

**Minutes
of the
National Satellite Land Remote Sensing Data Archive
Advisory Workshop
November 12-13, 1996
EROS Data Center
Sioux Falls, SD**

Participants

Joanne Irene Gabrynowicz, J.D., Chair

Dr. Prudence Adler

Dr. Marion Baumgardner

Dr. Grady Blount

Dr. Darlene M. Carlson

Mr. John Randall Copple

Mr. Thomas J. Feehan

Mr. Wayne Hallada

Dr. Thomas Lillesand

Dr. Gerald Nelson

Mr. Paul Tessar

Mr. David Thibault

John Antenucci

Dr. Frank Beurskens

Mr. John Boyd

Dr. Karen Coker

Dr. Kenneth Davidson

Ms. Kass Green

Mr. Tom Holm

Dr. John S. MacDonald

Dr. George Robinson

Mr. Mike Scott

Dr. Kenneth Thibodeau

Day 1

Introduction

Wayne Rohde, Assistant Center Chief of Programs for EROS Data Center (EDC) welcomed the participants. He said he believed the workshop to be a landmark meeting. It would be the first step in providing the advisory panel which has been needed for some time.

Mr. Rohde pointed out that EDC is interested in the issues of public/private interaction. He said that law and policy stipulate the need for a national archive and the desire to promote the commercialization of space. There are requirements for a global data center. Mr. Rohde said that the question of what that is, is a fair one.

Law and Policy Review

Joanne Gabrynowicz, professor of remote sensing law and policy and workshop chair, began the working portion of the agenda with a review of laws and policies pertinent to the National

Satellite Land Remote Sensing Data Archive (NSLRSDA). She reported that the idea of a national archive goes back to 1986 and is mandated in several important documents:

1986 NOAA - USGS MOU to establish NSLRSDA
1992 The Land Remote Sensing Policy Act
1993 NASA - USGS L7 MOU
1994 NASA - USGS EOSDIS MOU
1994 Presidential Decision Directive/NSTC-3 (Landsat Strategy)
1994 Commercial Remote Sensing Policy
1995 Executive Order 12951 (Declassification)
1996 National Space Policy

The definition of "archive" used by Prof. Gabrynowicz was an institution "where records relating to the activities of a nation are collected, maintained, stored, reproduced, distributed and held in trust."

Prof. Gabrynowicz reviewed provisions of the 1992 Policy Act which states that NSLRSDA is to maintain, control, and assure the quality, integrity and continuity of the data. The Act makes archiving practices the duty of the Secretary of the Interior and Landsat Program Management. It refers to a "basic data set" as long-term, global, and generated by remote sensing. The Act also requires there be "timely access" to Archive data. On the issue of content determination, Prof. Gabrynowicz stated that the Act requires anticipating scientific and technical developments, paying particular attention to global change research, and seeking user and producer advice. Referenced criteria include duplicated geographic coverage with different seasonal, spectral and resolution factors; unenhanced data generated by Landsat, private systems, and foreign stations; and, archived data in the public domain, provided by the Secretary of the Interior. Data is to be provided at the cost of fulfilling user requests.

Regarding various policies, Prof. Gabrynowicz noted that the 1994 Presidential Decision Directive (PDD) identified, as a key issue, the maintenance and availability of an archive for existing and future Landsat data. The Commercial Remote Sensing Policy requires private systems, according to the provisions of their licenses, to negotiate with NSLRSDA terms to provide it with any data the private operator intends to purge. The Executive Order declassifying data from early national systems identifies NSLRSDA as the institution to make the declassified data available to the public. The 1996 National Space Policy includes the goals of enhancing knowledge of the Earth and supporting NSLRSDA.

Prof. Gabrynowicz concluded that the NSLRSDA has both legislative and executive mandates. It will be expensive and advice will be needed. In order to solicit multidisciplinary advice there is a need to establish the archive's long-term direction and goals. This can be done, in large part, by forming an archive advisory panel.

Workshop Focus

Prof. Gabrynowicz identified the questions for the workshop participants:

Who must be represented on an advisory panel?
What critical issues are to be addressed by an advisory panel?
Who should be recommended for panel membership?

She suggested representation was needed from, among others, government, industry, academia, natural sciences, informational sciences, policy and law. Some concerns the group might want to address, among others, were standards, product definition, calibration, applications, systems, data preservation and delivery.

