Idaho
Geographic Information Systems **(GIS)**

State GIS Strategic Plan

Idaho Geospatial Council— Executive Committee
A subcommittee of the
IDAHO TECHNOLOGY AUTHORITY (ITA)

Approved by ITA: Effective December 6, 2016

This page left intentionally blank

TABLE OF CONTENTS

1. STRATEGIC PLANNING METHODOLOGY AND BACKGROUND

1.1 Project Background and Purpose

This update of the Idaho Spatial Data Infrastructure Strategic Plan (Strategic Plan) was conducted to address changes in the opportunities and challenges of meeting Idaho's geospatial stakeholder's (Figure 1) needs since the initial version was implemented in 2009. These changes have come about because of the expansion of open data sharing, innovations in data collection, management, processing, and dissemination, application development advances, and the growing industry of geospatial technology and services.

The Idaho Spatial Data Infrastructure (Idaho SDI) is the technology, policies, standards, human resources, and related activities necessary to acquire, process, distribute, use, maintain, and preserve spatial data for the use of the Citizens of the State of Idaho. The goal of the Idaho SDI is to improve statewide coordination and access to geographic data and services to support the business needs of Idaho stakeholders by building on existing GIS capabilities and spatial data development in Idaho. Stakeholders have come to expect transparent, current, accurate, and accessible spatial data.

Figure 1:
Idaho Geospatial Stakeholders

The objective of this revision is to renew the strategic goals, objectives, limitations, and obstacles outlined in the 2009 Strategic Plan to better reflect current priorities and needs of Idaho's statewide GIS community. Current priorities and needs were identified through an online stakeholder survey sent out to the GIS community in September 2015. This online survey was nearly identical to the survey conducted in 2008 that assisted in the creation of the 2009 Strategic Plan. In August 2016, the GIS community was asked to assess the Idaho SDI's current strengths, weaknesses, opportunities,

challenges, and proposed goals. Results of the 2015 and 2016 surveys were used to craft the Strategic Plan revision. Analysis and comparison of these surveys is explored later in this document (Section 5).

1.2 Project Participants

This strategic plan update was crafted by a sub-committee of the Idaho Geospatial Council-Executive Committee (Bill Farnsworth – Idaho Geospatial Office, Keith Weber – Idaho State University, Donna Phillips – City of Hayden, Pamela Bond – Idaho Fish and Game). Input from members of the statewide geospatial community through the online stakeholder surveys and feedback from reviews of drafts of the update was crucial for shaping the final updated Strategic Plan.

2. VISION, MISSION, AND GUIDING PRINCIPLES

2.1 Vision and Mission

Vision: Idaho Spatial Data Infrastructure (Idaho SDI) is fully developed, maintained, and managed and supports the missions of Idaho organizations through easy access to high-quality, up-to-date geographic information and related services.

Mission: With leadership by state government and active participation from stakeholders statewide, we will develop, deploy and efficiently operate the Idaho SDI with a focus on meeting the geographic information needs of users and delivering real, substantial benefits to a comprehensive spectrum of organizations and individuals in Idaho.

2.2 Guiding Principles

Guiding principles help set a context for how the GIS community carries out work and how they interact among themselves and the users and constituents they serve.

In the summer of 2016, a survey was sent to the members of the Idaho Geospatial Council (IGC) membership. The survey was closed on Monday August 8th, 2016 with responses from 60 individuals. The anonymous online survey asked for input regarding current guiding principles (as well as strengths, weaknesses, opportunities, and challenges, and comments on five proposed goals).

Six of the ten original guiding principles were still considered highly important/relevant to Idaho's geospatial community. These following six guiding principles are listed in order of importance (percent of respondents agreeing shown in parenthesis):

1. Seek to clearly represent the interests of my organization with other governing bodies and organizations (97%).
2. Act collaboratively on programs or activities that can be better accomplished through collaboration or team work (95%)
3. Seek solutions to issues of common concern (93%)
4. Inclusive and open communication throughout Idaho's GIS community (93%)
5. Seek resources from county, regional, state and federal agencies that will benefit Idaho's GIS Community (93%).
6. Optimize efficiency in all aspects of GIS data development and use (92%).

While some of these guiding principles characterize how an individual functions within their workplace or how they perceive their workplace, they also inform Idaho's GIS community about broader expectations. For instance, the principle to "clearly represent the interests of my organization…" presupposes the existence of governing bodies and organizations (e.g., IGC) to solicit and listen to the interests of others. Indeed, each of the six guiding principles demonstrates the importance of professional communities working collectively toward a better geographic information system for Idaho.

When planning the path for the future, it is important not only to know the direction in which to proceed, but to also know areas or directions to avoid. While this survey certainly identified some clear future directions it also recognized topics of low priority. For example, only 63% of respondents

indicated they “pay close attention to quality in the creation, maintenance, and archiving of Idaho SDI data and services.” This response does not suggest that Idaho’s geospatial professionals do not care about their organizations GIS data but rather seems to imply that the statewide spatial data infrastructure of Idaho is perceived as someone else’s responsibilities.

