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1989 (26th) Space - The New Generation

Apr 26th, 4:00 PM

Paper Session II-C - Florida Commercial Space Initiatives and Technology Transfer Mechanisms

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Florida Commercial Space Initiatives and Technology Transfer Mechanisms

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ABSTRACT

This paper discusses commercial space policy for the State of Florida in the context of state initiatives for general technology and economic development. The paper also compares Florida's commercial space initiatives to national space policies and describes mechanisms for transferring space related technologies and research to Florida businesses for subsequent development and commercialization.

Partial Excerpt from Preface
Final Report to Governor Martínez
Florida Governor's Commission on Space
Jeb Bush - Vice Chairman

Recent developments in national and international space policy, along with independent commercial initiatives, have brought renewed interest in a future of space exploration and commerce. With a new emphasis on human presence in the solar system, outer space is becoming an exciting, highly competitive marketplace.

Florida has been a fortunate participant in the nation's space program. The state's role as host to the nation's launch facilities will provide unique opportunities for further space business growth. However several steps must be taken to assure Florida's leadership position in the new frontier of space enterprise.

Since the early 1980's the U.S. Government and NASA have been trying to develop and implement a comprehensive policy which would promote the commercialization of space at least through the lifetime of the space shuttle. Suggested activities include(d):

- * Transferring ownership or management of government activities to commercial activities
- * Expansion of existing relationships between industry and government in space endeavors
- * Freeing private enterprise from unnecessary government regulations
- * Ensuring access to the business and tax incentives available to other business sectors

Most notably, the Reagan Administration declared during the early to mid 1980's, a commitment to facilitate space commercialization in regard to the land-remote-sensing satellite program, expendable launch vehicles, and development of a permanently manned space station to serve as a base for scientific and commercial activities. It was believed by the administration that proper implementation of space commercialization policy would add to the general economic vitality of the U.S., and would provide the U.S. with a more robust space capability.

Benefits envisioned included maintenance (and probable expansion) of a high-technology industrial base, addition to the Federal tax base through the provision of thousands of new jobs, spawning of numerous spinoff and supporting activities, and strengthening of the U.S. position in what was projected to be a growing international market.

Responsibility for land-remote-sensing commercialization was given to the Department of Commerce (government to industry transfers - negotiation and contracts) and the Department of State (provides guidance on all matters which effect international obligations).

The Department of Transportation was designated as the lead agency for facilitating and licensing commercial expendable launch vehicle activities.

To maintain a high-level of national focus for commercial space issues, a White House Group on the Commercial Use of Space was implemented. (The group is chaired by the Department of Commerce, and consists of all interested departments and agencies within the U.S. Government, including NASA and the Departments of State, Defense, Treasury, and Justice.

It was felt by the Reagan administration that the space initiatives undertaken during the early to mid 1980's would encourage and promote commercial space activities, benefit the domestic economy and reduce unnecessary government expenditures.

The loss of the space shuttle "Challenger", and the resulting major policy changes in regards to space shuttle operations (the shuttle's manifest has been restricted from any commercial cargo that can be launched by private companies or that didn't need the shuttles vast capacity for launch), has reinforced the need for the U.S private sector to move forward as quickly as possible to take advantage of the space commercialization initiatives discussed above, especially in the area of expendable launch vehicles.

While the previously discussed initiatives captured most of the public attention during the early to mid 1980's, NASA was working to expand upon less glamorous commercialization initiatives implemented at the inception of the U.S. space program.

During the "Apollo Era" congress mandated that technologies developed in with NASA's aerospace and space activities, be "spun" back to the private sector for utilization, commercialization, and transfer whenever and wherever possible. As a result NASA's technology utilization (TU) network was formed, which included field center TU offices, industrial applications centers (IAC's) and affiliates, the Computer Software Management and Information Center (COSMIC), and applications team. The basic mission of the network was to create a vast storehouse of already-developed technology that would be available for use by industry in creating new products and procedures. It was estimated in 1988 (the 25th year of the TU program) that over 30,000 secondary applications (spinoffs) had resulted from the TU network, and that for every dollar spent by the American taxpayer on the U.S. space program, a \$13-14 return had been benefited.

