State of New Hampshire
GIS Gap Analysis and Recommendations

New Hampshire GIS Technical Advisory Committee

February 2017

Contents

Background on this Document:

The GIS Technical Advisory Committee (GTAC) has been tasked by the NH House Bill 377 (GIS Advisory Committee) with conducting a gap analysis of the current status of GIS in New Hampshire in the context of Guiding Principles recently adopted by the state GIS Committee. The committee compared the 2007 New Hampshire Geographic Information System (GIS) Strategic Plan with the current status of NH GIS and identified specific short-term actions that can be taken to maximize the early benefits of a NH State Spatial Data Infrastructure to the greatest number of state stakeholders.

Summary of Recommendations

The GTAC proposes the preparation of a two-year Action Plan.

- **Outputs**
    - Prepared by working group of the GTAC
    - A sequence of steps that must be taken, or activities that must be performed well for a strategy to succeed
    - Three major components:
        - Specific tasks that will be done and by whom
        - Time horizon when things will be done
        - Capital and human resources needed for specific activities

- **Required outcomes**
    - HB 377 GIS Advisory Committee agreement to review, amend and adoption
    - Seek required resources to implement the action plan

- **Action Plan to address:**
    - *Strategy #1 -* NH statewide basemap and derivative data products will meet the operational needs of stakeholder agencies.
        - *Objectives -*
            - Develop a statewide data acquisition plan for updates of aerial imagery, LiDAR, and derivatives on a regular schedule tied to the biennial budget.
            - Develop a formalized protocol for collection and aggregation of local-scale authoritative data modeled after the Statewide Asset Data Exchange Service (SADES) & T^2 Parcel Mosaic.
            - Use a common way to locate geospatial features of interest to a location on the earth *e.g. US National Grid as a master index for enterprise level data sharing*

- ○ *Strategy #2 -* Fully realize GRANIT's potential to better support state agency operations by elevating GRANIT to the official NH State GIS Clearinghouse
  - ■ *Objectives –*
    - ■ <u>Common awareness and accessibility to enterprise GIS data sets</u> e.g. *Making users aware of what GIS data is available and how to get access to it*
    - ■ <u>Task- and cost-appropriate analytical tools</u> e.g. *Identify and promote use of the same GIS software and tools for managing and editing GIS data*
    - ■ <u>Common GIS presentation tools and platform</u> *e.g. Web viewers like Google Earth; NHDES One Stop*
    - ■ <u>Increase outreach to state, regional, local governments, and private stakeholders</u> *e.g. Large unmet need for GIS educational and technical support aimed at the municipal government level.*

- ○ **Strategy #3** - Access to GIS technology is equitable and affordable to all state agencies
  - ■ *Objectives –*
    - ■ Develop best practice guidelines for data collection, storage, and management
      - ○ Example: <u>Adopt official geographic data indexing system as a common way to locate geospatial features of interest</u> *e.g. US National Grid as a master index for enterprise level data sharing*
    - ■ Identify software & managerial solutions to improve license management within & across agencies.
    - ■ Pursue collaborative partnerships with strategic software vendors

- ○ **Strategy #4** - Enhance statewide GIS governance and policies to guide best practices
  - ■ *Objectives -*
    - ■ Renew GTAC charge and outreach plan
    - ■ Elucidate uniform legal guidance with respect to GIS and NH public records law

Implementation Table: NH GIS Technical Advisory Committee Gap Analysis Working Group -- Proposed Strategic Actions for HB 377 GIS Committee (February 2017)