3. GOALS & IMPLEMENTATION OBJECTIVES

Based on feedback received from the GIS community via anonymous online surveys (see Sections 5.1 and 5.2), Idaho's GIS strategic plan goals are as follows:

GOAL 1: Create/support a robust geospatial data clearinghouse for sharing current and historical TIM Framework and other authoritative data layers.
Objective: Seek and secure the funding and staffing needed for an official TIM geospatial data clearinghouse.
Strategy: Have a designated clearinghouse administrator who can reach out and support TIM/authoritative data stewards, review datasets and documentation and help keep them current, and maintain the clearinghouse website; acquire and maintain dedicated funding for this position.

GOAL 2: Provide best available statewide TIM Framework data layers.
Objective: Increase the number of officially recognized TIM Framework data layers and create a recognizable TIM "brand."
Strategy: Create an inventory of Framework data layers currently available from metadata; reinvigorate the Framework Leadership Team; start with the top 10 (as defined by current survey results) and work with the associated agencies/TWGs to get the data layers nominated – host TIM nomination workshops and TIM metadata workshops; host the Framework data layers in the geospatial data clearinghouse and brand as TIM.

GOAL 3: Improve geospatial data quality.
Objective: Improve the quality and currentness of publicly available GIS data through education and have data stewards publish their geospatial data as Open Geospatial Consortium (OGC) services (WMS, WFS, WCS, etc.).
Strategy: Increase education on and encouragement to follow State GIS policies and standards; education on proper metadata; education on transition to web services.

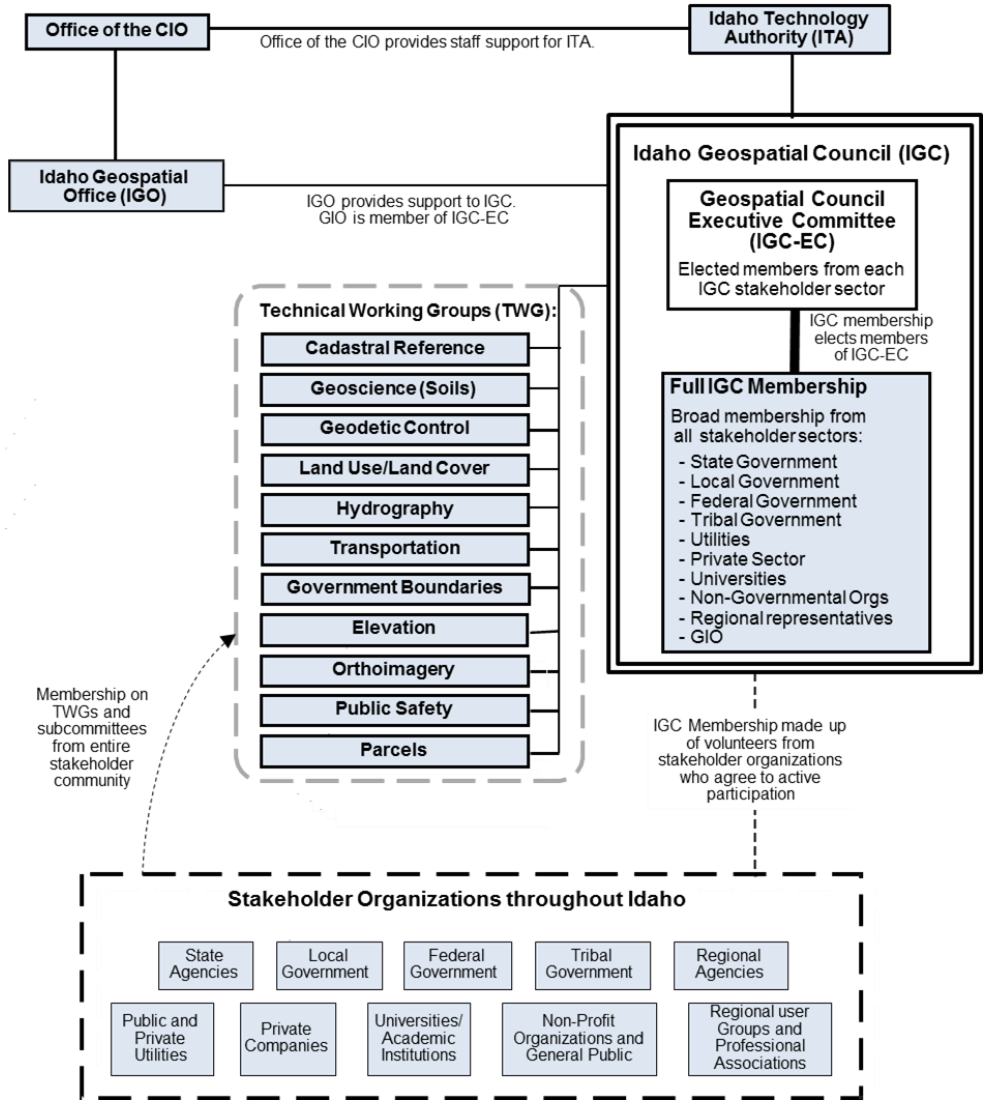
GOAL 4: Improve delivery and accessibility of GIS services and information.
Objective: Increase stakeholder exposure to geospatial data and leverage the more user-friendly mapping applications to make geo-information more sharable and usable.
Strategy: Explore the use of data sharing applications such as Esri Open Data and data.gov; encourage not only GIS staff but others to use tools like Story Maps and Web Map Applications to relay geo-information to their customers and the public; encourage the use of mobile-friendly templates; funding for and encourage data stewards to use ArcGIS Server/shared State ArcGIS Server and enterprise ArcGIS Online accounts.