A discussion ensued about international representation. It was suggested that the Committee on Earth Observation Satellites (CEOS) might be consulted. It was pointed out that the archive will be paid for by U.S. taxpayer dollars and that the 1992 Act describes the archive as is in the "national interest." However, it was also noted that as a practical matter, the archive would involve international activities, users, and contributors.

A question was raised about the definition of "timely access." Does this mean access by the U.S. population or the international population? Foreign users are identified as a constituency under the 1992 Act. This discussion flowed into the question of data copyright laws. It was noted that the current international trend is to limit data access from national satellite systems under intellectual property concepts and that the U.S. statute is one of the few directives expanding, rather than limiting, access. It was stressed that the U.S. could make some impact on global opinion.

There was a discussion on the issue of defining the terms "raw data," "baseline data," and "unenhanced data." Data definitions was added to the list of advisory panel issues.

The point was raised that aerial data is not legally relevant to NSLRSDA because the statutory mandate is to archive satellite data. But the importance of aerial data in its ability to complement satellite data was discussed.

The view was expressed that NSLRSDA will be a 21st Century asset, and while embryonic at this time, it should be considered comparable to other national archives.

Archive Contents

By most definitions, the archive would hold records (images, data, metadata, technical processes and procedures), and activities of the nation (land use, water use, natural hazards, population trends, etc.). Archive holdings today include 30+ years of earth observation from Landsat Scanner, Landsat Mapper-AVHRR/LAC/HRPT. In the future it will hold data from SPOT, commercial sources, Landsat 7 and EOS/MODIS and EOS/ASTER. There are also 880,000 frames of declassified intelligence satellite photographs at EROS. Long term preservation includes access and distribution that will maintain data integrity; planned data migration; and, provide information access to all users. It was reported that over 60 data sets are accessible via the Internet and were released in June of 1991.

The Landsat International Data Base includes the following: computer-based catalogue, worldwide arch, metadata exchanged in a common format, GLIS accessibility, 940,000 scenes achieved in the United States, and 2,443,000+ scenes achieved by non-US stations. With Landsat 7, foreign stations will have to provide metadata, but not data, or browse. It was pointed out that non-US populations will have unlimited access to foreign scenes but U.S. users will not have access to foreign scenes.

Definitional Issues

The Tuesday afternoon session began with the task of defining "archive" and "data." A discussion followed as to whether the law's reference to "unenhanced" includes distributing and holding. The opinion was expressed that there is no standard definition of "unenhanced" or "raw" data. The question was asked, "What are the parameters?" Industry will want varying degrees of refinement.

Discussion ensued on the issue of what data is required to be archived. The law says "satellite land data." The opinion was expressed that could be expanded to "Landsat type data." What data is worth keeping and what is not worth keeping? Librarians ask the user community to prioritize saving what can be afforded. Will the archive panel need to do that? Reference was made to section 5652c of the 1992 Act which contain guidelines for archiving. It was pointed out it is almost certain that priorities will change over time, therefore a 5 to 10 year philosophy may need to be the focus. Perhaps the right question is, "What are the objectives of the archive?"

At this point in the discussion the group reached consensus on two points:

1. Issue statements are to be kept simple.
2. The advisory panel will be interdisciplinary.

It was clarified that the panel would report directly to the Secretary of Interior.

Public Good

Discussion then centered on the definition of "public good". Since there will be large archive costs, will a philosophy that equates the maximum spin-off and the maximum public good be appropriate?

The group suggested issues be framed as follows:

What is the purpose of the NSLRSDA?

What is being archived?

What should be the priorities?

Define how data is to be accessed.

What constitutes a basic data set?

Panel Membership

Discussion the focused on panel membership. It was agreed that members should be chosen for knowledge, community of representation, and political support of the archive. A view was expressed that a priority for the panel is in influencing and interpreting policy. Technical representation on the panel is fine, but is not the primary function.

Holm was asked how many members the panel should have; he answered he thought no more than 15. Gerald Nelson thought members should be eminent persons rather than representatives of interest groups. Wayne Hallada replied he thought both were important. It was felt the appointment of a futurist would be advisable. Within a couple of years, he said, a new method of allocation of scarce resources will arise. Cost won't drive it; demand will. A collaborative supply chain will be created and the situation will no longer be adversarial. Robinson pointed out that not everyone has the same agenda, and information could cause hostility very quickly. Hallada replied the transparency of information is crucial; the pie could be bigger if we all had better information. Kenneth Thibodeau said he felt the best customers of the archive won't be born for another 100 years. He said the job of an archivist is to carry the message through time without distortion.

