

Executive Summary

Overview

Several past reports commissioned or prepared by NASA have discussed what types of microgravity research could be conducted in space and which industries present the largest markets for commercial space enterprises. The aim of this effort is considerably different: It presents a communication strategy that describes *how to communicate* the benefits of space-based research to potential private-sector partners.

The communication strategy described in this report is based on a number of key findings that resulted from an analysis of NASA and industry reports, interviews with NASA and CSC staff, and interviews with members of the target industries. These include:

- Over the past 40 years, space commercialization has evolved to a point where industry can participate as users and developers of space facilities and not simply as contractors to the government or beneficiaries of technology transfer. Moreover, commercial utilization of space is no longer limited to the aerospace sector; it includes a wide spectrum of industries ranging from pharmaceuticals to heavy machinery.
- Microgravity research is the key component for ISS-based research. Research conducted on the ISS can potentially leverage three unique features of space: a microgravity environment, vacuum, and a unique vantage point. Industry can access all of these features via other space vehicles (e.g., shuttles, satellites, sounding rockets, etc); however, the Space Station offers a vast improvement over the current means of generating a microgravity environment. Long-duration, human-tended microgravity environment is the most unique, valuable and attractive feature of the ISS as a research laboratory, and it is the focus of this marketing and outreach plan.
- Microgravity provides few obvious and immediate solutions to earth-based problems although it has very great potential to do so. Humans have always lived in an environment supported and constrained by gravity. As a result, all human-developed processes are fundamentally adapted to this environment. Microgravity research is a relatively recent development and its vast potential is, so far, largely unexplored and untapped. Due to the nascence of the discipline, it is still premature to pinpoint the extent to which microgravity will revolutionize *current* industrial practices or products, and which practices and products these will be. The largest benefits of the opportunity NASA is offering industry lie well in the future, and few people truly understand its implications or potential. While the ultimate pay-off for society as a whole is likely to be large, few (if any) companies will be able to reap immediate profits from microgravity research, and some may see no financial return at all.

Other breakthrough inventions that are now regarded as indispensable to industry (e.g., vacuums, microscopes) or to people's daily lives (e.g., Post-It® notes, microwave ovens) have experienced similar incubation stages. In some cases (such as the vacuum tube) it took up to a century to realize the full benefits of a new scientific technique or discovery. Similar to these past discoveries, microgravity research will *ultimately* provide similar great advances, but it is difficult to say how far into the future these may be and which specific applications or processes will be revolutionized.

- Collaborative research with CSCs continues to be the cornerstone of ISS commercialization. Commercial research on the ISS can occur via an Entrepreneurial Offer (EO) or in partnership with a CSC. Research conducted via an EO is meant to lead directly to a profitable product. At present, few lines of research are mature enough to lead directly to profitable products, and few companies could bear the expense of an EO at the current level of uncertainty associated with the research. The one possible exception to this seems to be the aerospace sector, which can use the ISS as a test-bed for products, materials and technologies, and has the technical know-how to send experiments into space and comply with NASA's procedures. For most other industry sectors, EOs do not appear to be a viable proposition and cooperative research with the CSCs is likely to be the primary entrée into the world of space-based research.

Communication Strategy

Long-term access to a human-tended microgravity environment is the main benefit of doing research aboard the space station. However, few people appreciate the importance of microgravity research, let alone the benefits of conducting this research aboard the space station. Our task, then, is not simply to promote the benefits of the space station as a unique research environment, but to increase awareness of the benefits of microgravity research as a discipline. In marketing terms, our task is to create and define a new market category and to create a market demand for this category.

Key Shaping Factors for the Program

The most important factor in shaping our communication strategy is the current state of microgravity research. The field of microgravity research is still in the early phases of identifying, replicating, describing and categorizing phenomena, and little progress has been made towards developing explanatory models or hypotheses. This lack of data makes it difficult for companies to foresee a clear pathway or program of study that can lead to specific discoveries. The complexity and expense of microgravity research also makes it difficult for this discipline to compete with earth-based technologies and programs of study. Microgravity research holds great potential to generate profits for industry through development of new products and improvement in current R&D or manufacturing processes. However, much basic research needs to be done before these benefits can be realized and it is difficult to predict which lines of research will yield these results and which will prove unfruitful.

