National Geospatial Advisory Committee

The National Map Subcommittee Status Report

June 22, 2010

TNM Subcommittee

- Subcommittee Members:
  - Allen Carroll (Chair), Sophia Beym, David Cowen, Dennis Goreham, Jay Parrish, Jack Dangermond, Randy Johnson, Steve Wallach

- Purpose:
  - Provide input on scoping and approach for development of a National Basemap / National GIS, and the role that The National Map could play in such an effort. Provide feedback and comments on the development and implementation of the new strategic plan for The National Map.

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- **Activity 1** Develop options and recommendations on approaches for the development of a national base map, addressing the following questions:
- **What are the primary datasets that should be included in a National Base map?** Subcommittee will send recommendations to NGAC. Possible recommendations may include:
  - The National map should be the primary administrator and integrator of foundational data layers as a key component of the geospatial platform.
  - The foundational data layers should align with the FGDC framework; data should include geodetic control, elevation, orthoimagery, hydrography, administrative units (boundaries), Transportation, cadastral (parcels), and geographic names
  - TNM's goals for base map data layers should be to maximize the authority and consistency of the data, and to seek data from a variety of sources (national, state, local, private-sector) and ultimately across all appropriate scales and resolutions
  - Governance structure should ensure that all foundational data layers are actively supplied and maintained by USGS and other providers (e.g., DOT, Census Bureau)

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- **What services should be provided through a National Base map?** Possible recommendations may include:
  - TNM should be a (not necessarily *the*) provider of “base map” services, including a topographic map and an orthophoto map, atop which additional data layers can be displayed
  - TNM services should be fast, reliable, and reusable; that is, available across an array of applications.
  - TNM foundational data should be available for other stakeholders to utilize for map services; TNM should not duplicate efforts of others if other services compete with or are superior to TNM’s
  - An array of additional services can be provided by USGS or other geospatial platform users based on need and demand, e.g., a variety of cartographic renderings, thematic basemaps like geology, hillshade and elevation services
  - policies as conditions change.

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- **What are the issues and options for licensing private data?**
  Possible recommendations may include:

  - Recommend that TNM should actively seek to license private-sector data in appropriate categories (particularly imagery and transportation) based on the following principles:

    1) “Basic” data (i.e., reasonably current and meeting fundamental requirements) should be fully and freely available to the public; and

    2) Government agencies shouldn’t duplicate private-sector efforts if private data can be made publicly accessible at reasonable program cost to TNM*

  - The rapidly-evolving business and technology landscape requires that TNM be flexible and willing to refine licensing policies as conditions change.

    *Utilize & refine NRC report on private-sector data

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- **What is the relationship between a National Base map and the Geospatial Platform?** Possible recommendations may include:

  - That TNM be an integral component of the Geospatial Platform by providing essential base map data, data integration, and a general base map service and other map services to the Platform and its users.

TNM Subcommittee: Definitions

- **Activity 2** Define key terms, including “base map,” “foundational data layers,” etc.

Black type	Primary definitions
Gray type	Secondary definitions and information
Red type	Commentary

Thank you Dave Cowen!

Definitions

- Base Map
  - **An integrated set of foundational data layers** that comprise a spatial and cartographic framework for multiple uses, including overlaying and displaying operational data layers
  - One or more styled and pre-packaged **digital map services** that combine representations of some or all foundational data layers into a product that provides a background image and geographic context for operational or thematic geospatial data layers.
  - The essential layers: Governmental units, hydrography and transportation.
  - GAO glossary: A map that shows the horizontal position of features on which additional information may be placed.

There's the data and there's the representation of the data; "base map" embraces both—which can cause confusion

Definitions

- Foundational Data Layers
  - The **fundamental geospatial data categories**, including elevation, imagery, transportation, hydrography, and boundaries, that provide an authoritative geographic reference and context upon which operational or thematic data created by the federal government and other stakeholders can be overlaid or displayed.
  - NRC: The fundamental data set of geographic data that is normally produced in the preparation of national series general purpose graphic and digital cartographic products. These data represent the physical and cultural features of part or the whole of the Earth's surface. Used individually or collectively the data can provide the framework upon which other themes of geographic data can be referenced.

