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Workshop 12

Organization and Management of Space Grant Programs

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# Organization and Management of Space Grant Programs

## Abstract

The 21 Space Grant Programs represent a broad range of organizational structures which operate programs ranging in size from single university organizations to organizations including up to 41 members involving a composite of industrial organizations such as state agencies, and universities. Some of the space grant awards were made to organizations already in existence with on-going programs while other awards were made to consortia newly formed for the purpose of applying to the Space Grant Program. The workshop on organization and management of Space Grant Programs provided an opportunity for directors and program representatives to discuss and compare the relative advantages and disadvantages of the various models being used. This paper offers examples of the diversity of organizations, summarizes the common concerns to be met by each organizational model, and provides a case study of the Texas Space Grant Consortium organization.

## Diversity of Organizations

NASA's Space Grant College and Fellowship Program encouraged proposals from consortia composed of academic, industrial, and governmental agencies. This approach has allowed each program to take advantage of existing organizations and space-related activities within the various states and has resulted in a diversity of organizational structures. NASA's foresight in anticipating and allowing such diversity has opened possibilities that would not be available under a more restrictive structure.

The makeup of five space grant programs discussed at the workshop illustrates the diversity.

Texas: The Texas Space Grant Consortium consists of 21 university members, 18 industrial members, and two state agency members. Matching funds to support the Consortia objectives are provided by universities.

Illinois: The Illinois Consortium consists of five universities working in cooperation with Argonne National Laboratory. Matching funds are provided by the state of Illinois.

Florida: The Florida Consortium consists of four university members and eight university affiliate members.

New Mexico: The New Mexico Consortium consists of one university and one state agency with matching funds from New Mexico State University.

Hawaii: The Hawaii Space Grant Program has one member, the University of Hawaii.

Because of the diversity in the makeup of the consortia, no single model can be devised that adequately represents the organization and management of Space Grant Programs. Moreover, the diversity itself provides an element of richness to the program which will support alternative approaches to programming.

It is important to note that while most organizations are confined to the boundary of a single state, one consortium crosses state boundaries.

#### Space Grant Program Infrastructure

Despite the diversity of the consortium makeup, the organizational structure chosen by each must provide management for a Space Grant Program meeting the basic criteria and program goals outlined by NASA. Thus, the infrastructure adopted by each must address similar issues.

In terms of organizational structure, each program includes a director charged with the responsibility of managing the Space Grant Program. This person serves the role of principle investigator for the NASA award. Thus, the director is responsible for technical contributions of the program, for fiscal accountability of the program, and for meeting basic NASA reporting requirements. In addition, the director provides leadership for the state organization in terms of program identification, development, and networking among the consortium members.

A single member Consortia may have no need for additional officers. The larger programs, however, have defined additional program officers. Typically these include associate directors, frequently located on different campuses of Consortium members. In addition, some consortia include a board of directors or advisors who are assigned the role of providing additional guidance and assisting in developing policy for the Space Grant Program.

The organizational structures possible under the Space Grant College and Fellowship Program are impacted by the categories of members defined by NASA.

Two categories of educational institutional members are defined by NASA: "space grant colleges"; and "members of space grant consortia". In order to use the designation "space grant college", an institution must have received an average \$2,000,000 per year in funding from NASA for the previous three years and must have at least three Ph.D. programs in appropriate space-related academic fields. Other educational institutions in space grant consortia which do not meet this criteria may use the designation of "members of the space grant consortia".

NASA did not preclude space grant categories of membership. As a result, Space Grant Consortia have members and representatives both from industry and other governmental agencies. Where these types of members are to be included, appropriate criteria for their selection and guidelines for their participation must be developed within the organization of the consortia.

Most of the Space Grant Programs have a very simple organization designed to meet NASA guidelines stated in the Announcement of Opportunity. For many, no formal documentation of the structure exists beyond the provided in the space grant proposal. Other programs have developed or are developing charters and bylaws for their organization which outline the organizational structure and the roles and responsibilities of each of the participants.

