

ALASKA GEOSPATIAL BUSINESS PLAN

Final, February 2012





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Executive Summary

Geospatial: of or relating to the relative position of things on the earth's surface.

Having information about the physical world around us is one of the most important investments that can be made to better our community. Accessibility to quality geospatial data is a key component in a community or organization's ability to prosper and thrive.

In 2010, the state of Alaska was awarded a grant to develop Geospatial Strategic and Business Plans from the Federal Geographic Data Committee (FGDC) Cooperative Agreement Program (CAP) in support of the Fifty States Initiative, a national effort to bring all stakeholders together to improve GIS coordination.

These plans facilitate the coordination of programs, policies, technologies, and resources supporting the collection and sharing of geospatial data across the state. These plans are based on needs and ideas gathered through an open and inclusive process, including an online survey, regional workshops, and interviews with representatives from federal, state, and local government, academia, and the private sector. This process was designed to ensure that expressed needs and ideas served as the foundation for the resulting plans.

The Alaska Geospatial Business Plan is the second phase of this effort and supports the Geospatial Strategic Plan. This

phase establishes specific initiatives intended to advance Alaska's geospatial goals. Included in this document, are implementation details supporting each initiative, outlines of required resources and investments, a prioritized timeline targeting completion within a three year period, and projected financial benefits. Six initiatives are identified in the Strategic Plan:

Organizational and Management Activities – The Alaska Geospatial Council will be created, consisting of representatives from stakeholders across the state. This council will have the authority to make decisions on important statewide geospatial initiatives for the Alaska community. A Geospatial Information Officer (GIO) will lead these efforts, as a recognized champion tasked with achieving Alaska's geospatial initiatives. Technical working groups will also be formed pulling from new or existing groups within the Alaska geospatial community. These workgroups will help provide professional guidance, collaboration, and implementation of many of the statewide initiatives.

Policies, Standards, and Best Practices – Under the guidance of the Alaska Geospatial Council, technical working groups will be established to recommend processes for setting standards, policies, and best practices for geospatial technology in the state. Additional technical working groups will be formed as necessary to support development of these conventions for specific programs, datasets, or best practices.



Communication and Outreach –Marketing and communications plans will be used to actively engage support from the community and share information while facilitating collaboration on geospatial initiatives. Activities will be dedicated to encouraging transparency and inclusive community participation from geospatial professionals to enhance involvement, communication, and collaboration.

Statewide Framework Data - Individual initiatives will be set forth to plan, develop, and maintain statewide framework datasets that include orthoimagery, elevation, cadastral, hydrography, transportation, and geodetic control. Technical working groups will be utilized to develop data stewardship models and, whenever possible, data standards.

Unified Data Clearinghouse – The Alaska Geospatial Council and supporting technical working groups will plan for a unified, one-stop, clearinghouse to provide web access to statewide geospatial data. These efforts will evaluate needs of stakeholders and determine how the existing clearinghouse technology is meeting these needs, including alternatives to a web based system to support

areas having inadequate network bandwidth to make data accessible.

Sustainable Funding – In order to ensure adequate resources to statewide geospatial initiatives, all reasonable sources of investment will be explored and evaluated. Business cases will be developed to help secure ongoing investment in statewide geospatial initiatives that bring value.

The investment and financial benefits for each of these initiatives are summarized in Table 1 below. The cost estimates included in this table, further detailed in Section 3, represent the investment needed to support each initiative for the first five years. It is important to note that the largest investment in the development of Alaska’s statewide geospatial infrastructure are anticipated from outside, largely Federal, sources or are one-time capital improvement budget items. The continuing funding impact on the Alaska General Fund is anticipated to be a modest recurring amount. Although further investments may be required to support the initiatives into the future.

Year	Benefits	Costs	Net Benefits	Investment Sources		
				State General Funds (Operating)	State Capital Improvement Project	Other
Year 1	\$7,797,676	\$18,128,750	(\$10,331,074)	\$231,250	\$4,939,000	\$12,958,500
Year 2	\$15,595,351	\$19,095,450	(\$3,500,099)	\$247,950	\$5,317,700	\$13,529,800
Year 3	\$23,629,320	\$17,950,089	\$5,679,231	\$312,339	\$4,735,000	\$12,902,750
Year 4	\$23,629,320	\$2,097,941	\$21,531,379	\$310,191	\$465,000	\$1,322,750
Year 5	\$23,629,320	\$2,123,067	\$21,506,253	\$318,317	\$495,000	\$1,309,750
Total	\$94,280,987	\$59,395,297	\$34,885,690	\$1,420,047	\$15,951,700	\$42,023,550

Table 1 - Summary of Benefits and Costs for Statewide Geospatial Initiatives

In addition, the annual benefits detailed in Section 2 were allocated over the same five year period, with benefits increasing over the first two years as the program matures to realize 100% of the projected benefits in year three. These benefits are extremely conservative, using only prudent estimates proven by similar efforts.

A positive return is realized in year three and a positive cumulative return in year four. **As the program moves forward past year five, expected net benefits are approximately \$21 million dollars per year, or an annual return of 10 dollars in benefits for every dollar invested.**

Having a robust and reliable spatial data infrastructure available for use by government and private sector will result in improved resource management decisions, planning for the maintenance and construction of infrastructure, disaster mitigation planning and post event

response, and access to economic development opportunities for citizens. Additional benefits that are more difficult to measure include, supporting private sector site-selection investment decisions, infrastructure development, resource development, and improved management of economic resources.

Building a statewide geospatial infrastructure for Alaska will require a significant investment, in part because of the lack of framework data that already exists over much of the lower 48 states. However, the benefits from these investments will position Alaska to be on the cutting edge of innovation that will have a positive impact on every Alaskan.





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1 Introduction

1.1 Overview

Through the recent development of the *Alaska Geospatial Strategic Plan*, stakeholders across the state have embraced a vision that works towards a collaborative geospatial framework. This framework consists of a technological infrastructure supported by participation from the geospatial community. Whether it is data, best practices and standards, professional development, or technical services, the geospatial framework will facilitate the communication and partnerships needed to fulfill these needs in a cost effective and coordinated manner.

This Geospatial Business Plan is an extension of this vision, further illustrating the initiatives that need to be fulfilled to work towards a collaborative geospatial framework, along with the investments required and project benefits to be realized. Details provided on the requirements and investments help gain commitments and allow management to allocate needed resources effectively. This information, combined with the expected benefits, provides justification to be used to solicit sustainable funding in support of the initiatives. An implementation plan provides a path forward over the midterm to achieve the initiatives outlined in this plan and coordinate activities over time.

Both this Business Plan and the preceding Strategic Plan were developed using a fully transparent and participatory process that was used to understand the needs of the entire community and to ensure that plans moving forward incorporate these ideas to meet common needs. An online survey was conducted to gather input from representatives of geospatial stakeholder groups within Alaska. This was followed by six (6) stakeholder workshops held across Alaska to foster an open dialogue about the status of geospatial coordination in Alaska and what can be done to improve the benefits of the technology. Interviews were also held with executive management from Federal, state, and local government, as well as universities, native, and nonprofit organizations. In total, 27 stakeholders participated in 18 drill-down interviews. Information from each of the above noted activities was used to guide the direction of this planning effort. For more information on this process, see *Appendix A: Business Planning Methodology*.

This Plan is written for government executives, managers from the private and public sector, and all geospatial practitioners within the state.



1.2 Business Plan Unpacked

This remainder of this Business Plan is organized as follows:

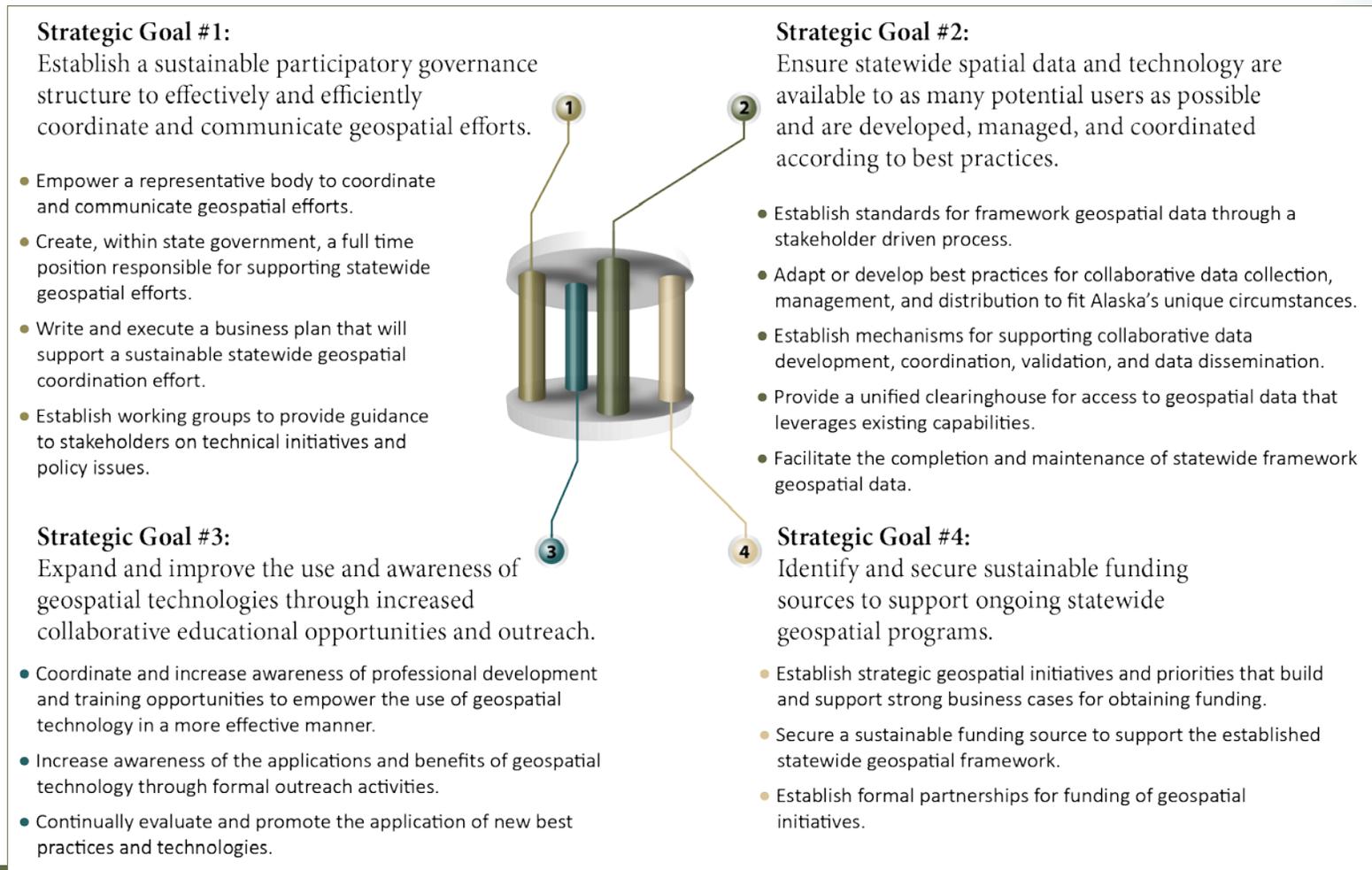
- **Section 2: Working Towards a Collaborative Geospatial Framework** – A review of the program goals outlined in the strategic plan, along with details on implementing organizational and management initiatives; policies, standards, best practices; communication and outreach; statewide Framework data; and a unified clearinghouse.
- **Section 3: Benefits and Justification** – An overview of the value expected to be realized as a result of implementing the initiatives, including both financial and other benefits that can be used to justify the programs.
- **Section 4: Requirements and Cost** – A catalog of the resources necessary to support the initiatives, including staff, software, hardware, and infrastructure. Cost estimates required for investments are also included.
- **Section 5: Implementation Plan** – Priorities and implementation steps necessary to achieve the initiatives.

2 Working Towards a Collaborative Geospatial Framework

2.1 Strategic and Program Goals

The Alaska Geospatial Strategic Plan, August 2011, outlined four (4) Strategic Goals to be achieved in support

of the collaborative geospatial framework. Each of these Strategic Goals has associated Programmatic Goals to help focus on specific activities required to accomplish the goal. The diagram below illustrates the strategic foundation that serves as the pillars of the coordination initiatives to be achieved under this Business Plan.



2.2 Geospatial Initiatives

To meet the Strategic and Programmatic Goals, several initiatives have been identified to work towards a collaborative geospatial framework. These implementation initiatives include specific work activities necessary to meet one or more of the Programmatic Goals and accomplish a sustainable geospatial coordination effort in Alaska.

A priority has been assigned to each implementation activity to provide a basis for detailed planning and execution of work elements. The priority is a relative indication of the initiative's importance to goal accomplishment and the urgency for carrying out the necessary work. Priority designations are:

- **Very High (VH)**—Fundamental for the accomplishment of the designated strategic goal with most other goals dependent upon it. It is critical that major progress be made on this initiative by the end of 2012.
- **High (H)**—Very important for accomplishing the overall mission with multiple goals dependent upon major progress. Work should begin as soon as possible with planned completion or major progress by the end of 2013, or sooner if possible.
- **Moderate (M)**—Significantly affects achievement of the overall mission and other selected goals. Work should begin by the middle of Year 2 or

before with planned completion or major progress by the end of 2014, or sooner if possible.

- **Low (L)**—Important for overall success of coordination, but there is flexibility in work scheduling given resource and time limitations. These initiatives should be scheduled and work initiated as resources permit with projected completion by the end of 2015.

Each of these initiatives is further described in the remainder of this section.

2.2.1 Organizational and Management Activities

The success of any statewide GIS program is largely dependent on the strength and stakeholder support of the organization and management structure supporting implementation. An organizational and management structure that encourages more active involvement from all GIS stakeholders in Alaska will greatly enhance the likelihood of success for any responsible initiative undertaken.

The Alaska Geospatial Council (AGC) will include representatives from across the state to provide direction and make decisions on critical statewide geospatial initiatives. With oversight and leadership from a Geospatial Information Officer (GIO), these stakeholder representatives will attain the support needed for operation and will have a champion to voice the concerns and needs of the state. Technical Working Groups (TWGs) created and organized from the community to support specific activities, will aid these decision-makers with technical guidance and support.

The activities outlined in Table 1 are intended to build the environment necessary to encourage, nurture, and grow collaborative efforts.