Strategic Goal	Potential Action(s)	Benefits	Relative Technical Complexity	Relative Institutional Complexity	Cost*	Timeframe**	I. Data Sharing	II. Sharing of GIS Innovations & Technologies	III. Inter-Agency GIS Collaboration Initiatives
NH Statewide Basemap and derivative data products meet the operational needs of stakeholder agencies	1. Develop a **data acquisition PLAN that refreshes aerial imagery, LiDAR, and derivatives** (e.g. , buildings and other infrastructure, hydrography) regularly (e.g. tied to biennial budget schedule).	Authoritative location data on all NH assets is critical to **meeting public and commercial expectations for effective, efficient, and transparent government**	Medium	Low	Low	Ongoing	X	X	X
	2. Develop a formalized **PROTOCOL** for the collection and aggregation of **local-scale authoritative data** (e.g. infrastructure, town boundaries) modeled after the Statewide Asset Data Exchange Service **(SADES) & T^2 Parcel Mosaic**		Medium	Low	Low	Ongoing			
GRANIT's potential to better support state agency operations is fully-realized	1. Formally recognize **GRANIT as the official NH State GIS clearinghouse for curated, public-facing GIS data**	**Builds upon successful model**; makes data access efficient; **reinforces NH GIS identity** and brand; **eliminates agency learning curve**	Low	Medium	Moderate	Short-term	X		X
	2. Extend GRANIT's State GIS clearinghouse role with adequate support to cover standards awareness, metadata management, outreach and training		Low	Medium	Moderate	Ongoing	X		
	3. Promote GRANIT for **cost-effective data hosting** and viewing		Low	Low	Low	Ongoing		X	X
	4. Implement a more modern, user-friendly **GRANIT data portal**		Medium	Low	Moderate	Short-term	X		
Access to GIS technology is equitable and affordable to all state agencies	1. Develop **best practice guidelines** for data collection, storage and management	**Reduces IT** and GIS staff administrative **burden**; improves software access, **reduces costs** through sharing	Low	Medium	Moderate	Mid-term	X	X	X
	2. Identify software & managerial solutions to improve **license management** within & across agencies. Optimize **ESRI license procurement** strategy								
	3. Pursue **collaborative partnerships with strategic software vendors**								
NH statewide **GIS governance and policies** guide best practices	1. Renew **GTAC charge and outreach plan** to ensure strategies benefit GIS **end-user community**	**Increases effectiveness and reach of HB 377**	Low	Low	Low	Short-term			X
	2. Elucidate uniform legal guidance with respect to **GIS and NH Public Records Law**	**Eliminates barriers** to data sharing; **reduces agency legal liabilities**	Low	High	Moderate	Mid-term	X		
	3. Adopt an **official geographic data indexing system**; pass legislation when National Spatial Reference **System (NSRS) is updated**	**Reduces spatial error**; critical to **emergency mgt.**	Low	Medium	Moderate	Mid-term	X		

* Cost per Cycle: Low < $50K; Moderate $50-250K; High >$250K
** Timeframe: Short-term 3 years; Mid-term 5 years; Long-term 10 years

Recent Successes

Over the past decade, New Hampshire state, regional, local agencies, and GIS stakeholders, through working together and leveraging existing agency resources, have implemented several recommendations of the 2007 New Hampshire GIS Strategic Plan.

Progress includes:

- **Continued support for GRANIT**, New Hampshire's GIS data clearing warehouse, through pledged state agency funds to provide GIS services that filled gaps in state resources to successfully implement strategic GIS initiatives by individual agencies. GRANIT services include:
  - Data distribution & development
  - Online mapping (examples: GRANITView & NHDES OneStop)
  - Spatial analysis
  - Image processing & application development
  - Cartography
  - Program management, technical services & training
- Continued agency support for the **GIS Technical Advisory Committee (GTAC),** formerly known as the NH GIS Advisory committee, to advance GIS statewide, by pursuing:
  - Technology knowledge sharing
  - GIS data awareness and sharing
  - Collaboration and outreach to GIS stakeholders at state, federal, regional, and local agencies, as well as public and private partners.
- **Statewide Asset Data Exchange System (SADES),** a cloud-based solution to effectively and uniformly collect critical infrastructure data on a statewide level that provides specifications, methods, training, and data exchange services for all stakeholders.
  - SADES provides a cloud-based model that supports partnerships for GIS data collection and sharing across state, regional, and local agencies.
  - SADES provides an opportunity to maximize staff and funding resources by reducing the risk of duplication of data development, collection, and storage of essential statewide GIS data.
- **New Hampshire Visual Information and Emergency Watch/Web (NHVIEWW),** a secure-access collaborative system operated by the Division of Emergency Services and Communications (DESC) that integrates various state data repositories, owners, and services into a data store with web-based visualization and analysis tools. It is currently used by eight state agencies on a paid subscription basis.
- **High Resolution (1 foot resolution) statewide aerial photography:**
  - Collection of high resolution orthophotography in 2010 & 2015 by DOT.
  - Collaborative funding partners included DOS and DRA (only in 2010).
- Acquisition of **statewide LIDAR data** through a collaborative funding model between NHDES and the U.S. Geological Survey.

