Final Project Report – Category 4 – Hawaii Geographic Information Coordinating Council
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Project Title: Development of Ortho-Imagery Business Plan for the Hawaii Geographic Information Coordinating Council (HIGICC)

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Executive Summary

This plan builds on one of the Programmatic Goals of HIGICC's CAP-funded 2009 Strategic Plan – *"develop a strategy for assisting data acquisition projects and developing geospatial data standards that cross geographic and administrative boundaries."* Although this plan focuses specifically on imagery, it will serve as a process model for addressing other framework data layers.

Strategies were developed based on the outcomes of an Imagery Workshop that brought together key stakeholders from around the state, and on the results of pre- and post-workshop surveys of the local geospatial community. These strategies provide the Council with some direction for pursuing the three programmatic goals of this project:

1. Define a mechanism to support periodic statewide imagery acquisition. a) Enhance communication among partners to facilitate collaborative imagery acquisition efforts; b) acquire statewide imagery through existing Federal programs; and c) create imagery consortia to pool limited resources.

2. Facilitate the adoption of a set of metadata standards. Create a working group to identify minimum standards for metadata, and develop and oversee an implementation plan to ensure their widespread adoption.

3. Develop an online spatial data and dissemination mechanism. a) Develop a basic portal providing simple links to data sites; b) and c) develop more sophisticated portal sites that include web mapping and searching capabilities and might also include data hosting.

Although additional planning will be needed to flesh out some of these options based on the priorities and resources of the Council, work has already begun in anticipation of carrying out these strategies.

Project Narrative

Summary of project activities

April 2010 – In preparation for an online survey, HIGICC's Data Inventory and Assessment Committee ("DIAC") performed an analysis of imagery collections from other states, focusing on imagery types and public data distribution methods.

April 2010 – Pacific GPS was selected as the consultant for this project.

May 2010 – An online survey of the local geospatial community was conducted with approximately 100 responses, representing 25% of the 400 invitations to participate that had been emailed to various targeted lists.

May 2010-June 2010 – Results of the survey were compiled and summarized by the consultant.

June 2010 – The consultant facilitated an Imagery Workshop in Honolulu with key stakeholders from the federal, state, county, education, and private sectors. A presentation and discussion of data portal options was included in the workshop. The CAP Grant funded travel for neighbor island participants, making possible valuable user input from across the state.
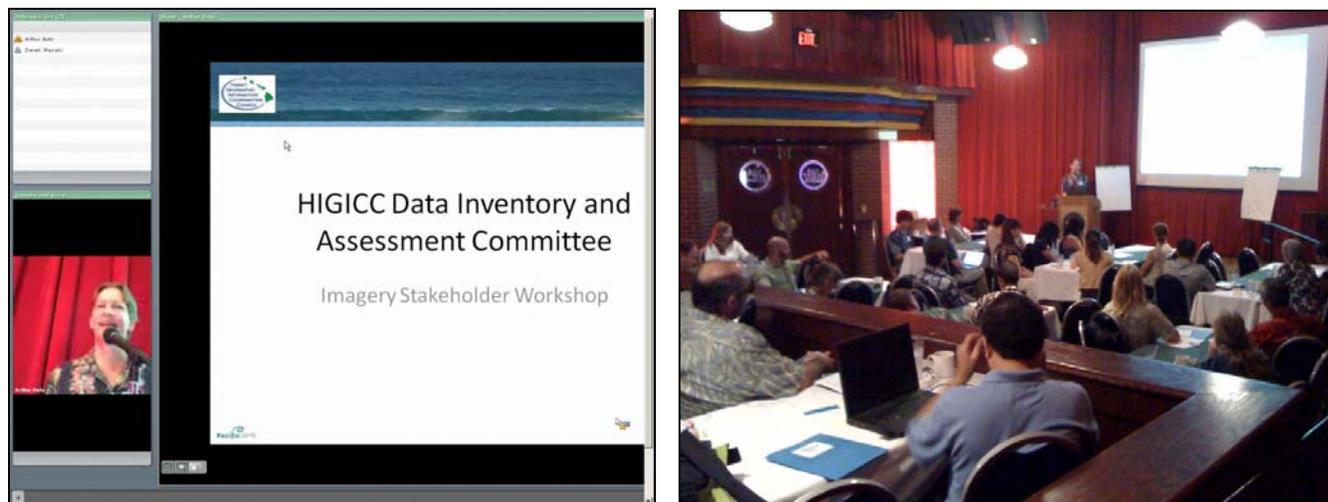

Figure 1. **Left:** Shannon McElvaney from Pacific GPS facilitated the Imagery Workshop, hosted by HIGICC's Data Inventory and Assessment Committee (DIAC); **Right:** key stakeholders from around the state and representing federal, state, county, higher education, and private sectors attended this workshop on June 30, 2010, in Honolulu, Hawaii on the island of Oahu.