To engage industry in microgravity research in this early phase, NASA needs to highlight the immediate and short-term benefits of commercial participation in this research. In the short term, this program offers:

- A fresh look at the problems that industries have been grappling with.
- Participation in forging a new discipline of study that is likely to yield significant benefits in the future.
- Cost-leveraging with NASA.
- Access to expertise of NASA scientists and academicians (through the CSCs).
 - Access to CSC research resources through partnerships.
- A long-term collaborative program of study that yields important discoveries and advances, some of which may have immediate application.
- Prestige and visibility through association with NASA and the ISS.

We have designed a strategy that emphasizes and builds upon these short-term benefits, without losing sight of the potential for large financial returns in the longer term.

The second important factor in designing this plan is the current economic and media environment. The current economic downturn is likely to strain available research resources. Furthermore, following September 11, 2001 the national agenda and media and public attention have been dominated by a new set of concerns, generally relegating many other issues (including space exploration and technical breakthroughs) into the background. The nation has come a long way from its buoyant mood and exuberant faith in the promise of technology. Furthermore, NASA has received considerable negative publicity in recent months due to budget overruns and mission setbacks, and is sometimes portrayed as an inefficient, wasteful bureaucracy that is out-of-synch with the nation's priorities.

In summary, this communication is being planned during an unfavorable media and economic environment. This factor plays an important role in our recommendations for industry audiences as well as the overall timing and implementation of this program. Specifically, we recommend that NASA focus on building public enthusiasm and support for microgravity research in the first phase of this program. As the media and economic environments improve and appropriate policies and procedures to accommodate commercial research aboard the space station are in place, a more focused appeal can be made to industry leaders to invest in this research.

The Basic Strategy

The strategy shaping this communication program is driven by a need to highlight the short-term benefits of participating in microgravity research: most notably, the strategic advantage and cost leveraging gained by early participation in this field, and the opportunity to be perceived as an innovative, progressive leader within an industry and among the public. Our strategy is to:

- **Widen awareness and perceived relevance of microgravity research among public and industry audiences.** This includes bringing NASA's research out of the "aerospace world" into more industry sectors and into the mainstream media and public discussion forums.
- **Create a public and media environment that values industry participation in this venture.** This is critical for validating the short-term public relations and image-building benefits that we promise companies that choose to participate in this venture.
- **Associate industry participation with valued attributes such as innovation and leadership.** Microgravity research is truly a "new frontier" of great potential and great uncertainty.
- **Position NASA's offer to highlight benefits while minimizing costs.** One of the greatest benefits to participating in microgravity research in this early stage is that industry can leverage both costs and expertise through collaborative research with the CSCs.

Target Industries

The statement of work identified three target industry sectors for this outreach plan: Biotechnology, Agritech, and Materials and Processes. The term Biotechnology is used loosely in the statement of work to include a host of medical applications, not just those that rely on cellular or molecular processes for product development. Thus, this sector is titled the “Biomedical” sector in this report, and covers both biotech and non-biotech medical applications of microgravity research. The specific industries within the Biomedical field that can benefit from microgravity research are Medical Biotechnology (e.g., cellular or molecular processes used to solve medical problems), Pharmaceuticals (e.g., drugs manufactured to treat illness and disease), and Medical Devices and Implants. Also, in this report, we consider Agritech as a specialized application of biotechnology, which uses biotech to solve agricultural problems.