- **Statewide Parcel Map:**
    - The **NH Mosaic Parcel Map** is an advanced integrated land records system developed and maintained by the NH Department of Revenue Administration and made available through a customizable MOU to many different state departments, including DOT, DES, and DOS. It contains:
        - Parcel and political boundaries
        - Real estate transactions (from registry of deeds)
        - Municipal budget and appropriations data.
        - 40+ attribute Computer Assisted Mass Appraisal ("CAMA") database.
        - Updated annually and is validated through local sales records and indexed County Data is transferred automatically via FTP each night.

A more detailed analysis of the progress New Hampshire has made since 2007 can be found in Appendix A, "Changes from 2007 Strategic Plan to Now".

Current Challenges

Some challenges that were noted at the time of the 2007 Strategic GIS plan continue to exist. These include:

- **Lack of awareness of GIS status and resources:** While GRANIT is known and widely used as a quality resource for GIS data in the state, numerous data sets are being developed at a variety of state agencies and elsewhere that are not part of GRANIT, making it difficult to gain an overall picture of GIS development status in New Hampshire. In addition, a good deal of data – particularly agency data sets – is not documented with metadata. Without this important component, the data cannot be archived in GRANIT and discovered using the GRANIT clearinghouse tools. As such, it is difficult to reliably determine whether a particular data set currently exists, and if it does, whether it has appropriate quality for intended uses. This has led to instances of redundant data development.

- **Statewide GIS guidance is lacking:** While GRANIT successfully implements the Federal Geographic Data Committee (FGDC) metadata standard for their data clearinghouse, the State provides little further guidance to other GIS stakeholders on data standards that will help insure that New Hampshire's GIS assets are of the highest quality and are well documented. In an effort to address this, DES has applied for an EPA grant in 2017 that will develop a GIS Data Life Cycle guidance document that could be adopted by any interested state department to standardize their GIS data management and sharing.

- **Lack of formal recognition of GRANIT** as the focal point for New Hampshire's spatial data infrastructure is a point of vulnerability within any statewide GIS planning effort; without uniform acknowledgement of GRANIT and adequate financial support, the state risks duplication

of effort and associated costs. At present only OEP, DES, DOT, DRED and Fish & Game support GRANIT financially as a presentation and archival platform for geospatial data, currently at the level of $27,000 per year.

- Absence of uniform guidance regarding the handling of GIS under New Hampshire **Public Records/Right to Know statutes** is a potential threat to data sharing. (for an example see: http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/municipal-gis/gis-and-the-public-records-law/)

- Despite successes in other statewide core datasets (e.g. parcels, LiDAR), there is no ongoing financial support for a statewide inventory of boundary monuments which would form the basis of an authoritative GIS data layer of municipal boundaries. Agencies across various levels of government use differing versions of New Hampshire municipal boundaries which poses the risk of serious legal and safety consequences.

- Uneven adoption of and diminished funding for GIS at the regional and local levels is a missed opportunity for state agencies to leverage cost savings from local data access and aggregation.

- Agencies need to communicate between disparate systems at state, federal, and local levels. For example, the NH National Guard's system can communicate with NHVIEWW, but needs to be able to communicate with the National Guard Bureau (NGB) and surrounding states' National Guards. The goal is interoperability and the capability for full information sharing.

Current Major Opportunities

- Decision-makers have become accustomed to seeing GIS products while not understanding the challenges GIS practitioners face nor seeing the gaps that exist in the state's data and technical infrastructures. In 2016, House Bill 377 established a GIS council of executive-level agency representatives who are positioned to make strong, consistent recommendations on behalf of GIS within the executive and legislative levels of government. As identified in the 2007 plan, there remains a strong collaborative attitude and support for increased coordination across GIS state programs. This collaborative attitude, codified in the guiding principles of HB 377, can streamline the process of realizing change.

- ESRI has expressed willing interest in strategic partnership with the State of New Hampshire, one successful outcome of which would be uniform deployment of and access to, and management of the ESRI suite across all state agencies with unmet GIS needs.

