



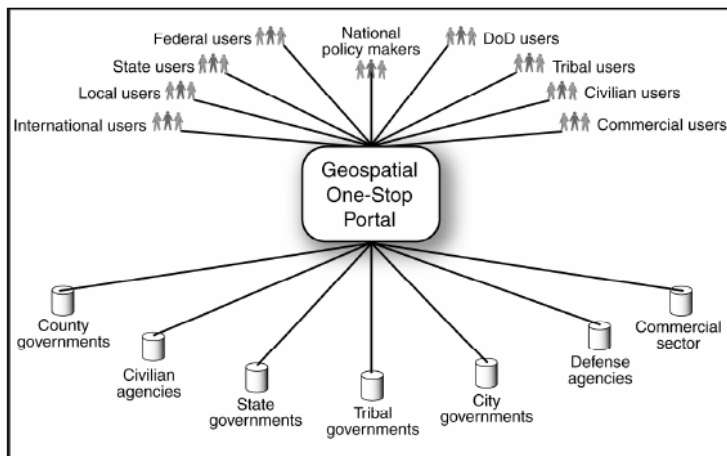
# Statewide Digital Mapping Initiative

## INTRODUCTION

The Statewide Digital Mapping Initiative addresses and corrects a deficiency that is a basic underlying requirement for the State of Alaska to migrate to a much more effective and cost efficient platform of conducting business and providing emergency response and disaster recovery services. A vast majority of Alaska's current maps do not and cannot support modern electronic information management practices and analysis proven to make a more productive and cost effective government possible.

Alaska is the last state in the union to procure a modern statewide digital base map system of uniform resolution and accuracy in both a geographic and procedural context that offers contiguous statewide coverage. Such a map would support data sharing and the accurate analysis of the data thereby promoting intelligent resource allocations and planning for the benefit

Figure 3: Geospatial One-Stop Portal Concept



Source: GAO based on FGDC information.

of all Alaskans. In limited stove-piped departmental roles Alaska has demonstrated it can deploy advanced Geospatial Information Systems (GIS). However, it is the undeniable absence of a useful statewide base map that inhibits Alaska's full migration to a more efficient and cost effective method of conducting business. The fact is: Alaska has realized a small fraction of its potential efficiencies and cost savings in this regard. Often times, geospatial data is acquired and utilized on a project driven, departmentally

specific basis, which does not benefit the much broader user group. Currently, data exists in departmental silos and is often duplicated and when shared among users it is done so on a limited basis. Therefore, users often end up repurchasing and recreating similar data needs. Furthermore, value added products and services that could and should be derived from a single source statewide base map in a digital or paper context are not produced and their constructive effects upon governmental efficiency and public safety go largely unrealized.

Alaska is the largest state in the nation and has a larger abundance of natural resources and wildlife habitat than any other state. This should magnify to the reader the importance and difficulty in effectively inventorying and managing these resources in order for Alaskans, and indeed all Americans to realize the true wealth that lies within these resources. This formidable task requires a tool which does not yet exist within the State of Alaska, and requires that it be developed. This tool is in fact a unified, uniform and commonly accessible base map system and

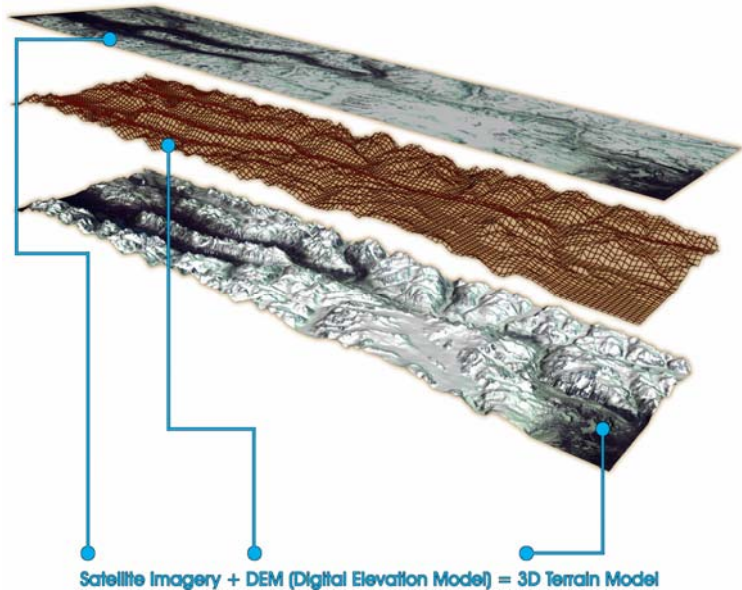
this initiative moves to correct this deficiency. If this is not remedied we are ensuring our critical decision making processes will rely on inaccurate, incomplete and unreliable information.