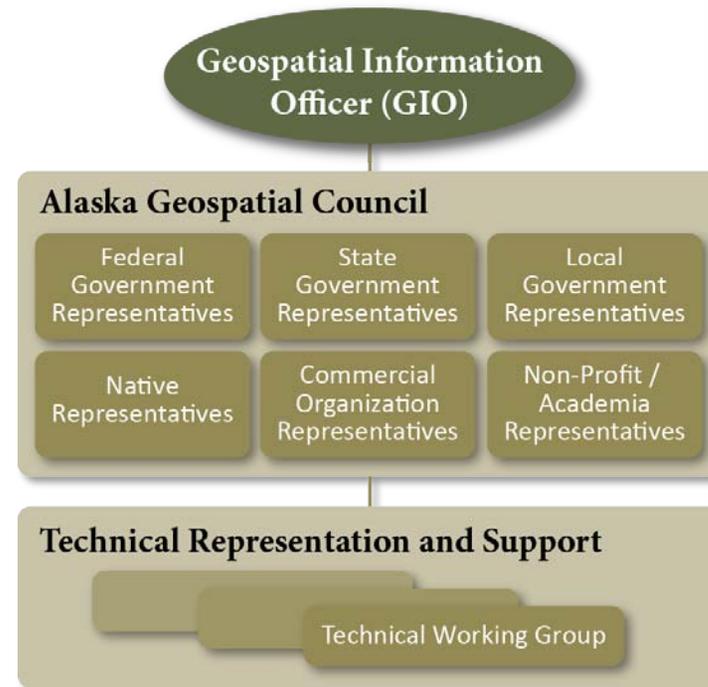


Figure 1 - Alaska Geospatial Framework Organization



Implementation Initiatives—Organizational and Management Initiatives		
Implementation Initiative	Priority	Description
O1: Create an Alaska Geospatial Council. Appoint members to the Council, establish working procedures, and Council charter.	VH	The Alaska Geospatial Council must be created through executive action or legislation. Regardless of the method, these actions should include the identification of an institutional home. Enabling documents should identify the source and placement of members selected to represent the entire geospatial community. Operational issues should be formalized, including membership, leadership, an approach for decision making, formation of subcommittees and working groups, etc.
O2: Create and fill a full time position of the Geospatial Information Officer (GIO)	VH	A successful coordination effort requires that an individual be charged with accomplishing the mission. This will require the creation of a full time professional position to serve as the GIO and hiring of an individual with a blend of technical and non-technical skills.
O3: Identify and establish initial Technical Working Groups (TWGs) under the Council	VH	Define a number of TWGs to address key ongoing GIS and related IT issues and concerns. The TWGs should be formed as needed, but should begin with ones that are needed to support high priority initiatives such as: GIS/IT Standards Development, GIS Policies, GIS Program Outreach and Communication, Business Plan Monitoring, GIS Education and Training, GIS/IT Coordination, and GIS/IT Trend/Advances Monitoring. Critical data framework datasets such as geodetic control and datum, elevation, and orthoimagery should also have TWGs established.

Table 2- Implementation Initiatives - Organizational and Management Initiatives

2.2.2 Policies, Standards, and Best Practices

A series of policies, standards, and best practices as recommended by appropriate TWGs must be approved by the Council.

The initiatives outlined in Table 2 are intended to serve as an initial listing of those that will need to be developed and implemented.

Implementation Initiatives—Policies, Standards, and Best Practices		
Implementation Initiative	Priority	Description
P1: Define/document process for GIS standards and policy development and approval	VH	A TWG should be created under the Council, charged with defining a process and workflow for the submittal, evaluation, and ultimate approval of an IT and/or GIS standard or policy.
P2: Develop and approve formal GIS policies	H	Ongoing activities should be conducted to create formal policies according to the process developed in P1. Initial policies will focus on high-priority organizational, operational, and administrative activities. Policies may be applicable to certain types of organizations (state vs. local government) or for all GIS stakeholders. High-priority policies may include requirements for standards and policy compliance, data maintenance responsibilities, requirements for project review and approval, and GIS ethics.
P3: Develop, approve, and support the use of GIS database standards	H	Activities for developing and approving data standards for GIS data should be accelerated to support the development of consistent statewide data. This initiative would begin with a focus on high-priority data standards that apply to all or most data layers (e.g., metadata, projections/coordinate systems, and data distribution licenses). Ongoing work under this initiative would include the preparation and approval of more specific standards on data content, quality, coding/classification, attribute data schemas, etc.

Table 3 - Implementation Initiatives—Policies, Standards, and Best Practices



2.2.3 Communication and Outreach

Communication, outreach, and education are important to a successful statewide coordination effort. Decision makers and GIS professionals in Alaska need to be connected to the statewide GIS coordination effort to ensure success.

It is the goal of these activities to build an understanding among the GIS stakeholder community that there are clear and significant benefits from participation in a statewide coordinated geospatial effort that outweigh the costs of doing so.

Implementation Initiatives—Communication and Outreach		
Implementation Initiative	Priority	Description
C1: Complete a communication and marketing plan for the state spatial data infrastructure.	VH	An effective statewide GIS coordination effort is built upon a strategically focused communications plan and marketing effort. An initial plan focused on outreach communication and marketing of the state spatial data infrastructure should be implemented to focus communication in the necessary direction.
C2: Actively pursue outreach to, and support from, professional and industry associations	VH	Statewide coordination should work towards better communication with professional and industry associations that represent those that have an interest in GIS technology and data for Alaska. This would include participation in meetings and conferences hosted by these groups, providing promotional and educational materials, and soliciting their support for GIS initiatives.
C3: Prepare materials and hold briefings to sustain support from senior officials	H	A number of explanatory and promotional materials should be prepared to provide information about the needs, applications, and benefits of the GIS program and work to stimulate intergovernmental partnerships between federal, state, local interests and in some cases, where a conflict of interest does not exist, private organizations. These materials should be aimed at senior managers and elected officials and may include brochures and presentations.

Implementation Initiatives—Communication and Outreach		
Implementation Initiative	Priority	Description
C4: Reach consensus on name, logo, and other branding for Alaska’s statewide GIS program	M	Overall promotion and education about the statewide GIS program will benefit from appropriate “branding” as a basis for communication and outreach, particularly for expanding interest and participation in statewide GIS initiatives. This “branding” includes a number of actions, most important of which is defining a name, logo, and possibly a slogan or “tag line” for the Alaska geospatial coordination effort. Several states that have taken this step have seen considerable success in statewide GIS promotion (e.g., North Carolina’s “NC OneMap”, Maryland’s “MD iMap”, and Oregon’s GIS Utility program branded as “NavigatOR”). Reaching consensus on a name and logo could be done in the form of a contest with suggestions from the Alaska GIS community. When a name and logo is settled on, it would be used in all GIS program communication, presentations, websites, GIS products, and hosted applications.
C5: Design and create promotional materials for statewide GIS program	VH	In coordination with other outreach initiatives, Alaska should design and develop materials using a variety of media and distribution channels to provide information to potential users and partners in the statewide GIS program. This may include brochures, website pages, and other materials distributed to users and potential users. This could be a role taken on by a TWG. All statewide GIS stakeholders would have access to these materials and could use them in connection with events, meetings, and other outreach activities.
C6: Develop a website for improved access to information, services, and resources	H	A website should be established to serve as a primary communication channel for statewide GIS users or potential users to easily find information about the statewide GIS program. This initiative would involve a full website design with input from potential users. This is an important aspect of GIS program promotion and supports most outreach and education initiatives, as well as those focused on delivery of GIS data and services.
C7: Prepare and maintain a single web-based GIS contact directory	H	Alaska should compile a directory of people and organizations, principally users and technical staff with GIS expertise, who may serve as a resource for information and technical support to other GIS programs. Contact information should be provided to the community through a web-accessible application that will facilitate networking between professionals.





Implementation Initiatives—Communication and Outreach		
Implementation Initiative	Priority	Description
C8: Support and encourage expanded participation in GIS events and professional associations	H	This activity will encourage broader participation in GIS events and related professional associations, including Alaska-based organizations and programs, as well as out-of-state GIS events and organizations (e.g., URISA, GITA, ASPRS, and NSGIC). This initiative should be supported by a web-based resource with information on professional organizations and upcoming events (e.g., conferences, workshops, special meetings). Membership and participation in these professional organizations and events supports professional development, networking, and overall advancement of GIS programs.
C9: Create and maintain a central, web-accessible repository for GIS and related IT standards and policies	H	This activity includes the design and deployment of a searchable web-based catalog of pending and approved IT/GIS standards and policies.
C10: Encourage and support professional development and certification for GIS professionals in Alaska	M	This activity has the purpose of supporting the increase of technical skills, management skills, and professional advancement of GIS professionals in all stakeholder organizations within Alaska. Specific objectives include completion of formal GIS educational degrees or GIS certificates in universities, continuing education course credits, and increasing the number of GIS staff with applicable GIS and related professional certifications (e.g., GISP, ASPRS-CMS, PMI-PMP, or other technical certifications). Work would include preparing web-based information on educational and professional programs, promotion of these opportunities at events, and possible monetary support to qualified individuals. This initiative could also include a review and preparation of standard and recommended GIS personnel descriptions.
C11. Encourage and expand participation in and programs offered by the Alaska Geographic Data Committee (AGDC)	M	This activity involves ongoing promotion through all available channels to encourage broad participation by GIS users; including soliciting contributions and presentations by users for meetings and web-accessible material. The programs offered through the Alaska Geographic Data Committee (AGDC) may be a good starting point for this activity.

Implementation Initiatives—Communication and Outreach		
Implementation Initiative	Priority	Description
C12: Communicate GIS project initiatives, successes, lessons learned, and best practices through media, website, conferences, and professional meetings	M	Communicating this information will help distribute news about the statewide GIS program activities and user stories to support professional networking. Publishing information about GIS applications and “success stories” provides a resource for other users’ application deployment and support for GIS business cases.
C13: Compile and maintain a directory of GIS training sources and opportunities	M	This would be a regularly updated online directory that gives users and technical staff in Alaska information about upcoming events and sources for training, education, and professional development. It would include training courses and seminars sponsored by government agencies, universities, vendors, professional associations, and private trainers; conferences; training materials; and online courses.
C14: Prepare GIS education/training plan and put in it in place	H	A formal, comprehensive education and training plan should be prepared that guides these activities for all stakeholders. The plan will describe education and training goals, as well as the types, sources, and consumers of education and training.

Table 4 - Implementation Initiatives—Communication and Outreach



2.2.4 Statewide Framework Data

To support the strategic goal of completion and maintenance of statewide Framework data, a number of initiatives should be undertaken. These initiatives would

supplement data development efforts already underway, expand the geographic coverage of Framework layers, and initiate cooperative projects to develop new layers.

Implementation Initiatives—Statewide Framework Data		
Implementation Initiative	Priority	Description
D1: Expand the Geographic Data Library to maintain a web-based catalog of sources of geographic data	M	An index should be compiled with descriptive information and links to websites maintained by public sector (Federal, state, local) and other organizations that provide access to geographic data. This would include applicable metadata to provide prospective users with sufficient information about data content, data quality, access provisions, etc. for users to determine “fitness for use.”
D2: Design and put in place a data stewardship model and practices applicable to all GIS data	VH	An overall model should be created for data stewardship which defines various stewardship management best practices and operational roles, and a process for data updates and access. This model should designate responsibilities for maintenance of each framework data layer and define workflows for ongoing data maintenance. Alaska should build and deploy effective applications for data update, quality control/quality assurance, and providing up to date data for public access.
D3: Evaluate current quality of Framework data and define actions for quality improvement of those data over time.	H	As a basis for planning future enhancements and improvements of existing Framework data, Alaska should perform a detailed assessment of current data quality. This would include the creation and/or update of metadata and would address multiple quality criteria: completeness, map accuracy, attribute accuracy, graphic integrity, etc. The results of the data quality assessment would be compared with needs expressed by GIS users to identify realistic improvements.
D4: Develop, approve, and support the use of GIS database standards	H	To support development of consistent statewide data, Alaska should accelerate activities for developing data standards and providing guidance on their use. This initiative should begin with high-priority data standards that apply to all or most data layers (e.g., metadata, projections/coordinate systems, and data distribution licenses). Ongoing work would include the preparation and approval of more specific standards on data content, quality, coding/classification, attribute data schemas, etc.

Implementation Initiatives—Statewide Framework Data		
Implementation Initiative	Priority	Description
D5: Develop template database specifications and procurement templates for new data themes	M	Alaska should prepare template specifications for database development. These specifications should reference applicable data standards and include technical specifications for data conversion and capture, format of deliverables, quality criteria, and work performance criteria. These template standards would be a model (with necessary adjustments) for use by any stakeholder organization for a data conversion project or procurement of private data development services. The template would also encourage database development partnerships.
D6: Create geospatial metadata profile(s) and develop more effective metadata management tools	H	Alaska should create a metadata profile based on currently nationally recognized content standards such as the “FGDC Content Standard for Geospatial Metadata,” create templates for populating metadata fields, and enable tools for metadata queries. This would allow users to easily maintain metadata, which in turn allows easy access to data and information for other users
D7: Support creation of current statewide elevation data	VH	Alaska should actively support the development of an improved elevation dataset for the state. Improved elevation will better support business functions in the state and result in better spatial accuracy of orthoimagery. These efforts should build off the work currently being performed by the Statewide Digital Mapping Initiative (SDMI) to map elevation for the state, including using the specifications developed and leveraging the established partnerships. In addition, Alaska should support and utilize gravity data that has been and will be collected by the NOAA National Geodetic Survey’s Gravity for the Redefinition of the American Vertical Datum (GRAV-D) project. This project was designed to inform a new vertical datum and improve elevations across the country, particularly the meter level bias in Alaska.
D8: Establish a program and process for ongoing repeatable statewide coverage of orthoimagery	VH	Alaska should support ongoing orthoimagery acquisition. These efforts should build off the work currently being performed by SDMI to map orthoimagery for the state, including using the specifications developed and leveraging the established partnerships. Plans should be established for updating and maintaining these data into the future on a 3-5 year refresh cycle, developing update and maintenance procedures, and authorizing a data steward. Depending on the amount and source of funding, a business case may be needed to justify the investment required with cost and benefit estimates and a plan for accomplishing the effort.





