

**Strategy for Framing a National Preservation and  
Access Strategy for Geospatial Data  
Meeting Minutes  
Library of Congress  
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*Note: All presentations and other meeting documents can be found at:*

*[http://www.digitalpreservation.gov/news/events/other\\_meetings/geosummit09/index.html](http://www.digitalpreservation.gov/news/events/other_meetings/geosummit09/index.html)*

## **Day 1**

### **Opening Remarks**

Martha Anderson introduced and welcomed participants to the two-day meeting. She provided background on the Library's content efforts over the next year, which include a series of three focused meetings. Meetings on public policy and news (broadcast and digital news) were held earlier in the fall. This meeting is considering geospatial data.

Bill Lefurgy provided background information about NDIIPP. In early 2000, the Library began the process of working with partners in different communities (academia, federal, commercial sector) to preserve and make available "at-risk" cultural and scientific digital information. The partners have worked in areas of developing best practices for content preservation and the tools, services and infrastructure to support the long-term preservation of digital materials.

The challenges associated with preservation and access are too large for one institution to handle on its own. The Library has adopted the practice of working collaboratively with a network of partners, and it views itself as a catalyst to bring different groups together to work on solutions that can cut across domains. Now, the Library is positioned to work with communities of practice on the challenge of preserving specific types of digital content.

The geospatial data summit is a starting point for discussions. The objectives of this meeting are to:

1. Share perspectives from different organizations and uses/needs of geospatial information;
2. Discuss what are some useful next steps and what the Library can do in the near-term. One immediate next step is to make presentations and documents from this meeting available online to all participants.

### **Interest in Temporal Digital Geospatial Data: A Panel of Perspectives**

Ann Hale Miglarese, National Geospatial Advisory Committee

NGAC provides advice to federal government on a variety of issues and is made up of individuals from all sectors.

- Federal government is building a national geospatial infrastructure to help support decision making. Many professionals have not spent time thinking about archiving data for the long-term.

- NGAC has interesting challenges. Commercial and private data is becoming more prevalent. We need to start thinking about what needs to be preserved and made accessible.

Tim Trainor, Census Bureau [ppt presentation available]

- Census conducts about 100 surveys, which are tied to geospatial data.
- Views all related data (e.g. address) as spatial.
- Difference between real and virtual maps. Virtual map preservation question: Can you replicate data in the future? Saving data through time is a major concern (e.g. saving paper tape versus magnetic tape versus CDROMs).

Milo Robinson, Federal Geographic Data Committee [ppt presentation available]

- 50 States Initiative could help promote business plans for data preservation.
- FGDC Born Digital historical perspective
- Executive orders

Jack Owens, Idaho State University [ppt presentation available]

Concerned with geographically integrated history

- To understand historical process, we need to understand place, space and time
- We have technology to use it now (e.g. visualizations)
- NSF project – DynCoopNet: European Science Foundation [see slide re: publication]
- New NSF project – understanding social networks within complex, nonlinear systems
  - Geographically-integrated history and dynamics GIS

Text minding component of the project

- Graduate Program at Idaho State University

Ethics of collaboration – historians are not socialized to collaborate.

- Need research infrastructure for shared data

Future uses of current data sources

- Save “practically” everything to be able to deal with various problems going forward

Jan Johanssen and Paul Schirle, Library of Congress [ppt presentation available]

CRS background and mission

Accuracy is important in dealing with public policy legislation. Works closely with Census and other partners across federal government. Creates new data for the legislative process. Needs granular data but privacy issues are prevalent.

Three cases:

1. Creating geospatial data from legislation
  - a. Need to maintain new data.
  - b. Legislative systems do not have geospatial data.
  - c. CRS is working on attaching geospatial data back to legislation so it lives together.
2. Population-dependent data making

- a. Privacy issue is preventing us from understanding different approaches to carbon
- 3. California water management
  - a. Considerations re: source gathering for analysis
  - b. Question is how to create database (data, geographic representation, connecting to source data)

Q&A / Discussion: Implications for digital preservation of geospatial data

Q: For CRS presentation, is there a general protocol and/or responsibilities for trusted relationships?

A: Jan – Ad hoc relations

A: Paul – there is nothing in place to look back at data from 5 years ago to understand how the decision was made.

A: Jan – there is cooperation among many federal agencies.

A: Some entities are easy and cooperative to work with, while other entities are not so open.

*Comment:* Liked the way Jack framed the cooperation among discussion. Similar to how NDIIPP is accelerating the organic communities of practices. Would like to understand the ecosystem among stewardship organizations.

Q: How far off are we on developing best practices for GIS data....

