Wednesday, November 1, 2017
1:00 p.m. - 3:30 p.m.
Nebraska Dept. of Roads- Main Auditorium
1500 Nebraska Hwy 2
Lincoln, Nebraska

AGENDA

I. Roll Call and Introduction of Audience Attendees

II. Public Meetings Regulations and Posting of the Same
III. Approval of minutes from 6/13/2017 meeting*

IV. Membership Nominations to forward to NITC
V. Nominations and voting for Vice Chair for 2018*
VI. Report from MaGIC clearinghouse summit
VII. Report about Census 2020 activities and LUCA
VIII. Report about the Nebraska Geocortex User Group meeting

IX. Strategic Initiative Action Item-Update-This is part of the State Technical Plan that NITC reviews every 2 years- we need to update the GIS Council part of it

1. Imagery
    I. Activities/Update-Business Plan to NITC
    II. Do we update, deletion or additions to add to strategic plan*
2. Street Centerline and Address
    I. Nebraska Street Centerline and Address Databases
    II. Do we update, deletion or additions to add to strategic plan*
3. Boundaries
    I. Activities/Updates
    II. Do we update, deletion or additions to add to strategic plan*
4. Elevation
    I. Update on projects
    II. Do we update, deletion or additions to add to strategic plan*
5. Geodetic and Survey Control
    I. Update/Activities
    II. Do we update, deletion or additions to add to strategic plan*
6. Nebraska Map
    I. Update/Activities
    II. Do we update, deletion or additions to add to strategic plan*
7. Archiving
    I. Thoughts/Discussion for this to be a strategic initiative with action items and deliverable target? *

X. Updates from Members Agencies

XI. Other Business
XII. Dates for 2018 GIS Council meetings- February 7, May 2, August 21 and November 7, which are all 1st Wednesday of the month

XIII. Invitation for Public Comment from Attendees

*Indicates an expected action item.

GIS Council Meeting Minutes
PROPOSED
August 9, 2017
1:00 p.m. – 2:00 p.m.

Meeting Location:
Nebraska Department of Roads - Main Auditorium
1500 Nebraska Hwy 2, Lincoln Nebraska

GIS Council • Nebraska Information Technology Commission

Meeting Summary

Membership Openings- Several memberships will be up this year – 2 at large members and 2 – NACO representatives. In addition, a new Vice Chair will need to nominated and elected as well. The current Vice Chair, Sudhir Ponnappan, will take over as Chair in January 2018.

Members were asked to send their nominations. Ballots will be prepared for voting at the next meeting. The NITC will make the final approval of the nominations at their November meeting.

ESRI USER Conference- Various council members gave their thoughts from the ESRI UC. Game and Parks received a Special Achievement in GIS Award.

STRATEGIC INITIATIVE ACTION ITEMS

Imagery - Activities/Update-Business Plan to NITC, John Watermolen. The NITC approved the Imagery Business Plan at their July 12th meeting. With the assistance of Administration Services, an RFI is being developed to determine what it would cost to do imaging on a regular basis. The OCIO would like to collaborate with the NiROC plans to do imagery on a regular cycle.

Street Centerline and Address - Nebraska Street Centerline and Address Databases, John Watermolen. The Work Group has had sporadic conference calls.

Boundaries - Activities/Updates, Claire Inbody. The work group has been working on the boundaries for census based on NebraskaMAP categories. The partners are reviewing their data sets and fields, as well as recommending data field names. The next steps will be to build the boundary layers.

Elevation - Update on projects, Jim Langtry. Mr. Langtry distributed a Nebraska Lidar map. A total of four project are in process with the state and partners.

- South Platte Lidar is completed and delivered March 15, 2017 with 4,841 square miles covered
- Sandhills Lidar is in process and is 76% complete. It is anticipated the deliverable date will be February 28, 2018.
- Hat Creek/White River Lidar is in process and is 18% complete. It is anticipated the deliverable date will be December 20, 2017.
- Eastern Nebraska UA Lidar is in process and is 50% complete. It is anticipated the deliverable date is January 31, 2018.

Geodetic and Survey Control - Update/Activities, Jeff Timm. Continues to work with BLM on PLSS survey points.

Nebraska Map - Update/Activities, Joh Watermolen. Mr. Watermolen has been meeting with agencies and other entities to promote the project, as well as to remind some of them that their data is needed.

AGENCY UPDATE- Participating Agencies on the Council provide updates to activities they are working on.

Motions

Motions Carried:

- The June 13, 2017 minutes were approved.

Motions Failed:
There were no motions that failed.

I. Roll Call and Quorum

Members Present: ** Authorized to Vote*	

* **MEMBERS PRESENT:** * Jon Kraai, Nebraska State Patrol, Chair * Sudhir Ponnappan, Nebraska Game & Parks, Vice Chair * Tim Cielocha, Public Power Districts * Bill Wehling, Department of Roads * Steve Rathje, Department of Natural Resources * Jim Ohmberger, Office of the CIO * Doug Hallam, Conservation and Survey Division, UNL * Lesli Rawlings, NE Geospatial Professional Association * Karis Bowen, DHHS * Lash Chaffin, League of Nebraska Municipalities * Eric Herbert, Omaha Metro Area * Kea Morovitz, Public Service Commission * Jeff McReynolds, Lincoln Metro Area * Gary Morrison, Dept. of Environmental Quality * Todd Whitfield, At-Large Representative\ * Jim Langtry, USGS * * *	**MEMBERS ABSENT:** John Beran, State Surveyor Todd Wiltgen, NACO Casey Dunn, Legislative Research Office Pat Larson, Member at Large Erin Northwall, Governor's Policy Research Office Barb Oswald, Property Tax Administrator Mike Preston, Geospatial Professional Association Kim Wessels, NACO Chuck Wingert, Natural Resources Districts Michael Schonlau, Member at Large Chad Boshart, NEMA/Military Dept.

NITC Representatives:	John Watermolen, GIS Council Coordinator and Lori Lopez Urdiales, CIO/NITC
Public Visitors:	Les Biven, Fuaro Aeospatial; Mike Koutnik, ESRI; Dan Haag, ESRI; Rob Christian, BTSD-DOT; Trisha Schlake, Nebraska Game and Park's Dan Ecker, Infogroup; Joe Heieck, GIS Workshop; Lou Anne Daugherty, BTSD-DOT; Ryan Kroemer, NRCS; Steven Case, State Records Board; and Michael Munson, DOT

I-III. General Meeting Formalities (continued)	
Roll Call and Quorum	The Chair, Lt. Jon Kraai, called the meeting to order at 1:03 p.m. Roll call was taken. There were 16 members present at the time of roll call. A quorum was present to conduct official business.
Introduction of Audience Attendees	Public visitors were welcomed and were asked to introduce themselves if they wished. Visitors who wished to identify themselves as attending the meeting were to sign the visitor log and their name and affiliation would be reported in the minutes.
Public Meetings Regulations and Posting of the Same	The meeting notice posted on the Nebraska Public Meeting Calendar on January 4, 2017 and agenda posted on GIS Council website August 2, 2017
Approval of Minutes from Previous Meeting	**Mr. Hallam moved to approve the June 13, 2017 minutes as presented. Mr. Wehling seconded. Roll call vote: Kraai-Yes, Ponnappan-Yes, Cielocha-Yes, Wehling-Yes, Rathje-Yes, Ohmberger- Abstained, Hallam-Yes, Rawlings-Yes, Bowen-Yes, Herbert-Yes, Morovitz-Yes, Chaffin-Yes, McReynolds-Yes, Morrison-Yes, Langtry Abstained, and Whitfield-Abstained. Results: Yes-13, No-, Abstained-3. Motion carried.**

V. MEMBERSHIP OPENINGS	
DISCUSSION	Mr. Watermolen stated several memberships will be up this year – 2 at large members and 2 – NACO representatives. In addition, a new Vice Chair will need to nominated and elected as well. The current Vice Chair, Sudhir Ponnappan, will take over as Chair in January 2018. Members were asked to send their nominations to Mr. Watermolen. Ballots will be prepared for voting at the next meeting. The NITC will make the final approval of the nominations at their November meeting.

VI. STRATEGIC INITIATIVE ACTION ITEMS

DISCUSSION

Imagery - Activities/Update-Business Plan to NITC, John Watermolen. The NITC approved the Imagery Business Plan at their July 12th meeting. With the assistance of Administration Services, an RFI is being developed to determine what it would cost to do imaging on a regular basis. The OCIO would like to collaborate with the NiROC plans to do imagery on a regular cycle.

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The NRCS is upgrading level 3 that is already there. They may be able to provide funding for areas such as Cass County and the Southeast area. An informational sheet was distributed to members about the USGC webinar training 3D Elevation Program (3DEP) prior to the release of the USGS Broad Agency Announcement (BAA) for the 3D Elevation program. Registration is required. If members cannot attend, they will be recording the webinars.

Geodetic and Survey Control - Update/Activities, Jeff Timm. Continues to work with BLM on PLSS survey points.

Nebraska Map - Update/Activities, Joh Watermolen. Mr. Watermolen has been meeting with agencies and other entities to promote the project, as well as to remind some of them that their data is needed.

VII. REPORT FROM ESRI USER CONFERENCE ATTENDEES

DISCUSSION

Chair was not able to attend and asked for reports from members who attended. Mr. Herbert attended and was able to ask questions about the transition to Pro and Survey 123. The Nebraska Game and Parks Commission received the 2017 SAG (Special Achievement in GIS) Award.