It was determined that a charter should be developed defining the relationship among the Secretary of Interior, the EROS Data Center and the panel.

Tom Holm said the largest policy issues for the panel would be:

Decide the content of the archive (what is a basic set).
Decide who has "timely access."
Prioritize the data.

Day 2

Synopsis of the First Day's Results

Wednesday morning's session began with a review and synopsis of Tuesday's activity. Joanne Gabrynowicz reminded the group the task for Wednesday was to:

1. Add substance to the issue list.
2. Provide guidance on the membership of the panel.

Members were given the synopses they had developed:

I) Issues

- What is the Archive
- Purpose
- Who uses the Archive/who are the potential users
- What is being archived
- What entities
- Which priorities
- How is data to be accessed

Landsat 7 data access by US and non-US users
Definitions of data
"unenhanced"
What constitutes a "basic data set"
Panel terms of reference
Guidelines in 1992 law
Scope/relationship of panel to EDC
Request from the Secretary of Interior
Relationship of the Archive to other similar institutions
Applicable advisory panel law

II) Panel

High-level Community Groups
Academia
Ad Hoc/At large/general public
Government
Industry
Information science/technology
Natural Science
Social Science
Communities
Resource managers
Policy/Law
NGOs
K-12
Educators
Community-based environmental
Data providers
Value-added
International
Hardware/system providers
Student researchers

The question was raised whether the panel would be advisory to the NSLRSDA or to EDC. It was decided that the panel would be advisory to the archive. The opinion was expressed that because many parts of the EDC activity are archiving activities, any advice taken would be consistent in all areas of EDC, since users do not recognize the lines between archiving activity and other activities.

Joanne Gabrynowicz was asked what the role of the Secretary of Interior would be. She replied that he might ask the panel to address specific areas.

Working Group Reports

The workshop participants organized into three working groups. Each working group each produced a report. The reports are appended to these minutes. (Appendix 1)

Federal Advisory Committee Act

General discussion followed the reports. It was expressed again that panel members would need to be proactive and willing to act as liasons. The standard is the national interest. George Robinson discussed the Federal Advisory Committee Act (FACA). The points he cited were:

The panel must be made public.

Must establish administrative guidelines.

Management controls must be consistent with the GSA.

May not meet without a charter from the Interior.

Supreme Court decisions have indicated broad powers, but the decisions don't include every group.

The GSA has regulations, and the EDC needs to know them well before going further.

The advisory panel ends after two years unless the agency renews and justifies membership.

A plan to attain a balanced membership must be published in the Federal Record.

The panel must be balanced by points of view; a cross-section of qualified/interested people with expertise relating to the task to be achieved.

A 1993 amendment caused each department to slash 1/3 of their advisory committees and they could not create new panels unless the agency head sees a compelling need, the OMB approves, and the panel is seen to be in the national interest.

Recommendation Letter and Future Action

A draft letter was presented and discussion ensued. George Robinson said he felt a letter of support was critical, and suggested appending a list of the signers and a list of the issues and subsets. David Thibodeau added he felt it would be appropriate to provide support for EDC at the meeting on November 22 where the letter would be presented to the USGS director. Further discussion about the letter, which would be addressed to Gordon Eaton, ensued. A copy of the final letter is appended to these minutes. (Appendix 2)

The Workshop participants unanimously accepted the letter and authorized Gabrynowicz to refine it and sign it on their behalf as Chair of the group.

The group asked for an email chat group to be set up so they could be kept apprised of ongoing activity on the issue of the advisory committee. Pru Adler asked if the workshop group would serve until the advisory panel is in place. Tom Holm replied that the workshop group, a subset of this group, or a new group that would consider eventual panel membership. George Robinson said the workshop group could help draft the charter.

Panel Members

Gabrynowicz suggested the group discuss panel membership, urging them to remember that with the letter still having to be accepted, the discussion might be premature. John McDonald agreed the activity would be premature. He said there should be at least one more meeting, since it is too early in his view to be naming names. It was discussed whether to have one more meeting or to use email for the purpose of helping in development of the charter and the suggestion of individuals for the panel. The group then suggested various agencies individuals felt should be represented.

Conclusion

Gabrynowicz asked if there was further business to be discussed. George Robinson thanked her for keeping the group focused, and R. J. Thompson thanked the group for addressing the issues for EDC.