## **EXECUTIVE SUMMARY**

An underlying digital base map of Alaska is essential to support informed public policy and decision making on a broad scale. It is also critical to deliver competent disaster recovery and emergency services to the citizens of Alaska as well as a variety of other value added products, which would benefit both public and private users. Additionally, the initiative augments cross-jurisdictional collaboration and facilitates data and information sharing among state, federal, local and private organizations. In this way, the state can reduce the likelihood of costly duplicated efforts, incompatible or conflicting data sets and inconsistent analytical results. Furthermore, it will render tangible results enhancing how the state manages its timber resources, oil reserves land use considerations, fisheries, recreational development, and its direct interactions with large private land managers (native corporations--ANCSA), federal and local governments as well as the effective execution of its responsibilities to the citizens of Alaska.

Presently Alaska has not been digitally mapped on a statewide basis and remains the only state in the Union that has not been digitally mapped on a state-wide basis. Alaska relies on old, incomplete and inaccurate information. Point of fact, many states have already completed or are currently addressing a plan of action to refresh their mapping data for the third or fourth time. ***The fact Alaska does not have a state-wide digital map and is lagging behind other states which are in some cases fifteen years ahead of Alaska is simply unacceptable.***

To accomplish this, modern mapping methods require that two components: imagery and elevation data are acquired. Earth imaging products and elevation data are both acquired from aerial or satellite platforms. The digital elevation data is used to build a Digital Elevation Model (DEM). The DEM illustrates the surface height of the earth's topography and physical features in digital dimensions. These two separate but complementary products are blended through electronic processing into a highly accurate terrain model, which is also referred to as the base map. This base map can then be used for many purposes across all disciplines. The required imagery and elevation data, which are needed to create the base map, are virtually non-existent in Alaska<sup>1</sup>.



This base map is critical in order for the state to migrate to modern day applications of GIS data (Geospatial Information Systems) used across all disciplines both public and private. Many of the

<sup>1</sup> The acquisition of the data required to create an accurate DEM represents the single largest cost component for this project. However, at one time it was assumed a classified DEM existed to serve the needs of the Military in their Military Operating Areas (MOAs), which represent about two thirds of the state. Efforts to declassify this data revealed the DoD's DEM was recreated from existing flawed data and no new data was contributed to its creation. This thereby resulted in a flawed DEM that is no more accurate than what currently exists and was created by cartographers prior to statehood. It is believed the military has a tactical need for a DEM to operate effectively in Alaska and it is conceived an unclassified version of a DEM procured by the DoD may possibly be used by the state to create the statewide base map. That being said Alaska would be able to substantially reduce the cost of this project.

geospatial applications requiring a base map are not functional in Alaska. Additionally, geospatial information—where it exists—exists in silos, is inconsistent and spread across many levels of government and private enterprise. As a result vast economic benefits, disaster recovery initiatives and advancements in public safety go largely unrealized. A variety of limitations arise from not having a base map, which impedes a coordinated GIS program and a progressive plan of economic development. The following represent only a few of them:

- Advancements in public safety, consequence management and disaster preparedness are largely unavailable and go unrealized due to the lack of a base map which is an underlying requirement for modernized first responder applications. Consequently, first responders and emergency management personnel do not have access to GIS based applications and asset management programs to expedite emergency procedures.
- A variety of interests both public and private have been acquiring, on an as needed basis, both Ortho and digital elevation data to construct terrain models to support their individual program needs, projects and agencies. Often times this data is licensed and utilized on a project-by-project basis and rarely benefits the potentially broader user group often resulting in costly duplicative efforts. This is a very inefficient way to conduct business and affairs of state.
- Coastal erosion is one of Alaska's primary natural hazards. NOAA's Coastal Services Center provides tools, techniques, and training to enable our first responders and emergency management personnel to do their jobs more effectively. Federal agencies such as NOAA's Coastal Services Center have demonstrated capacity and capabilities to develop applications utilizing GIS-based digital mapping systems. Additionally, federally funded climate change initiatives would benefit from highly detailed coastal maps. Such tools become the baseline which allows sound measurement of the impacts of climate change (e.g., coastal erosion, tidal variations, hydrologic flow, and glacier dammed lakes). Without this baseline adaptation and mitigation efforts are unable to be applied accordingly.
- Private sector value-added geospatial services that could benefit the state, federal and private businesses are often impeded if not derailed due to the lack of a base map. Please see "Beneficiaries" section for examples.
- Efficiencies in time from application to permit, reduced overtime and workforce headcount requirements are not realized due to the automation that advanced GIS systems and applications could achieve.