A: Alec – GeoMAPP project is investigating and developing best practices

Federation of Earth Science Information Partners – this group is looking at relationships and stewardship of data.

Q: In libraries, we have been discussing this issue for 3 years. CRS, do you have protocol for making sure the data can't be altered?

A: Jan – CRS isn't a repository even though we're creating mass amounts of data for others to curate

Q: There are tough data management and storage issues. Do you store and archive everything? Or just the baseline changes? Another issue is dealing with a variety of partners and who owns data that might be analyzed differently.

A: Tim Trainer – it wasn't so long ago that data was written to specific devices. It isn't necessarily a data volume issue.

A: We organized a workshop for NGA. If you aren't going to save all the pixels, how do you show the change or tracking the change, which later on might be different question to answer.

**What Geospatial Content is Created/Collected**

Bill Burgess, National States Geographic Information Council [ppt presentation available]

Commented that the geospatial community is fragmented

Types of content

- Framework for base map data: data layers
- Mission/agency specific data: demographic, zoning, energy resources, criminal activity, endangered species
- Most Complex data: LIDAR data (raw point data, intensity, contour lines, metadata)
- Simple Data type: mailbox locations, facility locations
- GIS Inventory Systems

Jerry Johnston, Environmental Protection Agency

EPA is consumer of geospatial data and dealing with same issues as everyone else (how to save, archive, laws and regulations)

Types of information

- Mission data for regulatory purposes: trusted partner network with state partners (exchange network); Resource Conservation and Recovery Act data; Water and air sampling data. The data uses are being re-used by other programs inside EPA as “secondary uses.”
- Collaborative data sets with participating agencies
- Research data

Petra Noble, Minnesota Population Center [ppt presentation available]

Population Centers are housed in universities and MN has data infrastructure projects from historical census data.

National Historical Geographic Information System

- Project that recovered census data from 1789-2000 and created GIS

Other NHGIS projects

Future projects

- Integrate geographies (researchers can look at percent changes over time)
- Other data integration (health and environmental)
- International boundary files

Bob Downs, Center for International Earth Science Information Network [ppt presentation available]

Research center has been around for 20 years

Current research project

Archival solution investigated

Digital repository collections

Q&A / Discussion

Q: What are the selection criteria for archiving data sets: done on data set by data set?

A: Bob - Yes, in long-term archive, we are starting very slow. We are concerned about long term preservation. Only 10 data sets have been approved and it took a few years to establish criteria. Data sets are coming in 2 to 3 at a time and we have to make a case as to why we'd spend money, why it is worthy. It is a challenge.

Q: What is fixity information?

A: Bob – traditional maps are on paper. They are fixed. With digital info, we don't have the same capabilities. We need a way to say this is the map. We can show that a particular map has particular bits and bytes. We create a digital signature (w/ standards, MD5 and SHA-1). Signatures developed from parsing the bits and string of characters.

Q: Do annotations exist prior to 2000?

A: Petra – Yes.

Q: For EPA mission-driven purposes and research what types of data are kept?

A: Jerry – For giving research grants, we can't be highly prescriptive to use it for mission purposes. We've improved greatly as to what data comes back, including metadata. The secondary use of mission data deals with regulations for the primary use of the data sets. It would be hard to change or to add on more data elements.

### What Geospatial Data Merits Preservation: Small Group Discussion

John Warren asked participants to think about a national view and what type of content should be maintained or preserved for enduring use. Each group discussed the issue and presented their findings.

#### Group 1

Prioritized types of geospatial content into:

1. "Global state of the world" geospatial data
2. Socio-economic geospatial data
3. Public investment data (federal, classified, restricted)
4. Individuals data sets
5. Network used data

#### Group 2

Prioritized layers of geospatial data

1. Imagery
2. Boundaries

Other points arose that geospatial data is important to public policy and digital news preservation. Use cases in these areas may be useful to help identify the important data type sets.

#### Group 3

The group discussed what should be saved, in no particular:

1. Base maps
2. Application specific data sets (infrastructure, broadband) for use cases
3. Policy issues related to types of data (for example, imagery data created by private sector). How do we preserve data, privacy and maintain high granularity?
4. Urban mapping

#### Group 4

The group discussed that there is already a system that established the layers. How the framework applies to state, local, national and international level is interesting.

1. Base data sets
2. Social networking (Flickr data, images, Twitter)
3. Neo-geo content
4. Older versions of software/hardware
5. Mission statements for population centers
6. Temporal state of web services

#### Group 5

There is value judgment for people to decide to put the metadata into and what is important.

1. Neighborhood demographics
2. Raw data sets

#### Group 6

Primary focus was on services and standards and approaches.