- Web map service technology has steadily improved, and GRANIT and others have expanded their breadth of services accordingly. One recent success story is the migration of the NHDES One-Stop data portal to GRANIT's ArcGIS for Server/Geocortex platform. There is potential to

provide low-cost web access to much of the state's GIS inventory using such a solution, particularly since GRANIT is the de facto statewide hub for GIS data.

- As the former NH GIS Advisory Committee, the body now known as the NH GIS Technical Advisory Committee (GTAC) has historically been well-attended by a variety of GIS stakeholders from all facets of the GIS community. The success and energy of this group could be channeled creatively to meet some of the current unmet needs for coordination of GIS promotion, outreach, training, and awareness.

Progress in the Context of Guiding Principles

In October 2016 the state GIS Committee adopted a set of Guiding Principles for New Hampshire GIS and tasked the GIS Technical Advisory Committee (GTAC) with determining what gaps exist between the principles and the current status of GIS in the state. There were three major guiding principles adopted, each containing several specific items. The following analysis will indicate the GTAC's assessment of the current status for each principle and related items, the desired future status, benefits to be accrued, the gap that exists between the current and future status, and proposed activities to erase the gap. Several proposed activities will address gaps in more than one guiding principle.

The table "Proposed Strategic Actions" following this section maps out the connection between actions and associated guiding principles.

Guiding Principle I. Promote statewide sharing of GIS data.

Benefits of adopting this principle include the ability to share data between departments and outside of state government, avoiding duplication of effort, and resulting in improved decision-making.

I.1. Common guidance for GIS data sets. Currently, each agency has its own data development/documentation protocol. While there are some similarities in agency processes, they are not standardized, resulting in different levels of completeness and detail.

> **Recommendations:** Guidance should be drafted to cover best practices for data collection, establishing a data life cycle, developing a common core data template (such as is used in SADES) or tear sheet, and for metadata. Guidance would list required data elements and optional additional details. Benefits to the state would include long-term usability and sharing of its GIS data, and that users would understand the derivation of every data set.

Proposed activities:
- Develop a **data acquisition plan** that refreshes aerial imagery, LiDAR, and derivatives (e.g. buildings and other infrastructure, hydrography) in a regular manner (e.g tied to biennial budget), and develop **standard specifications for statewide imagery** captured on a cyclical basis.
- Develop a **formalized protocol** for the collection and aggregation of **local-scale authoritative data** (e.g. infrastructure, town boundaries) modeled after the Statewide Asset Data Exchange Service (SADES) and T2 Parcel Mosaic.

I.2. Common geospatial data referencing and indexing systems. This refers to any geospatial referencing system, including geographic coordinates, street addressing, highway or stream route systems, and spatial indexing systems such as US National Grid. Current practice is for state GIS data to be stored in the New Hampshire State Plane Coordinate System within the North American Datum of 1983, as defined in RSA 1-A:1-5. The National Geodetic Survey is planning to adopt a new National Spatial Reference System (NSRS) by 2022, which would replace the 1983 datum. Future status would include the implementation of a statewide spatial indexing system, which would reduce spatial error and aid emergency management/disaster recovery operations.

Proposed activities:
- Pass legislation that will adopt new wording when NSRS is adopted; input will be needed from the New Hampshire Land Surveyors' Association.
- Adopt an official geographic data indexing system.

I.3. Common awareness and accessibility to enterprise GIS data sets. The GTAC understands this to mean awareness of what datasets exist and how to access them. GRANIT is New Hampshire's statewide data clearinghouse, with a wide range of data available for use by state agencies and the general public. Currently there is a variation in awareness both of GRANIT data and of GIS data that has been developed by other agencies and that may be available with varying levels of difficulty. The Division of Emergency Services and Communications maintains the most comprehensive data on street address locations in the state but is restricted by its enabling legislation on how it can share this data. The desired future status would include an increased awareness and use of available data, resulting in greater participation by agencies in sharing data. A defined core set of data sets that will be shared from state, regional, and local sources will reduce data duplication.

