ensure data security
- Retain intellectual property

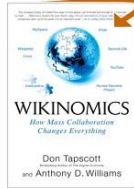


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Prove It!

- IBM
- Boeing
- What do these two examples have in common?
 - Mass-collaboration
 - Open structure
 - De-centralized organization(for more, read “Wikinomics”)

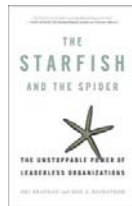


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The Web 2.0

- The Next Generation
 - All about mass-collaboration
 - Mash-ups
 - Synergy
 - Distributed, de-centralized systems(for more, read “The Starfish and the Spider”)



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Collaboration is New?

- *Traditional* collaborations were:
 - A selected team of colleagues
 - Hierarchical in structure
 - Breadth of knowledge relatively narrow
- *Mass-collaboration* is:
 - An open set of contributors
 - De-centralized in structure
 - Breadth of knowledge will be broad

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Web 3.0

- Semantic web
 - coined by Tim Berners-Lee, the man who invented the (first 1.0) World Wide Web.
 - Machine-readable Web pages
 - Where search engines and software agents can better troll the Net and find what you are looking for.
 - Turns the Web into one big database

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A Grand Experiment

- Can Web 2.0 and 3.0 concepts be applied to GIS and spatial analysis... spatial problems?
- Can the GeoWeb be built and leveraged to provide real-time decision support?
- What is the role of GIS in the semantic web?
- Esri's Insights for ArcGIS <http://www.esri.com/products/arcgis-capabilities/insights>

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The Role of GIS

- Collect spatial data
- Prepare maps and models
- Perform spatial analyses to discover trends, spatial patterns, and relationships

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The Role of GIS (cont'd)

- Use ArcGIS for Server and web services to make all these geo-spatial data available to everyone
- Help build the Geo-Web

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Fulfilling our Role

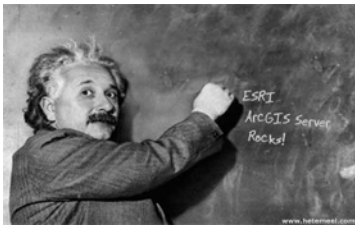
- ArcGIS Server and web services



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ArcGIS for Server



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ArcGIS Server: Architecture



- Requirements:
 - Network connectivity
 - 64-bit Windows Server OS
 - ArcGIS Desktop software
 - ArcGIS for Server software

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ArcGIS Server Requires...

- Server hardware
 - Sufficient hard drive space
 - Consider number of expected hits when selecting CPU and cache

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ArcGIS Server is...

- Scalable
- Flexible (variety of SDK's [e.g., Java, Flex and HTML5])
- Easy for clients to use (*easier* than ArcGIS Desktop)

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ArcGIS Server can deliver...

- Image services
- Geodata services
- Map services
 - (ArcMap documents)
- Geocoding services
- Indexing and Search services
- WMS Services
- KML Services

Name	Type
Utilities	ArcGIS Server Folder
Search_indexer	Geoprocessing Service
NAIP2011_EastIdaho	Image Service
Mercury	Map Service
NAIP2011	Map Service
Search	Search Service

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Using a Mash-up of Services...

- ArcGIS Server can deliver web map applications



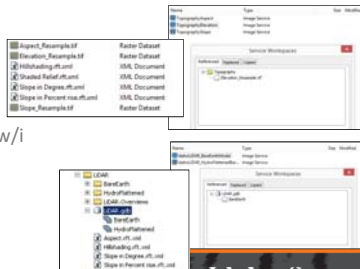
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Image Services

Best Practices

- Serve either a:
 - Single image file (e.g., GeoTIFF), or
 - Raster mosaic dataset w/i FGDB



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Raster Mosaic Datasets

- The best solution to serve raster data
 - Recall, ArcSDE is **not** a good solution
- Performance
 - Response
 - Cache size (no longer used)
 - Overview size
 - Developing a map service from these data

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Map Services

- Effectively, Map Services are a type of web service to display an ArcMap document (*.MXD)
- Advantages
 - Can include numerous layers
 - Raster and Vector
 - Retain symbology, scale thresholds, and other settings
 - (note: images with **ColorMaps**, served as image services, will retain symbology also)

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Process of creating an ArcGIS Web Application



1 Author a map
– Using ArcMap



2 Create your project's ArcGIS Server Map Service



3 Create a Web application

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In IT4GIS...

- Our exercise will give you experience with:
 - Image services
 - Map services
 - Web map applications

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Web 2.0 and 3.0 Revisited

- It should be clear how the GeoWeb fits and supports the concept of Web 2.0
- How might it support the semantic web? (Web 3.0)
 - Two minute write!

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Key Concepts

- GIS is everywhere
- The Internet is a great way to deliver GIS
- Today –and in the future- web enabled GIS will be increasingly important
- Students need to know the fundamentals of serving GIS data and maps on the web and the practical application of this technology

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Questions...Assignment



Demo...connecting to our servers

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