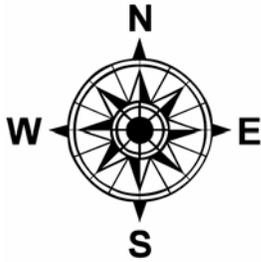


Chapter 14: SCANNED MAPS (Updated 2005)



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Theme Description:

Throughout the state of Hawai‘i there are various ad hoc efforts to scan (rasterise) hard copy maps and other spatial data such as plans and photos. It is difficult to clearly define what the “map” refers to in the sense that many organizations maintain geographic materials together. Maps, plans, sketches, engineering drawings, building plans, architectural drawings, design plans, satellite images and air photos are all tools of the trade.

This review of scanned maps is focused on the rasterization of existing materials in existing special collections. In addition for the need to scan maps, especially old or valuable one, indexing and database entry is essential for this resource to of much value. Access to such collections is also an issue, both for the public and private sectors.

Status:

Data Source:

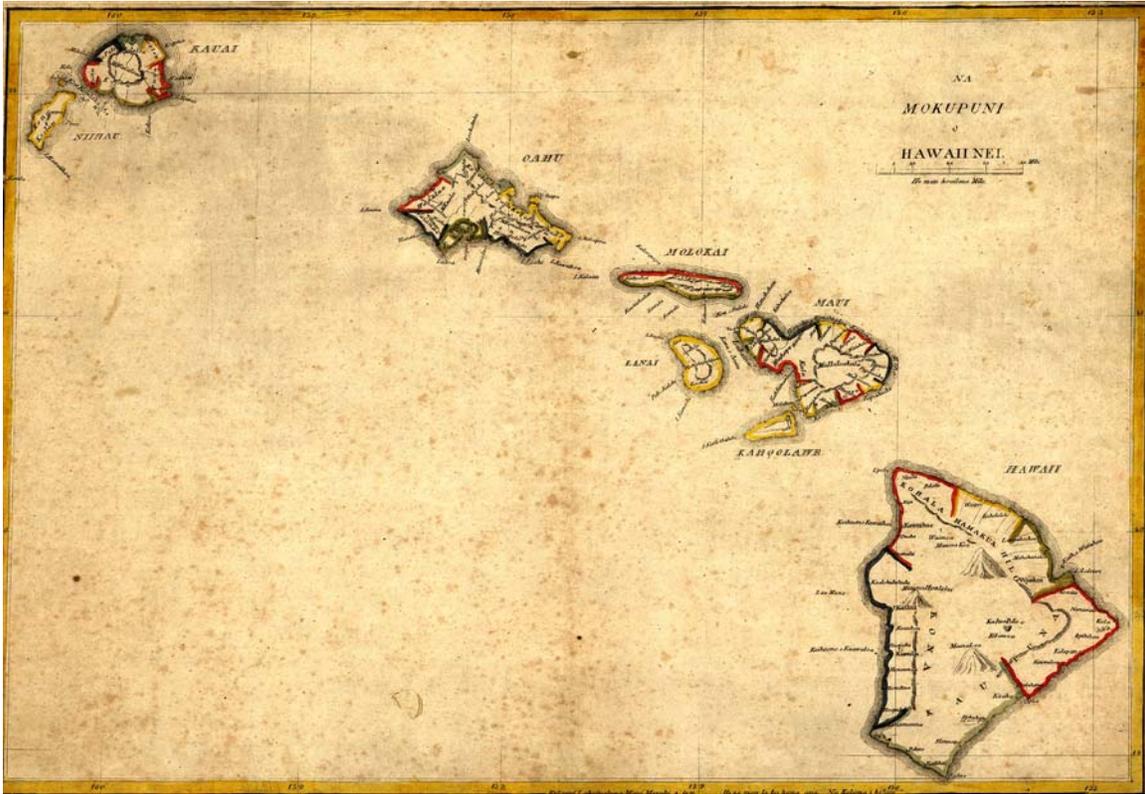
Maps exist in many organizations throughout the state. Many government agencies from federal, state, and county have large amounts of maps. The Library of Congress’s Map Collection is being scanned as well. Many individual agencies and divisions within governments have large amounts of maps. Private organizations have less in volume, but none the less are important to recognize. There is potential commercial interest in selling maps also.

Standards:

No standard has yet been established. Everyone who is doing scanning is operating independent of standards or as a group working towards integration of efforts and the sharing of information to a community external to their agency. The Library of Congress is doing one of the larger programs of map scanning. They have a large collection of maps, and have made many available on the web with a complex search engine to locate maps of interest. The URL to there site shows how a more mature effort looks;
<http://memory.loc.gov/ammem/gmdhtml/gmdhome.html> .

Priority:

No set priority has been set or discussed. As this action is being done by individual agencies, each agency defines priority and value of this work. To address this lack of coordination and protocol, the first efforts by the local agencies is to come together and begin discussing the scope of work. There needs to be some idea of who has the collections and how many items exist. Coordination of file formats is of great importance. The method of cataloging and index is equally important. The establishment of metadata standards is also needed.