Lesli Rawlings attended the ESRI Education Conference in early July. At this conference she learned that ESRI's ConnectEd offered to K-12 accredited schools in the U.S., is now called the ESRI Schools Bundle, which includes ArcGIS Online, ArcGIS Desktop, and Community Analyst. The ESRI Schools Bundle is now available for all accredited K-12 schools and clubs globally for instruction purposes only.
The sessions she attended stressed the importance to still teach students Desktop, ArcGIS Online, ArcGIS Pro, and Survey123. K-12 teachers see the importance of GIS, but are having difficulty including it in the classroom curriculum due to time constraints. Ms. Rawlings explained that ESRI is encouraging teachers to use GeoInquiries, which don't require ArcGIS Online organization accounts or logins. Geomentors might be asked if they know anything about GeoInquiries. Here is a link with some lessons:
http://education.maps.arcgis.com/home/group.html?id=39505ed571d646c8b66ecccadbc386e4#overview. ESRI's K12 Education Manager, Charlie Fitzpatrick, said in back in spring 2017 that Nebraska reached the 5th highest number of ArcGIS Online Organization accounts issued per 100 U.S. schools

VIII. UPDATES FROM MEMBER AGENCIES

DISCUSSION

Nebraska State Patrol, Jon Kraai. The agency is working with the OCIO on consolidation efforts and going through a reclassification program to provide a position within the OCIO.

Nebraska Geospatial Professional Association, Lesli Rawlings. Harris Payne, the Nebraska Dept. of Education Social Studies Specialist, had his grant from the Nebraska Environmental Trust extended to teach GIS and soil conservation. He completed two GIS/soil conservation workshops this summer and hopes to complete two additional workshops this fall.

At the National Council for Geographic Education Conference held July 27th-30th in Albuquerque, New Mexico, the following Nebraskans won awards: Paul Hunt, the GIS Lab Manager at the University of Nebraska at Omaha, received the Outstanding Support of Geographic Education. Mr. Hunt maintains the Nebraska Education ArcGIS Online Organization web site. Lesli Rawlings, an Associate Professor of Geography Wayne State College, received the Distinguished Higher Education Award. She has completed 4 service-learning projects, which utilize GPS/GIS applications. Kyle Tredinnick, who teaches in Omaha Public Schools' Zoo Academy, won the Distinguished K-12Teacher Award. He incorporates GIS in his classroom instruction.
Department of Transportation, Bill Wehling. The agency has hired a new Highway Engineer, Justin Wolff. He will be starting on August 27th.

UN Conservation and Soil Division, Doug Hallam. The division continues to work on historical imaging. Elevation requests are received occasionally. There has been an increase in requests, especially from GIS students in higher education.

Department of Natural Resource, Steve Rathje. The agency is in the process of hiring someone to replace Josh Lear.

City of Lincoln, Jeff McReynolds. The city is in process of parcels migration. A new infrastructure will be implemented followed by data migration.

Nebraska Public Power District, Tim Cielocha. With the deployment of the AMI reader system, NPPS will be able to ping meters for data, voltage drops, and assist customer information. LED lighting throughout communities.

Office of the CIO, John Watermolen. Meetings have been held with various state agencies to discuss GIS endeavors, consolidation efforts, and server based licenses into the OCIO. In GIS discussions with ESRI, they indicated that they are willing to do monthly brown bag lunches. GIS/LIS would like to partner with this effort. The OCIO staff met with the State Surveyors and Board of Educational Land Funds to discuss how the OCIO and the GIS Council can provide assistance and support to their agencies.

Nebraska Game and Parks Commission. The agency has eclipse information, as well as maps, on their website. The Public Access Atlas publication should be available to the public for the state fair.

Omaha Metro. Eric Herbert. Community planners have been frustrated retrieving data, as well as not having uniform data. An NRI (Natural Resources Inventory) initiative has started. Planners have been compiling a list of what they would want with easy access, including applications that will support their work. Hopefully, the end result will be to have data that is available to the public. He stated that his agency is considering being a community provider for "Waze" and asked for members input. Waze is a community based traffic and navigation application. Members provided positive feedback and recommended he contact ESRI's Waze point of contact.

IX. OTHER BUSINESS

DISCUSSION

Mr. Watermolen reminded members to send their nominations

X. INVITATION FOR PUBLIC COMMENT

DISCUSSION	There was no public comment.

Meeting Conclusion	
Adjournment	**Mr. Cielocha moved to adjourn. Mr. Herbert seconded** The meeting was adjourned at 1:54 p.m.
Next Meeting	The next meeting will be November 1, 2017, 1:00-3:30 p.m. at the Department of Roads, Lincoln Nebraska.

Meeting minutes were taken by Lori Lopez Urdiales and reviewed by John Watermolen of the Office of the CIO/NITC.

Nebraska Spatial Data Infrastructure (NESDI) Status Report

Report Date: October, 2017

NITC Strategic Initiatives Status Report				
Strategic Initiative, Action Item and Deliverable Target		Status	Notes	2017-2019 Recommendations
Nebraska Spatial Data Infrastructure (NESDI)				
1	Formalize the definition of the Nebraska Spatial Data Infrastructure (NESDI) and data stewardship			**Continue as is**
1.1	Establish an ad hoc committee of GIS Council representatives	Completed		
1.2	Develop a document that defines the NESDI and the role of data stewardship	In Progress	The definition for the NESDI and data stewardship has drafted. Priority is on developing and implementing other NESDI business plans and then provide resource information back to this document.	Continue as is
2	Geodetic and Survey Control Inventory and Assessment			**Continue as is**
2.1	Establish an ad hoc committee involving stakeholders from government, private industry and the survey community	Completed		
2.2	Develop a current inventory and assessment report of geodetic and survey control	In Progress	A partnership has begun with the U.S. Interior Bureau of Land Management to share our localized data to help improve the state's PLSS data layer. Localized data continues to populate our new PLSS database. An interactive map viewer has been created to support geodetic and survey control data for the Public Land Survey System (PLSS) – http://maps.nebraska.gov/nemap/PLSS This map viewer provides access to data submitted on behalf of the Low Distortion Projection Project.	Continue as is
3	Nebraska Statewide Elevation Program			**Continue as is**
3.1	Establish an Elevation Working Group	Completed		
3.2	Identify standard elevation product(s) and develop a set of standards	Completed	Developed and adopted on October 28, 2014	
3.3	Develop a business plan	Completed	Developed and approved on March 26, 2015	

3.4	Implement the program	In Progress	Collection is complete and on schedule with the dates in the USGS agreement documents. The Sandhills data is due to USGS for review at the end of December with final delivery as February 28, 2018. The Hat Creek-White River area is due to USGS September 1 and final delivery to NRCS on Dec 30, 2017. The South Platte Basin data has been delivered and is having some post processing done by DNR before public consumption. ***NRCS is starting to refly earlier LiDAR to match current quality level***	Continue as is
4	Nebraska Statewide Imagery Program			**Continue as is**
4.1	Establish an Imagery Working Group	Completed		
4.2	Identify standard imagery product(s) and develop a set of standards	Completed	Developed and adopted on October 28, 2014	
4.3	Develop a business plan	***Completed***	Developed and adopted on February 15, 2017. ***Adopted by NITC July 2014***	
4.4	Implement the program	Not Started		Continue as is
5	Street Centerline-Address Database			**Continue as is**
5.1	Establish a Street Centerline and Address Working Group	Completed	The slate of working group members have been extended to involve representatives from the Public Service Commission. There is a core working team that meets on a weekly basis since December.	
5.2	Identify standard street centerline and address product(s) and develop a set of standards	Completed	Developed and adopted on March 27, 2015	
5.3	Develop a business plan	In Progress	Goals and objectives have been drafted for the business plan. The necessary steps for implementing the program is currently being planned and documented into the business plan. Existing street centerline and address data are being assessed for completeness and quality so that future needs are also included in the business plan.	Continue as is
5.4	Implement the program	In Progress	The OCIO Geographic Information Office has begun to accumulate address points to populate the Nebraska Address Database (NAD).	Continue as is
6	Statewide Land Record Information System			**Continue as is**
6.1	Establish a Land Records Working Group	Completed		
6.2	Update the current NITC 3-202 Land Record and Information Mapping Standards	In Progress	Original standards adopted on January 27, 2006 and amended on March 1, 2011.	Continue as is

6.3	Develop a Nebraska Statewide Parcel Geodatabase Development and Maintenance Plan	Completed	Developed and approved on May 27, 2015	
6.4	Implement the program	In Progress	A request for parcel data was submitted to assessors in December 2016. Parcel data was started to be combined in the Nebraska Statewide Parcel Geodatabase in January. Data is coming in much slower than anticipated, in addition missing information that we have requested through the process. ***All data was submitted by August 2017. 2018 will start in December/January timeframe***	
7	NebraskaMAP - A Geospatial Data Sharing and Web Services Network			**Continue as is**
7.1	Establish a NebraskaMAP Working Group	Completed		
7.2	Develop NebraskaMAP Geospatial Data Sharing and Web Services Network Business Plan	In Progress	The business plan has been modified for inclusion within the State of Nebraska Geospatial/GIS Enterprise and OCIO Roadmap initiatives.	Continue as is
7.3	Develop and implement NebraskaMAP data clearinghouse enterprise platform	In Progress	Data continues to be updated and submitted through NebraskaMAP. A new addition to the clearinghouse is a secure repository to handle the GIS 911 data sets for Nebraska. This was developed in December and implemented in January.	Continue as is

1. **Action: State Geospatial Archiving Plan**

This initiative will:

- Provide documentation and guidance on archiving geospatial data

As the state continues to generate geospatial data, there is an opportunity to create guidance and a standard operating procedure to properly archive geospatial data and allow state agencies and the public a historic perspective of geospatial changes.

Lead: State GIS Coordinator, GIS Council Archiving Working Group **Participating Entities:** GIS Council, State Agencies, State Government Council **Timeframe:** 2017-2019

Funding: No initial funding required for this action item other than personnel time to meet, develop and communicate plans. Future funds are required for meeting objectives outlined in the business plan.