Implementation Initiatives—Statewide Framework Data		
Implementation Initiative	Priority	Description
D9: Design, develop, and deploy a statewide cadastral database and establish ongoing stewardship	H	Alaska should support the completion of a statewide parcel database consisting of parcel boundaries and a minimal set of parcel attributes. The requirements, design, development, and continual maintenance of these data should be coordinated with Alaska stakeholders. Data from multiple sources, including Federal, state, and local governments, as well as native corporations, should be contributed to create a seamless statewide parcel fabric. This effort should build on the work being performed by the Alaska Cadastral Initiative (supported by the Alaska DNR and the BLM) to integrate cadastral data for the state. Additional partnerships may need to be established with other data sources to ensure seamless coverage for all properties across the state and make sure that the needs of stakeholders are being met. Updates may be initially done as needed for taxation purposes, but eventually processes may be established to continually update this information as property boundaries or ownership changes. Depending on the amount and source of funding, a business case may be needed to justify the investment required with cost and benefit estimates and a plan for accomplishing the effort
D10: Enhance accuracy/completeness of administrative boundaries (city, township, school districts, election districts, and other special purpose districts).	H	Alaska should support the completion of data for administrative units, including boundaries of cities, townships, school districts, election districts, and other special purpose districts. The requirements, design, development, and continual maintenance of these data should be coordinated with Alaska stakeholders. Depending on the amount and source of funding, a business case may be needed to justify the investment required with cost and benefit estimates and a plan for accomplishing the effort.

Implementation Initiatives—Statewide Framework Data		
Implementation Initiative	Priority	Description
D11: Complete and enhance an integrated hydrography dataset for the state.	H	Alaska should support the completion of the NHD to represent inland hydrographic data in the state. An updated coastline dataset should also be developed for Alaska. These efforts should build on the efforts being performed by USGS, USFS, NOAA, the University of Alaska, and the Nature Conservancy to update this information. The requirements, design, development, and continual maintenance of these data should be coordinated with Alaska stakeholders. Stewardship responsibilities for these data should be assigned and an MOU between partner agencies should be negotiated and executed for development and maintenance. Depending on the amount and source of funding, a business case may be needed to justify the investment required with cost and benefit estimates and a plan for accomplishing the effort.
D12: Complete an integrated statewide transportation dataset	H	Alaska should support the completion of a statewide transportation dataset, integrating the various data that are maintained by the Alaska Department of Transportation and Public Facilities (DOT&PF), local governments, DNR, and the USFS. Each of these data owners should be involved to determine how this information can be continually integrated. Additional stakeholders should be engaged to determine the needs for this information across the state. Data updates should be made periodically to account for changes in infrastructure over time. The requirements, design, development, and continual maintenance of these data should be coordinated with Alaska stakeholders. Depending on the amount and source of funding, a business case may be needed to justify the investment required with cost and benefit estimates and a plan for accomplishing the effort.
D13: Complete an integrated and enhanced geodetic control dataset	H	Alaska should support the completion of a statewide geodetic control dataset and establishment of an accurate datum since these data underpin all geospatial data. Integrating data collected on many localized projects and enhancing these points as necessary may help to start these efforts. This effort may utilize and/or build upon the guidance provided by the SDMI Geodetic Control report to determine needs and available data that can be used. Additional stakeholders should be engaged to determine the needs of this information across the state. The requirements, design, development, and continual maintenance of these data should be coordinated with Alaska stakeholders. Depending on the amount and source of funding, a business case may be needed to justify the investment required with cost and benefit estimates and a plan for accomplishing the effort.

Table 5 - Implementation Initiatives - Statewide Framework Data



2.2.5 Unified Data Clearinghouse

A unified clearinghouse will act as a single point-of-entry to statewide geospatial data in Alaska, allowing users to easily find information and trust that the data are authoritative. Options for centralized data storage within this clearinghouse will reduce redundancies in data storage and offer opportunities for sharing technological resources.

As shown conceptually in Figure 2 (to be further refined with specific technology considerations as part of this initiative), users across the state will be able to access a single website to find geospatial data for the state. This site will allow the user to find and access available data within a centralized data repository or through other publically available data repositories.

The establishment of the unified clearinghouse must include an analysis of user needs for the website and build upon the capabilities of existing statewide clearinghouses. This can help determine a technology solution that is right for Alaska, which can be used to build a business case for developing and maintaining a sustainable clearinghouse than can be utilized into the future.

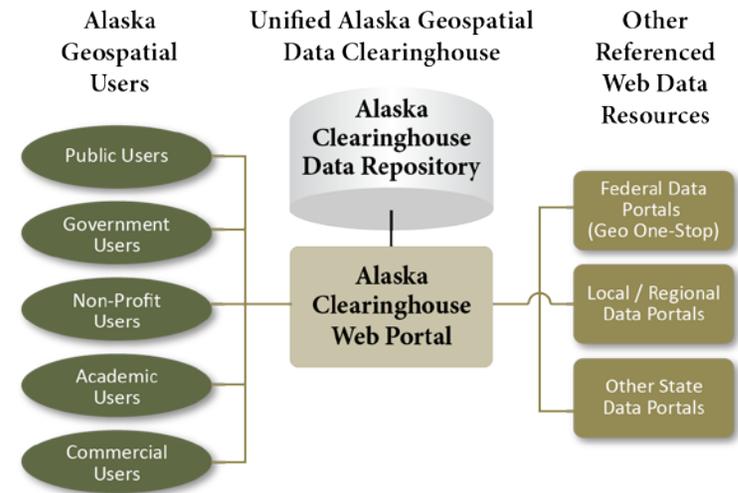


Figure 2- Alaska Unified Data Clearinghouse

The table above describes the activities necessary to successfully implement the unified data clearinghouse for the state.

Implementation Initiatives—Unified Data Clearinghouse		
Implementation Initiative	Priority	Description
U1: Evaluate stakeholder needs for a unified geospatial data and metadata clearinghouse	VH	To build a clearinghouse that will meet the needs of the entire GIS user community, a full evaluation of user requirements must be completed. This will include information about what needs to be provided (e.g., data and links to data on other sites), functionality for searching and cataloging data/ metadata, user interface design, and data replication in preparation for disaster response. The goal of unified clearinghouse should ultimately be to create a single unified operating picture that provides interoperability for a variety of platforms and software environments.
U2: Evaluate technology in place at existing data clearinghouses in Alaska	H	Once a clear understanding of user needs has been documented, an evaluation of existing data clearinghouses relative to those needs should be completed. This comprehensive evaluation will include a review of hardware, software, bandwidth, and policies.
U3: Develop a sound business case for building and maintaining a unified clearinghouse	M	A business case that supports the critical importance of a unified data clearinghouse and details the return on investment for the site will be required to support a quest for funding. The business case will also provide materials to encourage participation in the clearinghouse from non-state government partners.
U4: Identify sustainable funding for the unified clearinghouse	M	Funding will need to be secured to build and maintain the clearinghouse over time. This sustainable funding will need to be solicited based on the support of the user community and an effective business case.

Table 6- Implementation Initiatives - Unified Data Clearinghouse

2.2.6 Sustainable Funding

The ability to identify sustainable funding for the coordination and development of statewide Framework data will have a large impact on the long-term success of the effort. A number of activities can be undertaken to maximize the potential for achieving the necessary funding over the long term.

For orthoimagery there is a pressing need to explore sustainable and innovative funding mechanisms and partnerships to support the development and maintenance of this critical dataset. Widespread need for

these data may invite a public-private partnership that includes government interests from the Federal, State, native, and local level along with private interests from natural resource or mineral extraction companies, utilities, and others.

Implementation Initiatives—Sustainable Funding		
Implementation Initiative	Priority	Description
F1: Research and secure additional grant funding to support state and local GIS development	V H	This activity is to establish a well organized and resourced effort to identify, apply for, and secure grant funding from government, private, and non-profit foundation sources. Grants may be directly related to IT and GIS programs (e.g., FGDC CAP program, NTIA broadband mapping). Other grants may address other program areas, not specifically citing IT and GIS topics, but can be supported by GIS technology or data. The grant research and funding function may be led by a TWG, but the “legwork” would require time from the GIO.

Implementation Initiatives—Sustainable Funding

Implementation Initiative	Priority	Description
F2: Explore and pursue new funding sources for GIS development through local land transaction registration fees	H	A TWG should be established to explore the possibility of creating a new revenue stream for GIS development, such as a special fee for deeds transactions or a portion of the E911 tax collections, or a monthly tax on wired or wireless voice/data communications. Fees would go to a special fund administered by the Council through a state agency and would be used to support GIS development and operations based on an agreed-upon formula and a clear accounting process. This type of funding mechanism is being used by a number of states including Wisconsin, Illinois, Minnesota, and Oregon. Establishing this funding mechanism would require legislative action. This initiative begins with research on the approach taken by other states and a polling of interest by local governments. This would be followed by contact with appropriate committees in the state legislature, culminating in a proposed bill and vote.
F3: Research and identify other funding sources or financing strategies for GIS programs	H	A TWG on GIS financing strategies should be created to examine funding sources and financing strategies to support GIS initiatives at the state and local level. The TWG should conduct research on new funding alternatives and take action to put in place new funding/financing strategies based on the results of this research.
F4: Explore, identify, and facilitate access to non-traditional staff resource options	M	The success of GIS programs depends on well-qualified and dedicated staff fulfilling a range of important roles for GIS programs (GIS technicians, analysts, application developers, database specialists, trainers, managers, and administrative personnel). The purpose of this activity is to examine alternatives and opportunities for non-traditional staffing (approaches other than full-time salaried positions). This initiative would involve research about non-traditional approaches used by organizations in Alaska and in other states. Research would include an examination of personnel and labor laws and policies governing employment and personnel management at the state and local level. The main result would be a guide to GIS staffing options that describes the options and how they would be implemented. Examples of how they have been used would be provided as well. Non-traditional staffing options may include: part-time or seasonal positions, student internship/coop programs, “borrowed staff” from other agencies to support GIS projects, volunteer staff, contracted labor, and others. A follow-on activity may include setting up programs that would be available for use by any organization (e.g., internship programs with state universities, a contract labor pool, and directories of personnel available for part-time work).



Implementation Initiatives—Sustainable Funding		
Implementation Initiative	Priority	Description
F5: Prepare business case for open access to GIS data	V H	Some of the GIS data procured from commercial sources in Alaska have been purchased under a limited use license. This form of licensing restricts the ability of organizations to share data freely. A business case should be prepared to support the need for spending additional resources at the time of data acquisition to allow for open access to these data. This business case should include a thorough review of existing licensed data and the costs associated with expanding access to these data to make them part of the public domain.
F6: Prepare template agreements and management practices for multi-organization cost sharing	M	Cost sharing partnerships between government jurisdictions and other organizations (e.g., state, local, utility, university, private firms) are an effective means to fund GIS database or application development projects that provide mutual benefits for the partners. These partnerships may also reduce costs through economies of scale by service providers. Creation of template agreements with language appropriate for various types of cost sharing arrangements will streamline the establishment of cost-sharing partnerships. This initiative would make use of such agreements already in place or used in the past by Alaska organizations. The template documents will be web-accessible and will use specific notations that guide the use of the document in specific partnership cases.

Table 7 - Implementation Initiatives—Sustainable Funding

3 Benefits and Justification

Geospatial technology offers many benefits including improved decision making, improved efficiency of operation, and enhanced services and products. Many of these benefits have been realized by Alaskans and the initiatives recommended in this plan will expand and extend these benefits. These initiatives will build on efforts already underway to ensure that geospatial investments offer the highest return to the taxpayers.

The initiatives proposed as part of this business plan will build on the efforts currently being performed, helping to realize the benefits of increased use of geospatial technology. In addition, collaboration on these initiatives will also ensure that the investments and efforts supporting geospatial technology are fulfilled in a cost-effective manner.

In general, the types of value most often realized by geospatial technology can be thought of in the following manner

Operational and Efficiency Gains—Expected gains in current personnel efficiency and productivity allowing work to be accomplished in less time and with less expense. These can include reduced efforts for completing tasks, reduction in expenditures for infrastructure or assets, elimination of redundancies of processes, better decision-making, or more efficient use of resources.

Taxpayer or Customer Benefits—Benefits realized by providing better services or products to the direct taxpayer or customer. This class of benefits can be found in government as well as in private firms using geospatial technology and data. These benefits can include faster delivery, more convenient access, and a better experience receiving products or services. More efficient and effective interaction with taxpayers saving them time and money is a clear example of this type of benefit.

Cost Savings and Cost Avoidance—Reduction in current monetary expenses such as contract costs and direct expenses. Lowering or completely avoiding increased costs that would be incurred without the use of GIS technology, when new programs, regulatory requirements, or other new demands are placed on existing organizations.

Revenue Enhancement—Use of GIS technology and data in applications and business processes that result in increased revenue collection from existing or new sources.

Difficult-to-Predict Quantitative Benefits—The are benefits that can be measured in monetary or other terms (time, volume, etc.) but which are not easily predictable or regular in nature and which do not easily contribute to a return on investment analysis.

Non-quantifiable Benefits—Benefits that cannot be easily quantified but which have positive impacts on operations,



decision-making, quality of service, or a range of social and long-term benefits to economic or environmental health.

Strategic / Political Benefits – Benefits that work towards meeting the goals and objectives of an organization, or meet a particular political or policy priority. Examples involve better compliance with missions, transparency/accountability of operations, better position within the marketplace, etc.

As a result of these benefits, organizations can better meet their varied missions for social well-being, economic stimulation, environmental management, public safety, public education, and increased revenue or profit, among many others.

The benefits that are realized from each initiative are often intertwined, with the benefits resulting from one initiative dependent on another initiative. For example, in order to collect statewide Framework data in a manner that results in better usability, these data must be collected according to policies, standards, and best practices that are adopted. Each of these initiatives needs to be enacted in a coordinated manner to ensure that the full range of benefits is realized.

The projected benefits that will be realized have been detailed for each of the proposed initiatives to work towards a collaborative framework. These benefits include intangible or unquantifiable value, as well as financial

benefits that may be realized. In general, these benefits affect the community in a similar manner; however, examples have also been included to illustrate how these benefits will influence specific business uses.

The financial benefits included will help justify the significant investments needed for some of the initiatives. These financial benefits are for the large part based on anecdotal information received from participants in this planning process. In addition, the benefits contain some assumptions that may vary depending on the detailed specifications of each initiative that will be determined at a later time. These benefits are not necessarily a comprehensive evaluation of all of the benefits that may be realized and have not been verified for accuracy. In order to reduce the potential for overestimation of benefits, the assumptions made in formulating the results are generally conservative. As a result, these values should provide rationalization for expenditures, but should be used with caution and further elaborated as each initiative is initiated.

