

- **USGS Topographic Maps and Data -
A Personal Journey and
Look Ahead**

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- **Outline**
 1. A Personal History
 2. Transition from paper to digits
 3. What are you doing now ?
 4. What are your plans?
 5. What have “experts” recommended ?
 6. What should you be doing (What do your users want)?
 7. How should you be evaluated?
 8. The institutional setting
 9. Hey – What about parcels?

- Part 1 – Personal History
- GIS – Circa 1968
Ohio State University –
dissertation
- 1968 Dissertation

Provides independent advice to society and to government at all levels on scientific, technical, and policy matters relating to spatial data.

It also addresses aspects of geographic information science that deal with the acquisition, integration, storage, and distribution of spatial data.

The committee promotes the informed and responsible development and use of spatial data for the benefit of society.

We appreciate being included today.

- Mapping Science Committee – 1989 – 2009
- The Changing GeoSpatial Landscape

Dr. David J. Cowen,

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Representing NGAC –
National Geospatial Advisory Committee

- Recent Shock Waves
- **Shock waves**
 - Personal Navigation Systems < \$100
 - Navteq - Street Centerlines valued @ \$8.1 Billion
 - Google Earth - the 4th innovation in computing

- GIS users grow from 1,000,000 to 100,000,000 +
- Now on iPhone
- Zillow.com - More than 80,000,000 properties
- Open Street Map – Volunteered Geographic Information
- Location Based Social Networks via cell phones
 - Loopt etc. *Click ACCEPT to consent to: (a) the use, display, & disclosure of your phone's location to provide Loopt to you & your Loopt friends, geo-tag your messages & content,*

• Big Changes in GIS

- Computing environment
- Software
- Data sources
- Data capture
- Data Models
- Data Storage
- User interfaces and access –
- GI Data collection and Distribution –

- Users
 - Institutional Setting
 - Products
 - Relationship to IT
-
- USGS Twitter – Real Time !!
 - Parcels on Iphone – Says it all
 - 1963 - Paper Topographic Quads
 - The key to understanding geography !
 - Grand Canyon
 - Study area always spanned four quads
 - Long Beach – Photo Revisions of Urban Features
 - 1978 Coastal Zone Management Plan
GIRAS – 1:250,000
 - GIS World Claims Success

- 1:100,000 DLG Coast
- Foundation for State Wide GIS
- Interstates, Railroads & Highways
- Foundation for Building Spatial Data
- Sewer & Water Lines
- State Wide Sites & Buildings
- Sewer Lines and Major Employers
- Still Basis of GIS Site Selection
- 1988 Raster / Vector integration
1:100,000 DLG – ESRI / ERDAS
Live Link
- 1992 Environmental Data Atlas
DOE - Savannah River site
- Objectives - Data integration, standardization, elimination of duplication

- Mandated from DOE
 - Data rich environment
 - Multiple scales - facilities to 1:24,000
-
- USGS 1:24K DLG Base
 - Cross Platform
 - Mid 1990's State Wide SPOT & Topo
 - Access to SPOT
 - Access to Quads
 - LiDAR
 - Rooms
 - Aircraft - Four Inch Pixels -
 - 2. From Maps to Digital Products
 - Raster Images
 - Digital Line Graphs

- Fostered a robust commercial market
- Changed the way we take quads into the field
- Google Map – Pedometer
Topo is just one of six views
- Pedometer
- Two Views of Mt. Lemon
- DLG – Extract features from map products
- Digital Line Graphs – Vecors
 - Triumphs
- 3. What are you doing now?
- Topo Maps to The National Map
- Self Promotion
- Good NHD – Widely used by scientific community
- NHD Data Model

- Too many Viewers !!
 - Doesn't Cut it – Delays & User Interfaces
 - 4. What are your plans?
 - Orthophoto Quads
 - Beta Orthophoto Quad vs Google Map
- Which would you use?

- New National Map Viewer
- National Map layers
- New Viewer – Good performance
- National Map as a Platform / Service
- Link to Google Earth
- 5. What others have recommended?