Target/Deliverables:

1. Establish an Archiving Working Group to support this action item.
2. Develop Archiving Business Plan.
3. Develop and implement an Archiving Standard Operating Procedure

GIS Council

Nebraska Spatial Data Infrastructure (NESDI)

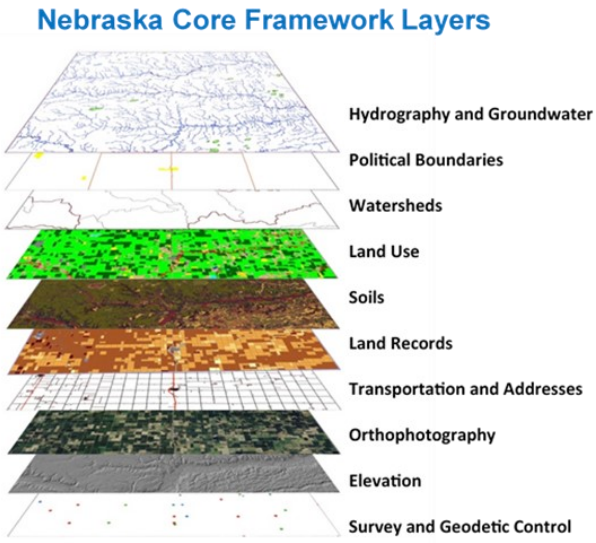
Overview

Objective:

- *To develop and foster an environment and infrastructure that optimizes the efficient use of geospatial technology, data, and services to address a wide variety of business and governmental challenges within the state. Geospatial technologies and data will be delivered in a way that supports policy and decision making at all levels of government to enhance the economy, safety, environment and quality of life for Nebraskans*.
    - *Facilitate the creation, maintenance, analysis and publishing of quality and authoritative data and information systems. Priority layers include: imagery, elevation, street centerlines, point addressing, and land records.*
    - *Formalize data stewardship and encourage data sharing and provide widespread access to data and services through NebraskaMAP.gov.*
    - *Facilitate technical assistance and education outreach opportunities for furthering the adoption of the NESDI and geospatial applications.*
    - *Achieve sustainable and efficient allocation of resources to support the implementation and wise governance of GIS services and geospatial data*

Collaborators:

- The State of Nebraska
- Local and County Government
- League of Municipalities
- Nebraska Association of County Officials
- Nebraska GIS LIS Association
- Natural Resources Districts
- Public Power Districts
- Federal Agencies
- Private Industry
- K-12, College, and University of Nebraska



Strengths/Assets:

- The GIS Council, established by Neb. Rev. Stat. § 86-572(2), provides an existing governance structure, representing a broad range of stakeholder interests.
- Standards which are foundational to the NESDI are in place or in development.

Nebraska Spatial Data Infrastructure (NESDI)

- Existing State GIS Coordinator and one GIS staff member in CIO GIS Shared Services Office.
- Several strong state agency and local county-based GIS programs.
- Several NESDI data layers and applications exist with coverage in priority areas or statewide.
- Strategic Plan completed in 2012 with stakeholder input from across the state. It serves as roadmap to setting statewide priorities and was used to develop the NESDI strategic initiative and action items.
- Centralized data file infrastructure established to host and share state agency data layers.

Challenges/Issues:

- Insufficient legislative or executive sponsor to support GIS Council efforts.
- Resources are inadequate to develop and maintain all framework layers.
- Resources are inadequate for a stewardship infrastructure that supports comprehensive stewardship of framework data.
- Outreach and training needs of GIS and geospatial data use and applications are broad given the level of different users.
- Reluctance to share data or making data available easily or timely.
- Technical limitations in current infrastructure and networks to host and exchange data.
- Sustainability of data maintenance and updates.
- Lack of metadata and appropriate documentation of data layers to support data discovery, sharing, and reliability of data.
- Lack of understanding of standards and no authoritative enforcement to data stewards not following standards. Local counties do not see NITC standards as a requirement but a guideline.

Recent Accomplishments:

- Working groups established involving our collaborators to gather information and develop plans.
- New standards adopted for elevation, imagery, street centerlines and addresses. Metadata standards have been updated to reflect federal ISO requirements.
- Elevation business plan completed and implementation started with collaborators working to acquire data through a 4,400 acre project in western Nebraska.
- Established a statewide K-12 GIS Education Initiative by leveraging a statewide enterprise license agreement for software and services to private and public schools.

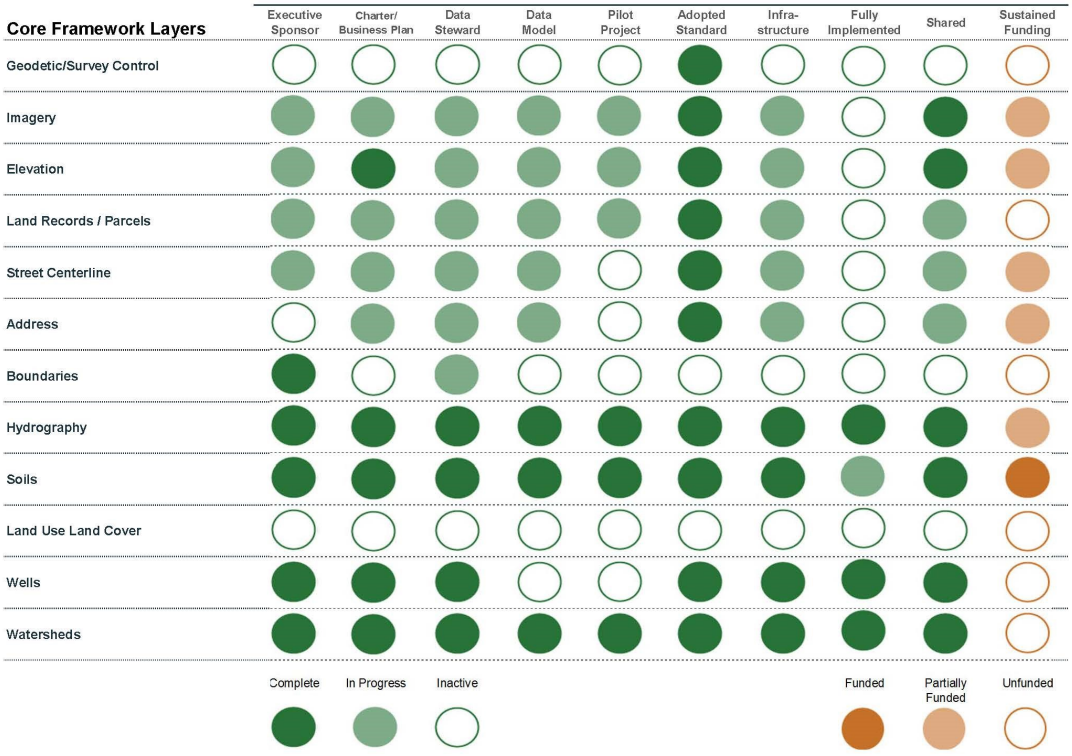
Recommendations:

- Continue this initiative. Current GIS Council goals are in line with strategic initiative and objectives. The next set of priority NESDI layers will become new action items in this initiative.
- Integrate NESDI data development, maintenance and application priorities into public safety, NG 9-1-1, and emergency management policy and activities.

Metrics

The metrics below and on the following page are used to evaluate the status of the NESDI and overall GIS program for the state.

Core NESDI Data Development and Maintenance Criteria and Status



Nebraska Spatial Data Infrastructure (NESDI)

Status of Nebraska Based on NSGIC Coordination Criteria

The National States Geographic Information Council (NSGIC) has published a listing of "9 Criteria for a Successful Statewide GIS Program." While these are not firm, binary criteria, they provide a measure by which different states can be compared. In general, the most successful states tend to have these things in common.

Criterion	Status
1. A full-time, paid coordinator position is designated and has the authority to implement the state's business and strategic plans:	**Partially meets criterion.** NITC has a full-time State GIS Coordinator. Authority to implement Business and Strategic Plans will come through NITC and Office of the CIO. Limited funds are available to carry out specific action items.
2. A clearly defined authority exists for statewide coordination of geospatial information technologies and data production:	**Partially meets criterion.** NITC GIS Council provides governance to statewide coordination efforts along with the Office of the CIO based on statutory authority for state entities. Rely on partnerships from local involvement.
3. The statewide coordination office has a formal relationship with the state's Chief Information Officer (CIO):	**Meets criterion.** The State GIS Coordinator is positioned in the Office of the CIO.
4. A champion (executive and other legislative champions) is aware and involved in the process of geospatial coordination:	**Does not meet criterion.** There are no strong, active champions currently involved in the process.
5. Responsibilities for developing the National Spatial Data Infrastructure and a State Clearinghouse are assigned:	**Partially meets criterion.** A complete Nebraska Spatial Data Infrastructure (NESDI) has not been fully developed. The NebraskaMAP state clearinghouse exists, but has limited capability and lags behind other states. Both require sustained resources to develop
6. The ability exists to work and coordinate with local governments, academia, and the private sector:	**Partially meets criterion.** These entities are represented on the NITC GIS Council. There is some evidence of local government involvement with state functions, but overall GIS adoption across the state remains low.
7. Sustainable funding sources exist to meet project needs:	**Partially meets criterion.** There is funding for the State GIS Coordinator and various resources for projects through other agencies. However, long-term, sustainable funding and allocation of resources is still needed.
8. GIS Coordinator has the authority to enter into contracts and become capable of receiving and expending funds:	**Meets criterion.** The State GIS Coordinator in the Office of the CIO can enter into contracts.
9. The Federal Government works through the statewide coordinating authority:	**Partially meets criterion.** The Federal Government recognizes the Nebraska GIS Council and their efforts and has worked with the state (e.g. via NAIP, Homeland Security, FEMA, NebraskaMAP)

Nebraska Spatial Data Infrastructure (NESDI)

Action Items

1. **Action: Formalize the definition of the Nebraska Spatial Data Infrastructure (NESDI) and data stewardship**

   GIS assists in solving complex issues by providing the ability to understand spatial relationships among various spatial data sets. In many cases, the spatial analysis capabilities of a GIS can identify trends from among many datasets to solve problems. Selected datasets have such widespread utility in a GIS that they have been identified as "Framework Datasets" and due to their significance are accorded special attention by the GIS community. Traditionally, these data sets have been developed independently for a relatively narrow range of purposes. However' the use of geospatial data and the range of applications it is used for is growing rapidly. This places increasing demands on individual data in terms of accuracy and completeness, and especially upon those inherent spatial relationships among datasets.