Proposed activities:
- Formally recognize GRANIT as the **official state GIS clearinghouse** for curated, public-facing GIS data.
- **Extend GRANIT's State GIS clearinghouse role** with adequate support to cover standards awareness, metadata management, outreach and training.
- Implement a more modern, user-friendly **GRANIT data portal.**

Guiding Principle II. Promote statewide sharing of GIS innovations and technologies

II.1. Common GIS platform. This item should refer both to agencies that currently use GIS technology and to those that don't use GIS widely yet. Currently, ESRI is the de facto standard for spatial data formats and common GIS tools. There is a statewide purchasing agreement for ESRI products, but there is also a state requirement that agencies evaluate open source software as an alternative. Agencies' use of web-based GIS is not standardized. The state should be working to support strategic relationships with leading GIS solution providers and vendors, and should standardize development tools in web-based GIS, resulting in shortened learning curves and the presence of common skill-sets among GIS users.

II.2. Common data collection methodologies & training. Currently each agency has its own set of standards. SADES is a promising model that has had some success. Ongoing programs exist for orthoimagery (through NHDOT) and LIDAR acquisition (through NHDES). DES is also applying for an EPA grant that would go to Earth Systems, Inc., to demonstrate the ability to use the US National Grid reference system as a transparent key for their datasets, which would also link to the DRA Mosaic Parcel Map; the EPA grant would also take one "have" and one "have-not" program at DES and develop a combined GIS life cycle document. In the future, a collaborative model similar to SADES should apply to the development of as many spatial datasets as possible.

III.3. Common GIS presentation tools. State agencies now use a variety of technologies to produce web-based data viewers. There are cost and resource issues with each agency hosting its own ArcGIS server. The desired state of GIS presentation would be a common look and feel to data viewers across state agencies, with GRANIT as an option as a single source for hosting and viewing agencies' geodata. Benefits to this approach would be increased ease of use by the public and by GIS technicians setting up the data viewers; savings on IT resources; economies of scale; and reinforcement of a common identity (branding) for New Hampshire GIS, resulting in increased visibility and usage.

Proposed activities for Guiding Principle II:
- Develop **best practice guidelines** for data collection, storage and management.
- Promote GRANIT for cost-effective **data hosting and viewing.**
- Identify software and managerial solutions to **improve license management** within and across agencies. Optimize ESRI license procurement strategy.
- Pursue collaborative partnerships with strategic software vendors.
- Data acquisition plan and formalized protocol for local-scale authoritative data (listed above under Principle I.1).

Guiding Principle III. Promote statewide GIS collaboration

1. Common strategic direction. The current GIS Strategic Plan is from 2007. The plan's mission statement and goals are worthy of ongoing consideration. Updating the plan would establish agency buy-in, eliminate future duplications of effort, and enhance funding success for GIS projects.

2. Increased outreach to state, regional, and local governments, and to private stakeholders. The GIS Technical Advisory Committee (GTAC, formerly known as the GIS Advisory Committee) has always been open to all GIS practitioners in the state, whether from state, federal, municipal, regional, non-profit, or for-profit organizations. The GTAC should continue to identify and reach out to state agencies that are using GIS, as well as reach out to other New Hampshire stakeholders.

3. Common understanding of statewide GIS needs and shared solutions

Proposed activities for Guiding Principle III:
- Develop new **GTAC Charter**
- Develop GTAC **outreach plan**
- Elucidate uniform legal guidance with respect to **GIS and New Hampshire public records law**

Appendix A: Changes from 2007 Strategic Plan to Now

During 2006 New Hampshire was awarded a Cooperative Assistance Program (CAP) grant by the United States Geological Survey (USGS) to support the development of the New Hampshire Geographic Information System (GIS) Strategic Plan. The goal was aimed at stimulating the development of coordinated GIS efforts at the state level as a necessary precursor to better national level coordination.

This document is designed to serve as an abbreviated version of the Strategic Plan document as well as provide updates on the status of key items mentioned.

Key Recommendations

1. Establish a State GIS Office and create a Geographic Information Officer position.
Create a small office, initially staffed only by a GIO.
UPDATE: Some improvement. While this was not accomplished, discussions about needing more formal GIS guidance lead to the creation of HB 377 and the GIS Advisory Committee.

2. Formalize GRANIT's role of service as the state's primary GIS repository.
GRANIT's role should be formalized via legislative recognition.
UPDATE: No change in status.

3. Increase outreach to regional and local government to foster municipal GIS.
This need could be met with a modest but converted effort to make technical assistance and educational resources more readily available to municipalities.
UPDATE: Little improvement. While there is increased communications with local GIS offices, by in large state agencies have not formalized outreach to local municipalities.