One of the first maps printed in Hawaii, Library of Congress Collection

Estimated total investment in this theme:

As this effort to convert hard copy maps into raster data is so varied in nature, it is difficult to anticipate a cost. There are methods to estimate certain types and methods of imaging and storage which will begin to define costs. Whether outsourcing or in-house efforts are done, the same time and materials are required.

Technology has played a major role in determining the cost and feasibility of scanning maps. New large format color scanners are now on the market, starting in the low \$20,000 range. This is a major change from a decade ago when the equipment was so costly and cumbersome that few agencies would even consider massive scanning projects. The availability of cheap computer memory and the newer fast chip sets have really only recently made such undertakings possible.

Estimated current state and local contributions:

Many state and local activities are underway in various forms. Several different agencies were polled for this initial investigation. State Archives has a large format scanner (grayscale), and have begun scanning file plans and other maps in their special collection, several thousand to date. Historic Preservation has been scanning maps related to archeological reports. Their efforts are mainly focused on later vectorizing the data for use in GIS.

The City and County of Honolulu has begun a major effort to scan over 2 million documents and maps. Already 750,000 such materials have been scanned and are also accessible in the City's robust document Land Information System (HOLIS). The City has outsourced the work. Kamehameha Schools has been working on scanning their entire special collection, consisting of maps, air photos, building plans, etc. This work is being done internally with a large format color scanner.

Costs are difficult to assess, many agencies have purchased large-format scanners and are doing the work with current staff. Large format scanners cost about \$25,000 alone. For a successful project, one also needs a powerful workstation, imaging software, cataloging and indexing software (database), and storage solutions.

The other alternative is to completely outsource the effort. This can cost on average \$1 per page up to several dollars per map.

What is needed:

This effort is being done by agencies that feel the need to do this. As prices drop for equipment, and technology makes this type of effort both cheaper and easier, more agencies will adopt this procedure. Standards will develop most likely as more agencies begin to use and distribute data in this format.

Forming a group of interested agencies to discuss these efforts would strengthen the effort and help clear up the many unanswered questions. The development and adoption of standards and review of other map scanning efforts worldwide would help local participants better accomplish the large task.

What is the likely source:

Each agency tasked with stewardship of existing collections. As the ownership of these special collections bridges federal, state, county agencies and some private ownership, no easy one solution to funding currently exists for this effort. For the next few years it seems likely that individual efforts funded internally will continue to be the main method of scanning maps.

Estimated total investment need to complete this theme:

There can never be a completion of this theme as maps and other spatial data are produced each day. There maybe a time in some distant future that all data is store digitally, even in vector format, however with the massive amount of existing data already in hard copy format clearly many millions of dollars are required to meet the existing inventory.

Estimated current allocation of funding:

It is difficult to accurately measure current spending on this effort. This is especially the case when agencies are performing the task in-house as staff time is not always listed as cost. Also, the purchase of the \$25,000 scanner is really an investment spread out over the life of the equipment.

Estimated budget shortfall:

As no coordinated effort in this area has been established here in Hawaii, the shortfall is not relevant. Once the true number of maps, there size and condition is known, the cost for both in-house scanning or outsourcing would be easy to calculate.

Possible ways to overcome this gap:

There is little likelihood that much more efforts will be done outside of what is already underway. While there maybe desire to have all hard copy maps rasterised, the large cost and backend infrastructure needs will keep the current pace, with gradual increases. External funding may be available, especially if local agencies were to band together. Grants or other funding probably could be found, or sharing costs by a partnership is something that needs to be explored.

Liability of doing nothing

On October 31, 2004, the University of Hawaii at Manoa was struck with a major flood event. Many buildings and facilities were hard hit and damaged by both water and mud. Destruction was extensive to the libraries map collection. As the collection was not scanned, a vast amount of maps were lost. Some maps are in recovery but the cost is in the millions of dollars and will take many years to complete. This re-emphasizes the need to scan and catalog maps. While proper storage and preservation is of the utmost importance, having a back-up copy for disaster recovery plus providing easier and greater access to the collection electronically becomes very cost effective.

Most appropriate data steward:

The agencies that are in current stewardship of the hard copies are best suited to continue in this role. Discussions should begin to the sharing of map collections. The actual stewardship of the hard copy and probably the scanned version is probably best done by

the current owner. However the sharing and dissemination of such data maybe best done by a group such as HIGICC or a similar group.

Maintenance Process:

It is just as important in the digital realm as with the physical storage of hard copy materials to provide protection and upkeep. This includes file format conversions and back-up services of hard drives. New database technology whereby rasters can easily be stored in relational databases may hold a key future in this effort.

Estimated maintenance cost:

It will always be the case that it is less expensive to maintain the data then to rasterise it in the first place. These cost will vary depending on the organization, and there use and storage of the material.