4. CURRENT STATUS OF SDI COORDINATION AND GIS USE

4.1 Current Status of SDI Coordination

Currently, ongoing management and coordination of the Idaho SDI resides in the Idaho Geospatial Office (IGO) led by the Geospatial Information Officer (GIO). The GIO and staff support and coordinate efforts with the Idaho Geospatial Council and with GIS personnel in state agencies. In addition, the IGO keeps in communication with GIS professionals in non-state government organizations around the state. Figure 2 shows the current organizational structure for the Idaho SDI.

Figure 2:
Organizational Structure for the Idaho SDI



Office of the Chief Information Officer (CIO) – Responsible for IT contract management functions, fiscal analysis & planning, and server and desktop support services; implements the state's vision of providing convenient and timely access to state government services via on-line capabilities; improves the state's telecommunications capabilities as well as planning, maintaining and coordinating services and equipment that comprise Idaho state government's wide area network; takes the state's lead on protecting our systems and information in order to maintain the trust of our citizens, businesses, and partners; and coordinates all geospatial information activities for Idaho state government.

Idaho Geospatial Office (IGO) – Provides leadership and coordination for the creation and maintenance of statewide base geospatial data (Framework) and overall support to the GIS community. IGO facilitates the use, development, access, sharing, and management of geospatial data and assists with communicating the value of geospatial information to citizens and decision-makers in the state of Idaho.

Idaho Technology Authority (ITA) – Operates strategically to leverage opportunities for improving the efficiency and productivity of state government. The ITA combines the business perspective of state government and the private sector with the technical expertise of its subcommittees to "ensure a coordinated approach to the design, procurement and implementation of information technology and telecommunications systems for both state government and the public." (I.C. § 67-5745)

Idaho Geospatial Council (IGC) – Provides a forum for the Idaho geospatial community to facilitate the use, development, sharing and management of geospatial data; and to communicate the value of geospatial information to citizens and decision-makers. IGC works collaboratively toward realizing The Idaho Map (TIM), provides feedback to IGC-EC, and elevates issues and solutions for IGC-EC consideration.

Idaho Geospatial Council – Executive Committee (IGC-EC) – The decision-making and steering body for the IGC. IGC-EC provides policy-level direction and promotes efficient and effective use of resources for matters related to geographic information; coordinates the development of geographic information statewide; addresses legal and policy issues for the distribution of geographic data; enables access to geographic data; and supports collaboration and data sharing.

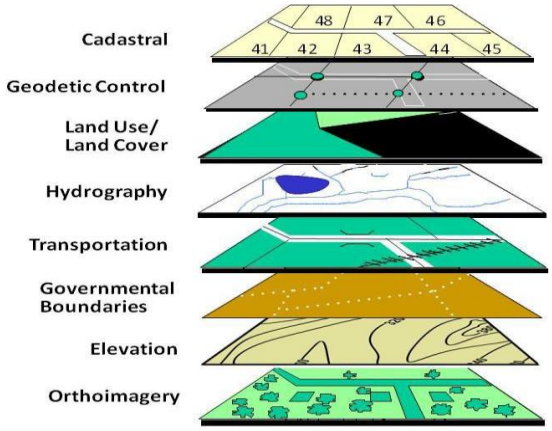
Technical Working Groups (TWGs) – Each of the Framework data layers has an associated technical working group. Active TWGs meet at regular intervals to discuss the acquisition or development, management, and distribution of Framework data.

Local and Regional User Groups – Act as points of coalescence for GIS users in different areas of the state and help to connect with the statewide SDI program. These user groups are very important to promote communications, cooperation, mentoring, training, sharing of ideas and expertise to the GIS community at a local and regional level. They can help bring ideas and needs from various areas of the state to the statewide groups such as the IGC and IGC-EC. They can also assist various State agencies to better understand local needs and respond to them.

4.2 General Structure of Idaho GIS Framework Data

The Idaho SDI success is dependent on high-quality, statewide geospatial data which is well-maintained and adheres to acceptable content and format standards to support effective use and sharing. The Idaho SDI development has a central focus on Framework data themes—spatial data that is commonly needed by a wide spectrum of GIS users with a goal toward developing and maintaining coverage statewide. Currently accepted Idaho Framework themes are depicted in Figure 3.