3.1 Examples of Alaska's Benefits from Geospatial Technology

The benefits of a cooperative and coordinated approach to building Alaska's geospatial infrastructure are many. A few that represent clear opportunities for making a real difference in saving lives and economic development in Alaska include:

Aviation Safety—Alaska has a high rate of air crash fatalities with an average of 22 fatalities a year over the last decade. Application of geospatial technologies will result in lives saved and cost avoidance on rescue and recovery efforts. With adequate elevation data a three dimensional flyable terrain model can be developed which will dramatically reduce Controlled Flight Into Terrain (CFIT) fatalities.

The impact of geospatial data and technologies on aviation safety has been clearly demonstrated through the 47% reduction in aviation accidents associated with the Capstone (FAA NextGen) project. Improved geospatial data, including elevation and orthoimagery, will only enhance those benefits.

Evacuation Route Planning—Alaska faces significant risks from coastal storm surge, Tsunamis, and flooding. Geospatial technologies and data when applied to evacuation route planning, flood mitigation and coastal zone management will allow Alaska to improve public safety, save lives, and avoid costs associated with disaster recovery. In the absence of diligent and concerted efforts to advance the availability of high quality geospatial data to apply to these problems it is only a matter of time before lives are lost.

Wild Fire Management—High quality geospatial data is necessary to support fire fighters in the actual task of extinguishing a wild fire but also in planning for risk

mitigation. The ability to use geospatial technologies to model fire behavior and risk levels has been demonstrated countless times in the lower 48 states and is largely unavailable in Alaska. Fire fighters lives depend on these data and the potential to preserve property and lives of citizens is greatly improved as these tools are made available.

Regional Planning – Planning for broad regional areas often requires collaboration and communication between planning organizations in multiple local, state, native, and even Federal government agencies. Coordination on statewide geospatial initiatives will help recognize the common needs of these stakeholders and provide information and tools to be used in regional planning. This coordination will also help these entities share information more effectively.

Public Safety – The operations of law enforcement often require collaboration and communication across jurisdictional boundaries and between government organizations. Coordination on statewide geospatial initiatives will help these organizations better share information and integrate practices to increase public safety, including improved 911 services, emergency response management integration, and access to external funding opportunities.

Emergency Management – Responding to emergency situations requires the information in real-time or in a





matter of hours, and data to be updated as events unfold. Continually collecting data from multiple sources in such short timeframes demands that the datasets are easy to integrate using automated means. Standards and policies need to be established to allow these datasets to be easily integrated in a timely manner. Better hydrography data will help increase understanding of flooding impacts on communities and enable them to plan for and respond to disaster events. Better elevation and orthoimagery data will help with logistics of emergency response in remote areas, including ingress and egress from a disaster area.

Economic Development Activities which boost the economic opportunities for Alaskan's benefit from geospatial data availability. Pipeline route development, oil and mining development, and traditional site selection for industry and commerce all are made more efficient and effective through the use of geospatial data

Water Resources / Water Management There are currently several initiatives taking place at the regional level to maintain hydrography data for streams and shorelines. Well developed stream networks are useful in a variety of applications including downstream contamination tracking, fish migration and habitat analysis, flood planning and mitigation. These data cannot currently be integrated effectively statewide.

Geospatial technologies and data are also essential to understanding the effect of climate change upon water

resources. An example is the analysis of future drinking water locations impacted by the increased porosity of warming Arctic tundra. Geospatial technology can be used to analyze areas where of methane gases are likely to seep into and poison fresh water bodies used for drinking water. -

Natural Resource Management – Private industry (oil and gas, mining, etc.) currently collects certain spatial data, including orthoimagery and LiDAR elevation data, to help design and build new infrastructure projects (e.g., new pipelines and mines). These data, which are particularly needed for the management of natural resources (including wildlife habitats, wetlands, forests, coastal erosion, glacial retreat, etc..), are generally not shared with others in the geospatial community. Actively engaging these industries in formal outreach activities may increase opportunities for collaboration and data sharing.

Coastal Zone Management—The coastal zone is home to a large percentage of Alaska's residents and is extremely variable and constantly changes. This zone is particularly vulnerable to environmental issues associated with sea level rise and climate change. Geospatial data and analysis can help researchers measure and better understand changes in this dynamic region. From this understanding can come appropriate mitigation and polices to support efficient management of coastal resources.

Rural Development / Sustainability – Rural areas are currently challenged to maintain trained geospatial professionals on staff. Additional training and educational opportunities will provide the opportunity for these communities to have professional development that allows sustainable rural development and resource management that is in the best interest of Alaskans.

Land Use / Land Planning – Public and private sector organizations are currently constrained in their ability to effectively determine property ownership boundaries. This often results in misuse of land (e.g., exploiting resources on the wrong property, closing off access to public lands, etc.) resulting in conflicts between owners. These organizations are currently faced with conducting expensive research or field surveys to validate assumptions and prevent these erroneous decisions. Having access to an accurate statewide cadastral dataset will help make better land use decisions, without additional burden of field surveying or research.

Property Tax Assessment – Tax assessors currently rely on field evaluations to determine if additions to property have been accurately recorded for taxation. In some instances, additions are not viewable or accessible to the field evaluators, increasing the potential of missing unrecorded additions. Orthoimagery will allow for these assessors to view additions on properties without field visits, saving time spent in the field and increasing the

probability of finding unrecorded additions to tax property owners more appropriately.

Property Ownership Protection—Imagery can be used to identify activities that involve trespassing on property. This can involve identification of activities which are not permitted on State or Federal land but can also be used to protect private property rights.

Wildlife Habitat Monitoring / Protection – Statewide orthoimagery can improve determinations of the status of wildlife habitats, which can be used to more effectively monitor and protect these habitats over time. This may save some field visits to remote areas. In addition, permitting and monitoring land use including mineral, water and infrastructure will be more easily accomplished with a better understanding of locations and the impacts of proposed projects.

Transportation – Transportation information is generally maintained by the owners of transportation assets in the Alaska Department of Transportation, local governments, and forestry management agencies. Individuals involved with transportation planning and logistics currently update this information as changes to transportation networks and assets are made. An online clearinghouse and methods for ingesting data will help these data owners continually combine the data into a unified and current dataset for use across regions and by multiple users. Additionally, transportation infrastructure such as the



proposed Arctic Ports and Harbors require accurate geospatial data.

Real Estate – Having access to property information for the state through a centralized website will allow real estate interests to determine potential property for acquisition. Developers and potential owners can access this information remotely to evaluate prospective land. The regional website hosted by the Kenai Peninsula Borough provides cadastral data and has seen success in attracting new sales, which could be adopted in some manner by the state.

Energy – New pipelines, infrastructure, and transportation routes can cross multiple jurisdictions, creating a challenge for collecting data for planning, environmental evaluations and permitting purposes. Having access to a unified clearinghouse and accurate geospatial data will allow planners to save time researching and contacting multiple data sources to assemble or acquire data. The Susitna Hydroelectric project, for example, requires significant geospatial data for engineering and the above noted activities. At the time of this writing this data isn't available and as such has slowed the planning process and caused project delays.

Flood Mitigation—Completion of statewide elevation data will allow for effective hydrologic and hydraulic modeling to create improved public safety planning and zoning and flood insurance rate maps.

3.2 Benefits from Recommended Initiatives

This section of the document will review each of the categories of implementation initiatives and identify likely benefits from each of them.

3.2.1 Organizational and Management Initiatives

A series of organizational and management initiatives have been identified in “Alaska Geospatial Strategic Plan,”

dated August 2011. This series of initiatives is intended to build the environment necessary to encourage, nurture, and grow collaborative efforts. These collaborative efforts hold the promise of solid benefits for Alaska. The table below lists the benefits that will be realized through implementation of organizational and management initiatives.

Benefits—Organizational and Management Initiatives	
Benefit	Description
Reduced redundancy of efforts	Oversight provided by the Council and state GIO will help coordinate initiatives within the state, reducing the need for redundant activities that are currently performed. This will save these organizations money and time currently spent on these initiatives.
Geospatial initiatives better meet stakeholder needs	Having a formalized participatory structure with decision-making authority will ensure that the needs of stakeholders across Alaska are heard when making decisions on statewide initiatives. This will present opportunities for the Council to express its needs and have those needs acted on as part of prioritized statewide initiatives.
Increased support from executive management and decision-makers	The state GIO will act as a single voice that speaks for the geospatial community in Alaska. Executive management and decision-makers will look to this individual as the authority for statewide initiatives. This will prevent confusion that can occur when multiple entities are expressing different needs to these stakeholders, as well as strengthening the messaging for specific needs.
Increased buy-in from stakeholders and increased use of resulting products and services	Engaging stakeholders across the state in the decision-making process will increase the perception of inclusiveness and representation. This will help manage the change that results from new initiatives and should compel individuals to adopt the resulting change. This will result in increased use of the end products and services, making the overall efforts more successful.
Increased participation from stakeholders in statewide initiatives	Statewide initiatives often require funding and technical support from many stakeholder groups. The inclusiveness of the Council and TWGs will offer opportunities for these stakeholder groups to be engaged throughout the process and offer the most appropriate support to make these initiatives successful.

Table 8- Benefits of Organizational and Management Initiatives



3.2.2 Policies, Standards, and Best Practice

A series of policies, standards, and best practices will serve to benefit the state of Alaska in a number of ways. The table below lists the benefits that will be realized when

statewide policies, standards, and best practices are implemented.

Benefits— Policies, Standards, and Best Practices	
Benefit	Description
More reliability in data products and geospatial processes	Policies, standards, and best practices will ensure that needed products are developed in a manner that is most usable by consumers. Organizations that adopt and conform to these practices will be considered more reliable, since there will be a level of trust in the processes that are being used.
Increased interoperability and a common operating picture across government boundaries	Having common geospatial practices in place that have been adopted by stakeholders in Alaska will help ensure interoperability between government agencies. Datasets developed and served in a common standard will be more easily integrated within multiple organizations. Adopted metadata standards will instruct users on how to use and integrate data into their operations.
Improved quality of geospatial services and products	Common procedures for developing, maintaining, and using geospatial technology will ensure processes are being performed effectively. Practices that result in erroneous or unusable data will be reduced, increasing the quality of resulting products and services.
Better efficiency of processes	By sharing best practices for implementation of geospatial technology, professionals can improve production and operations for more efficiency, saving time and money.

Table 9- Benefits of Policies, Standards, and Best Practices

.3.2.3 Communication and Outreach

Communication, outreach, and education are important elements to any successful statewide GIS coordination effort. These implementation strategies will build and understanding of the clear and significant benefits from

statewide coordinated efforts. The table below lists the benefits that will be realized with improved statewide communication and outreach.

Benefits—Communication and Outreach	
Benefit	Description
More transparency and accountability of government actions	By increasing communication and outreach, the geospatial community will be more aware of geospatial activities. This will help increase the transparency of government actions and improve the accountability of government for these actions. Better transparency and accountability provides a mechanism for the community to be more engaged in the decision-making process of government to ensure that it meets their needs.
Increased use of geospatial technologies	As awareness increases, the community will better leverage services and products that are offered by government agencies within Alaska. A formal method for communicating the location of data and other products will make finding these data and products more achievable, resulting in increased use of geospatial technology.
Increased compliance with best practices and policies	Improved communication with the geospatial community regarding the application and benefits of best practices and policies will allow better integration of these practices and policies into business workflows and improve business operations.
Increased sharing of geospatial technologies and data	Increased awareness of Alaska’s technology capabilities and offerings will facilitate the sharing of information, technology, and data between multiple organizations. This will help reduce redundancies in operations and share efforts in accomplishing geospatial initiatives.
Increased support from executive management and decision-makers	Marketing and promotional activities combined with executive briefings will help the geospatial community communicate their needs and the benefits that should be realized from initiatives to executive management and decision-makers. This will improve awareness and understanding of the importance of these initiatives at an executive level so that these decision makers may provide financial and management support.

Table 10- Benefits of Communication and Outreach



3.2.4 Statewide Framework Data

A goal of the Alaska Geospatial Strategic Plan is the completion and maintenance of statewide framework data. These initiatives are expected to build in data development efforts already underway and initiate new

cooperative projects to develop new data sets. The table below lists the benefits that will be realized with the development and maintenance of statewide Framework data.

Benefits—Statewide Framework Data	
Benefit	Description
Reliability of product and schedule	Having a standardized procedure for managing geospatial data, with the commitment of stakeholders across the state, will ensure the reliability of products and schedule. A formalized process for data collection and maintenance will allow data to be consistently collected according to best practices, allowing for more consistent data. Collecting data according to a predefined schedule will allow for more regular updates as needed by stakeholders and for these stakeholders to better plan and act on their missions according to these schedules.
Better compliance with organization missions	Many of the statewide Framework datasets are not available in the manner needed to effectively fulfill many Alaska organizations’ missions. Developing these datasets to meet National Map Accuracy Standards and specific Alaska needs will help public and private organizations better perform their missions. The benefits of this include better customer service, increased operational efficiencies, increased revenue, a better educated and safer public, and better management of cultural and natural resources.
Increased efficiency in data collection efforts	Collecting statewide data in a coordinated manner presents opportunities of more efficiencies in data collection. As larger areas are collected, the stakeholders could see improvements in economies of scale as costs per unit of data go down. In addition, resources may be pooled to support these efforts for quality assurance or maintaining the data, helping to make more effective use of these resources.
Reduced redundancy of data collection efforts	Coordinated data collection efforts will help reduce redundant data collection. Efforts to build consensus on data specifications will help meet the needs of the majority of users, alleviating the need for organizations to recreate data for their own needs. Organizations will be more aware of data collection that is being performed, reducing the potential for collection of data that have been collected by another agency.
Improved quality of decisions	As consistent and higher quality data become available in a more accessible manner, these data will be more readily used to support faster and more informed decisions.
Increased use and application of geospatial technology	Data are not currently available for geographic areas in Alaska at the quality that is needed by many business uses and stakeholders. Developing statewide Framework data will help better meet the needs of these uses and individuals, increasing the use and application of geospatial technology and the resulting benefits of this technology.

Table 11 - Benefits of Statewide Framework Data

3.2.5 Unified Data Clearinghouse

A unified data clearinghouse to serve as the single point-of-entry to statewide geospatial data in Alaska will yield benefits. Users will have improved access to authoritative

data from multiple sources without investing significant time and resources to locate those data. The table below lists the benefits that will be realized with implementation of the unified data clearinghouse.

