COMMERCIAL SPACE SERVICES

by

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ABSTRACT

This poster paper provides an overview of space service opportunities as identified by a Wyle Laboratories' research team. This effort is funded by the NASA Commercial Task Force to support policy and planning efforts of the government and to accelerate transition of space operations to the private sector. A better understanding of potential commercial opportunities for space services is needed to aid in the promotion and implementation of new private enterprises as encouraged by current administration policy.

Through the use of a baseline space scenario, a variety of space hardware, services, and commercial activities are identified and related on a time-phased basis. A model is presented to relate the potential functions of government and the private sector in a commercialized space environment during the period 1984 to 2004. Barriers, incentives and key issues are likewise identified and addressed to aid in the implementation of private sector activities for space-related programs. Broader awareness, legislative actions, incentive development and benefit analyses are considered in the presentation. The time-phased plan developed as the final product of the study contract provides a useful planning and management tool, allows broader communication, and supports overall space commercialization program assessment.

DISCUSSION

Wyle was recently awarded a new contract by NASA Headquarters to support the NASA Commercialization Task Force. The Wyle team, consisting of personnel from Huntsville, Hampton, and El Segundo has supported the development of the new policy and position papers needed to stimulate expanded commercial activities in space programs.

Commercial opportunities in space encompass involvement of the private sector for products and services derived in the space environment and for support services to space endeavors. Potentially profitable enterprises related to:

- Earth and ocean observations
- Communications
- Materials processing
- Industrial and special commercial services.

To achieve private sector investment in, ownership of, and operation of various activities as a profit-making venture, certain NASA initiatives must be undertaken to stimulate and support private sector involvement. Wyle is helping NASA to identify and implement those new initiatives and communication methods.

The long-term development and use of space will require the continuing application of a large array of equipment, facilities, and operational processes. Not only will new opportunities arise for the development and commercialization of new products as a result of the special environment afforded by space, but likewise, many new service-related opportunities can now be anticipated. The Wyle team is supporting NASA by identifying potential space services required to support a broad variety of public, private and military space endeavors now in planning and development.

Commercial space services in support of space applications, technology development, military and industrial activities are anticipated for a broad range of activities, both ground and in-space related. Wyle has identified numerous service functions. In addition, related services and desirable government incentives, and actions needed to accelerate the commercialization process have been identified and addressed in the Wyle study program.

To aid in the study, a model was developed by Wyle which helps to relate the potential functions of government and the private sector in a commercialized space environment. The time-phased listing of potential involvement of the private sector, developed as the final product of the study, should provide a useful planning and management tool, allowing broader communication, and enhancing the overall assessment of the space commercialization program.

A Fee-For-Service Laboratory attached as a module to the planned orbiting Space Station is envisioned to be one area where the private sector can contribute both technically and materially to NASA space commercialization efforts in general, and to private sector involvement in the Space Station mission in particular. This laboratory, as an example of a typical commercial space service activity, can provide an important and necessary vehicle to meet private-sector needs in the commercialization of emerging technologies such as materials processing in zero gravity. Technical and economic assessment of a Fee-For-Service Laboratory is being proposed by Wyle Laboratories. This Lab will have many positive advantages for both the government and industry factions which it will serve.

The architecture of the Fee-For-Service Laboratory will evolve through detailed analysis of user requirements and associated equipment operation. Surveys which are now in progress and those completed in the past have revealed that industry has both needs and interests in space-based R&D; however, there is a strong reluctance on their part to pursue the independent development of supporting facilities and equipment. The Wyle Fee-For-Service Laboratory could provide both the needed space-based facilities/equipment as well as trained personnel to perform tests and/or to generate samples in accordance with user specifications. Consideration of industry needs, individually and collectively, would ensure the development of a general purpose laboratory of sufficiently broad capability, to meet industry needs in an orderly rather than in a piece-meal fashion.

In addition Wyle is investigating other space concepts and ventures to support development and testing of large space structures, energy conversion and storage devices, and advanced materials needed to advance our technological base and broaden commercial operations.

In the longer term, and projecting into the next century, the expected exploration and exploitation of outer space could lead to public and private enterprises of considerable scope and benefit to the human race. A selection of the types of long term space endeavors now being identified and assessed for commercial potential include the following:

- Hazardous Waste Disposal in Space
- Global Environmental Assessments (CO^2, Freon, Acid Rain, Etc.)
- In-Space Agriculture
- Tethers For Mass/Momentum Transfer
- Large Space-Based Power Systems
- Space Industrial Parks
- Space Hotels and Recreational Facilities
- Lunar Base Construction and Operation
- Extra Terrestrial Mining and Mineral Processing