Materials and Processes is a broadly defined sector that includes, among other things, the production of a host of advanced materials with exceptional structural or conductive properties. In many respects this is not so much an industry category as a broad set of activities aimed at understanding, controlling and improving various physical phenomena. Under this rubric, the key industries that can benefit from microgravity research are Metals and Metal Products (e.g., metal fabrication and casting), Heavy Machinery and Automotives (e.g., engines, turbines and other heavy machinery), Chemicals (e.g., organics, inorganics, plastics, coatings, etc), Electronic and Optical Components (e.g., semiconductors, thin-films), and Ceramics (e.g., abrasives and advanced ceramics).

Each of these industries was evaluated according to four criteria: 1) Relevance of existing microgravity research findings; 2) Ability to use basic research findings; 3) Large R&D budgets; and 4) Value of consumer support and publicity. Based on this analysis, we recommend that early outreach efforts focus on the following industries:

- Medical biotech and pharmaceuticals
- Metals and metal products
- Heavy machinery and transportation
- Environment
- Optical and electrical materials
- Aerospace

Target Audiences

The primary target audiences for this effort are members of these target industries—scientists or executives—who can either decide to enter into a research partnership with NASA or can initiate or advocate for this participation. Our research shows that such a decision may be initiated either by scientists or by executives who are intrigued by the possibilities of this research, but it usually has to be approved by a mid- to senior-level executive.

In addition, industry business and thought leaders often set the tone and agenda for their industry sector and have an important impact on the R&D and other strategic decisions of individual companies. Thus, we propose the following levels of outreach to industry audiences:

1. General industry level outreach to target industries.
2. Outreach to specific scientists or workgroups within target industries.
3. Outreach to industry business and thought leaders, including CEOs, influential analysts, and heads of trade associations or think tanks.

Given that microgravity research is unlikely to yield immediate and certain financial returns for participating corporations, enhancing the strategic and public relations appeal of conducting this research with NASA is a critical component of our communication strategy. This can be achieved by raising the visibility and status of this program among the general public, and more specifically, among opinion leaders, so that a corporation can create confidence and goodwill among its constituents through participating in this research. Thus, we have identified a fourth audience for this campaign:

4. The Influential Public, consisting of educated and professional adults ages 30-65, particularly people who are oriented towards technological advances and may be considered opinion leaders in this area.

The Communication Program

An overview of the communication program is described briefly below for each target audience. This program is organized into two phases. The first phase concentrates on providing more general information and building broad-based support for microgravity research. The second phase continues and expands many of the Phase 1 activities, but undertakes some new activities and seeks to generate more specific interest in undertaking this research. A complete synopsis of the communication program can be seen in Table 1 at the end of this summary.

The Influential Public

In order for a business to undertake microgravity research it must first believe it is valuable and valued. This sense of value comes largely from its main constituency—the general public. Thus, fostering a positive view of microgravity research in the public’s mind is a critical first step in our program.

We define this audience as the educated and professional lay public between the ages of 30 and 65, particularly those who are oriented towards technological advances and may be considered opinion leaders in this area.

This audience currently has little or no awareness and knowledge of microgravity research, its benefits, and its applications. It also lacks knowledge about why the ISS exists, what it can do, and what is currently occurring on station. In addition, the current economic and social environment may heighten the sense that this research is unnecessary. On the other hand, most Americans have a sense of pride in the U.S. lead role in space exploration and want to see the U.S. continue to be a leader in space exploration and technological advances.

The objectives of the communication directed at this audience are:

- To increase awareness and perceived relevance of space-based research, particularly aboard the ISS.
- To increase awareness and perceived relevance of NASA’s technical and research expertise, particularly outside of space exploration.
- To generate awareness of space commerce and NASA partnership opportunity—discussion and engagement in the topic.

Communication with this audience should capitalize on this sense of pride and the “frontier” spirit of exploration that values new ventures and adventures. It should also promote the concept of government agencies, academia, and corporations working together to achieve scientific breakthroughs.

The preferred channel for this communication is earned media coverage, preferably feature stories, in high-profile daily and weekly publications. News stories should be developed that demonstrate how NASA has contributed to scientific advances that affect people’s lives on Earth, and how space research holds the promise of discoveries that can contribute to people’s health, safety, and quality of life. They should also position space-based research as a frontier that scientists from different sectors (public and private) are now exploring.