Figure 3:
Idaho SDI Framework themes



The IGO has approved several additional themes for acceptance as Framework layers including: Bioscience, Geoscience (soils, surficial geology), Climate, Public Safety, Reference, Parcels, Energy and Utilities (pipelines, broadband communications), and Hazards. The Idaho Map (TIM) contains these 16 Framework layers, which encompasses the geospatial "Framework data layers" defined by the federal government and the additional layers defined by the Idaho GIS Community.

Statewide coordination of Framework data is managed through Technical Working Groups (TWGs) established under the IGC. There are currently seven active TWGs (Cadastral, Elevation, Geodetic Control, Hydrography, Imagery, Public Safety, Transportation, and Soils).

The Framework data layers are in various stages of completion and the following TWGs are actively working toward Framework data theme development:

- *Geodetic Control*
- *Orthoimagery*
- *Transportation*
- *Cadastral Reference and Parcel*
- *Hydrography*
- *Soils (Geosciences)*

State Enterprise ITA Guideline G350 – Methodology for Recognizing a TIM Framework Dataset (http://ita.idaho.gov/psg/g350.pdf) was created to guide data stewards through the process of formally recognizing a TIM Framework Dataset.

A number of standards have been written to direct the creation and exchange of some Framework data layers, including: control points, parcels, LiDAR, energy, utilities, hydrography, land cover, structures and landmarks, and emergency service zones.

4.3 Current Status of GIS Use and Sharing in Idaho

Although most GIS users throughout the state have continued to use traditional GIS technology, such as desktop software, many are starting to incorporate web-based GIS such as ArcGIS Online and publishing platforms such as ArcGIS for Server to share GIS resources. These technologies have bolstered the creation and use of GIS web services. GIS web services provide not only GIS data but geoprocessing tasks as well. A major advantage of GIS web services is that data does not need to be stored locally and can be maintained by the authoritative data steward so current data can be easily kept up-to-date. Also, once a GIS web service is published to a public server, it can be used by many stakeholders simultaneously.

INSIDE Idaho continues to be the State's official geospatial data clearinghouse. Idaho State University is also a major geospatial data repository. However, Idaho still faces challenges maintaining a geospatial data clearinghouse: consistent funding, Framework datasets are not adequately identified/flagged, some GIS data stewards prefer to not share their data through INSIDE, there may be multiple versions of the same dataset available and it is confusing to data users which to use due to a lack of quality metadata, etc.

Rapidly evolving technologies, such as ArcGIS for Server and ArcGIS Online, have made it easier for GIS data stewards to host and share data on their own platforms but should be encouraged to also share their data as web services with a clearinghouse like INSIDE.

5. STAKEHOLDER SURVEY FINDINGS & STRATEGIC PLAN IMPLICATIONS

5.1 Summary of 2015 Survey Results – Business Drivers, Geospatial Data Needs, and Limitations and Obstacles

During the development of the Strategic Plan for Development and Deployment of Idaho's Spatial Data Infrastructure, March 6, 2009, a survey was created and provided to Idaho's GIS community. This survey was used to gauge the needs of the Idaho GIS community and incorporate its findings into the Strategic Plan. The items surveyed were: respondent contact data, business drivers, geospatial data needs, limitations and obstacles, and GIS experiences.

In September 2015 a similar survey was prepared but limited its scope to respondent contact data, business drivers, geospatial data needs, and limitations and obstacles. The free-text comment sections were eliminated. This survey was provided to the GIS community of Idaho. The survey responses came from many different professional levels, ranging from GIS coordinators to GIS technicians and analysts. Of the 78 respondents, less than 15% came from non-government or private entities; the respondents were primarily employed by government agencies. 97% of the respondents (n=70 of 72 responses to this question) indicated they use Esri GIS software while eight individuals indicated they also use Open Source software products like QGIS, Geoserver, PostGIS, OpenLayers, Leaflet, GeoExt, GRASS, and MapWindow GIS.

For a more in-depth comparison of survey results from 2008 to 2015 please refer to Appendix A.

Geospatial Business Drivers

Business drivers are "strategic or operational goals of the organization, user, or customer service needs, legal, or regulatory mandates, external conditions, or other organizational factors." Croswell, P.L. (2009). *The GIS Management Handbook*. Frankfort, KY: Kessey Dewitt. In the survey, a business driver was defined as a major program area, organizational need, or challenges that GIS technology and data can help support or address. Overall, survey responses describing business drivers have not changed substantially between the survey periods (2008 and 2015) and three business drivers stand out consistently over the years:

1. Improved response to citizens or customer
2. Improved land use planning and decision making
3. Improved geospatial data quality and consistency

Geospatial Data Priorities

While geospatial data priorities changed somewhat between the 2008 and 2015 surveys, the following datasets consistently received prioritization:

1. Orthoimagery (high resolution)
2. Parcels and legal lots
3. Transportation
4. Government boundaries

It is interesting to note that some datasets show an increase in priority, specifically: hydrologic unit boundaries, land cover, and natural hazards. In contrast, the priority of other datasets has declined. Transportation (roads) probably shows the largest decline in *priority* between 2008 and 2015. However, the reader is encouraged to understand that priority may have been interpreted by the survey respondent as those geospatial datasets that require prioritized time and effort to complete. In this case, priority is not the same as importance. This decline in transportation layer priority is likely because of progress made toward a roads layer in Idaho since 2008, and specifically the nationwide ARNOLD project (https://www.fhwa.dot.gov/policyinformation/hpms/arnold.cfm).