1. Mission critical data particularly for federal agencies (Framework data and A16)
2. Documentation of data decisions for changing
3. Creation of long-term data sets
4. Commercial data sets

### **Day 2**

Bill LeFurgy thanked participants for yesterday's informative discussions and said that the Library was pleased with the comments, ideas, and advice that came out of the session. He expressed hope for another good day of interaction and information exchange.

#### **Models for Shared Responsibility: Some Current Examples**

John Bates, National Climatic Data Center, NOAA [ppt presentation available]

- Represents broader data center and provided an overview of NOAA's mission. Geospatial data is used extensively in all four of NOAA's primary goals.
- Costs for storage are constant; stewardship is where spending occurs.
- Developed policy for records appraisal for archiving. The first step is identification of records to be preserved
- Preservation – scientific data stewardship is based on the OAIS model
- Generic access to heterogeneous data – a data grid approach. May be a way of sharing across broad resource sharing groups.
- Interest in developing community building tools

John Hebert, Library of Congress, Geography and Map Division [ppt presentation available]

Acquired 1507 map (\$10M). First map to show two separate oceans and "America."

Provided an overview of G&M division and collections

Began scanning analog maps but not geo-referencing. Scanning is based on patron and project demand.

Formats of geospatial data – in paper and digital formats. Traditionally the Library has acquired the whole map but there is a need to collect layers of data.

LC Model:

- Collects as broadly as possible to meet congressional needs (historical and contemporary data).
- Involved in Ocean Survey project
- Acquires tangible digital data

Data needs and assurances

- Federal geospatial data of all types
- Assurance that the creating body has archived the data

Lawrence Brewer, National Archives and Records Administration [ppt presentation available]

Reviews federal records disposition schedules, conducts records appraisal, including selection of records with archival value. Works with federal scientific and geospatial records. Also:

- Provides guidance and direction provided for preserving records
- Issuing guidance for records management and retention periods
- Promote access to records

Examples of geospatial data received and appraised as permanent: Data relating to Vietnam War; decennial census; Fish and Wildlife Service

NARA Guidance includes:

- Code of Federal Regulations for records management
- Guidance for agencies in association with proprietary formats

Community building activities

- Work with historical collections community
- Outreach to data managers to build awareness and build best practices
- Affiliated archives relationships: MOUs with EROS and NCDC for long-term agency preservation and access

NARA is moving more toward more affiliated archives relationships; NARA knows that some records are best preserved by the creating agency.

Another example of relationship building is the science-records working group; works with agencies to define best practices for preservation.

Steve Morris, Zsolt Nagy, and Alec Bethune, GeoMAPP [ppt presentation available]

Geospatial Multistate Archive and Preservation Project overview

Key outcomes:

Shared responsibility and shared vision. Establish that geospatial data are public records

Model of engagement [see slide]

GeoMAPP – a lesson in collaboration

- Working together to address the archival challenge, relationship building, collaborative working groups (inventory, data transfer).
- Major activity is moving data between partners and documenting transfer process

- Adding new state partners

Julie Sweetkind-Singer, National Geospatial Digital Archive [ppt presentation available]

Overview of NGDA goals

Content collection

- Scanned maps and Stanford geological surveys back to 1893
- Geospatial data

Collecting with a purpose

- Developed collection development policies to support the research needs of the university; created 3 digital collection policies for geospatial data.

Stewardship

- Accessioning content
- Stanford Digital Library ingest
- UC Santa Barbara ingest

Shared responsibilities

- Non-technical – content collection, access to licenses content through contracts, commitment to collaborate
- Technical – creation of format definitions and combining registry efforts, testing of print access mechanisms

How to mitigate threat? Need to educate about life cycle management.

### **Q&A / Discussion**

Comment – Problem is that there is no enforcement in regulation of policy. If there was an effective way to enforce, agencies could build processes into archiving data.

Q1: To LC, where do you see the digital national map? How much digital data are you getting?

A: John - In paper mapping, no problem for LC acquisition. Digital maps are more of a issue because we have less experience in this area. Library gets much digital content from DOD. Not sure about the shape of the national map.

Q2: To NARA, what percentage of federal agencies are using SDTS [Spatial Data Transfer Standard] now?

A: Lawrence – SDTS formats only being used by one agency. NARA will not turn away any data. ERA is still a research project. IT is developed incrementally through 2012. The preservation framework will be worked on in the next year. Currently NARA can preserve the bits and bytes.

Comment – Andrew Turner: GeoPDF is a NISO standard for embedding. There are some issues with getting the data “back out.”