Benefits— Unified Data Clearinghouse	
Benefit	Description
More efficient data access	Users will have easier access to data placed online through the clearinghouse that are not currently available from other online sites. This will not only reduce the amount of time that staff spend responding to requests for data, but will reduce the time spent by the requestor getting access to the data.
More readily available data	Having a single access point for geospatial data in Alaska, with activities performed to make users aware of this asset, will help make data more readily available to end users. This will reduce time spent by each of these users in researching the location of the most appropriate dataset. This will also increase the amount of data that are available for use in geospatial activities.
Increased utilization of data	Utilization of the data will increase as users become more aware of data and have easier access to the data. This will help stakeholders better perform these business processes and realize more benefits for each dataset.
Reduced redundancy of efforts	A single unified data clearinghouse will offer the opportunity for many different agencies to store data and information for centralized access. Data sources will not necessarily need their own data repositories for providing public access to their data. In addition, they may only need to provide their data to one location, instead of multiple clearinghouses, saving effort providing access to data.
Reduced risk of using inappropriate information	The clearinghouse will reference the authoritative datasets for the state, reducing the risk of users accessing data that may not be appropriate for their use.
Integration with national and local geospatial clearinghouses	The Federal government hosts a national geospatial clearinghouse, Geospatial One Stop, which provides national datasets. In addition, several local government portals provide data to the public. The Alaska clearinghouse can be integrated with these clearinghouses to provide users linkage to data for all government data providers for the state.

Table 12 - Financial Benefits - Unified Data Clearinghouse



3.3 Financial Benefits

There are innumerable benefits to implementing a coordinated approach to geospatial technologies in Alaska for which it is difficult to establish a clear tangible financial return. There are also many where a clear financial return can be identified. The numbers presented in this section for the tangible benefits associated with geospatial technology and data development in Alaska are largely generated through a number of USGS funded studies on this subject. Others are based on primary information gathered from public and private users in Alaska.

Estimated financial benefits for statewide Framework data are summarized in Table 13 and described in detail below.

Financial Benefits	
Description	Annual Dollar Benefit
Enabling GIS Applications With Statewide Framework Data	\$2,244,000
Elevation Data Benefits Per USGS Study	\$19,287,357
Additional Tax Revenue	\$397,959
Private Survey/Engineering Cost Savings	\$993,590
Reduced Time Responding To Data Requests	\$171,652
Reduced Time Acquiring Data	\$534,762
Total Annual Benefits	\$23,629,320

Table 13 - Financial Benefits Summary

3.3.1 Elevation Data Benefits

As Alaska has recognized, the National Map does not meet user needs for high accuracy elevation data within the state. USGS is addressing this gap through the release of the draft National Enhanced Elevation Assessment report, developed to determine the need for better quality elevation data for the U.S. As part of this assessment, individuals from all 50 states and most federal agencies provided information (through workshops and an online survey) on how they are using elevation data, what elevation data was required for their operations, and projected benefits to be realized if this data were made available nationally.

Over 300 activities were identified in federal, state, tribal, and local government agencies, as well as the private sector, which have need for elevation data. These activities include some of those mentioned at the beginning of this section, as well as many others that stretch across the broad spectrum of government and private sector responsibilities. There was a consistent need found for the same IFSAR data that is currently being collected for the state to support these activities.

Having this data available for the entire state would conservatively deliver \$17,699,192 to government entities and \$1,588,165 to oil and gas companies for a combined \$19,287,357 annually.

3.3.2 Additional Public Benefits from Framework Data

Financial benefits from statewide Framework data may be realized in two ways:

1. The creation and maintenance of statewide Framework data according to USGS National Map Accuracy Standards (or better) will enable users to take full advantage of geospatial technology that is currently available in the other 49 states, allowing the benefits associated with the National Map to be realized for Alaska.
2. Statewide Framework data will help increase revenue from taxable property and additions.

A study completed by USGS in 2004, A Cost Benefit Analysis of the National Map (<http://pubs.usgs.gov/circ/2004/1271/c1271.pdf>), used various literature review, interview, and survey techniques to determine the value that would be realized from implementing the National Map, with similar datasets to those in the Framework Data, in order to enable the use of geospatial technology. The following were considered when determining this value:

- This study estimated that an application of the National Map data, or a single use of the data for a single type of use, results in a conservatively estimated \$1,000 in benefits and these

applications are performed on average 1 time per month.

- This study also assumed that there are three tiers of local government users: Tier 1 are sophisticated users of the technology, Tier 2 are moderate users of the technology, and Tier 3 make low and less complex use of the technology.
- Of the local governments (counties) evaluated at the time of the study, 5% were considered to be Tier 1, 30% Tier 2, and 65% Tier 3.
- Tier 1 local governments were projected to have 10 applications, Tier 2 to have 8 applications, and Tier 3 to have 5 applications.

Using the estimates from this USGS study, the benefits of having the statewide Framework datasets according to National Map Accuracy Standards for Alaska can be calculated as follows:

- Although there are no counties within Alaska, Boroughs and Census-designated areas are treated as counties by the Census Bureau. There are 6 city- boroughs, 13 boroughs, and 11 census-designated areas within the state, for a total of 30 county-equivalent areas. Using the estimates referenced above, this results in 2 Tier 1 users (5% of all county-equivalent areas), 9 Tier 2 users (30% of all county-equivalent areas), and 19 Tier 3 users (65% of all county-equivalent areas).



- A total of 20 Tier 1 applications (2 Tier 1 users x 10 applications), 72 Tier 2 applications (9 Tier 2 users x 8 applications), and 95 Tier 3 applications (19 Tier 3 users x 5 applications) will be assumed based on the USGS study estimates. This results in 187 total applications within the state. Multiplying this number by 12 months results in 2,244 instances of use of an application per year within the state.
- The total value expected to be realized from the statewide Framework data is \$2,244,000 per year (2,244 applications per year x \$1,000 in value per application).

The calculations made above can be used as an estimate of the value that should be realized by implementing each of the statewide Framework data layers. This estimate is primarily based on the assumptions and estimates used in the USGS “A Cost Benefit Analysis of the National Map” study. This is a very conservative estimate for several reasons:

1. The calculated value does not include applications of geospatial technology for state/ Federal governments or for private sector and university organizations. Although there is less information available to determine the value for these organizations, they should be expected to receive additional benefits.

2. The benefits do not include the change that can be expected as organizations increase in sophistication and increase the number of applications over time. These additional applications should be expected to increase as data become more readily available and should result in additional benefits.
3. The \$1,000 in value for each application that was used by the USGS for the National Map study is significantly lower than the estimates gathered from study participants, which ranged from \$1,300 to \$24,000. Adopting the lower number for this Business Plan conveys the conservative estimate into the projected value of statewide Framework data.

Additional data can also increase revenue to government. As expressed in the workshops conducted as part of this planning effort, orthoimagery allowed the Kenai Peninsula Borough assessor to identify \$8 million in untaxed property improvements. With a tax mill rate of 4.5, this represents an annual increase in revenue to the Borough of \$36,000 per year.

Assuming that the number of housing units affects the untaxed property improvements, benefits can be applied statewide by comparing the number of housing units in Kenai to those in the remainder of the state. As of 2010, Kenai Peninsula Borough had 25,680 housing units, or 9%

of the 283,878 housing units in the state. Using these numbers, the state could expect to realize \$397,959 in additional revenue per year.

3.3.3 Survey/Engineering Benefits from Framework Data

In addition to the identified public benefits already enumerated, there are potentially significant benefits from the activities of private survey and engineering firms using framework data.

These benefits accrue primarily from reduced costs for preliminary engineering and survey activities.

Two engineering and surveying firms were interviewed as a part of this process and both acknowledge that having good elevation and imagery data available saves them thousands of dollars per year in time and effort for preliminary engineering and planning field work that they then pass along to their customers. One firm identified savings of \$200 per field job and estimated they completed 50 such jobs per year. Another identified savings in excess of \$3,000 per survey of 1-4 acre tracts for a subdivision by having elevation and imagery data available. These surveys are accomplished on average of 5 times per year. Finally, the firm identified that on small jobs they save approximately 50 customers per year between \$550 and \$1,000 and another 50 small jobs between \$100 and \$500.

When combined these individually identified savings pass on to landowners in the Kenai Peninsula Borough amount to \$77,500 $[(50 \times \$200) + (5 \times \$3,000) + (50 \times \$750) + (50 \times \$300)]$. Since the Kenai Peninsula Borough is 7.8% of Alaska's total population these savings can be forecasted to be \$993,589 per year statewide. Note that this is a conservative estimate based on a small sample size.

3.3.4 Benefits from a Unified Data Clearinghouse

The online clearinghouse should help save effort and subsequent money in two ways:

1. Reducing the time spent by the data requestor in researching available data, making a request for data, and receiving data through other electronic means.
2. Reducing the time spent by the data source in providing data, including preparing data for distribution, producing data media, and delivering the data.

One state government organization within Alaska expressed savings of 4-6 hours per week in responding to requests for data from their customers. If we assume the mean of this savings of five (5) hours per week and that this organization is representative of other geospatial data providers in the state, applying this to the 20 major government data providers in the state results in 7,800 hours in savings per year (5 hours / week x 20 agencies x

52 weeks / year = 5,200 hours / year). Factoring in an average state geospatial employee rate of \$33.00 / hour equates to \$171,600 in savings per year.

During the workshops conducted as part of this planning effort, several individuals mentioned that they are receiving benefits from hosting online websites to provide data to their customers. For one government organization, a website is receiving 8,100 visits per month. The participant estimated that 50% of these, or 810, would have been accommodated with walk-in requests for data prior to the website; however, for these purposes we will use a more conservative 2% estimate, or 162 estimated walk-ins per month. With 5 minutes currently needed to respond to these requests with the website, 25 minutes are saved for each request, equating to 4,050 minutes or 67.5 hours per month. Applying this to the 20 major government organizations in the state, this results in 16,200 hours in savings per year for the entire state (67.5 hours / month x 20 agencies x 12 months / year = 16,200 hours / year). With an average state labor rate of \$33.00 / hr, this results in \$534,600 in savings per year.

4 High Priority Initiatives Requirements and Costs

The Alaska Geospatial Strategic Plan established the foundation for this business plan and spelled out a large number of initiatives that could be implemented to build a sustainable spatial data infrastructure for Alaska. However, this business plan will address only those initiatives that were deemed to be very high or high

priority. While presenting an ambitious work plan for three years it is likely that this can be successfully implemented. The specific implementation initiatives to be address in this business plan are outlined in the table below.

High Priority Implementation Activities	
Implementation Initiative	Priority
Organization and Management	
O1: Create an Alaska Geospatial Council. Appoint members to the Council, establish working procedures, and Council charter	VH
O2: Create and fill a full time position of the Geospatial Information Officer (GIO)	VH
O3: Identify and establish initial Technical Working Groups under the Council	VH
Policies, Standards, and Best Practices	
P1: Define/document process for GIS standards and policy development and approval	VH
P2: Develop and approve formal GIS policies	H
P3: Develop, approve, and support the use of GIS database standards	H
Communication and Outreach	
C1: Complete a communication and marketing plan for the state spatial data infrastructure.	VH
C2: Actively pursue outreach to, and support from, professional and industry associations	VH
C3: Prepare materials and hold briefings to sustain support from senior officials	H
C5: Design and create promotional materials for statewide GIS program	VH
C6: Develop a website for improved access to information, services, and resources	H



High Priority Implementation Activities	
Implementation Initiative	Priority
C7: Prepare and maintain a single web-based GIS contact directory	H
C8: Support and encourage expanded participation in GIS events and professional associations	H
C9: Create and maintain a central, web-accessible repository for GIS and related IT standards and policies	H
C14: Prepare GIS education/training plan and put in it in place	H
Implementation Initiatives—Statewide Framework Data	
D2: Design and put in place a data stewardship model and practices applicable to all GIS data	VH
D3: Evaluate current quality of Framework data and define actions for quality improvement of those data over time.	H
D4: Develop, approve, and support the use of GIS database standards	H
D6: Create geospatial metadata profile(s) and develop more effective metadata management tools	H
D7: Support creation of current statewide elevation data	VH
D8: Establish a program and process for ongoing repeatable statewide coverage of orthoimagery where accurate elevation data exist	VH
D9: Design, develop, and deploy a statewide cadastral database and establish ongoing stewardship	H
D10: Enhance accuracy/ completeness of administrative boundaries	H
D11: Complete and enhance state hydrology datasets including the National Hydrography Dataset (NHD) and coastal data.	H
D12: Complete an integrated statewide transportation dataset	H
D13: Complete and integrated and enhanced geodetic control dataset	H
Unified Data Clearinghouse	
U1: Evaluate stakeholder needs for a unified geospatial data and metadata clearinghouse.	VH
U2: Evaluate the technology in place at existing data clearinghouses in Alaska.	H
Sustainable Funding	
F1: Research and secure additional grant funding to support state and local GIS development	VH
F2: Explore and pursue new funding sources for GIS development support	H
F3: Research and identify other funding sources or financing strategies for GIS programs	H
F5: Prepare business case for open access to GIS data	VH

Table 14 - High Priority Implementation Activities

4.1 Implementation Requirements

4.1.1 Organization and Management

An organizational and management structure that encourages more active involvement from all GIS stakeholders in Alaska will greatly enhance the likelihood of success and sustainability of the state's geospatial data infrastructure. The very high/ high priority initiatives discussed are intended to build the environment necessary to encourage, nurture, and grow collaborative geospatial efforts. Each of these very high priority activities will require a series of implementation activities to assure that they are successfully accomplished.

O1: Create an Alaska Geospatial Council. Appoint members to the Council, establish working procedures, and Council charter.

Creation of the Alaska Geospatial Council will require a number of tasks to be completed by the GIS stakeholder community. These activities include:

- Create a consensus on who specifically needs to be included on the Council.
- Enabling documents need to be created that will support the creation of the Council and appointment of members, identify the institutional/organizational home of the Council, and clearly delineate the powers of the Council.
- Work with the GIO to advance the enabling documents (either through Governor executive

order or legislation). This individual needs to be identified and cultivated.

- The Council will need to adopt a formal charter to guide the philosophy and activities of the Council.
- An initial act of the newly created Council will be to develop a set of formal working procedures for the review and approval of standards and the creation of TWGs.
- Enabling documents should mandate the creation and funding of a GIO position in the host agency of the Council.

The Council Charter will detail the formal structure and operational constraints of the Council. It will also identify membership and appointment requirements.