   This action item will begin to better define the NESDI and identify the necessary relationships among the various NESDI data layers. The document will provide an illustration of the "big picture" of Nebraska's framework including:

   - A common understanding of framework
   - A context for prioritizing the components of the framework
   - A context and justification for future funding requests
   - A basis for identification of potential stewards and stewardship roles and responsibilities

   The context of the framework themes will be explored at the local, state, regional and national levels. This will benefit the overall coordination, development, revision and promulgation of the relationships among various GIS framework data standards. It will aid in development, implementation and revision of stewardship guidance and procedures for the various GIS framework themes. In addition, it will provide additional direction on NESDI governance, management practices, policy development, and outreach with the statewide community.

   Lead: State GIS Coordinator, GIS Council Representatives

   Participating Entities: GIS Council, NESDI Data Stewards

   Timeframe: 2015-2017

   Funding: No initial funding required for this action item other than personnel time to meet, develop and communicate plans.

   Target/Deliverables:

   1. Establish an ad hoc committee of GIS Council representatives to work on this action item.
   2. Develop a document that defines the NESDI and the role of data stewardship to support the NESDI.

GIS assists in solving complex issues by providing the ability to understand spatial relationships among various spatial data sets. In many cases, the spatial analysis capabilities of a GIS can identify trends from among many datasets to solve problems. Selected datasets have such widespread utility in a GIS that they have been identified as "Framework Datasets" and due to their significance are accorded special attention by the GIS community.

2. Action: Geodetic and Survey Control Inventory and Assessment

Spatial data deployed in an enterprise environment generally has higher requirements for accuracy and quality than does a single-purpose dataset. Geodetic and survey control is essential for the development of spatial data that can be analyzed in combination with other layers.

A careful examination of our current survey and geodetic control data across the state based will be conducted on various criteria for its use in the development of NESDI framework layers. This action item will identify methods and linkages through NebraskaMAP to communicate and provide access to relevant data to users and stakeholders.

Lead: State GIS Coordinator, GIS Council Representatives

Participating Entities: Nebraska Department of Natural Resources, Nebraska Department of Roads, State Surveyors Office, various Licensed Land Surveyors, Federal Partners including NOAA – National Geodetic Survey and Army Corp of Engineers

Timeframe: 2015-2017

Funding: No initial funding required for this action item other than personnel time to meet, develop and communicate plans.

Target/Deliverables:

1. Establish an ad hoc committee involving stakeholders from government, private industry and the survey community.
2. Develop a current inventory and assessment report of geodetic and survey control in Nebraska.
3. Summarize scope of geodetic and survey control in the state in terms of coverage, density, and availability of data for use in the development of other NESDI framework layers.
4. Identify and document recommendations for:
    - Developing and improving statewide survey and geodetic control data in Nebraska.
    - Incorporation of recommendations into new and current NITC standards that impact the NESDI framework.
    - Education and training needs to stakeholders for using survey and geodetic control in their applications.
    - Best practices for incorporating data into mapping, GIS, and other GPS related applications.
    - Methods and linkages through data sharing to communicate and provide access to relevant data to users and stakeholders.

3. Action: Nebraska Statewide Elevation Program

Surface elevation databases are critically important for a wide range of GIS applications and as such have been determined to be a priority database for development by the GIS Council. Elevation databases have been determined by the Federal Geographic Data Committee (FGDC) to be a Framework Database because of their use by a wide cross-section of geospatial data users. LiDAR (Light Detection and Ranging) is a proven remote sensing technology that enables the efficient collection of highly accurate

surface elevation data for large geographic areas. This dataset serves as a basis for other derived geospatial data products in its relationship to the overall NESDI. More importantly, this data set strengthens the geodetic control context for the development of other framework layers. Pursuant to the objectives outlined in the Strategic Plan, the GIS Council is responsible for identifying and coordinating the use of digital elevation LiDAR technologies to develop enhanced surface elevation data for Nebraska. This involves:

a) An assessment of the current status and perceived adequacy of existing Nebraska surface elevation data, relative to the perceived short and intermediate-term needs;

b) An exploration and documentation of the likely costs and benefits of utilizing LIDAR technology to collect enhanced surface elevation d:ata for large geographic areas of Nebraska;

c) Recommendations related to possible future Nebraska LIDAR initiatives including technical standards, possible lead agencies, funding strategies, and timelines; and

d) Identification of methods and linkages through NebraskaMAP to communicate and provide access to relevant data to users and stakeholders.

Lead: State GIS Coordinator, GIS Council Elevation Working Group

Participating Entities: Nebraska Department of Natural Resources, Nebraska Department of Roads, Nebraska Natural Resource Districts, Public Power Entities, Federal Partners including Army Corp of Engineers, USGS, USDA-NRCS, and USDA-FSA.

Timeframe: 2015-2017

Funding: No initial funding required for this action item other than personnel time to meet, develop and communicate plans. Future funds are required for meeting objectives outlined in the business plan.

Target/Deliverables:

1. Establish an Elevation Working Group to support this action item.
2. Identify and develop a set of standards for standard elevation product(s) that will meet the majority of stakeholder requirements and expectations in a cost-effective manner.
3. Develop a Nebraska Statewide Elevation Program business plan.
4. Implement a Nebraska Statewide Elevation Program.

4. Action: Nebraska Statewide Imagery Program

Imagery is a required spatial data framework layer needed for a multitude of mapping applications. It is important that imagery is accurate, current, and easily accessible to end users. This dataset serves as a basis for other derived geospatial data products in its relationship to the overall Nebraska Spatial Data Infrastructure (NESDI). The acquisition of updated, orthorectified (corrected for camera tilt and the slope of the earth's surface) imagery requires a significant public investment, but if done collaboratively, on a regular periodic basis, these costs can be minimized and shared across a broad user community. It is expected that this effort will be largely integrated into the larger Nebraska GIS Strategic Planning process. Efforts will be made to learn from, and build on, existing collaborative imagery acquisition efforts such as the Nebraska-Iowa Regional Or-

thoimagery Consortium (NIROC) and the USDA Farm Services Agency – National Aerial Imagery Program (NAIP). This initiative will:

- Research and develop recommendations for standards, policies, infrastructure, and funding to support collaborative efforts by state, local and federal agencies to periodically acquire updated orthoimagery.
- Identify methods and linkages through NebraskaMAP to communicate and provide access to relevant data to users and stakeholders.

Lead: State GIS Coordinator, GIS Council Imagery Working Group

Participating Entities: Nebraska Department of Natural Resources, Nebraska Department of Roads, Nebraska Natural Resource Districts, Public Power Entities, City and County Governments, Federal Partners including USGS and USDA-FSA.

Timeframe: 2015-2017

Funding: No initial funding required for this action item other than personnel time to meet, develop and communicate plans. Future funds are required for meeting objectives outlined in the business plan.

Target/Deliverables:

1. Establish an Imagery Working Group to support this action item.
2. Identify and develop a set of standards for standard imagery product(s) that will meet the majority of stakeholder requirements and expectations in a cost-effective manner.
3. Develop a Nebraska Statewide Imagery Program business plan.
4. Implement a Nebraska Statewide Imagery Program.

5. Action: Street Centerline-Address Database

This action item will:

- Develop and maintain a statewide seamless street centerline and address referencing system used for various transportation, public safety (ie, NexGEN 911), economic development and other related applications.
- Initiate assessment of current street centerline data.
- Implement a data model and workflow guidelines for QA/QC of existing and future maintenance of street centerline data.
- Develop data model for address points and use of data in relationship to street centerlines and other NESDI framework layers.
- Further develop partnership efforts that support NexGEN 911 or combinations thereof who needs to be involved in the process of using street centerline and address point data.
- Research and develop recommendations for standards, policies, infrastructure, and funding to support collaborative efforts by state, local and federal agencies to periodically acquire updated a seamless street centerline-address database.
- Identify methods and linkages through NebraskaMAP to communicate and provide access to relevant data to users and stakeholders.

Lead: State GIS Coordinator, GIS Council Street Centerline and Address Working Group

Participating Entities: GIS Council, State Government Council, Nebraska Department of Roads, E 9-1-1 community

Timeframe: Implementation timeline determined by Business Plan

Funding: No initial funding required for this action item other than personnel time to meet, develop and communicate plans. Future funds are required for meeting objectives outlined in the business plan.

Target/Deliverables:

1. Establish a Street Centerline and Address Working Group to support this action item.
2. Identify and develop a set of standards for standard street centerline and address product(s) that will meet the majority of stakeholder requirements and expectations in a cost-effective manner.
3. Develop a Nebraska Street Centerline Database (NSCD) and a Nebraska Address Database (NAD) business plan.
4. Implement a Nebraska Street Centerline Database (NSCD) and a Nebraska Address Database (NAD).

6. **Action: Statewide Land Record Information System**

This action item will:

- Develop an integrated statewide land records system capable of providing reliable online access to this critical data, maintaining restricted privacy access as necessary, and supporting a variety of applications by multiple agencies.
- Develop guidelines for a common geodatabase model that can provide public data for use in a multitude of state government applications.
- Implement a geodatabase model to maintain baseline data.
- Work with local governments, state agencies, and the private sector to develop a collaborative plan, standards/guidelines, and the infrastructure necessary to encourage and facilitate the ongoing integration of separately-maintained state, city, and county land records.
- Develop data workflows with local county assessors to obtain parcel (spatial and attribute) data for use in various state government applications.
- Revise the current NITC Land Record Information and Mapping Standards that have been adopted with the goal of enabling the integration of local government land records into a statewide dataset.
- Identify methods and linkages through NebraskaMAP to communicate and provide access to relevant data to users and stakeholders.

