Recommendations for Geospatial Data Sharing

North Carolina Geographic Information Coordinating Council

A Report by the Local/State/Regional/Federal Data Sharing *ad hoc* Committee
Bill Holman, Chair
Revised, November 7, 2007

Background

The Local/State/Regional/Federal Data Sharing *ad hoc* Committee was created by the North Carolina Geographic Information Coordinating Council (GICC) to address issues brought forward by the Local Government Committee (LGC). At the August 16, 2006 meeting of the GICC the Chair of the Local Government Committee presented a report describing issues related to state government agencies' requests to local government for local government data. In the report (ATTACHMENT A), the LGC identified several issue areas, and recommended:

> "…*that the State designate a single state agency to serve as a clearinghouse for all data requests by state government agencies to local governments…"*

In that report, LGC directed the problem toward:

> *"…the lack of communication among state agencies…"* but acknowledged that *"…issues are complicated and the inconsistent policies at the local government level contribute to the problem."*

The LGC also acknowledged that:

> *"A mix of policy, process, and technology solutions will be required to solve the problem…"* and suggested that *"recommendations to address the issues should be consistent with the vision and characteristics of NC OneMap."*

The GICC referred the issue to the Chair of the Statewide Mapping Advisory Committee (SMAC) and on February 7, appointed the *ad hoc* committee to study the problem and develop specific recommendations that address the concerns of local, regional, state, and federal government agencies. Mr. Bill Holman, as Committee Chair, convened the *ad hoc* committee in four meetings from March through June. Recommendations of the Local/State/Regional/Federal Data Sharing *ad hoc* Committee are provided in this report.

Vision

The recommendations offered by the committee for the sharing of geospatial information are consistent with the GICC's vision for *NC OneMap*. The committee acknowledges that each government sector invests significantly in geospatial data and each sector brings value to the statewide community. The recommendations: a) foster partnership development across all organizations and levels of government; b) avoid wasteful duplication of effort; c) optimize the use of technical infrastructure to address business needs for information exchange; and d) ensure effective and economical leveraging of geospatial resources for public benefit. The recommendations support the Council's vision for *NC OneMap,* which include the following:

> *"The (NC OneMap) framework will promote the maintenance of economic vitality in our communities, public health and safety, and the quality of life for all North Carolinians. Our citizens will take the availability of comprehensive geographic information for granted."*
>
> *"…NC OneMap will serve the basic information requirements for decision-making in the community, statewide, and in support of national priorities. NC OneMap will provide information to support the daily business processes of numerous organizations and their functions. While any user may have a unique view of the resource and it ostensibly may be physically distributed and maintained by a variety of data producers, it will appear to users as consolidated and integrated."*

Ten Recommendations for Data Sharing

The committee identified ten data sharing recommendations for consideration by the Council. The recommendations, and associated best practices, should be publicized and used to encourage cooperation among all government agencies.[1]

1. **Avoid Formal Agreements**
   Written agreements that unnecessarily restrict the free exchange of geospatial data will be avoided. Exceptions could include circumstances that involve:
   a. Records that are protected by General Statute, such as those under the authority of the State Veterinarian; or are otherwise deemed confidential by appropriate authorities;
   b. Records that could pose a public safety or security risk, as written in law, or when appropriately restricted as part of a structured decision-making process guided by the "Guidelines for Providing Appropriate Access to Geospatial Data in Response to Security Concerns," adopted by the Council (ATTACHMENT B).

   In the rare exception, if a formal agreement is necessary the data *producer* is the appropriate authority to decide on the need for that agreement.

[1] Government agencies include federal, state, regional and local agencies and state-supported universities.

2. **Web Access**
   Local, regional, state and federal geospatial content providers will make every effort to make data available to other local, regional, state, and federal entities through Internet technology, by uploading data or linking local services through *NC OneMap*. This will help meet a desired increase in efficient handling and distribution of geospatial data. Also, it will enable all users to access data and reduce the number of inquiries and data requests to staff in each individual organization.

3. **Secure Access**
   In order to facilitate the distribution of certain data among government organizations additional services, including a secure site, may be necessary. Use of secure sites should not hamper or prevent the free sharing of data among public agencies. The road centerline data distribution tool, currently under development by the SMAC-Working Group for Roads and Transportation (WGRT), is an emerging example of secure ways to facilitate an organized approach to loading and distribution of data among public organizations.