O2: Create and fill a full time position of the state Geospatial Information Officer (GIO)

Along with the creation of the Council should be the establishment of the GIO position. This position will be responsible for the successful implementation of this business plan and making sure the agenda established with the Council is successfully accomplished.

Among the required activities to create and fill the GIO position are:

- Create a position description and have the description approved by the Department of Administration's Division of Personnel and Labor Relations.
- Identify the selection criteria and the selection method for the GIO.
- Post the position and recruit qualified individuals to apply for the position.
- Interview and fill the position.

O3: Identify and establish initial Technical Working Groups under the Council.

The enabling documents and charter of the Alaska Geospatial Council must spell out the involvement of the GIS technical community in a series of TWGs . The goal of the TWGs will be to provide input on policy and standards from across the entire spectrum of GIS users in Alaska. Appointment of the members of these TWGs should strive to represent all types of involved institutions from the public and private sector and from each of the geographic regions of the state.

The initial TWGs should include:

- Communication and Outreach
- Professional Development and Training
- Data Clearinghouse
- One for each Framework data element to establish consensus based standards and support

multi-organizational projects to build statewide datasets for

- Elevation
- Orthoimagery
- Cadastral
- Administrative Boundaries
- Hydrography
- Transportation
- Geodetic Control.

4.1.2 Policies, Standards, and Best Practices

Once the Alaska Geospatial Council has been established and a GIO has been hired, the Council must establish the process for the review and approval of standards. This will be followed immediately by charging TWGs to return recommendations on specific standards and policies that will need to be adopted.

P1: Define and document the process for GIS standards and policy development and approval.

Among the most important works of the Council will be to adopt policies and standards that have the support of the entire geospatial community. When the charter for the Council is drafted, it should include language that supports the process of approving these vitally important efforts.

The TWGs established by the Council are critical to the creation of standards. The TWGs will provide the experience and information from the GIS community

necessary to make sure that the standards can be fully supported by organizations moving forward.

A temporary TWG should be created and charged with the responsibility for defining a process and workflow for the submittal of a proposed standard or policy and its evaluation and consideration for approval as an IT and/or GIS standard or policy. Standards and policies may address any technical, operational, or administrative area including software, data architecture, database content and format, network protocols and management, system administration tools and practices, standard methodologies for GIS and IT development, organizational relationships, and information distribution. The standards and policy review and approval would follow a comment and consensus process with formal approval by the Council.

Standards compliance may be required by state agencies (with a provision for approved deviation from the standard if a business case could be made). For non-state agencies, standards compliance would be recommended and encouraged but not mandatory. Note: Short of formal standards that carry specific requirements for compliance, some topics may result in the approval of a “guideline” that is recommended for adherence for specific circumstances but which is not mandatory.

The process should include a TWG development of a standard, followed by posting to the community through a

website for comment to allow for maximum input. Once the TWGs have formally recommended approval of standards, they should be forwarded to the Council for review and potential adoption. These draft policies/standards will need to have all comments collected and documented and presented to the Council by the GIO with an official recommendation to either approve the draft or return it to the TWG for additional effort.

P2: Develop and approve formal GIS Policies

A series of potential GIS Policies may need to be addressed by the Council during its first 12-18 months of operation. These include polices related to organizational, operational, and legal matters.

There is a need for a coordinating group to listen and unify the diverse needs of the statewide GIS community and to design and propose the adoption of policies and standards that are required to support GIS solutions. While any standards or policies cannot be made mandatory for non-state agency organizations, GIS policies and standards should still go through a formal consensus process and approval by the GIS community so that voluntary adoption can be encouraged.

Written rules, policies, bylaws, formal agreements, etc. needed to be developed to provide the structure for clear, consistent operations, communication, allocation of

resources, and performance of data collection and statewide coordination. There may be multiple sources of these rules and policies.

P3: Develop, approve, and support the use of GIS database standards.

The adopted method for developing and approving standards should be implemented as soon as practical so they may be used for Alaska Framework datasets. These standards must consider national and international standards for these geospatial datasets, but in some cases these may require modification to meet the unique challenges presented by Alaska.

4.1. Communication and Outreach

Communication, outreach, and education are important to a successful statewide coordination effort. Decision makers and GIS professionals in Alaska need to be connected to statewide spatial data infrastructure efforts to insure sustainability.

There are a number of high priority items in support of building a connected and collaborative community that require resources to accomplish the goal of a sustainable geospatial program.

C1: Complete a communication and marketing plan for the state spatial data infrastructure

An effective statewide GIS coordination effort is built upon a strategic and focused communication and marketing effort. Completion of an initial plan focused on outreach, communication, and marketing of the state spatial data infrastructure is a high priority task for the Council and the GIO.

Resources will be necessary to support the development of the plan, including potentially hiring a marketing consultant to develop the initial plan in conjunction with a TWG.

The plan will need to identify the appropriate method for communication of core policies and standards, along with the most effective method to communicate them to the GIS community. Effective use of electronic and social media should be an important component of the plan. The plan will include detailed budget estimates for implementation of the communication strategy.

C2: Actively pursue outreach to, and support from, professional and industry associations.

Successful involvement from the GIS community will be facilitated through participation by the Council and GIO in professional and industry associations that are active in Alaska. This involvement should take the form of attending meetings and annual conferences, along with active service on committees whenever possible by the GIO. Sponsorship level support for professional meetings and other events should also be considered.

The GIO should take active steps to be placed on conference programs to update attendees on the activities of the Council.

C3: Prepare materials and hold briefings to sustain support from senior officials.

Executive support for the Council and the development of a statewide spatial data infrastructure will be critical to securing the required sustainable funding. A champion, or set of champions, in the state legislature and the Washington delegation, need to be cultivated to assist in identification and acquisition of funding.

Resources will be required to support travel within Alaska and to Washington, DC to cultivate this support and deliver briefings to senior officials.

C5: Design and create promotional materials for statewide GIS program

Materials for strategic marketing and communications will need to be created to support C1. Resources will be required to support the creation, design, productions, maintenance, and update of these materials.

C6: Develop a website for improved access to information, services, and resources.

The Council and the office of the GIO will need a web presence to serve as the foundation for the communication and outreach efforts. This website

presumably will be hosted in conjunction with the state's web domain, but resources will be required to create and maintain the content.

This website will contain documents created in support of the statewide geospatial efforts, including standards, marketing materials, business plans, charters, policies, and other technical/ management materials. In addition, this site may provide information on upcoming events, meetings, or solicitations.

C7: Prepare and maintain a single web-based GIS contact directory

A component of the Council website should be a self-maintained GIS contact directory. GIS professionals should have the ability to enter their contact information, areas of technical expertise, and identify if they are willing to share their insight and knowledge with other members of the GIS community.

The ability to opt in to mailings from the Council, GIO, and TWGs working on initiatives that may be of interest would be another component of this web-based tool.

Resources for programming of the database and interface and a system for user validation will be required.

C8: Support and encourage expanded participation in GIS events and professional associations

Directly related to initiative C2, this activity will be fully developed through active outreach to the GIS community in support of the associations. Uses of the GIS contact directory will be promoted to encourage participation. This will be supported by the website created as part of C6. Student involvement must be encouraged in these events and associations to promote development of the skilled professionals needed to meet Alaska's human resource needs.

C9: Create and maintain a central, web-accessible repository for GIS and related IT standards and policies

Directly related to initiative C6, under this activity all of the approved and draft standards under consideration by the Council will be posted to a web repository. Resources necessary to support maintenance of the web page will be needed on an on-going basis.

C14: Prepare GIS education/training plan and put in it in place.

A survey of the GIS community will be necessary to understand specific training needs and the current availability of training opportunities within the state. A plan will be created to bridge the gap between necessary training and those currently available through a university or private provider.

Development of the plan will require a full evaluation of the specific training needs of organizations throughout the

state. An online survey should be undertaken to get an estimate of the specific courses and type of training that are needed and an approximate demand for the courses. This information can then be included in an RFP to be issued by the state to secure the best possible price for training.

GIS education must continue and the plan should put an emphasis on industry and government cooperation with institutions of higher education to make certain that students are available with the skills needed. Student involvement in professional activities and research should be facilitated through scholarships and other inducements to develop the state's human resources.

4.1.3 Statewide Framework Data

Perhaps the most resource intensive activities associated with creation of an Alaska geospatial framework are those required to support the collection and maintenance of Framework geospatial data.

D2: Design and put in place a data stewardship model and practices applicable to all GIS data

A stewardship model that allows a multitude of organizations to develop and maintain Framework data layers will be a key component to building and sustaining a spatial data infrastructure. This data stewardship model will require formal structure, participation agreements, joint funding agreements, and data licensing/distribution agreements among partners. While the specifics of the

stewardship model may vary for each Framework dataset, the goal of the data stewardship model will remain the same: to build an environment of shared responsibility, shared costs, shared benefits, and shared control.

Each TWG devoted to Framework standards should strive to build a stewardship model into the creation and maintenance of the dataset it is overseeing.

D3: Evaluate the current quality of Framework data and define actions for quality improvement of those data over time

Complete a comprehensive inventory of Framework data currently available from all sources within Alaska. This inventory will form the basis for the metadata and data clearinghouse development. The review will also support standard development, as it will provide a comprehensive view into the status of each Framework dataset.

D7: Support creation of a current statewide elevation dataset.

Once standards are adopted for this critical Framework dataset, potentially from current efforts being completed under the SDMI, the Council should take the steps necessary to complete this dataset statewide. This will require securing funding for data acquisition, quality control, and distribution.

D8: Establish program and process for ongoing repeatable statewide coverage of orthoimagery.

Following the development of a set of standards for orthoimagery (potentially from current efforts being completed under the SDMI), and assuming that an elevation dataset to support meeting user accuracy standards for orthoimagery, move forward in development of a sustainable, ongoing refresh program. The adopted standards should address accuracy, frequency of refresh, and image clarity.

Explore sustainable and innovative funding mechanisms and partnerships to support the development and maintenance of this critical dataset. Widespread need for an ongoing imagery program may invite a public-private partnership that includes government interests from the Federal, State, native, and local level along with private interests from natural resource or mineral extraction companies, utilities, and others.

Continue to explore new technologies and their capacity to provide improved orthoimagery and the horizontal accuracy of that imagery.

D9: Design, develop, and deploy a statewide cadastral database and establish ongoing stewardship

Establish standards for the statewide cadastral database through actions of a TWG. Once these standards have been established, build the stewardship relationships with the local providers of these data, and build appropriate tools to allow for merging of these data into a statewide seamless dataset. Initially it is likely that a tool will be



necessary to automated ingestion of these data, since existing datasets from local jurisdictions are unlikely to be fully compatible.

The stewardship relationship will need to acknowledge that each jurisdiction may have dramatically different data when initiated. Plans must contemplate the gradual improvement of these data over time to meet a consensus based standard.

In some cases, financial support will be necessary to allow the development of these data in poorly resourced areas that have not initiated a GIS based cadastre.

D10: Enhance accuracy/completeness of administrative boundaries (city, townships, school districts, election districts, and other special purpose districts.)

Administrative boundaries are a critical Framework dataset that, much like cadastre, will need to be based on a stewardship model to be maintained over time.

D11: Complete and enhance an integrated hydrography dataset for the State.

Upon adoption of the standards for a hydrology dataset by the Council, the focus of the hydrology TWG will be to establish a suitable stewardship structure to support ongoing data enhancements and updates of the NHD and a coastline dataset. Since several organizations are currently working to improve the surface hydrology spatial data, this stewardship program will require crafting formal

data sharing agreements, aggregation of individual agency efforts into a single database with an established and authoritative custodian, creation of appropriate metadata, and rolling of the final aggregated dataset to state and national servers. An MOU between key stakeholders in these data should be used to formalize the stewardship agreements. The work being performed by the Southeast Data Library on the National Hydrology Dataset (NHD) may serve as a model for the rest of the state.

D12: Complete an integrated statewide transportation database.

Upon adoption of the standards for transportation features by the Council, the focus of the transportation TWG will be to establish a suitable stewardship structure to support ongoing activities in Alaska on these data. Since several organizations are currently working to improve transportation spatial data, this stewardship program will require crafting formal data sharing agreements, aggregation of individual agency efforts into a single database with an established and authoritative custodian, creation of appropriate metadata, and rolling of the final aggregated dataset to state and national servers.

Funding must be identified to support the aggregation of individual organization data into a unified dataset and to encourage mature organizations to change their workflow to create compliant data and to participate in the program.

D13: Complete statewide geodetic control network

Upon adoption of the standards for geodetic control by the Council, the focus of this TWG will be to establish a suitable stewardship structure to support ongoing activities in Alaska for these data. A stewardship program will require crafting formal data sharing agreements, aggregation of individual agency efforts into a single database with an established and authoritative custodian, creation of appropriate metadata, and rolling of the final aggregated dataset to state and national repositories.

The TWG will also focus on supporting Alaska based activities to establish appropriate datum.

4.1.4 Unified Data Clearinghouse

A unified clearinghouse as a single point-of-entry to statewide geospatial data in Alaska should be a short-term goal of the Council. This clearinghouse will allow users to easily find information and trust that the available data are authoritative for the state.

Providing centralized data storage opportunities within this clearinghouse will reduce redundancies in data storage and offer opportunities for more efficient sharing of technological resources.

U1: Evaluate stakeholder needs for a unified geospatial data and metadata clearinghouse.

There are several spatial data and metadata clearinghouses currently in operation in Alaska. It is

unclear if any of these are fully meeting the needs of the geospatial community. A study of stakeholder needs for a clearinghouse with particular attention to needs for active download of authoritative standard complaint data is required.

This study should also evaluate if there is a need to provide active map services that will serve statewide Framework and other datasets to the stakeholder community. Evaluation should include a review of data delivery response times, access from remote locations, potential consolidation of existing services, and access to dynamic agency housed data.

The requirements of data delivery to devices with periodic or limited connection to the Internet should be considered. All stakeholders do not have a continuous connection or the necessary bandwidth to take advantage of active map services or large datasets.

U2: Evaluate the technology in place at existing data clearinghouses in Alaska.

Perform a comprehensive evaluation of the existing infrastructure and functions in the existing Alaska data clearinghouses. This evaluation must include a review of server and networking capacity to meet increasing demand for data access as statewide Framework datasets are created. Additionally, the costs for maintenance of hardware and software, loading data regularly, and other



critical ongoing expenses should be budgeted for and secured.

Since these clearinghouses are critical resources, the evaluation should also explore the status of security, off-site backups, and redundancy in technical resources.