4. Address largest geospatial data gaps.

There should be targeted investments in improving key, broadly used data sets. Aerial photography, town boundaries and elevation data specifically.

UPDATE: Some improvement. Twice since this document was published multiple state agencies have collaborated and shared funds to purchase statewide aerial imagery. However, such efforts can be difficult and time consuming and there is no formal agreement to repeat the process.

Missed Opportunities from 2007:

1. Local parcel data is in mixed formats and often not available to state agencies.

Approximately 66% of New Hampshire communities maintain local parcel maps in a GIS environment with links to digital CAMA databases that house ownership, property and structure characteristics.

UPDATE: No longer a missed opportunity. A DRA-funded project led to the creation and maintenance of a statewide parcel mosaic and creation of digital parcels where they were not available. New Hampshire now has a regularly maintained statewide parcel layer.

2. Lost opportunity to have RPCs provide support to local government via free GIS software.

In 2001, the New Hampshire state government provided a free laptop PC and a copy of ArcView software to every municipality in New Hampshire. While this initiative was successful in spurring GIS activity at the local level, many communities did not successfully use the resources, and over time, GIS use atrophied even in communities that used the software successfully.

UPDATE: No change in status.

3. Geospatial imagery products developed for Hillsborough and Rockingham counties with homeland security grant funding cannot be shared with state government agencies.

In 2006, the City of Nashua was successful in securing grant funding from the Department of Justice to develop neighborhood level oblique imagery for every community in the two county regions.

UPDATE: Lesson Learned. Twice since this document was published multiple state agencies have collaborated and shared funds to purchase statewide aerial imagery. Everyone has access to this data, which is currently provided as a free hosted service by GRANIT.

Weaknesses from 2007

1. Lack of awareness of GIS status and resources:
While GRANIT received high marks and many GIS stakeholders use their resources, there remain large pockets of stakeholders who are unaware of what is currently available and of the overall status of GIS within the state.
UPDATE: Significant improvement. Since this document was published, many more agencies are aware of the services that GRANIT offers, and GRANIT has improved the user interface of their web mapper, making the data more approachable. Work still needs to be done in regards to raising awareness of what GIS layers are available that are NOT found on GRANIT.

2. Existing duplication of effort and redundancy:
Without a centralized state government GIS server infrastructure, by necessity multiple state agencies undertake inefficient and redundant GIS data management and processing. For example, rather than accessing a single statewide GIS data warehouse, each department maintains its own data servers loaded largely with the same set of base layers that are available from GRANIT.
UPDATE: Significant Improvement. This situation has improved with the ability for agencies to store, manipulate and share their data directly on a variety of browser-based platforms such as GRANIT, OneStop, SADES, ArcGIS Online and NHVIEWW. More work still needs to be done on reducing the duplication of efforts with agencies working on similar projects. Efforts to be able to provide feedback to the GIS layer owner on corrections or additions would be helpful.

3. Many important data sets are not reliably and readily available to general GIS users:
There are numerous weaknesses in the New Hampshire geospatial data holdings, including:
- Core data layers such as Town Boundaries.
- Data exist but are undiscoverable
- Data exist but are not generally available (Street Centerlines/Ranges)

UPDATE: Little Improvement. Many core layers, particularly town boundaries, still require updating and error corrections, and many of these layers are updated independently by individual agencies. For example, many agencies edit the lakes and rivers layers for their own specific purposes. In other cases, agencies maintain data that other agencies are unaware of. Finally, any data maintained by 9-1-1 is not available on a wholesale basis due to RSA 106:H-14. While 9-1-1 has made efforts to share information (NHVIEWW Public Viewer, street name change reports, etc…), sharing data itself remains off limits.

4. Statewide GIS standards are lacking:

While GRANIT successfully implements the FGDC metadata standard for their data clearinghouse, the State provides little further guidance to other GIS stakeholders on data standards that will help insure that New Hampshire's GIS assets are of the highest quality and are well documented.

UPDATE: GRANIT provides a set of data and metadata standards at
http://www.granit.unh.edu/resourcelibrary/GRANITresources/standards/standards.html. Besides basic projection standards, there are code sets for conservation lands mapping, a description of FIPS codes used, and standards for GPS use and land use mapping. Additional standards need to be developed.