Given the public’s limited understanding of microgravity research, these messages should be simple and should use familiar language. For example, we suggest using the terms “space-based research” or, more simply, “space research” to describe research opportunities on the Space Station. The focus should be on getting the main story across without getting bogged down in fine distinctions (such as the difference between technology transfer and cooperative research with industry).

Industry Executives and Leaders

This category includes CEOs, high-level executives, analysts, association heads, and others who are considered to be the thought leaders in their respective industry areas. Their support is crucial to this program; not only can they commit funds that they control, but they also yield tremendous influence within their industry sector and their support can raise the profile and perceived legitimacy of commercial space research.

The communication objectives for this audience are:

- To engage senior executives and industry leaders to participate in and guide NASA's commercialization venture.
- To encourage senior executives and industry leaders to promote space commerce to media and within their industry.
- To encourage senior executives to take the lead on commercial space research for their sector.

Industry executives want their companies, and themselves personally, to be perceived as visionary leaders. Media and publicity opportunities are valued ways to communicate their leadership to others, including the general public. Thus this audience will value association with this enterprise provided it signifies a leadership position in their industry. Like the general public, however, these executives lack understanding of the benefits of microgravity research. Until they perceive sufficient "buzz" about this opportunity and/or are personally enthused by its potential, they are unlikely to actively support it.

Most industry leaders are driven by short-term bottom-line concerns, but like to think of themselves as visionaries who take a longer-term perspective. These industry leaders need to understand both the long-term and short-term benefits of microgravity research. For this reason it is important to communicate that although microgravity research is unlikely to provide short-term return on investment, it does provide many intangibles such as prestige, leadership, and publicity. The ability to leverage cost with the CSCs and with NASA should also be emphasized to convey that by participating now, companies can position themselves at the cutting edge of microgravity science and reap its benefits at minimal cost.

In the first phase of this communication program, NASA's efforts should focus on generating interest in microgravity research and building support in key industries with selected leaders. In Phase 2, NASA can seek to translate this support into concrete action by convening an "industry panel" composed of industry leaders who are committed to guiding and promoting NASA's commercial microgravity research effort.

Industry-level Outreach

This audience refers to a broad pool within the Biomedical, Agritech, and Materials and Processes industries.

The goals of this industry-level outreach are to:

- Increase awareness of microgravity research applications for each industry sector.
- Increase perceived value of research partnership with NASA.
- Identify appropriate contacts for follow-up.

These industries are generally interested in scientific discovery and recognize its value to their business. They also appreciate the value of serendipity and recognize that all research involves some uncertainty and risk. However, they are more likely to undertake programs of study where the possible pathway from discovery to product or process innovation can be charted. As microgravity research yields tangible and specific findings, industries will be more likely to take on this research. However, the uncertainty and delays in NASA's current flight scheduling procedures are likely to be a big barrier for most industries. These delays and uncertainties may be frustrating at best or completely unacceptable at worst.

In Phase 1, the focus of industry-level outreach is to build knowledge about microgravity research and its benefits to specific industries. The recommended channels for this communication are trade shows, conferences, and other industry forums that NASA already reaches via the CSCs and the Office of Space Product Development. NASA's impact at these meetings can be consolidated and amplified through speaking opportunities (e.g., symposiums) and joint exhibits under the NASA banner. NASA's communication efforts should also be more focused towards the industries identified as primary targets. For these target industries, communication can be improved by developing industry-specific materials, forming partnerships with industry groups (like the current partnership with the Biotech Industry Organization), and supplementing exhibits with speaking opportunities at industry events such as conferences and trade shows. We also recommend the development of a more efficient system for tracking industry contacts and following up on conversations with interested parties that result from NASA's marketing efforts.