Limitations and Obstacles with Geospatial Data and Technology

Limitations and obstacles describe the problems facing SDI development and/or deployment. Both the 2008 and 2015 surveys illustrate that the Idaho GIS community consistently felt the following three categories were the most pressing issues:

1. Funding limitations
2. Staff limitations
3. Problems with data quality, currentness, and data updates

The only area of increased concern, albeit slight, was insufficient opportunities for training and education. This could be attributed to the larger pool of respondents or a more real need for continued education due to the expanding realm of the geospatial profession.

5.2 Summary of 2016 Survey Results – Strengths, Weaknesses, Opportunities, Challenges, and Goals

In the summer of 2016, a survey was sent to the members of the Idaho Geospatial Council. The survey was closed on Monday August 8th, 2016 with responses from 60 individuals. The anonymous online survey asked for input regarding current strengths, weaknesses, opportunities, and challenges (as well as guiding principles (Section 2.2)) and comments on five proposed goals. A threshold of 80% agreement by those surveyed was used to include guiding principles, strengths, weaknesses, opportunities, and challenges as important/relevant for this summary.

Strengths

When asked to assess the strengths of Idaho's current spatial data infrastructure and overall GIS efforts, each of the identified strengths described the GIS community itself and three of the six current strengths were considered to still be important/relevant:

1. Large, knowledgeable community of GIS users throughout the state (90%)
2. Effective, long-term use of GIS technology exists in many state agencies (88%)
3. Active GIS user groups in some regions (80%)

Weaknesses

Three of the five current weaknesses were considered to still be important/relevant:

1. Lack of funding for GIS (SDI) initiatives (95%)
2. Organizational and political barriers present obstacles to collaboration and consensus (87%)
3. State government IT planning and management is highly decentralized without sufficient level of central coordination and authority (81%)

Organizational and political barriers are an important weakness as collaboration and community of practice was previously identified as a critical guiding principle for Idaho's geospatial community. Multiple surveys expressed a need for better state management of SDI data and funding for the creation, maintenance, and sharing of SDI data by the authoritative agencies/organizations. A workflow for agency creation and maintenance but centralized sharing by the state is needed.

Once considered a strength, nearly half (46%) of respondents were unhappy with the skills possessed by the "young professionals completing undergraduate and graduate GIS courses and degree programs at Idaho universities and colleges" and felt they these students were not "well prepared for the positions my organization is seeking to fill". Sixty-two percent (62%) of respondents identified weaknesses at the state organizational level and felt it (the state) "does not provide adequate level of authority for GIS standards, policy approval, and adoption". These responses should be taken to heart and seen not so much as a reproach, but an opportunity to grow and improve.

Opportunities

Unanimously (100%), the single most important opportunity identified by this survey was the "Increased demand by the public for [GIS] information…" In this sense, Idaho reflects a trend seen across the nation where geospatial information is increasingly valued, demanded, and expected. Indeed, this is a tremendous opportunity for Idaho to help satisfy this demand and potentially develop opportunities for private sector commercialization. Other opportunities include:

- Extensive GIS educational offerings in the state higher education system support future training and professional development (94%)
- Professional and industry associations are potential "allies" in garnering support and creating heightened awareness of the SDI (91%)
- GIS is an accepted "core information technology" and is effective in enabling information and organizational integration (90%)
- INSIDE Idaho could be the basis for an enhanced geospatial portal (88%)

Challenges

The primary challenge (96%) reiterates the primary weakness perceived in Idaho, a "geographic disparity of resources [that] limits GIS development and operation in low-resourced jurisdictions." All of the other current challenges were considered to still be important/relevant as well and include:

- Establishing awareness and keeping the interest and support from senior officials (86%)
- Keeping regional efforts aligned with statewide efforts (86%)
- Insufficient availability of qualified staff and frequent staff turnover and low wages for competent technical and management personnel (82%)
- Maintaining involvement and coordination among stakeholder organizations statewide (81%)

Those surveyed also voiced concern that Idaho is becoming flooded with data, historic and current, that may not be shared properly (with sufficient metadata and usage terms) or consistently (concurrent historic data). This can only add to the confusion of which dataset stakeholders should be using and whether or not it comes from an authoritative source.