Opportunities from 2007

1. Strong collaborative attitude and support for increased coordination:

As described earlier, there are numerous, successful and independent state GIS programs within individual agencies.

UPDATE: Significant Improvement. There was already a good amount of collaboration in 2007 and there has been even more progress made on collaboration between agencies since then. However, this collaboration is typically among agencies that are already forward-thinking with GIS. More effort could be expended to include the "have-not" agencies.

2. Existing, supportive constituency for increased inter-governmental GIS coordination and increased geospatial service availability:

As described above, there are many GIS stakeholder groups that would like to see the State offer additional services that would add value, such as:

- Standards for data sets, such as finalizing the parcel standard, or activities, such as submitting electronic plans to communities.

- Active GIS coordination and information dissemination, such as hosting an index of municipal GIS deployments and hosting educational resources that can help communities "get started" with GIS.

- Helping to bridge the gap between the municipal "GIS haves" and "GIS have-nots" by supporting regional entities (e.g. RPCs) that work directly with municipalities to start/grow their GIS.

- Providing enhanced on-line access to the State's GIS assets to provide "starter functionality" without, or with only minimal, investments by the municipality.

UPDATE: Some Improvement. For example, the parcel standard has been set by DRA, and new national standards exist for other types of data such as address points, centerlines, etc… Also, small agencies and municipalities with only limited resources now have access to free or inexpensive tools such as ArcGIS Online which enable them to share, collect and maintain data with very little technical expertise.

3. Further opportunities for increased coordination and collaboration between the GIS community and Public Safety/Emergency Management community:

Given the importance and high profile of public safety and homeland security issues, particularly in the post-9/11 era, many states have forged productive working relationships between the public safety community" and the "GIS community".

UPDATE: Some Improvement. 9-1-1 has made several notable efforts to improve coordination and collaboration with other agencies and their GIS data. Efforts range from Secure and Public NHVIEWW to centerline data scrubbing initiatives with NHDOT and boundary discrepancy sharing with the GIS TAC. There remain more opportunities here but visibility and sharing have increased since 2007.

4. Potential of general web services for leveraging existing and future investments:

Currently, the State, via GRANIT, makes much of its data available on-line via web-GIS data viewers. For example the GRANIT Data Mapper illustrated below provides a rich GIS data

viewing experience. In addition to viewers, New Hampshire has the opportunity to develop and publish general GIS web services that would enable other entities to implement their own viewers utilizing the State's GIS data clearinghouse and infrastructure.

UPDATE: Significant Improvement. Between access to free or low cost solutions (such as ArcGIS Online), as well as other agency-sponsored platforms (such as OneStop, VIEWW, GRANIT, etc...) access to online data and the ability to post data online has never been easier.

Threats from 2007

1. Lack of sustainable funding for GIS Coordination:
Currently there is no centralized, sustainable funding for state GIS Coordination efforts.
UPDATE: No change in status.

2. Lack of awareness of GIS activities at the legislative level and no senior-level champion that advocates on behalf of GIS issues and funding:
While GIS use is widespread and there have been numerous GIS success stories, there has not been a strong and consistent voice advocating on behalf of GIS within the legislature or at the executive level.
UPDATE: Completed. HB 377 and the new GIS Committee have provided that senior-level champion and hopefully will help in raising legislative awareness.

3. Resistance to widespread sharing of geospatial data:
Many municipalities indicated a resistance to sharing local large-scale data with the State. At the State level, RSA 106-H:14 has prevented the Department of Safety from sharing street centerline and address range data with others, except on a case-by-case basis. In all situations where general data sharing does not presently occur, there would be a benefit in looking for solutions that would protect the interests of the data providers (e.g., privacy protection, data ownership concerns, liability) while enabling the data to be shared effectively to the overall benefit of the state. These issues are not unique to New Hampshire and there are numerous models for addressing them.
UPDATE: Some Improvement. The Department of Safety offers controlled access to the centerline and address point data that allows agencies to have some visibility into those layers

without directly sharing the entire dataset and running afoul of H:14. Many of the larger municipalities now have their own web GIS viewers or allow of the downloading of their data. There is room for improvement here but the gap has narrowed considerably.