To generate support for microgravity research in target industries, the long-term benefits of engaging in microgravity research and the short-term value of scientific discovery and innovation must be promoted. The focus should be on publicizing relevant findings and the leads they offer for further research. Another important message is that industries can explore the benefits of this research at little cost. Most important of all is the need to stress the relevance of microgravity research for industry sectors. The communication should be about how NASA can contribute to a *specific industry* and not about *all* that NASA's microgravity research program has accomplished.

In Phase 2, communication with these audiences can be more motivational (as opposed to informational) and more focused on publicizing specific opportunities, for example via advertisements in trade publications.

We also recommend that NASA and the CSCs give some consideration to improving communications with existing industry partners to retain their support in this unfavorable economic and media environment. Many of the delays and uncertainties of flights are beyond NASA's control, and there may be good reasons for many protocols and procedures that seem unnecessary and cumbersome to the faster-paced private sector. Communicating with industry partners about these concerns, explaining NASA's constraints, and listening to the partners' concerns are likely to help NASA retain partners and attract new ones through word-of-mouth publicity.

Corporate Scientists

This category includes scientists engaged in research within the targeted industries. The goals of the communication with this audience are:

- To introduce microgravity research to appropriate scientists, thereby generating interest in this research.
- To increase credibility and perceived applicability of this research and engage scientists in a discussion of the possibilities for this research.
- To persuade scientists to suggest this research for their company or support this research in discussions with other scientists or managers.

Corporate scientists value exploration and discovery for their own sake. In this regard they are no different than scientists in academia or government. However, the fact that they operate in a corporate environment means that they have to justify their interest in a particular line of research by demonstrating its value to the corporation. Corporate scientists are used to making decisions based on data they've collected and will need good data and hard facts to be convinced to undertake microgravity research. A key advantage with this audience is that many of them harbor very positive feelings about NASA and space exploration, especially since so many of them grew up during the Apollo years. For this reason, the idea of conducting research in space and in collaboration with NASA is especially appealing to them.

Much of the outreach to this audience should be conducted scientist-to-scientist via the CSCs. Materials must employ fact-based appeals that focus on actual results and their implications, without exaggerating or over hyping the promise of microgravity. Messages to scientists need to be largely informative rather than persuasive, and should be designed to build the stature and credibility of the discipline of microgravity research.

As with the other audiences, Phase 1 activities focus on knowledge-building and establishing microgravity science as an interesting new frontier in scientific research, but sharing information on research projects and making presentations to interested scientists or research groups (as the CSCs are currently doing). We also recommend developing a newsletter for interested scientists and creating a clearinghouse of microgravity research findings and publications. In this way, scientists have access to a single source with extensive information about conducting microgravity research and its findings. In Phase 2, these activities are extended and the focus shifts slightly to generate more speaking opportunities and presentations of successful research projects via a variety of scientific forums.

Preparatory Steps

The role of communication is to generate interest in the opportunity offered by NASA. In order for NASA to convert this corporate interest into active participation, it must set in place procedures to meet the needs of potential private sector partners. We recommend that NASA take the following steps to support its commercial microgravity program and prepare for more active industry interest.