Q: For Julie: How do your stakeholders feel about continuity and migration of formats?

A: Julie – there is a strong understanding on technical and collection side that continuity is needed. Our libraries are effective at handling data but just learning to deal with digital map data. We haven’t accessioned enough data to think through migration of formats.

A: Zsolt – we are working hard on the outreach effort so the data manager understands the lifecycle process and how important metadata and migration are for the data.

*Comment:* Have had a personal history with statements of work and realize the importance of the right guidance in contracts so the resulting data is in optimal condition for preservation. Is there a model for this? If not, this might be very useful for the federal government to look into.

*Comment:* NOAA has a data manager handbook that can be made available to everyone.

*Comment:* At the state government level, we are also looking at the same best practices question.

*Comment:* See [toolkit.archives.gov](http://toolkit.archives.gov). There are many documents that help with scientific records management. NARA doesn't see its role as developing these documents, more interested in identifying the gaps and work with agencies to make information available.

*Comment:* We have heard about the responsibilities of preserving institutions. We also need to talk about the relationships between the creators and preservers. What are the positive incentives for data creators? To Julie's point, short-term preservation goals can influence long-term preservation strategies.

*Comment:* The FDLP [Federal Depository Library Program] program is not pushing data out like it used to push maps out. We cannot assume that universities and state libraries are now collecting data the way they used to collect paper maps.

*Comment:* For the custodian role it is useful to talk about temporal data access. We are tying data management to meeting the needs of organizations and their customers. We have a huge issue with management of spatial databases. We rely on data custodians to manage these databases. We can do archival snapshots but they have short life cycles because they aren't managed. We have a lot of work in these shared areas.

*Comment:* There are some mechanisms for moving data into repositories. The problem is that creators do not make the effort to do it.

*Comment:* Related to FDLP program, there was a change in federal government acquisitions for maps and mapping data in that data is now licensed; GPO can't take licensed data. This is a bottleneck.

*Comment:* The Census Research Data Centers have an interesting model. There are 12-13 centers tied to universities that have raw data.

*Comment:* Centers are run out of Economic Census Center. They have been acquiring demographic data, too.

Q: Julie, have you considered a dark archive?

A: Julie – for special or paper collections, we are thinking about it.

A: Because the licensing is so complex, we are thinking about a dark archive for the short term.

BREAK

### **Models for Shared Responsibility: Discussion**

Bill: In discussing models, our goal is to gather ideas about current or future arrangements that might help improve geospatial data stewardship. We invited stewardship organizations to this meeting to talk about new ideas we can explore for collaborative engagement. In terms of the Library, we are especially interested in pragmatic approaches that can be tested in the near-term.

### Group F

The group devised a map of the stewardship domain and discussed the overall ecology.

Who are the creators? (Note: not all are stewards)

- Academia, federal, state, local, neo-geo

What drives geospatial preservation?

- Mission-related for government
- Business interest for commercial
- Neo-geo for personal contribution
- Academia for patrons

There is also a sense that for all of these “time is ticking,” but for each one the clock is moving at a different speed. It is important to convey that stewardship responsibilities can transfer over time.

“The How” and Gaps

- Leverage expertise from other digital communities
- Gaps between stewards and creators, knowledge, resources, intent

The outcome of our distributed map will help us articulate an efficient infrastructure development and ecology.

Q: What is shared responsibility for the commercial sector?

A: The profit motive. When it isn't profitable anymore, it should be handed off. It may be the stewardship organizations responsibility to engage

*Comment:* This isn't just for-profit organizations; there could also be political motives for holding on to data.

### Group E

Our groups worked on “molecules” of models, with the thought that “small pieces, loosely joined.”

Examples discussed:

- Data.gov - the federal government established the connectors between data producers and uses.
- Creative Commons – data available with the rights to use freely known.

Sharing is the “care” and stewardship of data.

- Flickr model – how can we get agencies to use a similar model of sharing.

### Group B

Literal interpretation of task.

Attributes for a model

- Evolving with environment
- Flexible
- Discoverability
- Communication

What does these models look like?

- Who is the preserver of last resort? Latchkey data or data pound

Licensing precludes preservation

- Create a working group about licensing and standards that could help preservation instead of preventing it.

#### Partnerships

- For scholarship

#### Missing organizations

- Private, business, local governments, data producers

Q: John – we called latchkeys orphans. Funding is difficult for smaller organizations.

A: Bates – NOAA has Climate Database Modernization Program supporting grants to modernize data.

#### Group A

We discussed that we have different ways of defining terms:

Out of this meeting, we should define the nomenclature (e.g. access, metadata)

We also need to define/discuss the cost/economics.