Lead: State GIS Coordinator, GIS Council Land Records Working Group

Participating Entities: GIS Council, State Surveyors Office, Department of Revenue, County Assessors, and various licensed Land Surveyors

Timeframe: Implementation timeline determined by Business Plan

Funding: No initial funding required for this action item other than personnel time to meet, develop and communicate plans. Future funds are required for meeting objectives outlined in the business plan.

Target/Deliverables:

1. Establish a Land Records Working Group to support this action item.
2. Update the current NITC 3-202 Land Record and Information Mapping Standards for standard land record product(s) that will meet the majority of stakeholder requirements and expectations in a cost-effective manner.
3. Develop a Nebraska Statewide Parcel Geodatabase Development and Maintenance Plan.
4. Implement the Nebraska Statewide Parcel Geodatabase Development and Maintenance Plan.
5. Develop a Nebraska Land Records business plan.
6. Implement the Nebraska Land Records business plan.

7. Action: NebraskaMAP - A Geospatial Data Sharing and Web Services Network

This initiative will:

- Enhance NebraskaMAP beyond its current geoportal status to an enterprise-level geospatial platform;.
- Provide necessary communication and mechanisms for public and private access to peer-reviewed Nebraska SDI data, maps, and GIS web services.

NebraskaMAP started as a metadata portal to inventory and provide linkages to several data sets. Enhancements will involve expanding services to upload, review and share NESDI data either through direct download, REST services, or accessing through web services. This system would also provide conduit to authoritative data sets, linked and shared base maps to reduce data storage costs, and a coordinated security system, including the possibility for limited data access and password protection for specific data sets. The State agencies are developing a statewide GIS Enterprise system in order to conduct daily business operations. This systems will also coincide with the interoperability, data sharing, and workflows planned for NebraskaMAP.

Lead: State GIS Coordinator, GIS Council NebraskaMAP Working Group

Participating Entities: GIS Council, State Agencies, State Government Council

Timeframe: 2015-2017

Funding: No initial funding required for this action item other than personnel time to meet, develop and communicate plans. Future funds are required for meeting objectives outlined in the business plan.

Target/Deliverables:

1. Establish a NebraskaMAP Working Group to support this action item.
2. Develop NebraskaMAP Geospatial Data Sharing and Web Services Network Business Plan.
3. Develop and implement NebraskaMAP into a statewide data clearinghouse enterprise platform.

State of Utah

Business Plan

For

Archival Preservation of Geospatial Data Resources

Version1: December 30, 2008

Table of Contents

1. INTRODUCTION

Geospatial, or location based information, is ubiquitous and now necessary throughout government and non-government business processes. The *Governance of Geospatial Resources* white paper recently published by NASCIO states that "Geographic Information Systems or GIS technology has been employed in state government for decades". Utah first introduced GIS into state government in 1981. Since that time, countless GIS data files have been created to analyze issues, develop plans, make decisions, or provide services to the public. Over the nearly three decades of GIS use in the state, the focus of the community has been on creating and maintaining the most current and accurate data and very little thought or effort has gone into preserving that information or the resultant products.

The *Utah Geospatial Infrastructure (UGI) Strategic Plan* was completed in September of 2008. The Strategic Plan recognized the UGI is "necessary to acquire, process, distribute, use, maintain, and preserve digital spatial data and services." Included in this definition is the requirement to implement a process to maintain and preserve digital geospatial data resources within Utah across all state and local agency partners. Many individual agencies have no process currently in place for geospatial data preservation but do agree there is value in doing so.

There is increasing interest by states across the nation, in addressing digital geospatial data preservation. The State of Utah is working with the states of North Carolina and Kentucky along with the Library of Congress to implement processes for archival preservation of this data. This coincides with the National States Geographic Information Council (NSGIC) and the Federal Geographic Data Committee (FGDC) approach to encourage and assist state strategic planning efforts.

The Division of State Archives and Records Service (State Archives) along with the Automated Geographic Reference Center (AGRC) begun a partnership to lead the effort of preserving digital geospatial data for Utah. The intent is to do this through joint policy development, infrastructure provisioning, training, technical assistance, and implementation.

The mission of the Division of State Archives and Records Service (State Archives), a division of the Department of Administrative Services (DAS), is to:

- Assist Utah government agencies in the efficient management of their records,
- Preserve those records of enduring value, and
- Provide quality access to public information.

The mission of the Automated Geographic Reference Center (AGRC) is to:

- Encourage and facilitate the effective use of geospatial information and technology for Utah.
- Manage the State Geographic Information Database (SGID) as an asset for all geospatial data users for Utah.

The intersection of these missions, based in statutory requirements, brought the AGRC and State Archives together. This activity has become a priority for Utah because of the increasing recognition of the value of geospatial data and the realization that much of it is currently at risk.

State Archives and the Department of Technology Services recently completed an *Electronic Records Management Business Case* where many of the following business drivers were identified:

- Records preservation: Preservation of all aspects of government projects and decisions including data, software, processes, products and documentation.
- Loss of Investment: Electronic records document business processes and decisions that the state has paid for; their loss would require resources to redo the work. Some losses may not be recoverable.
- eDiscovery: Increasing demand for finding and retrieving information in legal matters, and increasing penalties for not being able to produce it.
- Government Records Access and Management Act (GRAMA): There is constant demand for information the public is entitled to.
- Efficiency: The demand for efficiency drives technological advances, which drive the state to be able to define policies, standards, procedures, and tools to better manage electronic records.
- Online Storage Costs: Records stored in an active online environment without regard to the business value of the information equals higher cost.
- Duplication of storage costs: Savings realized when sharing storage and other infrastructure by multiple agencies for data holdings.
- Archival Professional Guidelines: Sets standards for which records stewards must be compliant.
- Increasing Use of Technology: There are ever-increasing amounts of records being created in or converted to electronic formats.
- E-record Vulnerability: Essential electronic records are at risk in disasters and other emergencies.
- Transparency: The emphasis on transparency in government and online public access to records results in a need for adequate records management solutions.

The costs to implement this activity are minimal in comparison to the funds initially expended to develop this data. This plan defines a project that can move forward using currently available low cost solutions. This process will define an enterprise solution that will help to alleviate the need for each agency to maintain the computer systems and storage necessary to preserve their data independently. Regardless of cost, there is a legal and social responsibility to perform this activity.

2. GOALS

Through the planning process to develop the *Utah Geospatial Infrastructure Strategic Plan*, discussions concluded that there needed to be a capability to manage digital geospatial data. This includes developing a process that will identify, inventory, evaluate, and preserve valued digital geospatial information. Requirements for data

inventory, maintenance and preservation were addressed in the *UGI Strategic Plan* with detailed objectives identified here.

Programmatic Goal: Implement a process to archive digital geospatial data resources in Utah across all state and local agency partners.

Objective 1: Establish scope and duration of effort.

Success Factors:

a. Finalize plan of action and milestones
b. Establish criteria for completion

Objective 2: Support the State Archivist's responsibilities to administer the state's archives and records management program including digital geospatial data (UCA § 63A-12-101).

Success Factors:

a. Create retention schedules for all record groups of digital geospatial data. A "record group" is a set of records that have some functional relationship.
b. Establish standards, procedures, and techniques for effective management and care of digital geospatial data.
c. Ensure preservation of historically significant geospatial data and records with continuing value.

Objective 3: Establish procedure and mechanism for inventory of state and local government digital geospatial data and projects.

Success Factors:

a. Establish the list of core data elements to capture during the inventory effort.
b. Establish "metadata" management approach for storing and reporting on inventory findings (e.g. RAMONA).
c. Use GIS to show status of inventory results and to help discover data resources.
d. Establish database of contacts for inventory effort in conjunction with "metadata" management approach.

Objective 4: Compliance with, and ease of fulfilling, Government Records Access and Management Act (UCA 63G-2).

Success Factors:

a. Ensure public access to archived digital geospatial data.
b. Provide assistance to any government entity to meet GRAMA requirements.

Objective 5: Assist the geospatial technology community to preserve their digital geospatial data and projects.

Success Factors:

a. Enable preservation at a single point.
b. Ensure against temporary or permanent loss as a result of the distributed nature of digital geospatial data.
c. Provide preservation of temporal versions of digital geospatial data.
d. Provide assistance to meet requirements for Continuity of Operations.

Objective 6: Increase awareness across sectors and stakeholder groups about the archival preservation program to expand participation.

Success Factors:

a. Develop training program to assist records officers.
b. Develop training program to assist geospatial technology professionals.
c. Arrange presentations to explain purpose and make appeal for their participation.
d. During the inventory process, determine need for door-to-door vs. group training and schedule accordingly.

3. BENEFITS

For nearly thirty years, state and local agencies in Utah have steadily implemented geospatial technologies into their work processes and projects. This has resulted in a huge amount of digital geospatial data, programs, and products. Agencies are often asked, or even required, to make old data available. There is also a need to be able to repeat a process from a previous decision or product using data and programs contemporary with the event. By having a commitment and a systematic approach to preservation, these needs are easily met.

There are risks to the state by not preserving digital geospatial resources. As identified in the State's ERM Business Case, "The primary risk is cost, due to loss of critical information, the necessity to recreate information that is no long available, or the amount and quality of storage purchased for records of questionable value. The business risk to the state may be in the form of legal actions due to an agency's inability to produce a record during an e-Discovery request."