July 2010-August 2010 – The Business Plan for Imagery ("Plan") was drafted incorporating the results of the online survey and the discussions held at the workshop.

August 2010 – The HIGICC Board reviewed and accepted the final draft of the Plan as presented by DIAC.

August 2010 – NRCS presented an update to the HIGICC Board and other local stakeholders on the status of the current Worldview 2 imagery collection for Hawaii and the Pacific Basin. The State of Hawaii provided partial funding along with NRCS, USGS, and USFS for this .5 meter, 8-band statewide data collection.

December 2010 – Pacific GPS and VoyagerGIS made a presentation to the HIGICC Board and local stakeholders on geoportals and metadata search technology.

December 2010 – HIGICC Board members and the state and county GIS coordinators viewed a web map portal demonstration from Keet Consulting Services (KCS).

January 2011 – The Board approved sponsorship of basic metadata training and train-the-trainer metadata workshops, in order to provide low-cost / no-cost metadata training to as wide an audience as possible, and to encourage the inclusion of metadata creation in the workflows of geospatial professionals.

Key accomplishments to date

Initial analysis. This project provided an organizational boost for the DIAC, bringing the all-volunteer committee together, and allowing them to focus on a key framework data layer and to develop a process model by which other data layers can be studied. Led by *Craig Clouet* and *Susan Vogt*, the DIAC conducted an initial analysis of imagery collections from other states, focusing on imagery types and public data distribution methods. The results of their analysis shaped the content and context of an online survey of local stakeholders.

Online survey. – This was the major outreach effort of the project. The survey questions were designed to help assess where Hawaii stands in relation to other states, and to gauge user needs, assets, and resources, and the perceived role that HIGICC might play in coordinating future acquisition and distribution activities. The survey elicited responses from over 100 of the 400 invited stakeholders resulting in statistically significant data that formed the basis for the Imagery Workshop that followed.

Imagery Workshop. This was the major inreach activity associated with this project. The Workshop brought together 40 key stakeholders from around the state and across all sectors – federal, state, county, education, and private – to discuss imagery acquisition and distribution issues and the need for more consistent production of metadata. In this forum information was shared about organizational and individual activities, priorities, resources, and potential collaborative opportunities.

Membership. An unanticipated benefit, apparently the result of the project activities, has been a significant increase in paid memberships in HIGICC in all categories – student, individual, and organizational. We attribute this to the increased visibility of the Council and the widespread support for the stated intentions of this business plan.

How inclusive is your effort? what have you done to bring new stakeholder groups or organizations into statewide coordination?

Imagery, more than most other data layers, has a very broad appeal and varied application. For those reasons HIGICC reached out beyond the "usual suspects" of geospatial professionals to solicit participation in the online survey. We made a concerted effort to contact professionals in the planning and land surveying communities using (with permission) email lists from local professional associations.

We also made an effort to expand our contacts in the higher education community by contacting geography departments of local universities.

Other significant outreach efforts include recent contacts with the Lieutenant Governor's office and staff from the Governor's office.

Explain how statewide coordination has (or will) change as a result of this project.

Imagery Acquisition. The Council will take a more active role in fostering partnerships and leveraging its influence with member organizations to promote data sharing and to initiate more dialog about imagery needs, planned acquisitions, and available resources. The Council on behalf of its members will also lobby to include statewide coverage of Hawaii in existing national imagery acquisition programs, like the

USDA's National Agriculture Imagery Program (NAIP). The goal is to maximize the limited dollars available for imagery acquisition with the intention of obtaining coverage and resolution that serve multiple users and purposes, and that is widely available and regularly updated.

Metadata Standards. HIGICC is actively promoting the cause of consistent metadata production in Hawaii. NOAA has demonstrated its commitment to collaborate and coordinate with HIGICC by co-sponsoring two upcoming metadata training sessions – *"Introduction to Geospatial Metadata"* (which is being offered simultaneously as a Webex to facilitate participation by neighbor island stakeholders) and a *"Metadata Train-the-Trainer"* workshop that will turn out a dozen local and neighbor island trainers who have committed to conducting additional *"Introduction to Geospatial Metadata"* training classes within two years of completing the class. The proliferation of metadata training classes that will be available and the consistent methods and content will go far in advancing the understanding and use of metadata. This will serve as the basis for developing sustainable local metadata standards.

Data Distribution Portal. HIGICC has already begun information gathering with respect to data portal solutions. A portal is another option by which HIGICC can facilitate locating existing imagery, possibly precluding the need for new or duplicative imagery acquisition. Implementing a solution will necessarily require a certain degree of coordination and cooperation among stakeholders.

What practices or activities led to success? What practices or activities have not?