Goals

Those surveyed were asked to rank the five proposed goals from one to five, five being the most important. The results were as follows:

1. Create/support a robust geospatial data clearinghouse for sharing current and historical TIM Framework and other authoritative data layers. (Average rating of 3.73)
2. Improve delivery and accessibility of GIS services and information. (Average rating of 3.23)
3. Improve geospatial data quality. (Average rating 2.92)
4. Increase stakeholder awareness of GIS data access, availability, and usability. (Average rating of 2.89)
5. Provide best available statewide TIM Framework data layers. (Average rating of 2.87)

One goal received a majority of respondent selections: "Create/support a robust geospatial data clearinghouse for sharing current and historic TIM Framework and other authoritative data layers". This priority goal is closely tied to Idaho's primary weakness "a lack of funding for GIS initiatives" and will be insurmountable unless this weakness is addressed first. In order for delivery and accessibility of GIS services and information to improve, data stewards need to actively participate in publishing and maintaining their clearinghouse data, presumably as web services. Sharing data with a geospatial data clearinghouse should to be fairly easy and there needs to be some benefit to the data stewards. Therefore, some kind of data sharing system/workflow needs to be designed that will do so.

Not surprisingly, the goal to "increase stakeholder awareness …" garnered the largest number of "not important" ratings. To understand this correctly is critical as it does not suggest GIS awareness is unimportant, but rather it helps qualify the previously identified opportunity ("Increased demand by the public for [GIS] information…"). Moreover, GIS is currently perceived as a ubiquitous and even common place technology where awareness campaigns are really no longer necessary. This contrasts starkly to just a few decades ago, when "World GIS Day" was developed to raise awareness about what geographic information systems are, and how GIS can benefit everyone.

6. PLAN APPROVAL AND FUTURE REVISIONS

This Strategic Plan is approved by the ITA which supports its goals and the overall approach for development of Idaho's Spatial Data Infrastructure. The Strategic Plan defines a long-term SDI vision and a foundation for action covering a five-year period, after which it must be reviewed and, if necessary, updated. If deemed appropriate by the IGC-EC, an annual review may occur by the IGC to make minor adjustments to the plan.

APPENDIX A: Comparison of Survey Results from 2008 to 2015

During the development of the 2009 Strategic Plan for Development and Deployment of Idaho's Spatial Data Infrastructure, a survey was created and provided to Idaho's GIS community. This survey was used to gauge the needs of the Idaho GIS community and incorporate its findings into the Strategic Plan. The items surveyed were: respondent contact data, business drivers, geospatial data needs, limitations and obstacles, and GIS experiences.

In September 2015 a similar survey was conducted but limited its scope to respondent contact data, business drivers, geospatial data needs, and limitations and obstacles. The free-text comment sections were eliminated.

Sample Size and Responses

The initial survey, conducted in 2008 by Peter Croswell of Croswell-Schulte IT Consultants, had 36 respondents after several months of open collection. The 2015 survey had 76 respondents in less than one month. This suggests the number of GIS users/professionals in Idaho has increased, although some of the increase in respondents could be attributed to improved technology and network communications. Both the 2008 and 2015 surveys show that Federal, State, and Local governments were the majority of respondents. The survey form is included in Appendix B.

Geospatial Business Drivers

Business drivers are "strategic or operational goals of the organization, user, or customer service needs, legal, or regulatory mandates, external conditions, or other organizational factors." Croswell, P.L. (2009). *The GIS Management Handbook*. Frankfort, KY: Kessey Dewitt. In the survey, a business driver was defined as a major program area, organizational need, or challenges that GIS technology and data can help support or address.

Overall, three business drivers stand out consistently over the years:

1. Improved response to citizens or customer
2. Improved land use planning and decision making
3. Improved geospatial data quality and consistency

A comparison of the 2008 and 2015 surveys indicates improvements have been made in the following areas since 2008:

1. Geospatial data quality and consistency
2. Partnership and collaboration
3. Environmental protection/natural resource enhancement
4. Enhancement of health and quality of life
5. Quality and availability of education and training

A comparison of the 2008 and 2015 surveys indicates slightly reduced emphasis on the following areas relative to other business drivers:

1. The need to explore new channels and sources for revenue generation
2. The need to respond to citizens or customers (likely because web mapping capabilities have allowed improvements in this segment)
3. Infrastructure improvement and maintenance

Overall, responses describing business drivers have not changed substantially between the survey periods (Figure 3).