Additional initiatives also benefited by or dependant upon a base map are significant. They include but are not limited to the following:

- Aviation Safety;
- Emergency Response;
- Gas Line Route: routing & permit support, public hearings and environmental monitoring;
- Oil and Gas Infrastructure Management and Monitoring;
- Large and Small Mining Projects & Prospects;
- Land Planning: Corridor analysis & Statewide Land Sales Program;
- Fire Hazard Mapping for Critical and High Value Protection Areas;
- Forest Resource mapping in Southeast, Northern and South Central regions;
- Land Use Permit Authorizations with Commercial Recreational Permits;
- Land Cover and Terrain for major State and National Parks;
- Tsunami Inundation Modeling
- Storm Surge Modeling (coastal erosion)
- Integration of Coastal and Ocean Mapping
- Coastal Resources and ACMP shore zone mapping project, and
- Change Detection.

The lack of an accurate digital base map fails to advance Alaska's interests in today's technologically driven economy. To date; key developments have occurred and need to evolve in order to resolve Alaska's need for an accurate base map, they are:

1. The state has appropriated in SFY2006 funds to "map the state" in the amount of \$2M. The intent of this appropriation was to provide seed money to develop a comprehensive plan for dataset acquisitions, creation of the base map itself and the subsequent implementation of the electronic archive and delivery infrastructure. Furthermore, and most importantly, it was a show of good faith to our Washington delegation demonstrating the state will participate financially to map Alaska and understands its obligation to do so. A long term budget initiative supported by a sound comprehensive plan must be completed in order to achieve the necessary funding for this multi-year, multi-phase project.
2. A trilateral agreement between three key state agencies and endorsed by the executive branch has been executed in the form of a Memorandum of Agreement (MOA). The intent of the MOA, as agreed to by the parties, is unmistakably clear in its intent to foster a collaborative effort that results in a strategic plan of development and to build consensus among the stakeholders both public and private. To date a comprehensive plan acceptable to our congressional delegation, sufficient enough to gain sustained funding has been lacking. Yet, it is now imminent—one plan, one vision and one supportive voice comprised of interested citizens and stakeholders.
3. Outside expertise and peer review is necessary to ensure best practices and techniques are followed. Therefore, a contractor consultant with proven experience in the discipline of digital mapping will be sought by the State of Alaska through a formal RFP to assist in the development and planning of the mapping initiative.
4. Expertise within the federal government and its agencies must be leveraged to ensure best practices and compatibility with national mapping standards will be achieved. The State of Alaska is currently leveraging its relationships with NASA, USGS, NOAA, BLM and a host of other federal agencies in association with the Alaska Geographic Data Committee (AGDC) to facilitate a collaborative approach to achieving best practice and technique.

## **VISION / MISSION**

### **Vision:**

To create and then make available free of charge, by electronic means, a comprehensively engineered statewide digital base map of Alaska to support the geospatial functionality required to more effectively serve the common good.

### **Mission:**

The Statewide Digital Mapping Initiative (SDMI) is comprised of three parts; the first of which is to implement a comprehensive strategic plan that will create a programmatic approach to digitally map the State of Alaska utilizing advanced technology resulting in a highly accurate base map; Secondly, the SDMI will implement those plans to use as a guide to acquire, process and manage the data, and Finally, establish a statewide enterprise geospatial information system. This is accomplished by:

- 1- Establishing a cohesive, visionary group of principals who can speak in one voice and are dedicated to leveraging the synergies within that body for the purposes of planning, development and execution of the statewide mapping initiative;
- 2- Establishing a working coalition of stakeholders to provide input and guidance during the process to ensure the statewide digital base map is systematically designed, and is methodically conceived and is engineered in a manner that serves the universal interests of the stakeholders in a timely and cost effective manner;

- 3- Establishing a forward looking governance policy that ensures the integrity, storage and refreshing of the data as well as establishing policy and procedures for data access, management, maintenance, enhancement and security.
- 4- Understanding the political drivers and the funding mechanisms required to acquire a sustainable funding source or sources that will ensure the statewide digital mapping initiative advances to its successful conclusion.

## **GOALS**

### **Goals:**

The SDMI Executive Committee has organized the mapping initiative into three forward looking programmatic development objectives and will seek counsel through a third party contractor experienced in the planning required to achieve these goals. These goals are highly dependant upon each other in that they are profoundly interconnected and yet they represent three distinct and separate channels of development each having unique processes and requirements. These goals are:

1. **CREATION OF THE BASE MAP:** This entails the acquisition of the ortho imagery and digital elevation data necessary to create Digital Elevation Models (DEMs), subsequent ground control validation, quality control measures and processing requirements with respect to the raw data that is necessary in order to create the base map itself;
2. **CREATION OF THE ARCHIVE:** The development of the electronic information systems infrastructure to warehouse, archive and make available free of charge to the public and private sectors—through a clearinghouse concept—the base map and additional value added GIS data layers using open source IP protocols, and
3. **LIFECYCLE MANAGEMENT OF THE BASE MAP DATA:** This phase represents the ongoing management of the base map data. At this juncture the state may consider the creation of an enterprise geospatial information system that operates in compliance with the National States Geographic Information Council (NSGIC) and the National Spatial Data Infrastructure (NSDI).