Joanne Gabrynowicz said she felt it had been a good session. The NSLRSDA is an important endeavor, she said, and the integration of disparate viewpoints that occurred at the workshop achieved the goal. She thanked the members for their participation.

APPENDIX 1

**National Satellite Land Remote Sensing Data Archive
Advisory Workshop
November 12-13, 1996
Joanne Irene Gabrynowicz, Chair
Summary of Workshop Discussions and Key Issues**

The National Satellite Land Remote Sensing Archive Advisory Workshop was convened to provide an opportunity for exchange of expert opinions regarding the challenges and issues associated with management of the existing and future archive of satellite land remote sensing data. The two-day workshop included a series of plenary sessions on the first day that described the existing archive of satellite remote sensing data currently managed by the USGS; discussed the conceptual characteristics of that archive; and, developed a common strategy for addressing the requirement for providing advice to the archive management staff. On the second day, three

smaller groups addressed these issues in more detail, and a final plenary session consolidated remarks and developed recommendations of the workshop.

The reports of the three groups were discussed in a summary plenary session and are provided in this report. In compiling this report, every effort has been made to faithfully represent only that information developed during the workshop. Therefore, the report is abbreviated in order to avoid adding additional interpretation to the work of the respective groups. Because the goal of the participants was encouraged only to identify issues appropriate for Advisory Panel consideration, not to debate the merits of the issues that were identified.

Workshop Summary: The workshop concluded with discussion and formulation of a letter from the workshop participants to the Director, U.S. Geological Survey, recommending the establishment of an Advisory Committee to oversee the activities and policies of the National Satellite Land Remote Sensing Data Archive.

Group 1 Report

Group one addressed the conceptual definition of the archive, the scope of the anticipated user community, the content of the archive, and types of representation required on an advisory panel. In addition, a number of questions related to archive management were raised.

Archive- A commitment to collect, maintain, preserve, and provide timely access to important data.

Who Uses- Limitless, given the worldwide reach of networks.

An issue for the panel will be how the archive can be responsive to these different communities, in regard to the level of access to data.

Archive Content:

Metadata

On an orbit-by-orbit basis:

1. Ancillary Data - orbit, date, time, etc.
2. Radiometric Calibration Data - to permit derivation of radiance on a pixel-by-pixel basis.
3. Geometric Correction Model
 - Precision Motion Model
 - Ephemeris
 - Attitude History

- Instrument Geometry

[Generate a product immediately using an approximate model, then update it later to generate a precision model.]

Important Associated Data Sets

1. Digital Elevation Model
2. Ground Control Chip Library

Possible Associated Data Sets

1. Atmospheric Data on an Orbit-by-Orbit basis

Other Related Questions

1. What is the process to determine priorities?
2. How should the archive pursue data from the private sector? How to pursue international data? The latter was seen as a priority.
3. What are the rules and guidance regarding purging of data from the archive?
4. What is the definition of timely access?
5. Duplication of archive -- are there alternatives for redundancy? For example, should the United States and Canada engage in discussions?
6. How will the archive address legal issues? e.g., chain of process concerns.
7. National security issues? Should there be some, any or no restrictions on access to the archive?

Archive Advisory Panel

Assess all available information of the legislation and to best meet the needs of the archive. Consider the enabling laws, directive, policy statements, and memoranda of agreement as a foundation for the charter of the advisory panel.

Draft a charter for advisory panel, the workshop participants would consider reviewing the draft charter before it is finalized.

Panel Membership

Two technologists knowledgeable in networking and computer communications plus expertise in remote sensing.

One library/archivist.

One law, policy, international - possibly a lawyer.

Industry

- value added

- consultants different than value added

Several Data Providers - 1-2 members; diversity of views, thus a need to rotate membership on the panel; no single community voice or view.

Several End Users - Representative sample from academia - natural and social sciences; industry; NGOs, e.g., community-based groups.

Government - NASA, NOAA, and Interior in some capacity should be represented.

Group 2 Report

Group two focused their discussions on the conceptual definition of the archive; how the archive is to be accessed; and, definition of the levels of data to be archived.

What is the Archive?

The purpose of the archive is to preserve, in trust and over the long term, valuable data which might not be preserved elsewhere.

