

## **Creating an Information Industry in Hawaii: The State Government's Pro-active Approach and Its Potential for Success**

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This paper will briefly review the unique geographic, socioeconomic, and political background of the State of Hawaii, as well as the existing telecommunications and information infrastructures for the purpose of highlighting the recent efforts of the state government to encourage the creation and growth of an information industry. The State's efforts will be outlined as an example of a highly pro-active governmental stance vis-a-vis the "information industry" in the midst of the general climate of deregulation in the U.S. and Hawaii telecommunications sectors. The existing resources upon which an information industry in Hawaii could be based and factors both favorable to the success of this initiative as well as potential pitfalls and obstacles will be reviewed. Finally, new activity in this area of the Hawaiian economy as it relates to the initiatives that the government has taken will be looked at and possible scenarios for future development will be presented.

Hawaii, the only island state in the United States, became the fiftieth member of the Union in 1959. Hawaii is the southernmost state, but not the smallest, despite the fact that it is comprised of a chain of islands, reefs, and shoals with a total land area of approximately 6450 square miles or approximately 16, 645 square kilometers. Its geographic characteristics and isolation are not alone in making Hawaii quite unique among the United States. It is very interesting from a socioeconomic perspective because it has a very diverse, multi-ethnic population, with equal racially unmixed majorities of Japanese and Caucasians, but an absolute majority of mixed race inhabitants, a traditionally high rate of intermarriage between Polynesians, Caucasians, Chinese, Japanese, Filipinos, Koreans, and others, and a very high percentage of working women and marriages in which both partners work. Agriculture, including aquaculture, and the production of livestock and flowers, is very important to the Hawaii, but Tourism is the leading force in the state's current economic growth.

In general, the organization of the government of the State of Hawaii is very similar to the governments of the other states. However, due to its island setting and relatively small overall population and land area, Hawaii's governmental structure is also different in some important respects. Local governments in Hawaii are somewhat more centralized and have just one level of government, the county, of which there are only four. And the Hawaii state government is also more streamlined and compact than other state governments.

The special characteristics of the State of Hawaii have contributed to a novel approach on the part of the State government to the development of an information sector in the economy. Deregulation issues in the telecommunications industry have been the predominant feature of the telecommunications scene in Hawaii of the 80's as in the rest of the United

States. But for a state economy often constrained by virtue of geographic factors, creating a viable infrastructure for an information industry, not to mention developing a market for information services, appears a daunting task. Deregulation by itself is not seen to be a "solution" to obstacles facing the evolution of a true information economy consisting of product development, services, and distribution in Hawaii and in fact, those with an interest in the fledgling information industry have repeatedly encouraged the Hawaii legislature to support small businesses by creating a regulatory environment conducive to reasonably priced (ISDN) services at intra-state, interstate and international levels.

For the purposes of economic development an information industry in the State of Hawaii has been defined as the business of using a combination of computer equipment and telecommunications - information technology - to store, analyze and deliver information in the form of video, voice, graphics, numbers, or text. In the United States as a whole, it has been observed that technological imperatives and consumer demand have greatly contributed to paving the way to a fully open and competitive enhanced services market. Yet, in the absence of high profile industrial or high technology private economic sectors (such as are to be found in the states of California or Massachusetts for example) to sponsor or otherwise force such a transition the State of Hawaii the government began in 1988 to take an active or (to use a buzzword from education) a proactive role in trying to help foster statewide alternatives for economic development, aided no doubt in part by its streamlined and centralized organizational makeup.

For example, in recent initiatives government leaders have elected to support efforts to build an information industry and created a piece of economic legislation that was unique in the United States. The Telecommunications and Information Act of 1988 appropriated several million dollars and conceptualized a public/private partnership for the creation of services and for the development of an appropriate telecommunications infrastructure or gateway(s) and accounting, billing, and collection services for the provision of information services. This partnership is to be nurtured by the Hawaii Information Network Corporation otherwise known as Hawaii, INC, which was created by the Act in order to serve as a catalyst for information business startups. It is comprised of a board of nine directors and empowered to hire employees, create advisory councils, and contract with private enterprise for services. Other 1988, 1989, and ongoing legislative initiatives include:

Appropriations of \$587,000 to expand Hawaii's involvement in software engineering via the establishment of a software engineering center at the University of Hawaii and another \$50,000 for the planning of a software industry.

Appropriations of approximately 6.3 million for the Hawaii Interactive Television System (HITS) for the provision of statewide distance education and other services to the state universities and community colleges, selected public schools, perhaps Honolulu area hospitals, as well as linkages to government agencies for training and teleconferencing.

Grant of \$125,000 to set up an experimental telework center.

Appropriation of \$750,000 each to the State Senate and House of Representatives to study ways in which public access to the legislative process and legislative data can be provided using electronic means plus other monies for projects related to providing information services to the public.

