

# AN ASSESSMENT OF THE MARKET FOR SMALL SATELLITES

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## ABSTRACT

This study was sponsored by a grant from the Virginia Center for Innovative Technology's Space Research Fund, to provide an assessment of current activities in the design and development of small satellites and potential commercial markets for these satellites and the services they could provide.

Our research methods included a review of:

- a) the history of the satellite industry,
- b) current activities of satellite manufacturers,
- c) complementary inputs to small satellites such as launchers and ground control,
- d) functional requirements that could be met using small satellites,
- e) potential users of small satellites,
- f) availability of various technologies,
- g) existing market projections, and
- h) other factors that could enable small satellites to be commercially successful.

We also addressed potential limits of small satellite development and production including the difficulties of the satellite in providing the services required because of technological or political constraints, and the inability to exploit economies of scale or scope compared to current and anticipated methods of providing the service.

The study was conducted through a review of the existing literature and interviews with satellite manufacturers and customers, with other industry officials, with government officials, and with academicians. The data contained in this report have largely been obtained from them. However, the conclusions are solely the responsibility of the authors.

**NOTE:** Due to the 160-page length of this document, it will be made available as a separate handout at the conference.

# **An Assessment of the Small Satellite Market**

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# Methodology

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- May 15 — September 28, 1989**

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- Review Of Literature**

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- Personal Interviews With Industry And Government Executives**
  - *Entrepreneurial Firms*
  - *Mature Firms*

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- Structured Questionnaire**
  - *Policy Makers*

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- Comprehensive Industry/Government Review**
  - *Hughes, OSC, TRW, OTA, CBO, DARPA*

# *Background*

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## *DoD*

- **DARPA**
  - **Lightsat**
- **Navy (ONR, Space Command)**
  - **Spinsat**
- **Air Force**
  - **STEP, Reserves, Small User Milcomsat, (Comm-By-The Yard)**

## *NASA*

- **OSSA**
  - **Science Payloads**
- **OAST**
  - **Technology**

## *Commercial*

- **?**

# *Potential Markets*

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- GEO Communications

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- Non-GEO Communications

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- Remote Sensing

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- Position Location

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- Microgravity

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- Academic/Scientific

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- Technology

## ❑ GEO Comm

- ***Primary Factors***
    - ***Relative Cost - Intelsat***
    - ***Transportation***
  - ***Highly Competitive***
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## ❑ Non-GEO Comm

- ***Mainly Entrepreneurial Firms***
  - ***Rumors Abound***
- 

## ❑ Remote Sensing

- ***Landsat Has Significant Problems/Political Clout***
- ***Small Satellites May Have Technology Edge — Also Fill Gap During Potential Downtime***

Position Location

- *Small Satellite Build Requested*
- 

Navigation/Search And Rescue

- *No Commercial Market Now*
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Microgravity

- *Limited Transient Market*
  - *Must Compete With Shuttle, Station, Foreign Capabilities*
- 

Academic/Scientific

- *Actively Being Pursued*
- *Dependent On Government Funding*  
— *Transportation?*

## ❑ *Technology*

- Potential Limited Market
  - Primarily For Government/  
Government Contractors



# ***Conclusions — Mature Firms Participation***

- ✓ **All Major Firms Surveyed Positioning Themselves To Be Able To Compete In Emerging Military Small Satellite Market**

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- ✓ **Potential Conflict/Teaming With Mature Entrepreneurial Firms**

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- ✓ **Mature Firms Corporate Culture Not Amenable To Competition For Small “Cheap” Satellites**
  - **Small Satellites Do Not Require Major Capital Investments Or Large Support Infrastructure**
  - **Some Companies Looking At:**
    - **Teaming**
    - **Acquisition**
    - **Skunk Works**

# ***Conclusions — The Market Place***

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✓ **Small Satellites May Evolve Into Two Distinct Markets**

- **Low Technology**
  - **High Tech**
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✓ **Launch Costs Vary Significantly — And May Determine Small Satellite Viability**

- **Small Launch Vehicles**
  - **Secondary Payloads**
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✓ **Commercial Market Yet To Develop**