Utah is committed to addressing this issue. Doing nothing to preserve our digital geospatial resources is no longer an alternative. There are many benefits to this on-going activity which include:

- Standardized preservation of geospatial resources.
- Standardized approach by state and local agencies for retention policies and categorization of resources.
- Development of tools to ease the discovery of geospatial resources.
- Improved access to digital geospatial resources to aid originators of data, GRAMA requests, researchers, and the public.
- Assistance in continuity of operations and disaster recovery for state and local agencies.
- Actual dollar savings due to coordinated approach to archiving geospatial resources using standardized formats and a shared computer environment and storage.
- Ability to compare data not only to see changes in the data itself, but in the processes used to create data and improvements in quality and completeness.

4. REQUIREMENTS AND COSTS

4.1 Inventory of Existing Infrastructure and Suitability Assessment

AGRC has been developing a Continuity of Operations Plan (COOP). Much of the infrastructure for that plan has now been implemented. Although COOP is still in the early stages of testing and evaluation, we believe it has the potential to also work for the preservation of geospatial data resources. The existing infrastructure contains the following components:

- Database Server (vector data)
- Imagery Server (raster data)
- License Manager (for ArcGIS products)
- FTP Server (that contains an export from the database)

4.2 Data Requirements

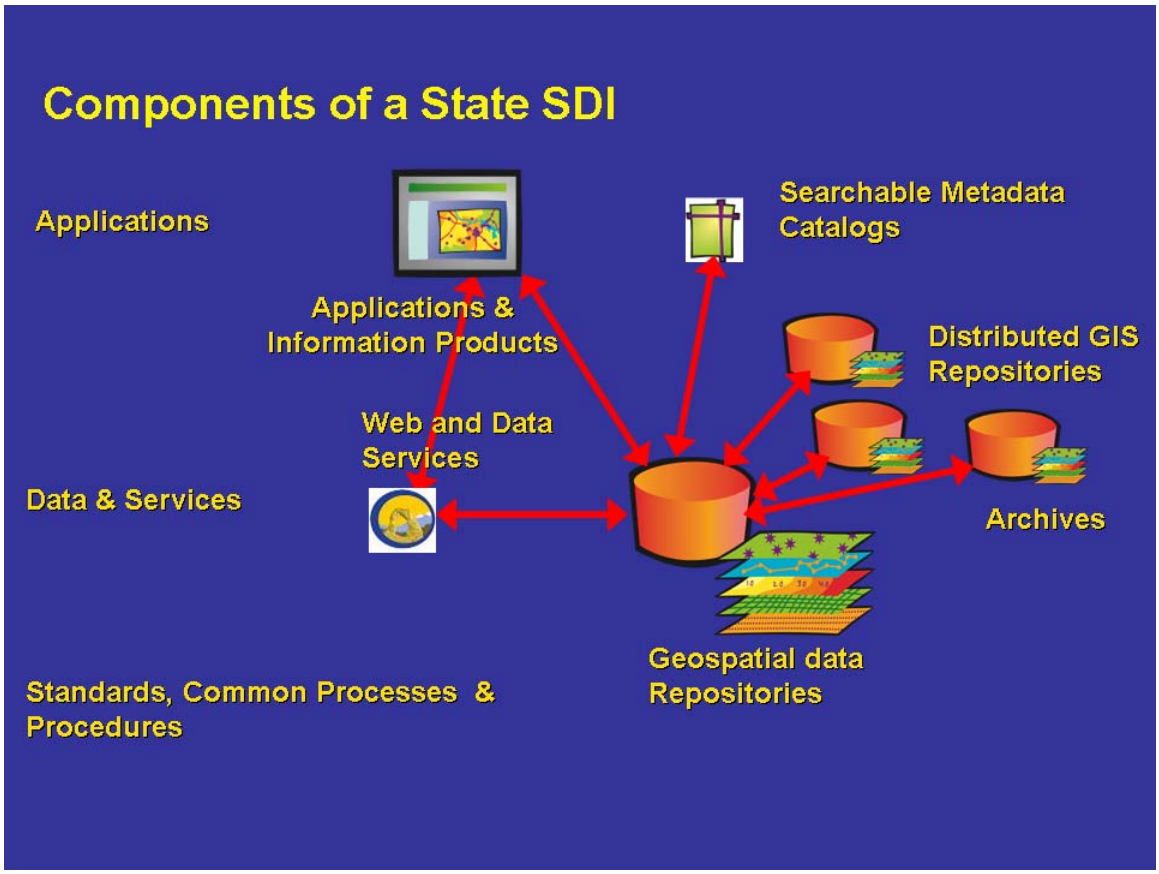
Data contributed to the State Geographic Information Database (SGID) and subsequent archiving will be loaded into the SGID framework. This process will ensure current, temporal, and archive versions of data are secure and accessable. This data will remain live, on-line, and read-only in the database. As technology allows, various GIS formats and computer aided design (CAD) formats of data will also be tested and integrated into the archival system. AGRC must ensure these data are secure and in a well managed computing environment.

These data must meet the core requirements for managing electronic records State Archives identified in their ERM Business Case:

- **Accessible—**the records must be available for appropriate use for the duration of the retention period.
- **Authentic—**the records must be what they claim to be and have integrity, that is, have not been changed, deleted or otherwise altered.
- **Reliable--**the data within the records is at all times retrievable (i.e., no loss of data is acceptable).
- **Secure--**all of the people allowed to view records according to the classification of the records, and in some situations, only those people, should have access.

4.3 Technology Requirements

The computing environment for this plan will take advantage of the Spatial Data Infrastructure components currently being implemented by AGRC. The architecture for this infrastructure will take advantage of the primary computer center located in Salt Lake City and the remote computer center located in Richfield, Utah. Both of these centers are operated by the Utah Department of Technology Services.



The infrastructure needs to contain the following components;

- Database Server – HP/Compaq DL380G5 Series Server
- ArcGIS Server Enterprise Standard – SQL Server

- Imagery Server – HP/Compaq DL380G5 Series Server
- This is an extension to ArcGIS Server Enterprise Standard

- License Manager – Sun Sunfire T1000 Server
- All Server type products use an .ecp file. Concurrent use licenses for ArcGIS Desktop and desktop extensions require a license manager

- FTP Server – HP/Compaq DL380G5 Series Server ~ 1TB on board storage
- There is no ArcGIS software on this server. This server contains geospatial data files in a few different formats for users to download

- As appropriate, all servers will run Windows 200X server standard.

4.4 Resource Requirements

The staffing resource requirement will have two aspects: the initial startup commitment and an ongoing requirement. The initial startup commitment will be approximately 200

hours and an ongoing requirement of .25 part of an FTE (500 hours per year at State approved rate).

4.5 Standards

Geospatial data preservation issues fall within the realm of a national information policy and a national data management strategy. Working in partnership with library and archival communities, government data producers need to standardize and adopt organizational policies and practices to govern the creation, use, retention, dissemination, preservation, and disposition of geospatial data to ensure their authenticity and integrity for as long as required by federal, state, and local laws and ordinances; rules and policies; and regulations, and for the health, safety, welfare, security, and prosperity of citizens.

While Utah is producing high-quality geospatial data, the policies and procedures governing its long-term retention remain to be developed both at the state and national levels. National bodies such as the Federal Geographic Data Committee (FGDC), federal agencies such as the Library of Congress and the National Archives, along with national councils associated with geospatial data production, delivery, and preservation should work together to further develop the following policy areas:

- Promote the use of the approved metadata standard in the geospatial community through publicity, workshops, and the creation of tools.
- Promote the adoption of non-proprietary standards for the creation and exchange of geospatial data such as GML and Open Geospatial Consortium specifications.
- Research the use of Library of Congress, the National Archives, and the FGDC guidelines and best practices for the logical and physical storage of digital information.

5. ORGANIZATIONAL APPROACH

5.1 Plan Sponsorship

This program will be managed the Utah Division of State Archives with support from the Department of Technology Services and the Automated Geographic Reference Center.

5.2 Project Governance

Oversight is provided by the current structure governing State Archives and AGRC. This includes participation by existing groups that include the State Records Committee, the Geospatial Information System Advisory Committee (GISAC), and regional and sector based organizations in Utah.