The online survey proved to be very beneficial and effective in assessing the perceived value of imagery, metadata, and data distribution among participating individuals and organizations. The relative ease with which online surveys can be created and analyzed, and the response rates we achieved, make them attractive tools for gauging community sentiment. It is an activity the HIGICC should undertake every two years or so in order to keep abreast of the needs, resources, and future plans of stakeholders, and to be aware of emerging trends, potential threats, and possible collaborative opportunities.

Getting the stakeholders together in one room and having face-to-face discussions is in itself a major accomplishment of the CAP Grant 4 for the state of Hawaii. The physical geography separating the eight main islands often serves as a barrier for simple meetings and events. And while email and phone contact are efficient, it is still the case that meetings in person further collaboration, networking, and a sense of community.

Although not as effective as face-to-face meetings, the online, remote meeting and presentation capabilities provided by Adobe Connect and webcams facilitate more frequent inclusion and participation of neighbor island stakeholders.

Explain how your project has advanced the NSDI (National Spatial Data Infrastructure)?

Imagery Acquisition. This CAP Grant 4 effort is in direct alignment of the NSDI mission. The open discussions that took place during the Imagery Workshop revealed acquisitions that were taking place on each island and some licensing issues that may restrict distribution. Participants took away valuable lessons that may have an effect on future imagery acquisitions. In addition, the results of the survey pointed to numerous opportunities for collaboration and data sharing.

Metadata Standards. The presentation and extended discussion about metadata and its inherent importance to data sharing and data distribution have gone far in supporting HIGICC's promotion of consistent and standards-based metadata creation across all sectors.

Data Distribution Portal. Working toward creating and / or contributing to a geoportal or local clearinghouse speaks directly to the NSDI goal of making geospatial data more easily accessible, while at

the same time reducing redundant data collection. In the case of imagery especially, the increased efficiency also results in increased economy.

Finally, the workshop itself was made up of key partners identified in the NSDI: federal, state, counties, academia, and the private sector. The networking opportunities afforded by the workshop extended the existing channels of communication among these stakeholders.

Describe the next steps in your project.

Imagery Acquisition. The Board's Policy Committee is working to clarify and provide guidance for HIGICC's efforts in lobbying state and federal lawmakers in matters important to the local geospatial community, including seeking Hawaii's inclusion in the National Agriculture Imagery Program ("NAIP"). In addition, increased communication among stakeholders will be utilized to provide notice of upcoming and proposed acquisition, and encourage partnering opportunities in order to leverage limited funding dollars to increase data collection areas and / or upgrade collection specifications.

We were fortunate to have been included in a recent acquisition of statewide 8-band imagery (Digital Globe WorldView-2). Jointly funded by USGS, USDA-Natural Resource Conservation Service (NRCS), USDA-Forest Service, and the State of Hawaii, this sizable (multiple terabytes) and badly needed imagery dataset should become widely available by disk distribution in June and July 2011.

Metadata Standards. HIGICC is committed to promoting the creation of metadata and the development and adoption of minimum local standards. As a first step, HIGICC has partnered with NOAA to provide low-cost / no-cost introductory training in the proper creation of metadata and in the industry standards that exist, and to encourage the inclusion of metadata creation in the workflows of geospatial professionals. HIGICC is also building a local pool of metadata trainers, again partnering with NOAA to provide a train-the-trainer workshop that includes a commitment from the participants to conduct a minimum number of metadata training sessions within two years of the workshop. To increase the availability and accessibility of the basic training, at least one trainer will be located on each of the four main Hawaiian islands; remote training is also available through the use of Adobe Connect and Internet technology.

As a direct result of the workshop and this project, several partners have approached the Council about creating a working group to begin creating metadata for existing datasets that are lacking, and to develop sustainable local metadata standards as a subset of FGDC's standard, and to provide best practice guidelines and common sense approaches for their adoption.

Data Distribution Portal. *Pacific GPS* and *VoyagerGIS* made a presentation to the HIGICC Board and local stakeholders on geoportals and metadata search technology. Some Board members and the state and county GIS coordinators also viewed a data portal demonstration from *Keet Consulting Services (KCS).* Because of the range of options available and the complexity and importance of this issue, we anticipate having to develop a separate business plan that takes a more in-depth look at the needs of the community and resources of the Council and its stakeholders, develops criteria for a desired solution, and evaluates funding options.

Informational Briefings. A concerted outreach and educational effort is underway. We will be conducting informational briefings about this plan to local legislators, Hawaii's Congressional delegation, state and county administrators, and to members of the local geospatial community.

How will this project continue into the future and remain viable?