4.1.5 Sustainable Funding

Sustainability in funding is essential for successful implementation of the Council and to build cooperative programs for a sustainable state spatial data infrastructure.

Funding requirements should consider costs associated with making data available to users in a variety of on-line and electronic media formats.

F1: Research and secure additional grant funding to support state and local GIS development

There are several models throughout the nation where state grant programs have been established from dedicated funding sources to support local GIS development. In many cases the state provides resources to support local project implementation including assistance with procurement, contract negotiation with vendors, project management, and data quality assurance/quality control of deliverables.

Given the unique challenges presented by Alaska's vast size and predominantly rural nature, the ability of the GIO

to provide these services and cost-share funding to local and regional government entities will be an important factor in the creation and sustainability of statewide systems. With this in mind the GIO should evaluate the needs for a GIS support grant program, the funding that would be required, the specific services that will need to be offered to make the program a success, and develop a plan to secure the necessary funding.

F2: Explore and pursue new funding sources for GIS development support through local land transaction registration

Many states have implemented dedicated funding sources to support GIS development and maintenance. One such source that should be carefully considered for implementation is a small fee on real property transfers. This funding source could create a fund to be administered by the Council that would provide the sustainable resources to support data and system grants to governments. Since GIS is necessary to efficiently manage land title transfers and other real property management functions, there is a logical relationship to this type of fee.

F3: Research and identify other funding or financing strategies for GIS programs

A host of potential alternative funding and financing strategies should be explored for implementation in

Alaska. Appendix A of this document outlines many of those that have been successfully implemented in other locations. Some may be appropriate for Alaska's situation and may be viewed positively by champions in the legislature for implementation.

F5: Prepare business case for open access to GIS data.

An important issue that was identified during the stakeholder outreach process that supported the creation of the state's Geospatial Strategic and Business Plans is the need for open access to GIS data. In some cases data have been purchased without licenses that permit distribution outside of the purchasing agency. Additionally, there are situations where the organization that has created a dataset, often with public taxpayer support, views these data as proprietary and does not

share them or makes them available for sale to outside users of the data.

It was the general consensus of the GIS community that data should be freely available once it has been created using taxpayer funds. In cases where the data have been purchased from a vendor, there should be an incentive to purchase licenses that permit the sharing of the data.

There is a strong potential business case to be made that the real value of any geospatial data is in the ability of that data to be built once and used by a multitude of users. Often the potential uses of the created data are not fully understood by the data custodian, but they are very real to other organizations, and the benefits from sharing typically outweigh the costs of doing so.



4.2 Anticipated Investment Required to Support Implementation

The costs presented in Table 14 represent estimates for labor, administrative support, hardware, software maintenance, and hiring independent consultants if deemed necessary. Costs for the development of Framework data elements are estimates based on the state labor rates for geospatial professionals, as well as

contracting estimates from SDMI. The anticipated source of needed funding has been identified as either State General Fund (GF), State Capital Improvement Project (CIP), or Other (including federal government, local government, non-profit, or commercial organizations).

Implementation Initiative	Source	Year 1	Year 2	Year 3	Year 4	Year 5	Comments
Implementation Initiatives—Organizational Needs							
O1: Create an Alaska Geographic Information Council. Appoint members to the Council, establish working procedures, and Council charter.	GF	\$10,000	\$10,300	\$10,300	\$10,661	\$11,034	Administrative support
O3: Create and fill a full time position of the State Geospatial Information Officer (GIO)	GF	\$180,000	\$186,300	\$192,821	\$199,569	\$206,554	Salary for GIO and Admin Support
Operational budget for GIO's Office	GF	\$20,000	\$20,600	\$21,218	\$21,961	\$22,729	Travel, memberships, etc.
O2: Identify and establish initial Technical Working Groups under the Council	GF	\$1,500	\$ -	\$ -			Administrative expenses
Implementation Initiatives—Policies, Standards, and Best Practices							
P1: Define/document process for GIS standards and policy development and approval		\$ -	\$ -	\$ -	\$ -	\$ -	Included in GIO/Council Operational Budget
P2: Develop and approve formal GIS policies		\$ -	\$ -	\$ -	\$ -	\$ -	Included in GIO/Council Operational Budget
P3: Develop, approve, and support the use of GIS database standards		\$ -	\$ -	\$ -	\$ -	\$ -	Included in GIO/Council Operational Budget
Implementation Initiatives—Communication and Outreach							

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Implementation Initiative	Source	Year 1	Year 2	Year 3	Year 4	Year 5	Comments
C1: Complete a communication and marketing plan for the State spatial data infrastructure.	GF		\$10,000	\$10,000			Year 1 consulting fees for plan development, years 2 and 3 are implementation costs
	CIP	\$32,500					
C2: Actively pursue outreach to, and support from, professional and industry associations	GF	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	Memberships and event sponsorships
C3: Prepare materials and hold briefings to sustain support from senior officials	GF	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	Printing and binding, along with in-state travel
C5: Design and create promotional materials for statewide GIS program	GF	\$1,250	\$1,250	\$1,250	\$1,250	\$1,250	Printing and binding
C6: Develop a website for improved access to information, services, and resources	GF	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	Initial design anticipated over years 1 and 2
	CIP	\$15,000	\$40,000				
C7: Prepare and maintain a single web-based GIS contact directory	GF		\$2,500	\$2,500	\$2,500	\$2,500	Development of system in year 1, maintenance years 2 and 3
	CIP	\$10,000					
C8: Support and encourage expanded participation in GIS events and professional associations		\$ -	\$ -	\$ -	\$ -	\$ -	Included in GIO Administrative and Marketing Budget
C9: Create and maintain a central, web-accessible repository for GIS and related IT standards and policies	GF	\$5,000	\$2,000	\$2,000	\$2,000	\$2,000	Development in C6, this is software and hardware maintenance
C14: Prepare GIS education/training plan and put in it in place	CIP	\$ -	\$17,500	\$ -	\$ -	\$ -	Work to be accomplished in year 2

ALASKA GEOSPATIAL BUSINESS PLAN

Implementation Initiative	Source	Year 1	Year 2	Year 3	Year 4	Year 5	Comments
Implementation Initiatives—Statewide Framework Data							
D2: Design and put in place a data stewardship model and practices applicable to all GIS data		\$ -	\$ -	\$ -	\$ -	\$ -	Included in GIO/Council Operational Budget
D3: Evaluate current quality of Framework data and define actions for quality improvement of those data over time.	CIP	\$ -	\$30,000	\$ -		\$30,000	Anticipated year 2 in work schedule, with revisit in year 5
D4: Develop, approve, and support the use of GIS database standards		\$ -	\$ -	\$ -	\$ -	\$ -	Included in GIO/Council Operational Budget
D6: Create geospatial metadata profiles and develop more effective metadata management tools		\$ -	\$ -	\$ -	\$ -	\$ -	Included in GIO/Council Operational Budget
D7: Support creation of current statewide elevation data	CIP	\$4,320,000	\$4,320,000	\$4,320,000	\$50,000	\$50,000	Acquisition and processing costs as estimated to collect SDMI IFSAR elevation data, includes cost share of state/federal resources. Maintenance costs for years 4-5 after acquisition is complete in year 3.
	Other	\$11,680,000	\$11,680,000	\$11,680,000	\$100,000	\$100,000	
D8: Establish program and process for ongoing repeatable statewide coverage of orthoimagery meeting the spatial accuracy needs of stakeholders.	CIP	\$405,000	\$405,000	\$405,000	\$405,000	\$405,000	Acquisition and processing costs as estimated to collect SDMI orthoimagery. Assumes completion in Year 3, with ongoing refresh collection in subsequent years
	Other	\$1,095,000	\$1,095,000	\$1,095,000	\$1,095,000	\$1,095,000	
D9: Design, develop, and deploy a statewide cadastral database and establish ongoing stewardship	GF			\$17,250	\$17,250	\$17,250	Database requirements and design during year 1, database development and maintenance tool development in year 2, bringing data into compliance with standards in year 3, and maintenance in years 4-5. Assumes most cadastral data has been collected from some governmental entity.
	CIP	\$11,500	\$55,200				
	Other	\$38,500	\$184,800	\$57,750	\$57,750	\$57,750	

ALASKA GEOSPATIAL BUSINESS PLAN

Implementation Initiative	Source	Year 1	Year 2	Year 3	Year 4	Year 5	Comments
D10: Enhance accuracy/ completeness of administrative boundaries (city, townships, school districts, election districts, and other special purpose districts)	CIP	\$10,000	\$20,000				Database requirements and design during year 1, database compilation in year 2, maintenance in years 3-5
	GF			\$10,000	\$10,000	\$10,000	
D11: Complete and enhance the National Hydrography Dataset (NHD) and coastal data	GF			\$15,000	\$15,000	\$15,000	Database requirements and design during year 1, database compilation in year 2, maintenance in years 3-5
	CIP	\$15,000	\$150,000				
	Other	\$35,000	\$350,000	\$35,000	\$35,000	\$35,000	
D12: Complete an integrated statewide transportation dataset	GF			\$15,000	\$15,000	\$15,000	Database requirements and design during year 1, database compilation in year 2, maintenance in year 3. Assumes all transportation data has been collected from some governmental entity. Costs mostly associated with data compilation efforts.
	CIP	\$50,000	\$150,000				
D13: Complete statewide geodetic control network	GF	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	Database requirements and design during year 1, database compilation in year 2, maintenance in year 3. Assumes most geodetic control data has been collected from some governmental entity. Costs mostly associated with data compilation efforts.
	CIP	\$25,000	\$60,000	\$10,000	\$10,000	\$10,000	
	Other	\$110,000	\$220,000	\$35,000	\$35,000	\$35,000	
Implementation Initiatives—Unified Data Clearinghouse							
U1: Evaluate stakeholder needs for a unified geospatial data and metadata clearinghouse.	CIP	\$ -	\$25,000	\$ -	\$ -	\$ -	Anticipated in Year 2 work program
U2: Evaluation of the technology in place at existing data clearinghouses in Alaska.	CIP	\$ -	\$45,000	\$ -	\$ -	\$ -	Anticipated in Year 2 work program

Implementation Initiative	Source	Year 1	Year 2	Year 3	Year 4	Year 5	Comments
Implementation Initiatives—Sustainable Funding							
F1: Research and secure additional grant funding to support State and local GIS development		\$ -	\$ -	\$ -	\$ -	\$ -	Included in GIO/Council Operational Budget
F2: Explore and pursue new funding sources for GIS development support through local land transaction registration fees		\$ -	\$ -	\$ -	\$ -	\$ -	Included in GIO/Council Operational Budget
F3: Research and identify other funding sources or financing strategies for GIS programs		\$ -	\$ -	\$ -	\$ -	\$ -	Included in GIO/Council Operational Budget
F5: Prepare business case for open access to GIS data	CIP	\$38,500	\$ -	\$ -	\$ -	\$ -	Anticipated year 1 in work schedule.
Total Annual Investment							
		\$19,013,750	\$19,870,450	\$18,970,089	\$2,017,940	\$2,056,067	
State General Fund	GF	\$231,250	\$247,950	\$312,339	\$310,191	\$318,317	
State Capital Program	CIP	\$4,939,000	\$5,317,700	\$4,735,000	\$465,000	\$495,000	
Federal, Private, etc.	Other	\$12,958,500	\$13,529,800	\$12,902,750	\$1,322,750	\$1,309,750	

Table 15 - Geospatial Initiative Costs

In addition to State funds, several of these initiatives may include cost shares from federal, local, or regional sources. The items most likely to have significant cost share opportunities include D7 support creation of current statewide elevation data, D8 establish a program and process for ongoing repeatable statewide coverage of orthoimagery, D11 complete and enhance an integrated hydrography dataset for the state, D12 complete an integrated statewide transportation dataset, and D13 complete statewide geodetic control network. A key point

of emphasis for a newly hired GIO will be to aggressively pursue cost sharing opportunities at the federal level and work to expand those funds currently made available to Alaska for data development and maintenance.

5 Implementation Plan

The table below identifies key tasks that must be accomplished to meet the goals presented in the Alaska Geospatial Strategic Plan. The table includes a brief description of the criteria by which success should be judged, identification of the stakeholders that should be involved in the task, and a broad timeline for implementation.

The key potential players in any of these tasks can be the Geospatial Information Officer (GIO), the Alaska Geospatial Council (AGC), the general GIS stakeholder community, Technical Working Groups (TWGs), and the executive sponsor agency of the effort. The organization that will take a lead role in the task is identified by the following symbol: ■. Organizations that have an active role in the task but are not responsible for completion of

the task or lack an official approval role are identified by a ●.

The implementation timeline is identified over three (3) years with each cell representing a single month. The table does not include a specific calendar reference, since the initiation date of the process is unknown. It is not the intention of the implementation timeline to provide the level of detail necessary to understand the effort required for each task. Instead, the timeline provides a generalized workflow and a broad estimate of the time expected for the tasks. Months identified with a dark green cell (■) represent when the task will be actively being undertaken. Months identified with a light green cell (■) signify the activity is ongoing.



Appendix A: Business Planning Methodology

The approach used for this business planning effort was driven by the goal of engaging stakeholders throughout the state in an open and transparent manner, working to ensure stakeholder's needs and ideas were used as the foundation for the resulting plans. Each of the tasks was executed with guidance from the Federal Geographic Data Committee's Strategic Planning Process Map (see http://www.fgdc.gov/policyandplanning/newsppb/StrategicPlanningProcessMap.v2_052809_FinalVersion.pdf).

The state of Alaska was awarded a CAP grant in 2010 and hired Dewberry in 2011 to facilitate the effort and develop the strategic and business plans.

An executive committee, headed by project management from the state of Alaska, was developed to ensure project decisions were made with the interests of key stakeholders in mind. This Steering committee included:

- **Nick Mastrodicasa, Project Manager**, Alaska Department of Transportation & Public Facilities
- **Anne Johnson, Assistant Project Manager**, Alaska Department of Natural Resources
- **Bill Hazelton**, University of Alaska Anchorage
- **Bill Holloway**, Kenai Peninsula Borough
- **Garth Olson**, Bureau of Land Management
- **Shannon Post**, Matanuska-Susitna Borough
- **Scott Van Hoff**, US Geological Survey

This committee managed and reviewed the key tasks and deliverables of this effort, each of which are depicted in figure 3 and further described below.