## **HISTORY OF PROJECT**

It is widely agreed the following criteria must be met in order to achieve the necessary funding:

- The state must have a comprehensive plan inclusive of stakeholder concurrence to guide the process utilizing best practices;
- Cooperation between the state stakeholders and the federal government is essential;
- The state, federal, tribal and private stakeholders must speak in one voice while having a unified vision;
- The private sector stakeholders must play a reasonable role in the process and in general agree to the plan, and
- Finally, the state and federal government must both participate in terms of cost sharing.

Several developments have occurred to further the aforementioned, they are as follows:

In March of 2005, a Memorandum of Agreement (MOA) was drafted to establish a coalition between the University of Alaska, the Department of Natural Resources (DNR) and the Department of Military and Veteran's Affairs (DMVA) to develop a comprehensive strategic plan to digitally map the State of Alaska. On January 19<sup>th</sup> 2006 all representative parties of the MOA, had agreed to and signed the MOA including an endorsement by the Governor of Alaska. The coalition resulting from the MOA has been designated as the Statewide Digital Mapping Initiative (SDMI).

In the third quarter of 2005 funding in the amount of \$2M in the form of a capital improvement project was requested and received in SFY2006. This appropriation was in effect:

- 1) Seed money to develop the necessary underlying plans to digitally map the state;
- 2) Seed money to commence data acquisition strategies and the creation of a website to illustrate and facilitate an emerging gap analysis as well as to support stakeholder interests and participation in the process, and
- 3) It was a demonstration of good faith by the state to validate to the Congressional staff that the State of Alaska would meet its understood obligation in terms of cost sharing.

During this approximate time period the SDMI prepared a request for a federal appropriation and further requested funding in the amount of \$8.325M. However, due to the continuing resolution the federal appropriation was not realized. A subsequent request for FY08 has been submitted for \$4M.

In September of 2006, the SDMI executive committee authorized the University of Alaska—Fairbanks, to commence development of a web site to support stakeholder relations and commence a preliminary review of data assets currently held within the stakeholder community. The website will act as a repository for stakeholders to share information concerning their data assets and illustrate an emerging gap analysis as well as submit questions, input and concerns regarding the SDMI and its activities.

## **NEEDS ASSESSMENT**

There are a wide variety of needs requiring representation throughout this process such as those of the federal, state and local governments and their underlying mandate to serve the requirements of the citizenship. In addition there are the needs of the native tribal organizations, their subsidiaries and investment partners, and the needs of free enterprise and the not-for-profit entities conducting business through out the State of Alaska.

There are specific needs and uses for a statewide base map but more importantly there is a greater collective need that will benefit the many. At a bare minimum the following must transpire in order to ensure a streamlined programmatic approach to evaluating stakeholder needs:

- A. End user groups and agencies must be identified and notified of the process;
- B. End user groups once identified must be engaged unilaterally in a form of due process that includes their voice be heard, acknowledged and where appropriate accepted as good counsel.
- C. A web based presentation of what has been accomplished and plans for what is going to be accomplished should be posted for review and comment by the stakeholders.
- D. Stakeholder needs as expressed should be considered in effect peer review and will be accommodated as such. However, expression of stakeholder needs aside, third party review and federal oversight will remain a factor in all policy decisions to ensure best practice, ethical conduct and discipline are maintained both in practice and perception.

The intent of this aspect of the strategic plan is to ensure a qualitative unbiased approach to efficiently and effectively map the Sate of Alaska in a digital context. And, it is undertaken with great prudence and exhaustive forethought on part of the policy makers and those responsible for endorsing that policy.