5.3 Organizational Outlook

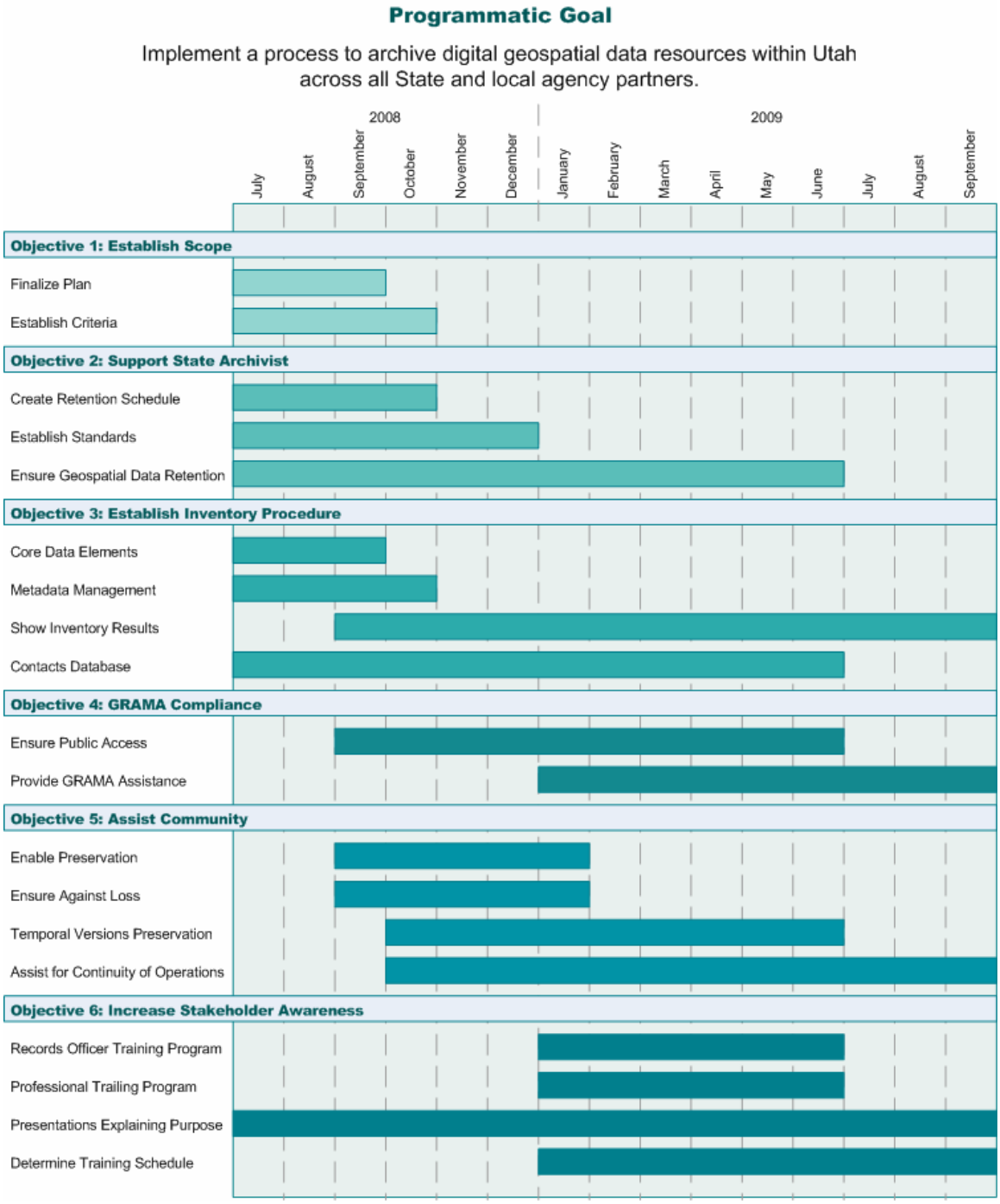
The current state of affairs supports this plan. No changes in sponsoring organizations or governance are required for implementation. This plan implements what is currently required by statute.

6. IMPLEMENTATION PLAN

6.1 Implementation Details

The Gantt chart below illustrates the proposed schedule for this project. The project should become operational and the processes be in full production by September 30, 2009. Each component in Objective 5 includes installation, testing and operations. This schedule will work for most agencies and most geospatial resources. Although the current computing environment will accommodate most of the data and projects that agencies wish to archive, the project may initially be constrained by storage capacity for larger data sets.

6.2 Phasing and Milestones



6.3 Budget Plan

The startup costs for these systems could be a shared cost between AGRC and State Archives. Preliminary startup cost estimates, excluding the costs of State personnel for this solution, and an estimate for ongoing costs, are provided.

Geospatial Archiving Solution: Cost estimates developed at AGRC are as follows:

Startup Costs:

- Licensing $30,000.00
- Servers $ 584.32/server/month, 3 Servers ~ $22,000.00/year
- Storage N/A Insufficient Sizing Data
- Staff time (Computing environment = 200 hours @ $73 = $14,600)
  (Project initiation and admin = 1000 hrs @ $73 = $73,000)

Ongoing Costs:

- Licensing/Support $8,000.00
- Server Admin, included in the cost per month
- Storage N/A Insufficient Sizing Data
- Server Replacement, included in the cost per month
- Staff time (500 hours @ $73 = $36,500 per year)

Computing Environment:

Startup $30,000 plus storage costs
Ongoing $8,000 plus storage costs

Archives Personnel:

An ongoing GIS Archivist II part-time salary and benefits estimate:
Salary $16,800
Benefits $18,700
Total $35,500 per year

AGRC personnel:

Startup
- Computing environment = 200 hours @ $73 = $14,600
- Project initiation and admin = 1000 hrs @ $73 = $73,000

Ongoing = 500 hours @ $73 = $36,500

Partner agency personnel:

Dependent on size of organization.

6.4 Measuring Success, Feedback, and Recalibration

Below is a preliminary scorecard for the defined programmatic goal and associated objectives. This scorecard provides a quantitative mechanism for determining what level of progress has been achieved over time. These “success factors” can be modified and extended as appropriate. On a predefined schedule, we recommended that the set of tasks

be reviewed and the checklist updated to reflect task completion. Totaling the number of checklist points enables a percentage estimate to be made against the target total, for checking status.

Programmatic Goal: Implement a process to archive digital geospatial data resources within Utah across all state and local agency partners.			
OBJECTIVES	**Total Points**	**Current Score**	**CHECKLIST OF SUCCESS FACTORS**
Objective 1: Establish scope and duration of effort.	10		❑ Finalize plan of action and milestones ❑ Establish criteria for completion
Objective 2: Support the State Archivist's responsibilities to administer the state's archives and records management program including digital geospatial data (UCA § 63A-12-101) .	15		❑ Create retention schedules for all record groups of digital geospatial data. ❑ Establish standards, procedures, and techniques for effective management and care of digital geospatial data. ❑ Ensure preservation of historically significant geospatial data and records with continuing value.
Objective 3: Establish procedure and mechanism for inventory of state and local government digital geospatial data and projects.	10		❑ Establish the list of core data elements to capture during the inventory effort. ❑ Establish "metadata" management approach for storing and reporting on inventory findings (e.g. RAMONA). ❑ Use GIS to show status of inventory results and to help discover data resources. ❑ Establish database of contacts for inventory effort in conjunction with "metadata" management approach.
Objective 4: Compliance with, and ease of fulfilling, Government Records Access and Management Act (UCA 63G-2)	15		❑ Ensure public access to archived digital geospatial data. ❑ Provide assistance to any government entity to meet GRAMA requirements.
Objective 5: Assist the geospatial technology community to preserve their digital geospatial data and projects.	20		❑ Enable preservation at a single point. ❑ Ensure against temporary or permanent loss as a result of the distributed nature of digital geospatial data. ❑ Provide preservation of temporal versions of digital geospatial data. ❑ Assist to meet requirements for continuity of

Programmatic Goal: Implement a process to archive digital geospatial data resources within Utah across all state and local agency partners.			
OBJECTIVES	**Total Points**	**Current Score**	**CHECKLIST OF SUCCESS FACTORS**
			operations.
Objective 6: Increase awareness across sectors and stakeholder groups during inventory process about the AGRC program to expand participation	10		❑ Develop training program to assist records officers. ❑ Develop training program to assist geospatial technology professionals. ❑ Arrange presentations to explain purpose and make appeal for their participation. ❑ Determine need for door-to-door vs. group training in Inventory application and schedule accordingly.
TOTAL POINTS	80	0	

We will use the following summary table to score our overall progress. Partial progress on a particular checklist item can get partial points. When a success factor is complete, full points can be counted. This will give some indication of the current level of success, on an ongoing basis. A quarterly reporting schedule is shown in the table, below, and should be accompanied by a narrative report.

Progress Matrix	**Total Points**	June 08	Sept. 08	Dec. 08	March 09	June 09	Sept. 09	Dec. 09	March 10
Programmatic Goal: Implement a process to archive digital geospatial data resources within Utah across all state and local agency partners.	80								
Running Totals	0								

END NOTES:

1) Governance of Geospatial Resources: "Where's the Data? Show Me" - Maximizing the Investment in State Geospatial Resources, NASCIO http://www.nascio.org/committees/EA/download.cfm?id=103

2) Utah Geospatial Infrastructure Strategic Plan, Utah GIS Advisory Council http://gis.utah.gov/index2.php?option=com_docman&task=doc_view&gid=78

3) Electronic Records Management Business Case, Utah Division of State Archives

APPENDICES

Appendix 1: GeoMAPP / Library of Congress project information

Library of Congress
National Digital Stewardship Alliance

Geospatial Content Work Group
http://www.digitalpreservation.gov/ndsa/working_groups/content.html

Geospatial Data Archiving

Quick Reference for GIS Practitioners: Data Creators, Managers, Clearinghouses

Sites last accessed: August-Sept. 2013 (Diane Papineau, Montana State Library, dpapineau@mt.gov)

There is increasing demand for older content to support historical and temporal analyses related to change in earth's natural and human landscape, including physical infrastructures. Examples of applications that require historic content include the study of climate change, disaster planning, environmental impact analysis, industry site location planning, and the resolution of legal challenges.

GIS Practitioners preserving the data they create and host is the necessary first step to support historical and temporal analysis. The resources below provide guidance for GIS practitioners on how to preserve geospatial data using state-of-the-art archiving best practices.

Geospatial Archiving Reference

- Geoarchiving Glossary http://www.geomapp.net/using.htm

Broad, Full Overview of Geospatial Data Archiving

- Geospatial Multistate Archive and Preservation Partnership (GeoMAPP) Final Report http://www.geomapp.net/docs/GeoMAPP_FinalReport_final_20111231.pdf
- GeoMAPP Key Findings and Best Practices http://www.geomapp.net/docs/GeoMAPP_ProjectFindings_BestPractices20111231.pdf
- Library of Congress: "Platforms for Digital Stewardship" http://blogs.loc.gov/digitalpreservation/2013/09/platforms-for-digital-stewardship/

Business Planning

- GeoMAPP GeoArchiving Self-Assessment Tool
  http://www.geomapp.net/docs/GeoMAPP_GeoArchiving_SelfAssessment_20100914.xls

- GeoMAPP GeoArchiving Business Planning Toolkit
  http://www.geomapp.net/publications_categories.htm#busplan

- State of Utah Business Plan For Archival Preservation of Geospatial Data Resources
  http://www.geomapp.net/docs/Utah_Business_Plan_Geospatial_%20Archive_2008.pdf

Collection Development Policy Examples

- Collection Development Policy for the National Geospatial Digital Archive
  http://www.ngda.org/research/Collections/NGDA_Collection_Development_Policy_11_06_final.doc

- Collection Development Policy for Montana State Library
  http://apps.msl.mt.gov/About_the_Library/Policies/22_colldev.pdf

- Collection Policy - Cornell University Geospatial Information Repository
  http://cugir.mannlib.cornell.edu/CUGIRCollectionDevtPolicy_20060825.pdf

- Library of Congress Collections Policy Statements: Cartographic and Geospatial Materials
  http://www.loc.gov/acq/devpol/cartog.pdf

Geospatial Data Archiving Best Practices

Selection and Appraisal

- GeoMAPP: Appraisal of Geospatial Data
  http://www.geomapp.net/docs/InfoPartner_Appraisal_presentation_final_20110728.pdf

- NDSA: Appraisal and Selection of Geospatial Data
  Not posted online yet, but internet search soon should find it.