The space administration has worked during the 1980's to increase funding for the TU network whenever possible and has worked diligently to promote visibility of the network. While the TU network has provided the means to pay back the American taxpayers' "investment" in the space program, it has obviously had to take a back seat (in terms of media publicity) to spectacular launches and space scenes. Even though the author of this paper does not wish to appear to be complaining in this matter ("I have to admit that while I can usually be seen jumping up & down, yelling words of encouragement at shuttle launches, I have yet to experience the same emotional response at TU seminars"), it is his opinion that greater promotion of the TU network, will most likely result in greater industrial utilization of such.

Recent activities, such as television spot ads about the TU network and its successes, is helping to get the word out to the public. Also the Reagan Administration Technology Transfer Act (1986) has raised the collective consciousness of the U.S. Government as to the successes of the NASA TU network, which will most likely be used as a model by many government agencies who, as a result of the act, need to establish their own technology transfer networks. In some cases where appropriate, non-NASA agencies may piggy-back onto certain parts of the NASA TU network. This obviously makes sense in cases where services being rendered by NASA TU entities are similar or the same as those needed by the non-NASA agencies, to fulfill their technology transfer missions.

Another program initiated by NASA during the 1980's to aid in the commercialization of space, was a network of Centers for the Commercial Development of Space (CCDS). The centers are not-for-profit joint undertakings composed of industrial firms, academic institutions and government organizations. The network currently consists of sixteen centers, each concentrating on a particular area of research activity with commercial potential (e.g.; life sciences, automation and robotics, materials processing, remote sensing, space propulsion, and space structures).

The above discussion should give at least an overview of the evolution of U.S. space commercialization policy, and of programs currently implemented as a result of such policies. Also, the discussion hopefully provides some ideas as to the space commercialization environment, as it exists today.

In May 1987, Florida Governor Bob Martinez appointed a commission on space to formulate a comprehensive evaluation of the space industry in Florida. The Commission analyzed and explored ways that the state might foster growth of space and aerospace industries. The Commission developed a set of recommendations to Governor Martinez, which it felt were achievable and would assure Florida's leadership position in industry for decades.

Primary findings of the Commission upon which recommendations were based included "a recognition of: the critical importance of reliable and efficient space transportation; the crucial need for a strong, space-oriented university research and academic program; the need to encourage the development of broad-based space enterprise support network; and the need for institutions of government, academia, and the private sector to work closely together in support of space goals to ensure maximum use of scarce resources".

The recommendations of the Commission are summarized below:

- * As host to the nation's space launch programs, Florida must take advantage of its present situation by supporting the commercialization of launch services
- * Florida's educational system must be improved to meet the current and future demands of space industry
- * Florida must target space-commerce as an industry of primary economic importance that will grow and mature well into the next century
- * Encourage the development of a commercial spaceport

As a result of the recommendations, the Florida legislature has appropriated monies to the Florida Department of Commerce, authorizing it to conduct the actions required to encourage the development of a commercial spaceport in Florida. The funds were specifically allocated for a space-port feasibility study. While the results of the study were not available at the time of the writing of this paper, it is anticipated that they will be available for analysis and discussion at the time of the presentation of this paper.

If this author can be so bold as to make recommendations to the State of Florida concerning its space commercialization efforts (specifically in terms of developing a commercial spaceport):

- * Florida should make every possible effort to utilize the existing services and facilities that NASA is willing to provide at its field centers, within the TU network, and at the Centers for Commercial Development of Space (CCDS)
- * Florida should only when necessary, develop its own services and facilities, as an adjunct to NASA services and facilities (e.g.; a CCDS concentrating in spaceport engineering and payload processing)
- * Florida should expand utilization and funding (where possible) of joint NASA/Florida and Florida/Industry endeavors

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