4. **Free Data**
   If local, regional, state, or federal data providers do not choose to make their data available on *NC OneMap*, it is recommended that providers supply data, including metadata, to other local, regional, state, and federal governmental organizations free of charge.

5. **Single Point of Contact**
   Local, regional, state, or federal government organizations are to consolidate and identify point of contacts for acquiring and distributing data. This will streamline and alleviate the number of inquiries and requests to each organization. Contacts should be registered on the *NC OneMap* inventory and contact information should be publicized, regardless of whether or not the organization releases data as part of *NC OneMap*.

6. **Regional Solutions**
   Regional approaches for data collection and data sharing through *NC OneMap* should be employed where beneficial and appropriate, typically when the local agency does not have the technical capability or available resources to distribute its own data.

7. **Official Outlets**
   Because data are most current and accurate at the original data source, data will be acquired only from original sources, *NC OneMap*, or through an official outlet, named by the *producer* of that data. Consumers that request data from secondary sources shall be directed to primary outlets. Secondary sources of data shall not redistribute original data, except at the request or permission of the originator. This does not apply if secondary sources have added value in some way to the original content and provide disclaimers/metadata indicating that they are not the original source.

8. **Archive and Long Term Access**
   Data producers should evaluate and publish their long term access, retention, and archival strategies for historic data.

9. **NC OneMap Brand**
   The *NC OneMap* logo (Service Mark) should be displayed on web sites among collaborating partners. The *NC OneMap* 'brand' conveys to visitors that the agencies are working together in a collaborative network on mutual interests to meet the GICC goals and *NC OneMap* vision.

10. **Outreach**
    Outreach and education on the recommendations above and the "Best Practices" below are vital components to the success and benefits of cooperative data sharing among government agencies. Appropriate material should be developed to communicate the recommendations and best practices. Suggested strategies for distribution of this information include:

    - The NC Association of County Commissioners (NC ACC) and the NC League of Municipalities (NC LM) should formally endorse the final report, as approved by the GICC.

    - NC ACC and NC LM should proactively promote the policy or recommendations that are adopted by the GICC, through newsletter articles, organization conferences and other means. It is important that county and municipal managers and elected officials be aware of the support by these organizations of the data sharing policies and recommendations.

    - The GICC committees, specifically the Local Government Committee, the State Government GIS Users Committee, and the Federal Interagency Committee should proactively promote the policies and recommendations adopted by the GICC.

    - State government departments should formally endorse or issue directives that staff will adhere to the policies and recommendations related to data sharing adopted by the GICC. It is true that many of the state government departments are represented on the GICC and the adoption of the final recommendations by the GICC will imply the tacit approval by these departments of the policies and recommendations in the report. However, without proactive support and promotion within all state departments, the policies and recommendations may not be adopted.

The Role of NC OneMap

Activities already underway to organize access to statewide geospatial data, such as *NC OneMap*, *NC OneMap* Inventory, and *NC OneMap* FTP Services, will be used as a data sharing framework. Additional services will be required to address "secure access" capabilities, such as the service currently under development for statewide road centerline sharing. *NC OneMap* is a collection of central and distributed services organized within a network of local, regional, and state agency stakeholders. *NC OneMap* is the 'official' statewide geospatial data clearinghouse. With full participation, users will be able to find information from across the state and be directed to appropriate on-line services and content providers.

Participating organizations are required to register in the *NC OneMap* Inventory and to create and maintain metadata that accompany transactions. The *NC OneMap* Inventory and metadata are important 'best practices' because those actions yield vital information about each organization and describe the availability of data to the statewide data sharing community.

Unless otherwise noted in statute or by agreement with the data producer, data that are part of *NC OneMap* are accessible in the public domain and can be freely redistributed. *NC OneMap* is an 'official' outlet for partner data.

No undue burden beyond the practice of sound data management principles will be placed on any one organization to participate in *NC OneMap* data sharing.