The goal of all this activity on the part of the Hawaii State Legislature is to take advantage of Hawaii's potential to become a key intermediary in the Pacific as information economies develop in and around the Pacific region. The hope is that instate information and tele-intermediary services can be built around existing resources and effectively marketed to national and international clients using the telecommunication infrastructure to take advantage of Hawaii's strategic time zone location in the middle of the Pacific.

What types of products and services are envisioned? Databases, including indexing, abstracting, table of contents, bibliographic, full text, financial, entertainment, travel and recreation, and other information, software products, teleconferencing, interactive ordering, information brokering and distribution services, and translation services specializing in multi-lingual access and areas of importance to the Pacific, Pacific Rim and Southeast Asian nations are among the potential services to be offered by Hawaii's information industry.

What types of existing resources are available upon which to build such services? Pacific Bell, Bell South, NYNEX, Bell Canada, IBM/Sears and the State of Hawaii as of July, 1989 all operate or plan on rolling out information service gateways accessible to Information Service Providers in the State of Hawaii and a variety of potential clients. The Haw-4/TPC-3 fiber optic Trans-Pacific cable link between the U.S. mainland and Japan places Hawaii at the hub of an important network and makes the Pacific Regional Research Network (PAC-COM) with Hawaii acting as the gateway to and from Asia for Internet, including research entities in New Zealand and Australia, a very advantageous proposition. At the same time intra-state networks are also being implemented and upgraded at an incredible rate, including the University of Hawaii Campus network and telephone system and the State data network. Other resources include numerous bibliographic and other databases such as the University of Hawaii Libraries Online Catalog and Trust Territory of the Pacific database, State Data Book Tables online, State Library databases and the Capitol Bulletin Board System.

What types of potential markets are thought to exist? Potential market sectors follow quite logically from the types of products that draw on Hawaii's strengths. The management of the financial business community, general business community, travel industry, and research community are seen as the primary instate market sectors. Export markets are projected to be European and mainland concerns with an interest in Asian commerce and government and

Pacific Rim and Asian entities with a commercial interest in the U.S. or needs for advanced language translation systems or "information technology" expertise.

Even this brief review of the circumstances at work today in the areas of telecommunications and information resources make the future of an information industry in Hawaii look rosy. There are other factors that bode well for the industry and bear explicit mention, among them the construction of several high tech development parks designed explicitly to attract high tech firms and their expertise to the state and the University of Hawaii, its facilities and the expertise of its faculty and staff make up a valuable resource. It has also been noted that Hawaii's users of telecommunications services have in the past proven quite receptive to new services. This is a very positive sign since it is Hawaii's users who would serve as the testing ground and incubator for the eventual expansion of the industry outside of Hawaii's borders. Finally, telecommunications forecasters who otherwise agree upon very little do agree that in the decades to come the revenues and profits will go to value-added services, marketing and complete systems provision, not the network business or passive pure bit transport. The state's plan for an information industry in Hawaii has been built around the concept of value-added services and vertical markets and so is strategically correct if the forecasters predictions hold true. However, it comes as no surprise that there are a number of potentially serious problems inherent in producing information products and services for diverse and unknown markets, especially in the middle of the Pacific. Particularly since the marketing of intangibles is at best tricky and difficult (it is also fairly well documented), even in our service-based economy. In the case of an information industry for Hawaii it should be regarded as a very critical concern. This is because the State of Hawaii in the guise of Hawaii INC must first market the viability of an producing intangibles to would-be entrepreneurs, in addition to aiding them in the successful marketing of the "finished" intangible product or service.

Some of the largest barriers to entry into the business of providing online services are the provider's expenses in tapping into the communications and accounting infrastructure and the end-users' expenses in acquiring the facilities or equipment to use the service. In addition, there is the egg vs. chicken syndrome to consider, which plagues most startup ventures, but information-related products/services more markedly in that a certain market is necessary in order to make the product or service a viable venture, but according to the experts it is difficult if not impossible to predict the market for a given information-related product or service until it has been offered. This phenomenon has also been exceedingly well documented by way of the lessons learned by many information industry pioneers such as the early Videotex concerns.

As the boundary between data processing and communications becomes less distinct the pro-active stance of the Hawaii State Government and the progress being made in telecommunications networks within the state and in its connections to the U.S. mainland and the Pacific and Asia should lead to an favorable environment for the growth of an information industry. But rapid

implementation of new technology and services may be the key to success, something which any state system, no matter how centralized and streamlined is hard put to accomplish for itself or to support in the private sector. The legislative process is by nature unresponsive to rapid change. In conclusion, this paper will monitor activity and indicators in the state economy over the next 6 months to see if a discernable information economy is indeed developing as a result of the State's information initiatives and propose scenarios based upon the results.