Figure 3 - Strategic Planning Process

Online Survey

An online survey was conducted to gather input from all stakeholders within Alaska. The feedback from this survey revealed:

- Information about how geographic information is being used
- Business functions and programs that are being supported with geospatial technology
- Reasons for using geospatial technology and the benefits being realized from the technology
- Existing resources, data, and technology available to support geospatial operations
- Needs of stakeholders for geographic information
- Suggestions for improving geospatial capabilities of the state

The online survey was hosted on SurveyMonkey.com from March 2nd to March 28th 2011. Five emails were sent to 952 individuals within the Alaska geospatial



community, inviting and reminding these individuals to complete the survey. The survey deadline was extended an additional three days to attempt to acquire responses from those who were not able to complete the survey within the initial timeframe. In total, 289 individuals responded to the survey.

Representatives from all organizations in the geospatial community participated in the survey. As shown in figure 4, these organizations included state, Federal, and local government, as well as the commercial sector, universities/ educational institutions, not-for-profits, utilities, native corporations, professional/ trade associations, special purpose districts, and public school districts. The majority of the respondents represented Federal and state government.

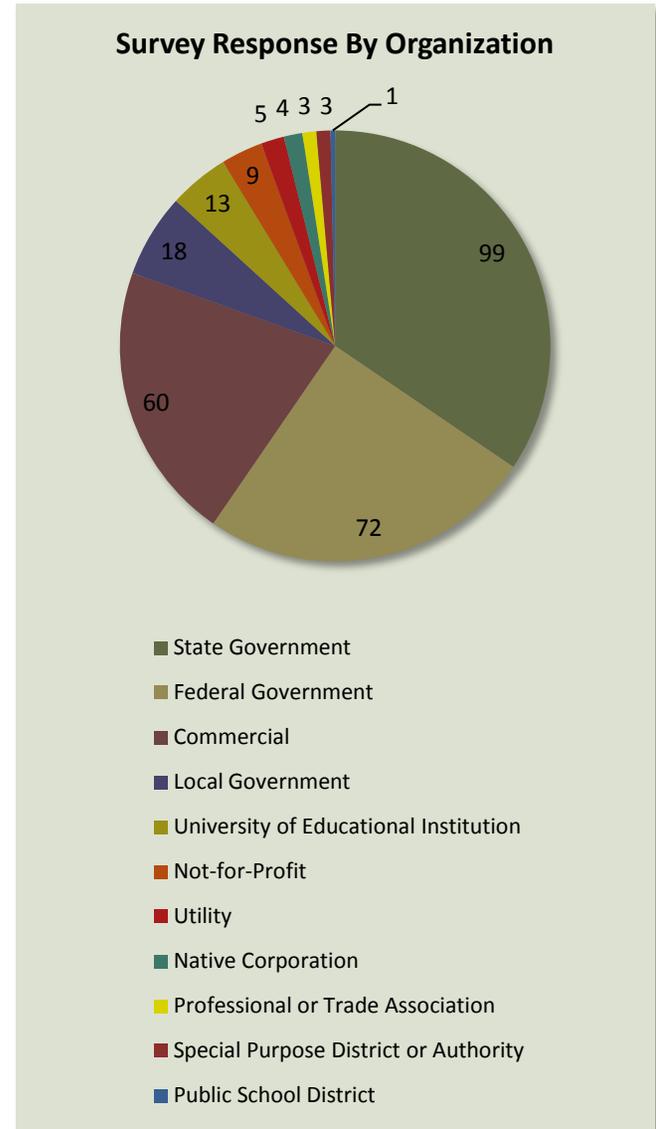


Figure 4 - Survey Response by Organization

Survey respondents were located throughout Alaska, with most from the major population centers. The map in Figure 5 shows the locations of the respondents by zip code.

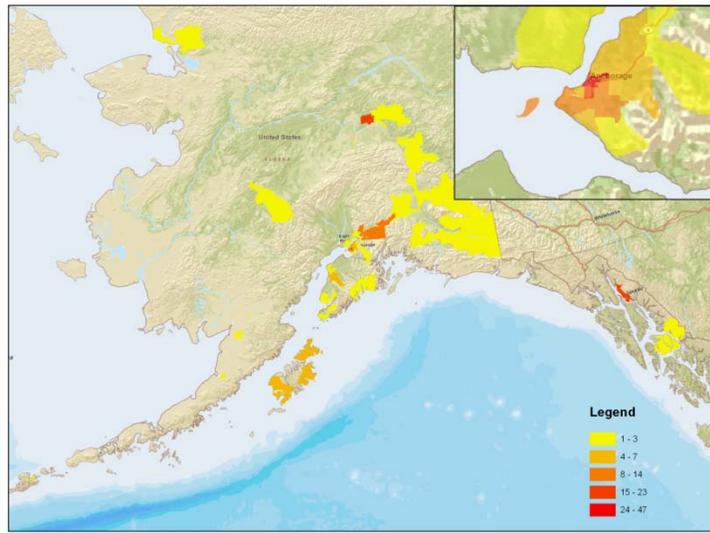


Figure 5 - Location of respondents by zip code. Anchorage inset included to depict detail not conveyed in larger map.

The results of the survey were summarized and distributed to the Steering Committee for review. A summary of these results was also presented during the regional stakeholder workshops, discussed below.

Regional Stakeholder Workshops

Workshops were conducted around Alaska, including physical workshops in Anchorage, Fairbanks, Juneau, Kenai, Kodiak, and one virtual workshop, in order to gather input from the GIS community for these plans. These meetings featured an open dialogue about the status of geospatial coordination in Alaska and what can be done to improve the benefits of applying the technology, data, and human resources in the state. The workshops gave insight into the current state of geospatial initiatives within the state and helped gather ideas for how initiatives might be improved in the future.



Figure 6 - Locations of Stakeholder Workshops

These workshops focused on the following discussion topics:

- **Overview of Strategic and Business Plans** – Introduction by the project team to the project goals, process, and expectations.
- **Process for Developing the Plans** – The project team reviewed the methodology used for the project and the projected schedule of task completion.
- **Evaluation of Alaska’s Geospatial Coordination and Collaboration** – Facilitated discussion on the things that are working well in the state, things that could be improved, opportunities for enhancement, and threats to achieving coordination goals.
- **Future of Alaska’s Geospatial Coordination** – Facilitated discussion on the roles, structure, and actions of a statewide coordinating entity
- **Current Geospatial Operations** – Facilitated discussion on the business drivers, benefits, and challenges associated with geospatial technology.

The physical workshops were held from April 5th to April 15th 2011. An additional virtual workshop was held on April 27th 2011 for those that were unable to attend the workshops in person. Three (3) emails were sent out to 952 individuals inviting and reminding them to register and attend the workshops. An agenda was sent to those that registered for a workshop.

In general, each of the workshops was well attended. A total of 83 people attended the workshops, with 42 attendees in Anchorage, 12 attendees each in Fairbanks and Kodiak, 10 attendees in Juneau, and 6 attendees in Kenai. These individuals represented similar organizations to those that completed the online survey, as shown in Figure 7.

The results of these workshops were summarized in individual reports. These reports were sent out to each of the workshop participants for comment to ensure that the information was captured appropriately. The resulting information was then summarized for all of the workshops and presented to the Steering Committee for review.

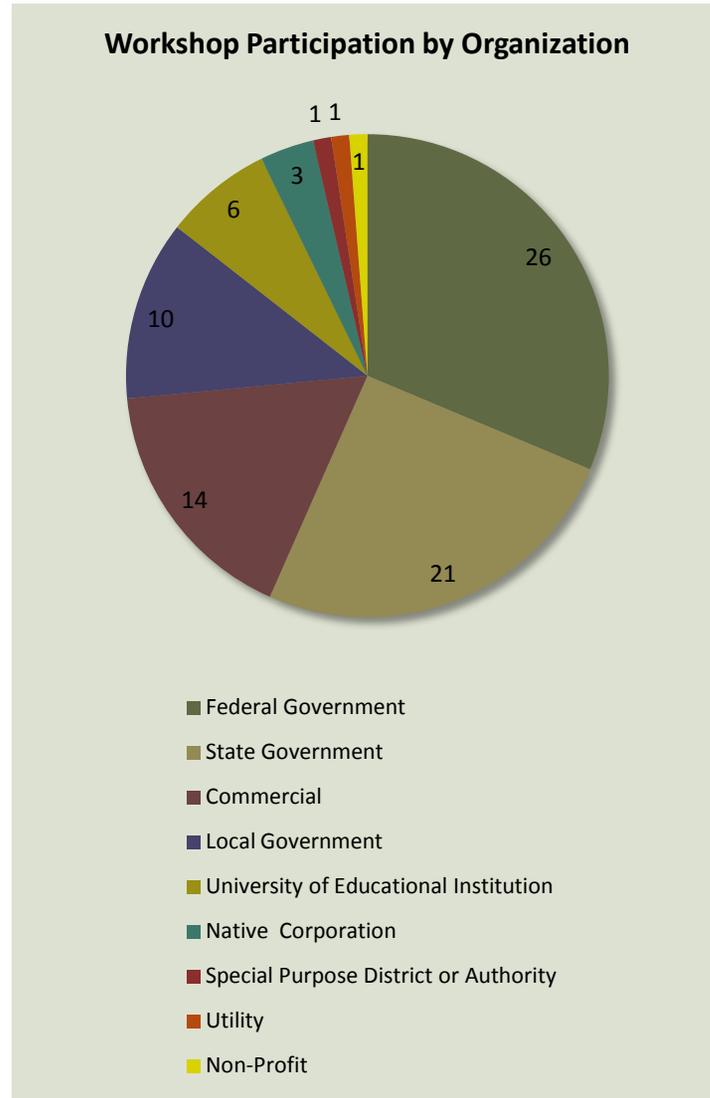


Figure 7 - Workshop Participation by Organization

Executive Management Interviews

Interviews were conducted with representatives from Federal, state, and local government, as well as commercial and university organizations. These interviews gave insight into the current state of geospatial initiatives within the state, as well as help gather ideas for how these initiatives might be improved in the future.

Interviews were conducted with 18 organizations over the course of two weeks. These individuals were chosen by the project evaluation team to represent the viewpoints and concerns of the major stakeholders of geospatial information in Alaska. These interviews included four federal government representatives, four state government representatives, four local/ regional government representatives, three academia representatives, and one state legislature representative. These individuals are either executive management or in a leadership role within their respective organizations. Table 17 lists those that were interviewed.

The information collected from these interviewees was summarized in a report by topic and submitted to the Steering Committee for review.

Plan Authoring

The resulting information from the surveys, workshops, and interviews has been used to compile both the Geospatial Strategic and Business Plans.

Interviewee	Organization	Position
Representative Eric Feige	Alaska House of Representatives	State Representative
John Cramer/ Pat Shier	Alaska Department of Administration	Deputy Commissioner/ Enterprise Technology Services Director
Kurt Kamletz / Jason Graham	Alaska Fish and Game	IT Manager/ Cartographer
Greg Light/ Cliff Jones	Alaska Department of Environmental Conservation	Information Technology Manager / GIS Coordinator
James Hemsath/ Peter Crimp	Alaska Industrial Development and Export Authority/ Alaska Energy Authority	Development Finance Program Deputy Director/ Alternative Energy & Energy Efficiency Deputy Director
Tom Duncan	Fairbanks Borough	GIS Coordinator
Doina Nica/ Lance Ahern	Anchorage Municipality	GIS Data Manager/ CIO
Paul VanDyke	Kodiak Island Borough	IT Supervisor
George Sempeles	FAA	Lead National Cartographer
Matthew Forney	NOAA/NGS	NGS Liaison to Alaska
Rob Beachler/ Heidi Nelson	Joint Forces - Military GIS User Group	
Dr Mark Myers	University of Alaska Fairbanks	Vice Chancellor-Research
Tom Case	University of Alaska Anchorage	Vice Chancellor
Gennady Gienko	University of Alaska Anchorage	UA Geomatics Professor
Robert Ruffner	Kenai Watershed Forum	Executive Director
Charles Parker	Alaska Village Initiatives	President/ CEO
Mike Plivelich / Sanjay Pyare	Southeast Alaska GIS Library	GIS Coordinator/ Professor
Ruth Monahan/ Andrea Gehrke / Erik Johnson	USDA Forest Service	Deputy Regional Forester / Information Management Director/ Geographic & Resource Information Systems Group Leader

Table 16 - Executive Management Interviewees

Appendix B: Abbreviation Glossary

Abbreviation	Description
ACSM	American Congress on Surveying & Mapping
ADFG	Alaska Department of Fish & Game
ADGDC	Alaska State Geospatial Data Clearinghouse
AEA	Alaska Energy Authority
AGDC	Alaska Geographic Data Committee
ASPLS	Alaska Society of Professional Land Surveyors
ASPRS	American Society of Photogrammetry and Remote Sensing
ASTER	Advanced Spaceborne Thermal Emission and Reflection Radiometer
BLM	Bureau of Land Management
CAP	Cooperative Agreement Program
CEO	Chief Executive Officer
CIO	Chief Information Officer
DCCED	Alaska Department of Commerce, Community, and Economic Development
DEC	Alaska Department of Environmental Conservation
DEM	Digital Elevation Model
DMVA	Alaska Department of Military and Veterans Affairs
DNR	Alaska Department of Natural Resources
DoD	Department of Defense
DOQQ	Digital Orthophoto Quarter Quads
DOT&PF	Alaska Department of Transportation & Public Facilities
DPS	Alaska Department of Public Safety
EPA	Environmental Protection Agency
ETS	Enterprise Technology Services
FAA	Federal Aviation Administration
FGDC	Federal Geographic Data Committee

Abbreviation	Description
FTP	File Transfer Protocol
GINA	Geographic Information Network of Alaska
GIO	Geospatial Information Officer
GIS	Geographic Information System
GPS	Global Positioning System
GRAV-D	Gravity for the Redefinition of the American Vertical Datum
HSS	Alaska Department of Health and Social Services
IARPC	Interagency Arctic Policy Research Center
LiDAR	Light Detection And Ranging
NED	National Elevation Dataset
NGA	National Geospatial-Intelligence Agency
NGS	National Geodetic Survey
NHD	National Hydrography Dataset
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRCS	National Resources Conservation Service
NSDI	National Spatial Data Infrastructure
NSGIC	National States Geographic Information Council
RMSE	Root-Mean-Square Error
SDMI	Statewide Digital Mapping Initiative
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TIGER	Topologically Integrated Geographic Encoding and Referencing system
TWG	Technical Working Group
UAF	University of Alaska Fairbanks
UAS	Unmanned Aerial Systems
URISA	Urban & Regional Information Systems Association