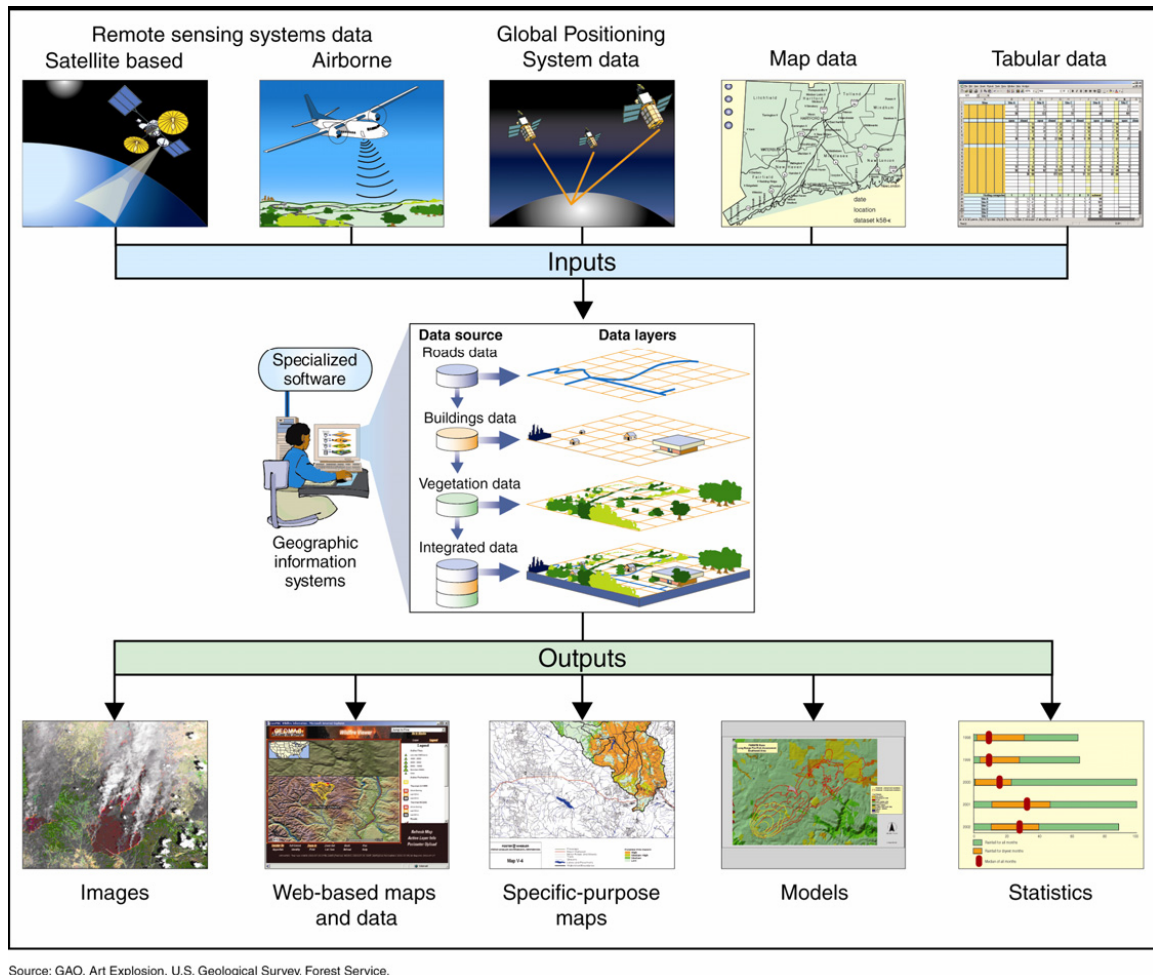
## **BENEFICIARIES**

The beneficiaries are in fact the stakeholders and they must have a significant voice in the process and planning efforts to the extent that it is reasonable and productive. Albeit by direct or indirect manifestation, this initiative benefits the greater good of such a broad spectrum of

interests across all walks of life: it is inconceivable that it would not be undertaken. The following illustrates how government agencies at all levels share the need for a common framework of geospatial data. Major functional areas of government depend on the common “framework” data for numerous applications. The following illustrates some but certainly not all of these applications:

FRAMEWORK DATA SET	FUNCTIONAL AREA				
	Homeland security/public safety	Natural resources	Infrastructure	Health & human services	Economic development, commerce, taxation
<b>Transportation/ Infrastructure</b>	Infrastructure security, location & dispatch of emergency resources	Watershed assessment	Infrastructure planning, traffic flow analysis	Facilities mgmt, emergency medical response	Resource allocation, manufacturing and industrial location
<b>Aerial photography/ satellite imagery</b>	Emergency planning and response, situational awareness	Vegetation mapping, management of coastal resources, mapping and managing mineral resources	Infrastructure planning, water demand planning	Hazardous mineral mapping and remediation	Agricultural land conservation
<b>Boundaries (administrative, jurisdictional)</b>	Cross Jurisdictional Mutual aid emergency services and response	Habitat conservation planning, coordinated resource management planning	Infrastructure planning	Resource allocation	Taxation, development credits and incentives for economic development by geographic/demographic sectors
<b>Hydrography (surface &amp; groundwater)</b>	Flood preparedness and response	Watershed assessment & restoration, oil spill response	Infrastructure planning	Drinking water supplies and ground water contamination	Industrial planning, ground water contamination mitigation & restoration
<b>Land ownership, use, and zoning</b>	Emergency planning and response, post-incident planning	Prioritizing land acquisitions/ easements (e.g. ecological reserves, recreation opportunities), flood plain easements, agriculture and open space preservation	Infrastructure planning, natural hazard restrictions to land development	Respond to disease outbreaks, resource allocation	Tax collection by tax rate area, licensing/ permitting and zoning enforcement
<b>Demographics</b>	Identify population density and languages for emergency management	Parkland, tourism demand planning and development	Infrastructure planning	Epidemiology, facility planning, resource allocation	Strategic planning, resource planning, workforce enhancement
<b>Elevation/ topography</b>	Flood preparedness and response, simulating fire behavior	Watershed assessment, air quality modeling, timber harvest plan review, wind energy assessment, Seismic and Geologic Hazards assessment	Infrastructure planning and desktop survey & engineering		Urban and agricultural land use development. Desktop project engineering telecommunications, utilities, roads building projects, pipeline, rail
<b>Biodiversity</b>	Mitigation measures for emergency operations	Habitat conservation planning, prioritizing land acquisitions/ easements	Infrastructure planning, mitigation		Project mitigation
<b>Land cover/ vegetation</b>	Mapping fire risk, simulating fire behavior, flood planning and mitigation	Habitat conservation planning, biomass energy assessment, agricultural land changes, urbanization	Infrastructure planning, mitigation, ground water recharge	Air quality and airborne dust, ground water contamination	Identification, conservation and use of mineral resources