4. Problem of technical staff turnover:

Time and again, GIS stakeholders both in municipal government and within state government reported that the loss of trained personnel is a significant threat and barrier to further progress. To address this concern, there is an existing effort spearheaded by DOT aimed at creating a series of GIS-specific job titles within state government.

UPDATE: Significant Improvement. The Department of Safety has spearheaded an effort to redefine the "Cartographer" job classifications for the state. The older classifications were replaced with newer, more relevant job descriptions and qualifications that reflect the kind of employee that is required to perform this work. In addition, the Department of Safety was able to increase the labor grade of these positions significantly in order to retain skilled workers. Finally, the Department of Safety in conjunction with the Department of Administration converted the Cartographer I, II and III positions into a "series", allowing a skilled worker to be promoted "in place". This means that an agency doesn't need to lose an employee who gains a significant amount of skills. Alternatively, an agency can hire a less skilled employee at a lower classification and thus increase the pool of candidates for any open Cartographer position.

Goals from 2007

1. Create a GIS office and Geospatial Information Officer (GIO) position.

UPDATE: Project Completed. While a GIO was not created, it did however lead to discussions that eventually led to the creation of HB 377 and the new GIS Committee.

2. Legislatively recognize GRANIT as the focal point for a New Hampshire Spatial Data Infrastructure (NH-SDI)

UPDATE: No change in status.

3. Increase awareness of GIS and what it can do, especially with state legislators.

UPDATE: *In Progress*: The general awareness of GIS has already been raised at the statehouse, as evidenced by the passing of HB 377. Additionally, there is now a mechanism for GIS practitioners, through the GIS Technical Advisory Committee's relation to the HB 377 GIS Committee, to have regular conversations with legislators.

2007 Federal Gap Analysis:

In 2006 the National States Geographic Information Council (NSGIC) issued a series of "nine criteria for successful state GIS programs". While recognizing that these represent meaningful indicators of success in many locations, New Hampshire asserts that alternative approaches may be appropriate given the unique characteristics of this state. Still, the New Hampshire GTAC believes that it is useful to review where the state stands based on these criteria as a general indicator of the current level of GIS coordination. As described below, New Hampshire currently only fully meets one of the nine criteria, while partially meeting four others:

	NSGIC Criterion	New Hampshire Score	Current Status:
1	A full-time, paid coordinator position is designated and has the authority to implement the state's business and strategic plans	DOES NOT MEET: New Hampshire does not have a full time coordinator.	Does Not Meet
2	A clearly defined authority exists for statewide coordination of geospatial information technologies and data production	DOES NOT MEET: There is no clearly defined geospatial coordinating body.	Meets: HB 377
3	The statewide coordination office has a formal relationship with the State's Chief Information Office (CIO)	PARTIALLY MEETS: While there is no GIS Coordination Office, the Office of Information Technology (OIT) participates in the GIS Advisory Committee and an OIT representative sits on the GIS Strategic Plan Advisory Committee.	Partially Meets: HB 377
4	A champion (politician, or executive decision-maker) is aware and involved in the process of geospatial coordination	DOES NOT MEET: There is no political or executive level champion for GIS.	Meets: HB 377
5	Responsibilities for developing the National Spatial Data Infrastructure and a State Clearinghouse are assigned	MEETS: GRANIT is currently fulfilling NSDI responsibilities.	Unchanged
6	The ability exists to work and coordinate with local governments, academia, and the private sector	PARTIALLY MEETS: While there is no formal coordination mechanism between the State and local government and other stakeholders, there is considerable informal coordination that regularly takes place.	Unchanged
7	Sustainable funding sources exist to meet project needs	PARTIALLY MEETS: Sustainable funding exists within some state agencies for departmental efforts. There is no sustainable funding for statewide coordination.	Unchanged
8	GIS Coordinators have the authority to enter into contracts and become capable of receiving and expending funds.	PARTIALLY MEETS: There is no statewide coordinator to engage in this activity. However, individual state agencies and GRANIT have been effective at collaborating and exchanging funds with various partners.	Meets: HB 377 and Coordination with DoIT
9	The Federal government works through the statewide coordinating authority	DOES NOT MEET: There is no statewide coordinating authority. The Federal Government works through individual state agencies and/or GRANIT.	Unchanged