

Proposal to Improve Accessibility and Power of GIS as a Tool to Inform and Effect Government Decision Making

I. Introduction

Geographic Information Systems (GIS) are powerful high tech tools used to collect, organize, store, analyze and display spatial information. Over the past two decades, GIS have evolved from very complex software programs available to only people with specialized training, to a technology that is becoming more user-friendly and as a result, being used by more people on an everyday basis.

Implementing GIS technology is particularly important to government agencies because it provides policy makers and regulators with a powerful tool to assist with decision making and management. Approximately 80-percent of all records collected and analyzed by government agencies include a geographic component. GIS technology helps facilitate government's ability to effectively analyze data to make better decisions.

The Office of Planning (OP) is the lead agency for coordinating State GIS activities. In the 15 years that the State GIS Program has been in existence, OP has partnered with the Information and Communication Services Division (ICSD) to implement, operate and maintain a GIS for state agencies.

Since GIS technology can be used for a multitude of applications, the use of the State's system has grown rapidly. **Today, there are over 140 people within 32 divisions that access the State GIS fileserver.** *See Attachment A for a list of Agencies and divisions utilizing current and outdated GIS licenses.*

Currently every state agency utilizing GIS purchases their own licenses and maintenance directly with a GIS vendor or an authorized reseller. This has resulted in a complete lack of standardization of the state's GIS software, leaving some state agencies unable to access all the imagery available in the statewide GIS database. Additionally, the lack of standardization has hampered the data sharing and coordination between state agencies. Consequently, the statewide GIS database does not contain all the data available from every state agency, resulting in a less powerful and less accurate GIS system than is achievable.

II. Strategic Plan for GIS

OP is proposing a 2-year strategic plan to guide the future growth of the system. The overall vision set forth in the plan is as follows:

Establish a national model for Statewide GIS programs by leading and coordinating the continued growth of the State of Hawaii's enterprise GIS that reflects advances in GIS technology and

provides a one-stop point of access to spatial databases for the purpose of improving overall efficiency and effectiveness in State government decision-making.

To move in this direction, the 2-year strategic plan identifies four goals aimed at improving the overall system:

1. Increase accessibility of GIS data and software;
2. Improve data sharing between agencies;
3. Begin integrating non-geospatial data with the GIS system; and
4. Institutionalize training to existing and potential users of the system.

III. Step One: Standardize GIS Licenses Bringing All State Agencies to Current Software

The first step in enabling the State of Hawaii to take full advantage of the power of GIS is to create a statewide enterprise system. An enterprise system will:

- Standardize the technology so all state agencies will be able to share and access all geospatial data;
- Improve coordination and data sharing by all state agencies and the statewide GIS database
- Integrate GIS as a decision making and management tool.

The architecture (hardware/networking/data) for an Enterprise Geographic Information System (GIS) already does exist for the State of Hawaii. However, the biggest impediment to achieving a fully integrated system is the lack of standardization -- various State agency GIS users are using various versions of GIS software.

Environmental System Research Institute (ESRI), the GIS software developer, does provide an Enterprise License Agreement (ELA) and has already executed an ELA with the City and County of Honolulu. Unlike other software vendors' license agreements, an ESRI ELA provides unlimited software deployment and unlimited maintenance on all products for the term of the agreement. This will immediately bring all out-of-date licenses up to the most current versions of the software. The ELA can, at additional cost, also include other benefits such as instructor-led training, professional services and web services. In addition, the ELA will reduce administrative costs since all licenses throughout the State of Hawaii would be packaged under one agreement.

IV. OP Survey and Data on Current Number and Cost of GIS Licenses in State Agencies

To assess the state of GIS software within the various State agencies, OP conducted a survey of existing and projected GIS users. OP also received data from ESRI, which listed their record of each license the various agencies have acquired.

Attachment A summarizes the GIS software licenses that exist in all State agencies, including both maintained licenses, and those licenses for which the software is out of date.

The survey also asked users additional questions with regard to entering into an ELA to gauge users' interest and discern their concerns. Attachment B lists some of the most interesting findings. Of particular note are the following:

- State agencies are collectively spending approximately \$100,800 on annual maintenance.
- The agencies spending the most on maintenance are: DAGS, DBEDT, DOH and DLNR.
- The maintenance charges are generally “hidden” costs – that is, they are not line items in budgets, but are funded “catch as catch can.”
- Many agencies have let their software maintenance expire due to lack of funding. This has resulted in many versions of the software deployed in State agencies, many of which are unable to read the newest State GIS data.
- One-time cost to bring all expired licenses up-to-date would be approximately \$60,000.
- Annual maintenance cost for all licenses, once current, would be approximately \$133,400.
- Users believe that customized applications and more training would increase GIS use in their agencies.
- A decisive majority believe that pursuing an ELA is a good idea.
- Lack of commitment to continued funding and allocation of costs among agencies top the list of concerns that the users have about pursuing an ELA

ESRI's ELA concept is a bit different than that of other software companies. Essentially, an annual charge is negotiated between the State and ESRI, with the agreement lasting approximately 3-5 years. The negotiated amount would include maintenance on existing licenses, and ***deployment of an unlimited number of additional licenses at no additional charge.*** To reach a fair, negotiated amount, the parties generally start with the amount currently being paid for maintenance along with a conservative estimate of the number of licenses that might be deployed during the contract period; in addition, items such as training, web services, user conference passes and professional services (e.g., application development) could also be included.

The City and County of Honolulu divides the cost of the ELA between four primary agencies. ESRI bills each of these agencies directly to avoid any confusion that could arise if a single agency were billed and responsible for collecting payments from each contributor. ESRI has indicated that such an arrangement could also be negotiated in an ELA with the State.

Some of the immediate benefits to the State would be the following:

- All users on same software version so that all could use existing State GIS database (nearly 200 data layers)
- Enhanced coordination of GIS activities within State agencies (since new software acquisitions would be managed and/or tracked by one or two agencies, rather than the current situation of agencies “doing their own thing”).

- More transparent, accountable funding of GIS software and maintenance expenditures.
- Potential overall cost savings (depending on how many new licenses were acquired)
- Unlimited deployment of licenses would allow users to “try out” the software.

V. Request

The Office of Planning, with support and assistance from DAGS, would like to initiate preliminary negotiations with ESRI for a State Agency Enterprise License Agreement in order to realize these benefits.

DAGS continues to be responsible for maintaining the hardware and network infrastructure of the GIS system. As the lead state agency for Information Technology, DAGS is the appropriate responsible agency to determine minimum specifications for the technology.

The Office of Planning continues to be responsible for the database administration and the regular sharing of data into the statewide GIS database. As the Office responsible for coordinating statewide planning, policies and priorities, OP is the appropriate responsible agency to facilitate the ability of the Executive Branch and individual agencies to maximize their application of the GIS technology.