A Geospatial Information System (GIS) is an electronic information system that analyzes, integrates and displays information based on geography. Geospatial systems have powerful visual display capabilities that present the results of analysis on maps in a wide variety of scales. GIS is regarded as the best technology to streamline and resolve problems associated with both private enterprise and governmental efficiency by utilizing information having a geographic element. The key component of any GIS strategy relies on having an accurate base map, which Alaska does not. Therefore, Alaska is not achieving nor can it achieve anywhere near its



potential in this regard because it lacks the bare necessity of an accurate base map. As such the value added GIS products and services resulting in increased services and reduced costs go unrealized. Furthermore, the life saving attributes of GIS based emergency management and disaster response systems also remain unattainable. Alaska is positioned in such a way that it is not a question of if a natural disaster will strike but a question of when. The time to implement disaster recovery and emergency response systems is not after a disaster strikes as was so painfully evident in the aftermath of hurricane Katrina. Alaska is particularly vulnerable to earthquakes, tsunamis, flooding, wildfires and volcanic eruptions. All of which present the tremendous potential for devastation on a grand scale. Ultimately the cost of a human life must be considered in a GIS cost benefit analysis.

Like most strategic investments there is an upfront cost to begin implementation, with a larger return on investment to be realized in the future. That being said, the beneficiaries are the citizen and corporate taxpayers who ultimately receive lower cost services realized through a more



streamlined and efficient operation of government. Additionally, those services can be executed in a fraction of the time. For example: permitting that used to take 45 days and several trips to the city planning office can now be done on line in less than a day. Finally, citizens also receive an enhanced capability in terms of emergency response and management that translates into lives saved.

A cost benefit analysis specific to Alaska has yet to be conducted. However, other governments having employed a GIS strategy reliant upon a base map have realized some very measurable results in terms of cost savings. While the base map itself is hard to quantify in terms of ROI the resulting applications contingent upon having a base map are not. The following applications could only be realized by having an accurate base map and once Alaska has a base map it may consider employing GIS to realize similar savings:<sup>2</sup>

- In 1995, the city of Philadelphia (CA) used GIS to optimize their garbage truck routes. In the following year the city saved over \$1 million in overtime.
- The state of Wyoming used its GIS to audit the mass appraisal process and found that approximately 250,000 parcels were not on the tax rolls. The city of Ontario (CA) generated \$190,000 per year in lost business license fees by using GIS to audit their billing files.
- In 1996, the city of Scottsdale (AZ) had only 3 weeks in which to respond and challenge the numbers provided by the Census Bureau's mid-decade census. Due to the city's GIS database the challenge was approved, resulting in increased per capita revenues to the city of \$1.8 million per year for the next five years - a total of \$9 million. This response was possible because the city had GIS available.
- The city of Redlands (CA) has used ArcView GIS to determine crime patterns which allowed them to focus police activities in target areas to reduce crime. They were also able to justify altering police beats to focus their resources.
- The Metropolitan Sewer District (Cincinnati, OH) used GIS to find parcels with sewer connections that were not being billed. The District generated thousands of dollars of missing revenue that more than covered the cost of their GIS.
- In Portage County (WI) an assistant in the county clerk's office typically would spend over 4 days to prepare the documentation required for rezoning hearing. Using GIS, the process gets done in about half a day.
- The Los Angeles County Assessors Office has reduced their yearly overtime hours from 1200 to zero, while at the same time reducing staff from 55 to 45. The cost and staff saving have been generated by a more automated assessor map creation and reproduction methodology with GIS.
- The city of Portland (OR) estimates its GIS program has saved the city \$9M by reducing duplicated systems, staff, software and other related cost items.
- The state of Louisiana estimates it will save the state as much as \$40M in fraudulent food stamps by utilizing GIS to determine patterns.
- State of Indiana Dept of Health sought a more streamlined method of screening children of Medicaid families for lead poisoning. By applying GIS principals, Indiana was able to isolate the counties where higher levels of lead were reported in existing blood analysis. By redirecting screening efforts to these counties Indiana saved nearly \$2M/Yr.
- Tualatin Valley, Oregon—Fire Dept realized its three fire stations were no longer optimally situated to effectively respond to calls. By reviewing the 25,000 annual calls for time, location fire and non fire the dept was able to optimally relocate the fire stations and saved \$4M/year in budget and improved response times.
- State of Illinois, Dept Public Safety identified an increase in accidents on roads patrolled by ISP. GIS analysts examined traffic problems and developed more effective strategies