Imagery Acquisition. The DIAC has primary responsibility within the Council for moving the implementation forward. The DIAC's Imagery Working Group in particular will work with the Board and the Policy Committee to approach local legislators and the Hawaii Congressional delegation for their support in a proposal to include Hawaii in NAIP. The Imagery Working Group will also maintain contacts among key stakeholders to keep abreast of imagery needs and anticipated acquisitions. The webcams and Adobe Connect will facilitate further workshop participation by neighbor island stakeholders.

Metdata Standards. Training sessions held in May 2011 demonstrated the amount of interest in metadata. The *Introduction to Geospatial Metadata* training was given to a capacity crowd of federal, state, county and private sector participants. Later a successful metadata Train-the-Trainer training took place with a commitment by the newly minted trainers to administer additional introductory metadata training sessions in the next two year. Significantly, the group included representatives from each of the four counties. This trainer corps, besides providing training opportunities on all islands, will serve as the basis for a Metadata Working Group within HIGICC to actively promote developing sustainable local standards, developing metadata templates, and validating and uploading metadata to existing geoportals.

Data Distribution Portal. Continuing our efforts with developing a data distribution portal will require additional planning and funding. It is likely that a Portal Working Group will be formed to seek funding, develop a business plan, and begin its implementation.

Clearly, with the limited resources of the Council, we'll have to prioritize our efforts and / or elicit greater participation from our membership and the local geospatial community, if we are to have a reasonable chance of success at any of these efforts.

Where do you need assistance?What type of assistance do you need?

Imagery Acquisition. We lack some resources in Hawaii needed to acquire aerial imagery locally. There are few aircraft located here that are adequately equipped and qualified to acquire imagery, resulting in higher costs (lack of competition and/or relying on mainland companies to bring in specialized aircraft) and often leading to scheduling delays and quality control issues. Among the benefits of inclusion in NAIP will be the regular cycle of collection and the quality assurance / quality control inherent in this federally managed program. HIGICC will seek letters of support from its partners when it submits a request to the Hawaii Congressional delegation for Hawaii's inclusion in NAIP. Non-NAIP imagery may be required occasionally, at which times HIGICC may seek partnerships and cooperative agreements as it has done successfully in the past.

Metadata Standards. As we educate our community and foster an understanding of and appreciation for geospatial metadata, we may need assistance developing and honing our curricula to tailor it to various target audiences. Assistance may also be needed in developing relevant content, including bringing in professionals from related fields such as surveying and planning.

We anticipate holding a series of workshops as we work towards developing some common metadata standards for the local geospatial community. Funding to support workshop development and travel assistance will go far to facilitate and expedite the process.

Data Distribution Portal. This project presents several options for the Council in its pursuit of developing a local imagery portal. The most ambitious will require additional planning and funding in order to better flesh out its scope. As our review of some portal solutions have already shown us, the possibilities and outcomes vary significantly, as do the method and amount of ongoing maintenance required. As an all-

volunteer nonprofit organization, funding and maintenance will drive our decision as much as the outcome.

Overall, continued guidance from the FGDC and other federal agencies on national standards, best practices, and other states' activities are important to Hawaii as a geographically isolated community.

Attachments

The completed and approved Business Plan is available at the HIGICC web site:

http://higicc.camp8.org/2010CAP

FEEDBACK ON COOPERATIVE AGREEMENTS PROGRAM

What are the CAP Program strengths and weaknesses?
+   Kick starts the planning and implementation process
+   promotes community building
-    quick turnaround time
-    limited funding

Where does it make a difference?
+   Participation in CAP ensures compliance with FGDC standards rather than striking off on your own
+   Moves the state along and provides guidance and support in specific areas of the NSDI

Was the assistance you received sufficient or effective?
Assistance and support from the program staff was very good. However, we felt the level of funding in the CAP categories to be sufficient only to <u>begin</u> much of the work at hand. We will self-fund some continuing efforts, but for others will have to seek additional funding, delaying full implementation. Having said that, the funding did allow us to begin work relatively quickly.

What would you recommend that the FGDC do differently?
Increasing the funding levels while reducing the number of awards (or categories) will allow for more ambitious project proposals. In addition, the relatively quick turnaround from the time of the announcement of the categories to the date that the proposals are due make it difficult to draft a thoroughly reviewed application – the fact that much of that time is during the traditional holidy season exacerbates the problem. Extending the deadline for applications and for the completion of the projects themselves may also contribute to more robust projects.

Are there factors that are missing or additional needs that should be considered?
None.

Are there program management concerns that need to be addressed, such as the time frame?
As previously stated, the amount of time between the announcement of the categories and the date that the applications are due is very short and during a particularly busy time of year.

If you were to do this again, what would you do differently?
We were ambitious in our execution of the project and should've focused solely on one program area. However, we feel that we made great strides in all areas after the completion of the project as a direct result of the work that had begun under it. Project team burnout was an unfortunate consequence, and one of the main reasons for our not seeking a 2011 CAP award.