The Role of Center for Geographic Information and Analysis

The Center for Geographic Information and Analysis (CGIA) is the managing and coordinating agency in the state for data distribution as described by NC General Statute §143-725(b). Under the direction of the GICC, CGIA and its partners will seek to fulfill this role through development of the appropriate technical infrastructure and practices as part of the GICC's *NC OneMap* program. If additional resources are required for CGIA to serve in this role, the GICC, its members, and other stakeholders should seek and advocate for additional ways to fund and resource the program.

> NC General Statute §143-725(b)
> *The Role of CGIA - The Center for Geographic Information and Analysis (CGIA) shall staff the Geographic Information Coordinating Council and its committees. CGIA shall manage and distribute digital geographic information about North Carolina maintained by numerous State and local government agencies. It shall operate a statewide data clearinghouse and provide Internet access to State geographic information. (2001–359, s. 1; 2004–129, s. 44.)*

Scope of Initial Data Sharing Efforts

Initial efforts to implement the recommendations above will focus on "key" framework layers, such as geodetic control, orthoimagery, road centerlines, parcels, surface waters, county and municipal jurisdictional boundaries, parcels, and local zoning. In total, the initial efforts will include the 37 data layers identified by the GICC to be part of *NC OneMap* (ATTACHMENT C) and also include leaf-on imagery from the National Agricultural Imagery Program. Data that are aggregated from original sources for these data layers and contain added-value content are also acknowledged as part of initial efforts.

Core Best Practices

Members of the committee developed the following core practices to help data producers and content providers meet the intended goals for solving the issues with statewide data sharing. The list does not reflect all of what can be done, but represents a minimum set.

1. Data producers and content providers should register on the *NC OneMap* Inventory and complete agency profile and data content information. Maintain the information on a regular basis.

2. Write and maintain complete Federal Geographic Data Committee-compliant geospatial metadata for all datasets. Publish the metadata for discovery, and distribute it with the dataset.

3. Provide access to geospatial data for free via the Internet, through your agency's data download page, FTP site, and/or via *NC OneMap* FTP site (or combination of above).
   - ✓ Determine the data layers most needed/most requested; a minimum list should be the framework layers;
   - ✓ Periodically review the content available to see if layers should be added, removed, or replaced;
   - ✓ Periodically review the data formats provided and modify/update based on current industry standards; and
   - ✓ Include aggregated or value-added data in your data sharing process.

4. Make sure the location of the data for download and instructions for downloading are clear and posted prominently on your agency's web site. Provide "Help Desk" capability for the public and others accessing your data.

5. Publish your web services and catalog through *NC OneMap*. Connect or enhance your Web Map Services to the *NC OneMap* viewer by contacting the *NC OneMap* staff at CGIA. If your organization does not utilize web services, then contact the staff about using the services from a regional partner or from the *NC OneMap* servers.

6. Establish a policy and procedure for the provision of access to historic data, especially for framework data layers.

7. Provide alternate methods to share/use restricted data between key approved partners in preparation of emergency, security, and hazard events.

Value and Benefit of Data Sharing

The committee agrees that the benefits of a shared and organized approach to geospatial information technology investments are far greater in the aggregate than from the sum of each individual result. The benefits from sharing data among partners increase with participation. Five business cases were identified that exemplify how efficient and open sharing of geospatial data

among organizations is of benefit and yields a collective return on investment. Each case is highlighted below. Additional information about each case is provided in ATTACHMENT D.

Case #1: At least $130,000 will be saved annually upon implementation of an on-line statewide road centerline collection and distribution service. Producers and users will be able to access an on-line service to load or access state and local centerline datasets. Benefits are realized when all stakeholders participate.

Case #2: The value of cost avoidance and efficiencies in the sharing of surface waters data among stakeholders in a joint development project is over $6,000,000. The benefits are accrued by numerous agencies, including Department of Transportation, Ecosystem Enhancement Program, NC Wildlife Resources Commission, US Geological Survey, local governments, and the development community, among others.