In the long run, mechanisms will need to be defined for changes within the structure. For example, routine changes in personnel such as election or selection procedures for the director and board of directors need to be accommodated. Some consortia are including within their structure the capability for adding new members as well as deleting inactive members. If the term "membership" is to carry a significant meaning, responsibilities of membership and minimum level of participation must be defined.

Although no two of the Space Grant Programs have selected the same infrastructure, concerns common to the whole Space Grant Program can be identified. Each consortium must have a mechanism for collecting the required matching funds and for distributing total space grant funding to members. In some consortia, the original proposal outlines a static distribution scheme of the money to the affiliates while in others the funds are held centrally with a mechanism defined for selection of specific projects for funding. A related concern is the disbursement of the fellowship and scholarship portion of the program. Various strategies for handling this aspect of the Space Grant Programs were addressed in a separate workshop.

All of the Space Grant Programs cite communication as a concern-communication to NASA, to other consortia, and among the members of the program. Communication via computer networks offers numerous advantages in all three of these areas. Good communication will maximize the accomplishments of the various programs by allowing the sharing of information and experiences. Poor communication, on the other hand, can stress even the best structured organizations.

Each space grant program has unique problems, needs, and as a result has its own organizational structure. It is not possible to discuss each in this presentation. In order to provide framework for discussion of some of the management and organizational issues, however, this paper describes the largest of the Space Grant programs: the Texas Space Grant Consortia (TSGC). Differences from and similarities to other Space Grant Programs will be included in the discussion.

#### An Example: Texas Space Grant Consortium

TSGC consists of twenty-one universities, eighteen industrial members, and two agencies of the State of Texas. The membership consists of the following:

##### Space Grant Colleges

The University of Texas at Austin (UT Austin)  
Texas A&M University (TAMU)

##### Space Grant Consortium Members (Academic)

Baylor University  
Lamar University  
Prairie View A&M University  
Rice University  
Southern Methodist University  
Texas A&I University  
Texas A&M at Galveston  
Texas Christian University  
Texas Southern University  
Texas Tech University  
University of Houston-Clear Lake  
University of Houston-Downtown  
University of Houston-University Park  
University of Texas at Arlington  
University of Texas at Austin  
University of Texas at Dallas  
University of Texas at El Paso  
University of Texas at San Antonio  
University of Texas Health Science Center, Houston  
University of Texas Health Science Center, San Antonio  
University of Texas Southwestern Medical Center,  
Dallas

Space Grant Consortium Members (Industrial/Research)

Barrios Technology, Inc.  
David Aerospace  
E-Systems  
Eagle Aerospace Inc.  
Entech, Inc.  
Ford Aerospace Corporation  
General Dynamics  
Grumman Space Systems  
IBM Corporation  
ILC Space Systems  
Krug International  
LTV Missiles & Electronics  
McDonnell Douglas  
Microelectronics and Computer Technology  
Rockwell International  
Southwest Research Institute  
Space Industries, Inc.  
Space Services, Inc.

Space Grant Consortium Members (State Agencies)

Texas Higher Education Coordinating Board  
Texas Space Commission

The list of membership of the Consortium is significantly larger than other consortia, but the mix is not typical for Space Grant Programs. The Consortium includes private universities, public universities, small universities, large universities, minority universities, large public-held corporations, a not-for-profit research organization, small business corporations, minority owned businesses, a State of Texas Commission, and a state higher education coordinating board.

Organization and Management

The host institution and financial agent for the Consortium is UT Austin. Dr. Byron D. Tapley (UT Austin) serves as the Director of the Consortium and is the Principal Investigator for the Grant. The Consortium has been established with multi-university "Program Offices." Each NASA designated "Space Grant College" is responsible for providing an Associate Director for the Consortium (and a program staff to support Consortium activities. As indicated in the list, UT Austin and TAMU currently are designated as Space Grant Colleges. Dr. Steven P. Nichols (UT Austin) and Dr. Sallie Sheppard (TAMU) serve as Associate Directors, and their staff serve as the Program Office for the Consortium. The time and expenses of the Director, the Associate Directors and their staff are contributed by UT Austin and TAMU.