- NRC 2001 – From Transition to Transformation
- NRC 2002 – Integration of Spatial Data
- NRC 2003 Review of the National Map
- 2003 House Government Reform Subcommittee on Technology, Information Policy, Intergovernmental Relations and Census

- NRC 2007
- 6. What should you be doing?
(What do your users want?)
- So What are you saying ?
- Your Own Words

- The digital age has fundamentally changed mapping as we understood it 30 years ago.
- Spatial analysis has moved from a tabletop exercise to fully automated geospatial analysis and scientific modeling.
- Maps are created today to convey the results of analyses that are performed routinely by consumers of geospatial services.
- The role of the USGS as the Nation's primary map producer has shifted toward geospatial services.
- Your own words
- The demand for geographic information system (GIS) products and services is higher than ever, and the demand for traditional paper products has rapidly declined.
- In the emerging Web 2.0 world, the service provision model is shifting. The USGS, while having a long-recognized

leadership role in mapping, is taking this opportunity to define its role as a premier geospatial data and application service provider.

- The shift from maps to geospatial services challenges the notion that a general-purpose base map should be the end result of the service offerings.
- Maps are a bad source of data
Boundaries don't align
- Maps are a bad source of data
Water doesn't follow contours
- Maps are a bad source of data
Not current, Labels,
Misalignment
- Survey - customer requirements
- Nationally consistent geospatial data
- Quality-assured and integrated geospatial data

- Frequency of update
- Geospatial data delivery services
- Analytical service support through enhanced data models and other features
- Published (digital) map products

- What do users say?
Performance, User Interface, Download, Feature Services,
- Users love Google
Don't like National Map
- Users want Imagery,
Elevation, Hydro,
transportation, and parcels
- Give us data appropriate for the task
- 7. How should you be evaluated ?

- USGS 2005 – Geography for a Changing World
- Vision ... By 2015
- .. *a host of consumer items will have integrated spatial data into their operations by taking advantage of wireless communications technology, mobile and portable computing devices, global positioning systems (GPS)*
- *The National Map will become the preferred gateway for popular access into geographical data for everyday tasks.*
- *The National Map's goal of 7-day update will be achieved, meaning that data are timely and accurate.*

- Vision Continued
- *This will be possible because automated software agents will have “data” data sources, seeking*

out changes on the Earth surface and extracting new map information with only minimal human intervention.

- *This timeliness will lead to myriads of new applications in real estate, emergency management, policing, environmental management, and commerce*
- **Performance Measures:**
- **Establish a single Web point-of-access to the data in *The National Map* and other Federal environmental data (*within 1 year*).**
- **Develop an ongoing user needs assessment methodology for *The National Map* (*within 1 year*).**
- **Performance Measures:**

- An operational data-management protocol is established to manage and access information from continental- and global-scale databases, using geographic data mining techniques (*within 2 years*).
- Create tools for error detection and elimination, and for automated updates of core base data sets (*within 2 years*).
- Multiple resolution data integration methodology is developed (*within 3 years*).
- **More Performance Measures**
- Appropriate representation and symbolization are developed for multiple-scale display of data that are a part of *The National Map* and other USGS products (*within 4 years*).

- Complete ontology of features, attributes, and relations for all layers in *The National Map* at all possible resolutions (*within 5 years*).
- More Performance Measures
- Develop appropriate representation and symbolization methods for multiple-scale display of data that are a part of *The National Map* and other USGS products (*within 5 years*).
- Develop methods to automatically generate maps at any scale from *The National Map* (*within 7 years*).
- 8. The institutional setting
- FGDC Mission or Lip service ?
- OMB Circular A- 16

- A-16 Same as User Survey
Orthoimagery / Earth Cover
Elevation & Hydrology
- FGDC Organization
- 1994 – Executive order 12906
- Why Don't Deadlines Matter ?
- 9. What about parcels?
- FGDC – 2009 Annual Report
- Connecting the Components
- N.C. / S.C. Parcels :NC One Map &
USGS National Map it is possible!!!
- Better Marketing?
- Summary
- Be proud of the past
accomplishments
- Thanks for giving me a career
- Remember
 - Data are like milk
 - Stick to your mission

- Act like Google
- Pay attention to performance measures
- Users vote with a click of a mouse