Definitions

- Foundational Data Layers (2)
  - A-16 glossary: Framework data: Seven themes of geospatial data that are used by most GIS applications (geodetic control, orthoimagery, elevation and bathymetry, transportation, hydrography, cadastral and governmental units). These data include an encoding of the geographic extent of the features and a minimal number of attributes needed to identify and describe the features.

    Key issue: differences between TNM base layers list and the A-16 framework data themes (see slide 15)

Definitions

- Operational data layer = thematic layer
  - Geospatial data or **“map layers” created and maintained for a variety of purposes** including inventory, management, and decision support. A thematic layer would not be a base map layer.

Definitions

- Map services
  - **A standard protocol for serving map images** via the Internet.
    - A Web Map Service (WMS) produces maps of georeferenced data.
    - A "map" as a visual representation of geodata; a map is not the data itself.
    - WMS is the production of spatially referenced data dynamically from geographic information. The map itself is an actual portrayal of geographic information presented as a digital image file for display on a computer.
    - WMS maps are in picture formats such as PNG, GIF or JPEG . http://eusoils.jrc.ec.europa.eu/wms/wms.htm

      Map services are one of an array of Internet services that more or less directly support geospatial…

Definitions

- Web services
  - Web services are typically application programming interfaces (API) or web APIs that are accessed via Hypertext Transfer Protocol and executed on a remote system hosting the requested services. Web services tend to fall into one of two camps: Big Web Services[1] and RESTful Web Services.
- Feature service
  - The Open Geospatial Consortium's (OGC) Web Feature Service (WFS) is a standard protocol for serving geographic features across the Web. The GIS feature information that is encoded and transported using WFS includes both feature geometry and feature attribute values.
- Geodata service (ESRI)
  - A geodata service allows you to access a geodatabase through a local area network (LAN) or the Internet using ArcGIS Server. The service exposes the ability to perform geodatabase replication operations, make copies using data extraction and execute queries in the geodatabase. A geodata service may be added for any type of geodatabase including ArcSDE geodatabases, personal geodatabases and file geodatabases.

Definitions

- NSDI Framework
  - FGDC: An initiative to develop a readily available set of basic geographic data. It includes the information, operational environment, and technology to provide access to these data, and the institutional setting to sustain its development.
  - Framework data: cadastral, orthoimagery, elevation (bathymetric and terrestrial), geodetic control, governmental units, hydrography, transportation
  - GAO: The framework of data themes are a collaborative effort in which commonly used data “layers” are developed, maintained, and integrated by public and private organizations within a geographic area.
  - A-16 glossary: An initiative to develop a readily available set of basic geographic data. It includes the information, operational environment, and technology to provide access to these data, and the institutional setting to sustain its development.

Definitions

- The National Map
  - GAO: **Purpose**: To provide trusted, integrated, seamless, and continually maintained geospatial base data and archives, along with related models and applications.
  - USGS website: *The National Map* is easily accessible for display on the Web, as products and services, and as downloadable data. The geographic information available from *The National Map* includes orthoimagery (aerial photographs), elevation, geographic names, hydrography, boundaries, transportation, structures, and land cover.
  - NRC: *The National Map* [is] a suite of data at multiple scales, with variable spatial extent, contributed by *National Map* partners. The USGS would evaluate and integrate (e.g., reclassify, merge, and mosaic) the data to be consistent with adjacent datasets, and serve as the guarantor of completeness, accuracy and consistency.

    Key conundrum/challenge: TNM is the data, and TNM is a series of map products

Second conundrum: The differences between the FGDC framework and the NTM data categories

FGDC Framework		TNM Data Layers
• Geodetic control	→	• (NGS)
• Elevation		• Elevation
• Cadastral	→	• ?
• Orthoimagery		• Orthoimagery
• Hydrography		• Hydrography
• Administrative units		• Boundaries
• Transportation		• Transportation
	←	• Structures
?	←	• Land cover
	←	• Geographic names

Definitions

- Topographic Map
  - A detailed and accurate graphic representation of natural and cultural features on the ground.
  - …portrays all basic information about location, elevation and extent of physical and cultural features that are required for preliminary economic and engineering studies, and for incorporation in a base for maps prepared for special purposes. *—Dictionary of Mapping, Charting, and Geodetic Terms*
  - Map showing the topographic features of a land surface generally by means of contour lines."

    —American Geological Institute (Dictionary of Geological Terms)

Carto-purists think a topo map has to have contour lines; others might view a topo map as a USGS "brand"