The Director cooperates closely with a "Board of Directors" (unfortunate mixture of the term "Directors") in development of policy for the Consortium. The Board is selected from member groups of the Consortium (universities, industrial/research organizations, state agencies) and has been designed to provide a balanced and representative mix of the various interests of Consortium members. As an example, according to the Charter of the Consortium, the Chair of the Board must be a representative of a Space Grant College other than the host institution (since the host institution provides the Director). Mr. Oran Nicks (TAMU) serves as the Chair. Other Board members are selected as follows:

- Each Associate Director serves on the Board of Directors
- University Members of the Consortium elect three Board members. These members cannot be from designated Space Grant Colleges. At least one of the Board members must represent a university whose student body consists of a "majority of minority" students.
- Industrial/Research members select three members of the Board of Directors.
- State agencies select two board members.

This mix allows representation of numerous interests and provides to the Director a senior body to assist in the development of policy and direction of the Consortium. The expenses of the Chairman of the Board and his staff are contributed by TAMU. The expenses of travel and time of the Directors are contributed by their home institutions.

Most of the Space Grant Programs also have named a Director from a university member of their consortia. That situation is not uniform, however, as an example, the Illinois Consortium has a director from Argon National Laboratories.

Each institutional member of the Consortium has designated an "Institutional Representative" who serves as the official contact at the institution and is charged with organizing Consortium activities at the institution.

Consortium activities are supervised by four Program Committees: the Education Committee, the Research Committee, the Outreach Committee and Minorities Committee. These committees coordinate and supervise activities between and among the universities, industrial and research companies, and State Agencies. Since funding provided by NASA in support of Space Grant activities are so limited, the Consortium activities generally are highly leveraged with other funds from various sources. Committee Chairs cooperate with one another and with the Consortium Program Offices in seeking additional sources of funding for Consortium activities.

## Consortium Meetings

The Texas Space Grant Consortium currently holds meetings of the entire Consortium twice a year. The meetings bring approximately sixty institutional representatives and their colleagues to the conference. During the meetings, Consortium members are brought up to date on Consortium activities, planning and budgets. The meetings also provide an opportunity for all of the committees to meet and for committees to share ideas and programs.

## Communication

One of the key responsibilities of the Consortium management is to assist in the communication between and among Consortium members. The Consortium has created a newsletter to aid in communication both to Consortium members and to the general public. Included in the newsletter distribution are the state and federal congressional delegations from the State of Texas.

## Conclusion

The organization and management of the various Space Grant Programs across the United States present a formidable task to the directors and managers of each program. NASA has delivered a serious challenge to these programs to make significant contributions in the areas of education, outreach, and research. The challenge includes a task to increase the involvement of women and underrepresented minorities in the space program. This challenge has been made to the Space Grant Programs with a maximum of \$225,000 per grant in NASA program support and \$100,000 per grant in NASA support for scholarships and fellowships. While this amount of funding represents a significant commitment from NASA headquarters, it requires the programs to rely heavily on leveraging, existing and potential sources of funding and requires a significant amount of matching support from participating institutions. The success of the Space Grant related activities will depend heavily on the management and organizational structures and capabilities of each Space Grant recipient. The participants at the workshop shared the approach taken by their institutions to meet the challenges made by NASA. This paper has summarized the discussions from the workshops. The management and organizational efforts presented in this paper, however, represent only the beginning of the organization of the various programs. The difficulty of the challenge requires each program to keep the flexibility necessary to adapt to the changes dictated by a dynamic program such as the NASA Space Grant and Fellowship Program.