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<sup>2</sup> Cost benefit information obtained from the NYS Study on Cost-Benefit Analysis for Geographic Information System, Implementation Justification; Elaine Silva March 4, 1998. <http://www.nysgis.state.ny.us/coordinationprogram/reports/cost/index.cfm> and ESRI [http://www.esri.com/industries/localgov/roi/roi\\_index.html](http://www.esri.com/industries/localgov/roi/roi_index.html)

focusing on specific areas and infractions. Accidents were reduced by 42% and fatalities 29%.

- The National Interagency Fire Center (NOAA, BLM, USFS, NPS & BIA) during 2000 experienced a catastrophic fire season burning nearly 7.25 million acres. These agencies needed to track all fires and distribute resources efficiently. The interagency group created an on-line GIS tool integrating real-time infrared satellite imagery, displays of current incident specific information, fuel types, current acreage, aircraft hazards and other critical analysis in order to more effectively marshal resources.

## **PROGRAM SUPPORT REQUIREMENTS**

The program support requirements necessary to successfully implement this initiative are relevant and will need to be addressed. They are as follows:

1. An insightful political champion for the initiative from within the elected body of state government.
2. A clearly defined authority granted by legislative approval for the statewide coordination of geospatial information technologies and data production.
3. Federal partners to provide a conduit through which oversight and cooperation by and between the federal government and the State of Alaska can occur. Many federal partners such as those embodied by the AGDC, NASA, USGS, BLM, NPS and NOAA have expressed an interest in participating in this process.
4. Technical expertise in the processes operationally, logistically and financially to guide, counsel and mentor the initiative to its successful and cost effective conclusion.
5. Adequate, long term, sustainable funding source(s), both state and federal, committed to meeting the projected needs of this multi-year, multi phase initiative.
6. Strong cooperative leadership from within the SDMI Executive Committee allowing for the synergistic and holistic development of this initiative;
7. Stakeholder support, guidance and participation that is ensured by a Stakeholder Advisory Board that has influence on the process and is comprised of federal, local and private enterprises having an interest in the successful completion of this initiative.
8. The holistic participation of vendors providing the necessary data across all platforms;

Detailed program support requirements are traditionally brought forward through specific planning documents prepared for an initiative operationally, logistically and financially. Those plans have not been completed at the time of this writing. However, it is the intent of the SDMI Executive Committee to prepare or have prepared those supporting documents. These documents will be made available for review on the SDMI website and stakeholder comments, input or criticism is encouraged.

## **ANTICIPATED OUTCOMES**

This strategic mapping and GIS initiative will culminate when a single, high resolution statewide digital base map of Alaska is produced and used:

- As the primary baseline map layer supported by the archive and retrieval of vital information derived from many disciplines and needs from across the state;
- Extensively by academia as a source document for research in many diverse fields for the greater understanding and betterment of the environment and humanity;
- Free of charge by and for the public. The underlying motivation being a “*create once and use many times*” ethic not prevalent in today’s operational environment.

The state through its oversight policy committee will ensure the accuracy, completeness and public worth of the data contained in both the underlying base map and the layers of GIS data it supports. In addition, the base map and subsequent GIS layers will meet National Map Accuracy

Standards, National States Geographical Information Standards (NSGIS), and have fully NSDI compliant metadata.

Stakeholder input will be a guiding principal defining the needs of the community at large and therefore will result in a product that is readily usable by the stakeholder interests and as such will stimulate the creation of value added products. Information warehoused on and retrieved from this digital base map will support public policy makers in determining a more informed decision making capability. Furthermore, the base map and its additional layers of GIS data will act as a major single source document in defining and interpreting difficult public policy issues all be their origin economic development, environmental impact, public safety or emergency response needs. Finally, the enhanced ability to deliver competent modern day first responder and emergency management capabilities in times of disasters, manmade or natural, can and will be available to the citizens of Alaska thereby minimizing the loss of life during and after such an occurrence.