- FGDC Users/Historical Data Working Group "Guidance on the Selection and appraisal of Geospatial Content of Enduring Value"
  Not posted online yet, but internet search soon should find it.

Metadata/Record Keeping

- GeoMAPP: Archival Metadata Elements for the Preservation of Geospatial Datasets
  http://www.geomapp.net/docs/GIS_OAIS_Archival_Metadata_v1.0_final_20110921.pdf

- GeoMAPP: Utilizing Geospatial Metadata to Support Data Preservation Practices
  http://www.geomapp.net/docs/GeoMetadata_Items_for_Preservation_2011_0110.pdf

- FGDC: Managing Historical Geospatial Data Records: Guide for Federal Agencies
  http://www.fgdc.gov/library/factsheets/documents/histdata.pdf

Transferring Data to an Archive

- GeoMAPP: Best Practices for Archival Processing for Geospatial Datasets
  http://www.geomapp.net/docs/GIS_Archival_Processing_Process_v1.0_final_20111102.pdf

- GeoMAPP: Best Practices for Geospatial Data Transfer for Digital Preservation
  http://www.geomapp.net/docs/Geo_Data_Transfer_BestPractices_v1.0_final_20111201.pdf

- GeoMAPP: Geospatial Data File Formats Reference Guide
  http://www.geomapp.net/docs/GeoMAPP_Geospatial_data_file_formats_FINAL_20110701.xls

- Library of Congress: "Bagger" Data Transfer Tool
  https://github.com/LibraryOfCongress/bagit-java

Archive Storage

- GeoMAPP Storage Primer
  http://www.geomapp.net/docs/GeoMAPP_Storage_Primer_final_20111231.pdf

Discovery and Access of Archived Data (examples)

- North Carolina State University Libraries GIS Data Collection
  http://www.lib.ncsu.edu/gis/datalist.html

- North Carolina Digital Collections
  http://www.digital.ncdcr.gov/cdm/search/collection/p15012coll6/searchterm/carolina/field/all/mode/exact/conn/and/order/title/ad/asc/cosuppress/1

- Kentucky Department for Libraries and Archives (browse by title)
  http://dspace.kdla.ky.gov:8080/jspui/handle/10602/1166

- Utah Department Of Administrative Services: Online Catalog
  http://archives.utah.gov/research/catalog.html (search for "geospatial")

Interagency Agreements

- Libraries as Distributors of Geospatial Data: Data Management Policies as Tools for Managing Partnerships http://muse.jhu.edu/journals/library_trends/v055/55.2steinhart.html
- Legal Agreements Governing Archiving Partnerships: The NGDA Approach http://www.ngda.org/docs/Pub_Sweetkind_Arch2009%20_09.pdf

Managing/Curating Geospatial Archive Collections

- Advancing Geospatial Data Curation: http://www.ukoln.ac.uk/events/pv-2005/pv-2005-final-papers/030.pdf

Examples: Geospatial Data Archiving Systems

- California's Geospatial Records: Archival Appraisal, Accessioning, and Preservation http://salt.unc.edu/eLegacy/

Early Efforts/Rationale for Geospatial Data Archiving

- ESRI UC Lightning Talk: The Benefits of Preserving Digital Geospatial Data http://www.youtube.com/watch?v=dgPAvRK91Io
- Update on Geospatial Data Preservation Efforts http://www.lib.ncsu.edu/ncgdap/presentations/2009_Mountain_View_Opening_Plenary_Morris_Preservation.ppt
- GeoArchiving 101 for Fun, Profit, and Peace of Mind http://proceedings.esri.com/library/userconf/proc10/UC/papers/pap_1202.pdf
- North Carolina Geospatial Data Archiving Project http://www.lib.ncsu.edu/ncgdap/
- Next Generation Archives: The NC Geospatial Data Archiving Project http://www.geomapp.net/docs/200903_geotools_JE_ZN.pdf
- Preservation of Digital Geospatial Resources: A Team Climb http://www.geomapp.net/docs/geomapp_pres_nsgic2008.pdf

Geospatial Archiving Organizations/Projects

Geospatial Data Preservation
http://geopreservation.org

Hosted and maintained by the Center for International Earth Science Information Network (CIESIN) at Columbia University. Browse by Topic or by Resource Type.

GeoMAPP
http://www.geomapp.net/

Multi-year project involving four full-partner states and many more "informational partners states." Project concluded in December 2011. Online reports and best practices are available for data creators and data archivists.

National Digital Information Infrastructure and Preservation Program (NDIIPP)
and
National Digital Stewardship Alliance (NDSA) Geospatial Content Work Group
http://www.digitalpreservation.gov/

NDIIPP was established in 2000. NDIIPP launched Geospatial Multistate Archive and Preservation Project (GeoMAPP). The NDSA Geospatial Content Work Group was formed at the close of the GeoMAPP project. The NDSA Geospatial Content Team is interested in exploring challenges and solutions to the long-term preservation, stewardship and accessibility of digital mapping information.

FGDC Historic Data Working Group
http://www.fgdc.gov/participation/working-groups-subcommittees/hdwg

The Users/Historical Data Working Group is established under the auspices of the Federal Geographic Data Committee (FGDC) to promote and coordinate activities among Federal agencies who are primarily users of, not generators of, geospatial data.

OpenGeoPortal
http://opengeoportal.org

The Open Geoportal is a collaboratively developed, open source, federated web application to rapidly discover, preview, and retrieve geospatial data from multiple repositories.

FGDC "GeoPlatform"

http://www.geoplatform.gov/

GeoPlatform is an internet-based capability providing shared and trusted geospatial data, services, and applications for use by the public and by government agencies and partners to meet their mission needs. This is currently in development by the FGDC. An archiving community may be developed within this site.

The National Geospatial Digital Archive

http://www.ngda.org/

This archive project was active between 2005-2009. As partners in the project, the university libraries of University of California, Santa Barbara and Stanford University led the formation of the National Geospatial Digital Archive (NGDA), a collecting network for the archiving of geospatial images and data.

USGS science for a changing world

USGS Data Management

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Preserve > Archiving

Archiving

Via the Bureau Windows Technical Support Team (BWTST): "Archives and Backups are two very different things. Backups are created for the express purposes of data restoration and continuity of operations in an emergency. In short, Backups are an insurance policy in case of disaster, which may include everything from accidental file data deletion to catastrophic loss of equipment. Archives, on the other hand, are a means for long-term storage of historically important data which are probably no longer needed online for immediate access."

Best Practices

- Ideally, **Archives** should be created in a **platform- and software-independent format** on **stable media** such that they can be **retained and used indefinitely**. For example, data in geographic information

USGS Guidelines for the Preservation of Digital Scientific Data [pdf]

This document provides guidelines for employees in technical evaluation of systems for preserving digital scientific data.

Environmental Guidelines for the Storage and Preservation of USGS Science Records Media [pdf]

This document provides recommended temperature and relative humidity ranges for storing USGS science records.

Key Points

- Archives should be created in a platform- and software-independent format on stable media such that they can be retained and used indefinitely.
- Archives must be uniquely labeled, thoroughly catalogued, and stored in a controlled and protected environment.
- Multiple copies of Archives are to be kept in separate locations.

system (GIS) databases may be stored in a proprietary format. This proprietary format may be altered over time as the GIS software evolves. Hence, in order to ensure that the data will be useful years later, it's necessary to export these data in a **standard and portable format**.

- Often, **Archives** are created for **legal reasons**. They provide a snap-shot of data as a historical record, similar to the way an accountant may retain tax records. Outside entities may expect that **Archives** be periodically created of all system data including logs, Web cache, email, project proposals, and the like. It is not unheard of to have such records **subpoenaed in legal proceedings** involving USGS offices and programs.
- Because **Archives** are created to be kept **indefinitely**, they should be created using **stable media**. Magnetic tapes and inexpensive optical media have a limited shelf life. Care should be taken to find and use appropriate **archival quality media**. It is understood that **Archives** may have to be **moved to new media** periodically in order to **ensure their viability**. Information on archival quality media is available on the Media Options page (USGS BWTST - Internal Site).
- **Archives** must be uniquely **labeled**, thoroughly **catalogued**, and stored in a **controlled and protected environment**. System Administrators should consider contracting with a firm that specializes in long-term storage of archives. Also, the benefits of creating **multiple copies of Archives** to be kept in separate locations should be given appropriate consideration.
- **Archives** can be made for various reasons. An archive may be made at the end of a project to create a historical record of all data and information from that project. Archives are also made as part of federal records management.

Tools

- **Archives and Records Centers Information System (ARCIS)**

  Description:
  ARCIS is the Web-based IT system of the Federal Records Centers (FRCs) of the National Archives and Records Administration. The system is the online portal through which your agency can do business with the FRCs.
  URL:
  https://www.archives.gov/frc/arcis/about.html

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