Case #3: The Natural Heritage Program, Ecosystem Enhancement Program, Division of Water Quality Wetlands Unit, and Division of Forest Resources are just some of the organizations that benefit from the acquisition of summer "leaf-on" imagery via the National Agricultural Imagery Program (NAIP). The base product is made available for free by the United States Department of Agriculture with buy-up options offered to help meet specific requirements. Municipalities and counties could benefit from the NAIP imagery. As one example, the City of Salisbury could have applied the data in a program called CITYGreen (see ATTACHMENT D1) to determine the 'value' of externality costs derived from the reduction of pollutants by the amount of tree cover in a given area. Externality costs are calculated as indirect societal impacts, such as rising health care costs. Another CITYGreen example shows the 'value' of tree cover in the reduction of storm water volume which correlates to potential lower costs for storm water infrastructure. In these examples commercially available licensed imagery was used by American Forests for the work but this licensed imagery was not available to the City of Salisbury for further work following the completion of these examples. The use of NAIP imagery in these projects in place of licensed imagery would have provided the City of Salisbury the opportunity to continue the work beyond the completed American Forests program, utilizing the same base NAIP imagery for temporal and technical consistency.

Case #4: Benefits are realized when the US Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services (USDA APHIS VS) is called in to aid in the response to animal disease outbreak. When USDA is activated, the Multi-Hazard Threat Database is critical to the response team because it is pre-loaded with shared data from state agencies, local governments, and from the various animal industries. Those data can be loaded to the USDA Emergency Management Response System, thus allowing quicker deployment of USDA surveillance teams in the field to support incident management. While no quantitative data has been found to specifically show dollars saved through quick and decisive response to animal disease outbreaks, it is assumed that the benefits are substantial given the level of commerce that exists in the state for animals and animal products.

Case #5: The NC Department of Agriculture and Consumer Services pre-loaded statewide parcel data in cooperation with local governments and as a result, FEMA was able to utilize the data to begin Hurricane Isabel recovery efforts in a timelier manner. Another case study

conducted after Hurricane Isabel identified the benefits of having parcel data in place and coordinated statewide in advance of events, and having 'core' parcel data published on a regular basis. The report highlights five specific findings for sharing of parcel data for emergency response, including the savings of time to assessors and adjusters for purposes of insurance claims and federal disaster loans, among other activities. See ATTACHMENT D2.

The examples above are only a few of the numerous business cases that could be documented to demonstrate the benefits of data sharing. Other significant cases could include the NC Floodplain Mapping Program in the development of local flood insurance rate maps and the Department of Commerce for industry recruitment tools, where the combined data resources of state and local government yield meaningful and powerful results to all participants.

Members of the Local/State/Regional/Federal Data Sharing *ad hoc* Committee

Bill Holman	Committee Chair, Duke University
Mary Combs	U.S. Dept of Agriculture – Natural Resources Conservation Service
Jim Dolan	North Carolina Office of State Budget and Management
John Farley	North Carolina Department of Transportation
Tim Johnson	North Carolina Center for Geographic Information and Analysis
Chris Koltyk	Moore County
Steve Morris	North Carolina State University Libraries
Zsolt Nagy	North Carolina Center for Geographic Information and Analysis
Doug Newcomb	U.S. Fish and Wildlife Service
Anne Payne	Wake County
Jake Petrosky	City of Raleigh/Capital Area Metropolitan Planning Organization
Allan Sandoval	North Carolina Department of Commerce
Colleen Sharpe	City of Raleigh
John Spurrell	North Carolina League of Municipalities
Steve Strader	U.S. Geological Survey – National Geospatial Programs Office
Richard Taylor	North Carolina Wireless 911 Board
Rebecca Troutman	North Carolina Association of County Commissioners
David Lawrence	UNC School of Government, Invited Speaker (March 15, 2007)
DeWayne Branch	NCSU Graduate Student, Observer (March 15, 2007)

Meetings of the Committee

The Committee held all of its meetings at the Albert Coates Local Government Center, Raleigh NC. The meetings were held on the following dates: March 15, 2007; April 19, 2007; May 17, 2007; June 21, 2007; and October 10, 2007.

Attachments

ATTACHMENT A	Requests by State Agencies for Geospatial Data Produced by Local Government
ATTACHMENT B	Guidelines for Providing Appropriate Access to Geospatial Data in Response to Security Concerns
ATTACHMENT C	NC OneMap Implementation: Initial Data Layers to Serve
ATTACHMENT D	Data Sharing Committee Business Case Summaries
ATTACHMENT D1	American Forests and CITYGreen *Calculating the Value of Nature*
ATTACHMENT D2	Parcel Data and Hurricane Isabel, A Case Study