### **ADDITIONAL PLANNING PROCESSES**

This strategic plan was drafted with the intent of outlining the basic need for a single source statewide digital base map and to establish how that may be most cost effectively accomplished in a high level overview. This strategic plan was also drafted to illustrate some of the tangible results derived from a digital map of Alaska. It was not intended to answer nor address all the specific elements involved in or required by that process on a “how to” operational, logistical or fiduciary basis.

This strategic plan has tried to stress that experts are available to assist in the process and can help to identify and manage the known while mitigating the unknown. The intent of this additional planning effort is to establish, affirm and ensure best practices are followed. The following are planning elements supporting that intent. For a more detailed understanding of the planning requirements please see the attached Strategic Planning Initiative, which is the basis of an RFP to seek competent third party counsel with demonstrated experience in terms of planning initiatives. This RFP will require:

- 1) A board of advisors comprised of stakeholders representing both the federal, state and local requirements shall be established. This in combination with an equal cross section of private enterprise and tribal interests shall oversee and construct the expanded basis of an RFP. Naturally, this board of advisors may not consist of potential vendors.
- 2) The board of advisors in collaboration with the SDMI staff representatives shall evaluate and make recommendations as to the successful respondent.
- 3) The review board will maintain the right to reasonably refuse acceptance of any and all respondents if the respondents fail to demonstrate their expertise in such a manner the board cannot overwhelmingly adopt a position.

**FIDUCIARY PLAN:** At the time of this writing there are no methodically hardened estimates of the costs associated with the creation of a base map for Alaska or for a continued coordinated GIS program inclusive of the need to systematically refresh the data on a predetermined basis. Estimates range widely but a comprehensive plan to quantify the costs involved has not been undertaken. Each of the planning elements in the SDMI’s strategic plan have costs associated with the base map and will become self evident through the planning effort and rolled up into a business case. This business case then becomes the basis for establishing a multi year budget to support the acquisition of sustainable financial commitments from a variety of funding sources.

**OPERATIONAL PLAN:** The operational plan is largely based upon both raster and vector requirements that have yet to be determined. The operational plan will spell out what steps need to be accomplished, in a specified timeline, in order to cost effectively acquire standardized ortho and DEM data needing to be processed and merged into an accurate terrain model. Additionally,

the data acquired must undergo a quality assurance process while the completed processing of the data will also need to be subject to quality control measures. A ground truthing process is necessary to tie both the ortho imagery and DEM data to precise fixed points on the ground requiring the placement of ground targets in a vast and extremely remote environment having major considerations. These considerations include, but are not limited to, the permitting of manmade monuments placed on public lands, access to native/tribal lands and the construction/placement of ground targets able to withstand a large population of bear activity, which is detrimental to traditional ground targets. There are additional operational challenges that need to be addressed in this plan, and there are challenges not having yet been identified and this is the purpose of an operational plan, to identify and manage the known while mitigating the unknown.

**LOGISTICS PLAN:** The logistical plan has more to do with how the data will be managed, archived and distributed. The logistical model in its majority addresses the considerations of the underlying architectural, IT and telecommunications infrastructure necessary to archive, distribute and secure the data and its integrity. This is perhaps the least expensive portion of the initiative and yet the most critical as the data has no purpose or usefulness if it cannot be accessed or acquired in times of need.

**GOVERNANCE PLAN:** A governance plan will become a logical necessity at some point through this process and should be considered based upon other states who have adopted a governance model that may or may not suit the needs of Alaska. However, a governance model/plan will be a necessary consideration at some point in this process.

## **SUMMARY**

Alaska does not have a statewide digital map nor are the existing maps accurate and they do not meet National Map Accuracy Standards (NMAS). In fact, the existing maps have regular inconsistencies in excess of a quarter mile, they were created by cartographers prior to statehood and do not meet National Map Accuracy Standards. **This is completely unacceptable for any state, especially a state having such well known vulnerabilities to a wide variety of natural disasters and having a critical geo-global position in terms of military importance.**

Modern day mapping initiatives are the basis for many applications providing for the streamlining of governmental services and more importantly life-saving disaster response and emergency management services vital to the well being of any citizen regardless of their state of residence. It is the intent of the SDMI signatories and their representatives to correct this matter and bring Alaska into the modern age of GIS services and applications based upon an accurate base map. In order to accomplish this, a great deal of planning will need to be executed as demonstrated within this strategic plan. However, once completed Alaska will have a greatly improved first responder, emergency management and disaster preparedness capability. In the end, it can be said this map is about many things yet its foundation lies in the needs of the people and saving lives.

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