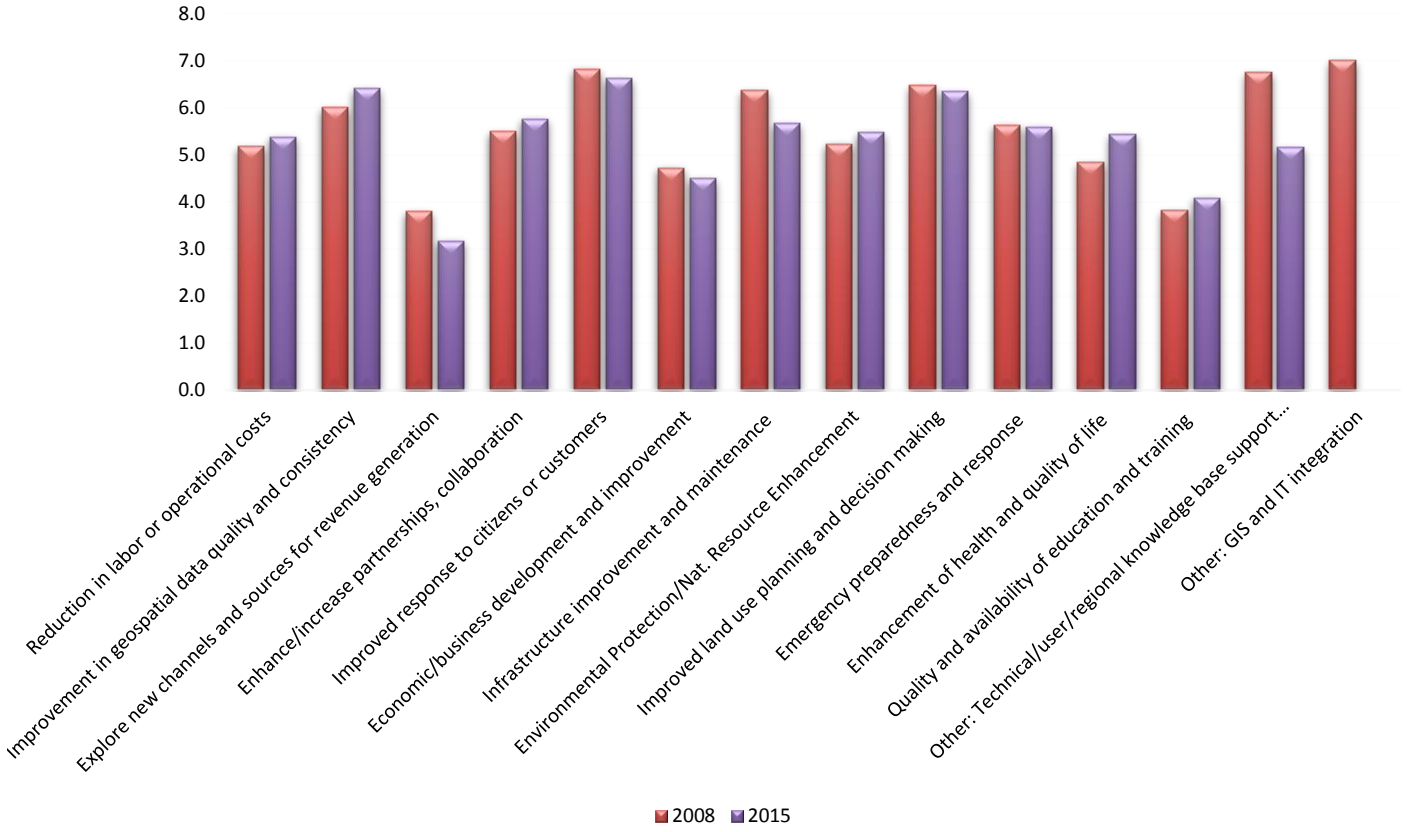


Figure 3:
Comparison of perceived business drivers between the 2008 and 2015 surveys.

Geospatial Data Priorities

While geospatial data priorities changed somewhat between the 2008 and 2015 surveys (Figure 4), the following datasets consistently received the prioritization:

1. Orthoimagery (high resolution)
2. Parcels and legal lots
3. Transportation
4. Government boundaries

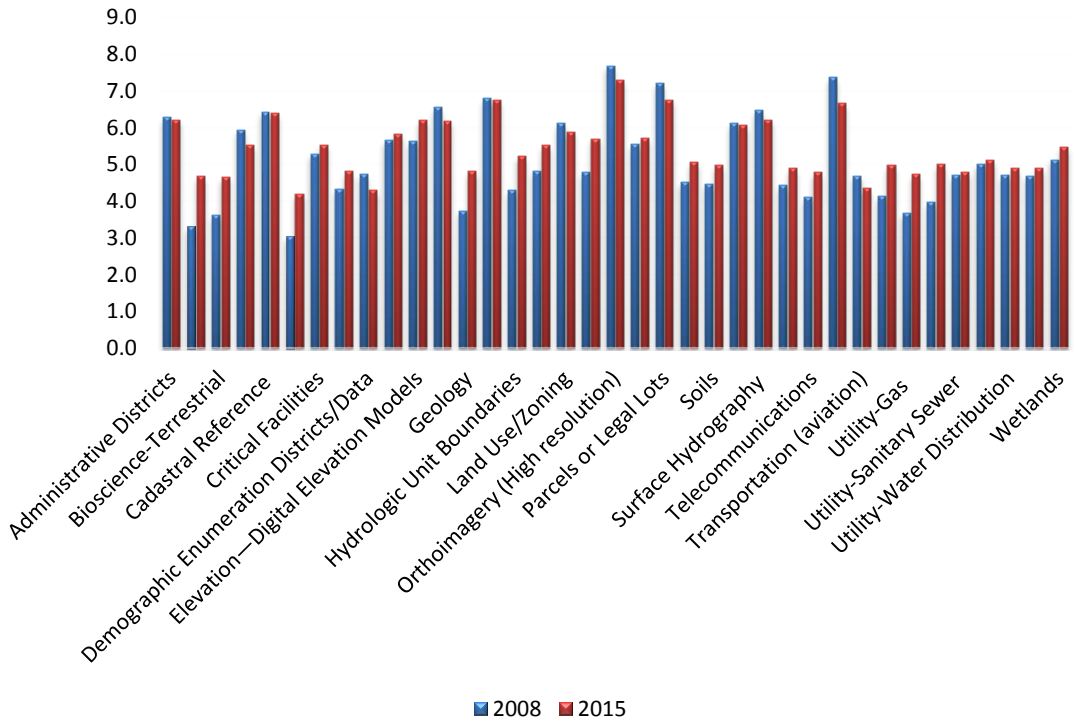


Figure 4:
Comparison of geospatial data priorities between the 2008 and 2015 surveys.

It is interesting to note that some datasets show an increase in priority, specifically: hydrologic unit boundaries, land cover, and natural hazards. In contrast, the priority of other datasets has declined. Transportation (roads) probably shows the largest decline in *priority* between 2008 and 2015. However, the reader is encouraged to understand that priority may have been interpreted by the survey respondent as those geospatial datasets that require prioritized time and effort to complete. In this case, priority is not the same as importance. This decline in transportation layer priority is likely because of progress made toward a roads layer in Idaho since 2008, and specifically the nationwide ARNOLD project (https://www.fhwa.dot.gov/policyinformation/hpms/arnold.cfm).

Limitations and Obstacles with Geospatial Data and Technology

Limitations and obstacles describe the problems facing SDI development and/or deployment (Figure 5). Both the 2008 and 2015 surveys illustrate that the Idaho GIS community consistently felt the following three categories were the most pressing issues:

1. Funding limitations
2. Staff limitations
3. Problems with data quality, currentness, and data updates

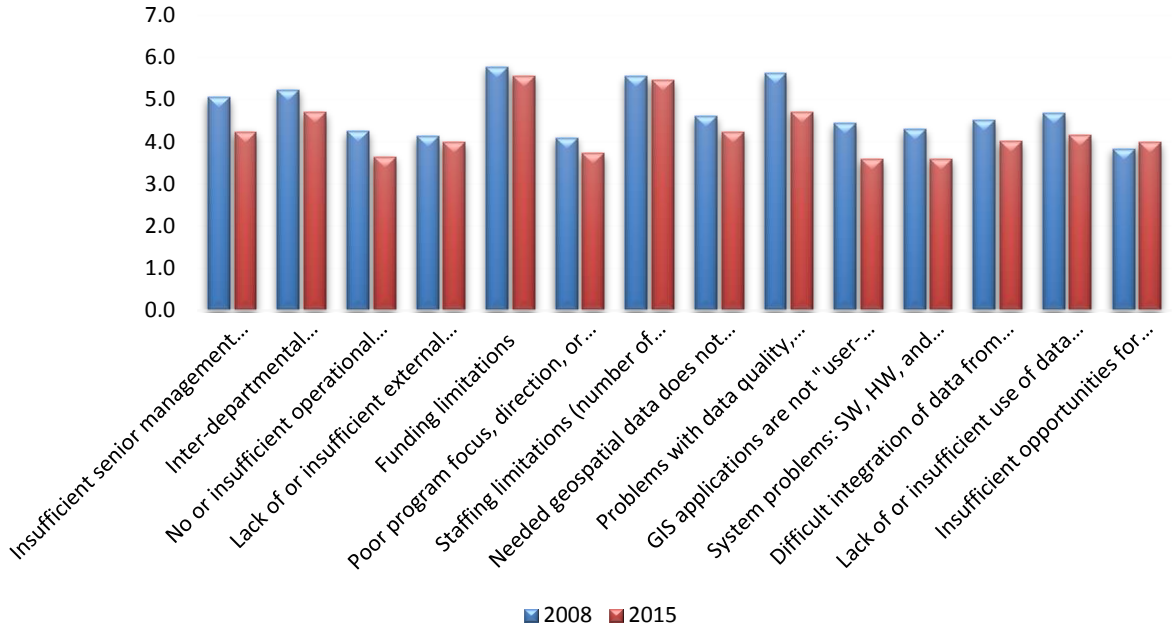


Figure 5:
Comparison of perceived limitations and obstacles between the 2008 and 2015 survey responses.

The only area of increased concern, albeit slight, was insufficient opportunities for training and education. This could be attributed to the larger pool of respondents or a more real need for continued education due to the expanding realm of the geospatial profession.