#### Issues to discuss

- Legal ramifications
- Move from here? How to manage “us” to make sure we keep talking to each other? We need a structure

#### Missing organizations

- International groups, NGOs, industry
- Technical groups (software engineers) to help understand bridging from one system to the other
- Google

#### Group D

Our group discussed and identified 4 key questions to consider.

Who is best able to preserve geospatial data?

- Types of organizations, knowledge, skills, resources

What are the attributes for a sustainable model?

- Identify the elements to make sure the data is sustainable, either organizational or data

What are the common characteristics of sustainable organizations across disciplines?

- There isn't difference between sustaining geospatial or other scientific data. Characteristics are same and there is potential value for looking at data across domains

What are the existing authorities that drive the responsibilities?

- Understand what is available to do

#### Recommendations

- Create formal agreements to recognize what each organizations contributions are
- Standard guidelines
- Licensing is problematic. Given the choice, avoid the proprietary approach.

#### Group C

Our group discussed anecdotes and the attributes noted were:

- Network needs to be present.

- Strategies were organic and figuring out what worked for them. There are different ecologies where rules are different.
- Business preservation model – local data.
- Value of temporal data – same as preserving data.
- Archives serve as nodes for commercial services.
- “All added value is new” data.

#### Missing organizations

- Data translation engines, commercial providers

Martha and Abby Smith Rumsey provided information about other NDIIPP-related activities.

- The Blue Ribbon Task Force on Sustainable Digital Preservation has consulted with preservation experts. Abby noted that digital preservation fails because social organizations fail. Technology issues can be address but there is more of a focus on “society’s willingness to pay for this activity.” The BRTF defined “sustainability” as “what is the value to the people who make decisions.” These people aren’t the ones who build the repositories; they are the decision-makers and funders. The BRTF also discovered the need to align incentives and remove barriers and focus more on roles and responsibilities to have the demand side expressed. For geospatial community, the use and demand is easily explainable. Our efforts represent the future interests of society. The final BRTF report will be published in January and February. There will be a symposium on April 1, 2010, with experts discussing the report.  
<http://brtf.sdsc.edu/>
- Martha noted there is a Digital Formats Sustainability resources website. Geospatial formats will be added to the site this year.  
<http://www.digitalpreservation.gov/formats/>
- Federal Agencies Digitization Guidelines Initiatives. 14 federal agencies of two working groups – still image and audio/visual - working together to develop guidelines to get a better response from the vendor community. There may be a possibility for this type of model for this community. There may be a third group – led by GPO – on authentication of digitized images.  
<http://www.digitizationguidelines.gov/>

#### **What are ideas for five next steps to address long-term access to digital geospatial content?**

Ideas discussed in small breakout groups included:

- Hold a workshop on geospatial data appraisal: what models exist for deciding what data to preserve?
- Set up a working group to explore development of a model data license that supports preservation; this would help when contracting with vendors for geospatial data services
- Aggressively pursue opportunities that come out of this meeting
- Explore an outreach program to broadly inform people about the value of geospatial data and why it should be preserved.

- Develop a glossary of terms for geospatial preservation activities
- Set up an “information clearinghouse” with current information about geospatial data preservation: programs, resources, best practices, etc.
- Find out who is creating what data and how it is managed: what are the current models for preservation? How well do they work?
- Develop guidelines for sustainable formats
- Build preservation partnerships
- Explore cloud services
- Meet with FGDC to develop guidelines
- Provide more responsibility to NARA to ensure sustainable archiving
- Convene federal data creators and determine how “at-risk” their data sets are
- Convene commercial data providers and create public-private pilot project to develop partnership
- Work with NSF to develop and enforce a data management policy
- Communicate information from this meeting widely; establish a plan for ongoing communication; set up clearinghouse for geospatial information; and share outcome/report from this meeting
- Archive data.gov (only metadata records)
- OSTP / White House – get someone interested
- Association of American Geographers (National Conference in April in DC)
- Involve the American Geophysical Association
- Develop a template for cooperative agreements between institutions (build on/extend the NGDA model agreement)

### **Closing**

Bill thanked participants for their willingness to share and to help the Library better understand issues in connection with geospatial data preservation and access. He noted that there is a need for further work in this area, and that the Library will study information from the meeting to determine some meaningful next steps. The Library is very interested in helping to support a broad-based community of practice for geospatial preservation and access, and this will be a major intent behind future efforts. He said that information gathered from the meeting will be pulled together in the form of summary minutes that will be sent to everyone. The minutes and all the meeting presentations also will be posted on [digitalpreservation.gov](http://digitalpreservation.gov), which is the NDIIPP web site.