Because resources are scarce, the panel must focus on priorities between;

* Archiving data that represents coverage of global versus United States areas

* Access versus preservation:

Preservation is less expensive than access, but without preservation there is nothing to access. Yet, if there is no access to the data, there is no reason to preserve.

How is data to be accessed?

The question of access depends on the type of customer to be directly served by the archive. Two types of customers exist:

* Individuals looking for information derived from the processing of the unenhanced data, or

* Organizations that generate information from the unenhanced data

Group two believes that the archive should prioritize its efforts towards organizations that generate information from the data. Emphasizing this type of organization will foster the growth of private and public organizations that will add value to the unenhanced data to serve the individuals.

What is being archived?

Considering that funds are limited and that the Archive has a goal of serving organizations that generate information, leads to archiving only Level 0 data with its associated meta data. This is the Canadian model.

EDC needs to examine the duplication of archives. Duplication is important when it has been established that a data set is valuable enough to be duplicated. Presently, several archives are duplicated (e.g. AVHRR is archived both by EDC and NOAA). However, an explicit decision has not been made that this data set needs duplication. Other cases of duplication also need to be examined.

Panel Members

Panel members should be chosen from those members of the public that have an interest in preserving and accessing unenhanced imagery of the Earth's surface.

Group 3 Report

Group three devoted its time primarily to discussion of potential communities from which a panel membership could be drawn.

Archive Representation Community Groups: Sectors and Disciplines

Sector: Academia (2)

1. Researcher
2. Educator

Sector: Government(4)

3. Federal User
4. State User
5. Local user
6. Science Archivist

Sector: Industry (4)

7. Data Management Technologist
8. Licensed Data Provider
9. Value-Added Service or other data provider
10. End User

Sector: Other (5)

11. Non-affiliated individual at-large
12. NGO
13. International
14. At-large from any sector
15. At-large form any sector

Disciplines: Need to be represented via above sectors:

Information Science

natural Science

Social Science

Policy / Law

Note: Overarching Considerations:

1. Panel members should have a high of interest in spatial information.
2. Members should serve as a communication channel with the interests they represent.
3. Members should focus on the "public interest" in their advice.
4. The scientific agenda should be proactively addressed.

APPENDIX 2

Dr. Gordon P. Eaton

20 November 1996

Director
U.S. Geological Survey

101 - National Center
Reston, VA 20192

Dear Dr. Eaton:

On November 12-13, 1996, twenty-one leaders and experts from industry, academia, state and federal government, representing a variety of disciplines relating to remote sensing imaging, archiving, and education, attended a workshop at the EROS Data Center to provide multidisciplinary advice regarding the long-term direction and goals for the National Satellite Land Remote Sensing Data Archive (NSLRSDA). Workshop participants were invited by the U. S. Geological Survey EROS Data Center.

After two days of intense deliberation on core issues and related questions, the workshop participants unanimously agreed that establishing an archive advisory committee at this time is essential to the effective and timely conduct of NSLRSDA business. The participants' unanimous recommendation is consistent with the archive's enabling legislation, applicable presidential policies, relevant memoranda of understanding, and implementing regulations.

It is clear that, with the proper and lawful composition of an advisory committee, the committee's deliberations will very likely significantly influence the guidelines or rules relating to archival data deposit, maintenance, and preservation as well as access management policies and procedures. This type of assistance and guidance is not readily available from any other advisory committee or source within the Federal Government, and the foreseeable recommendations of an archive advisory committee will lead to significant improvements in the effective and cost efficient delivery of the archive services required by statute and presidential policies. A well-composed and structured advisory committee will provide important, perhaps critical, perspectives and viewpoints influencing NSLRSDA operations.

For these reasons, the workshop participants unanimously recommend, as the next appropriate step, that the Chief of the EROS Data Center initiate the drafting of an advisory committee charter for consideration by the Secretary of Interior. Toward that end, the workshop participants offer to remain available to assist in any manner the Center deems appropriate, and to provide additional input to the attached draft issues and recommendations.

The workshop participants also compiled a list of critical issues to be addressed by an advisory committee and a list of committee membership criteria. These are enclosed for your convenience. Also enclosed is a copy of the briefing book participants received to prepare for the workshop. It includes the enabling legislation, presidential policies, relevant memoranda of understanding, and regulations referenced in this letter.

Finally, the participants express their gratitude for the invitation to be involved in the formulation of guidelines to assist in implementing the Archive's mandate regarding the invaluable and irreplaceable global resource of remotely sensed data.

Sincerely,

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