- **Improve flight manifest procedures so that they are simplified and streamlined.** Most important of all, NASA must explain these procedures and timelines clearly to industry partners and deliver on them as much as possible. If unforeseen circumstances lead to changes in the schedule, these constraints should be clearly explained to partners.
- **Implement fast-track flight procedures.** When an industry partner seeks to replicate its prior study it should be fast-tracked to facilitate replication and validation of studies, thereby contributing to the credibility of microgravity research as a scientific discipline.
- **Clarify and communicate procedures for ensuring confidentiality of Intellectual Property.** NASA must make sure that the confidentiality of all the information presented is protected at all times and these procedures should be discussed with potential partners.
- **Establish a single point of contact.** Businesses interested in pursuing microgravity research should be able to contact a single person or office who will be knowledgeable about *all* the microgravity research being conducted at the various CSCs, and can guide the caller to the relevant CSC or scientific group. This contact person should be able to determine which CSC might be the best partner for an interested business and facilitate partnership development. The contact should also follow up with the industry member to see how the partnership is progressing, and should generally have a relationship management and customer satisfaction charge. Ideally this contact person should be reachable via a front-door mechanism such as a toll-free number.
- **Strengthen the CSC network.** The CSCs all too often work in isolation and with very limited funds. Sharing knowledge about outreach efforts, research projects, hardware development, and flight manifesting could be highly beneficial to all CSCs. Moreover, the CSCs should be encouraged to collaborate on research and share findings so that microgravity research can be effectively advanced. NASA can provide the forums and the opportunities for such collaborations.
- **Strengthen links between NASA and the CSCs.** NASA should be more closely linked with the CSCs both in external and internal communications. However, this should be done without squelching the diversity and entrepreneurial spirit of the CSCs. These links should build the sense that the CSCs are part of a larger endeavor and are supported in their work. For example, NASA's annual conference with CSC directors currently focuses largely on each CSC reporting on work in progress or completed. This annual conference should instead be more of a forum for two-way communication where, in addition to reporting on their work, the CSC directors have the opportunity to learn more about NASA's strategic vision, processes, and constraints. They should also have the opportunity to raise and discuss issues that concern them all. The annual conference should also be supplemented by periodic updates and discussions among the CSCs and NASA, either by conference call or email. The aim of these efforts should be to foster a spirit of collaboration and involvement between NASA and the CSCs rather than merely keeping the CSCs well-informed of NASA policies or activities.

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Table 1: Summary of Communication Program

| | Audiences | Communication Objectives | Key Audience Factors |
|--|--|--|--|
| <p>Goals of the Communication</p> <p>Raise awareness of the benefits of microgravity research, especially on the International Space Station</p> <p>Raise awareness of NASA's commercial research program</p> <p>Attract private sector interest in microgravity research with NASA</p> <p>Overall Strategy</p> <p>Widen awareness and perceived relevance of microgravity research among public and industry audiences</p> <p>Create a public and media environment that values industry participation in this venture</p> <p>Associate industry participation with valued attributes such as innovation and leadership</p> <p>Position NASA's offer to highlight benefits while minimizing costs</p> | <p>Influential Public</p> | <p>Increase awareness and perceived relevance of space-based research, particularly aboard the ISS.</p> | <p>National pride in NASA and U.S. leadership in space exploration but in tight economy ISS and NASA generally may not be much of a priority.</p> |
| | | <p>Increase awareness and perceived relevance of NASA's technical and research expertise, particularly outside of space exploration.</p> <p>Generate awareness of space commerce and NASA partnership opportunity.</p> <p>Counter negative publicity about ISS.</p> | <p>Strong interest in scientific advances in health and environment.</p> <p>Do not see relevance of space -based research to self, society and nation.</p> <p>Negative publicity about ISS may make public reluctant to support and/or fund space-based research.</p> |
| | <p>Industry Executives and Leaders</p> | <p>Engage senior executives to participate in and guide NASA's commercialization venture.</p> <p>Encourage them to promote space commerce to media and within their industry.</p> <p>Encourage them to take the lead on commercial space research for their sector.</p> | <p>Want their company to be strategically positioned at the cutting edge of science. Also want to be personally seen as industry leader, chosen to represent their industry sector in this effort.</p> <p>Opportunities for publicity and for networking valued.</p> <p>Lack understanding about benefits of basic research. Insufficient "buzz" about microgravity research to make participation worthwhile.</p> |
| | | <p>Industry (in general)</p> | <p>Increase awareness of microgravity research applications for each industry sector.</p> <p>Increase perceived value of researcher partnership with NASA.</p> <p>Identify appropriate contacts for follow-up.</p> |
| <p>Corporate Scientists</p> | <p>Introduce microgravity research to appropriate scientists; generate interest.</p> <p>Increase credibility and perceived applicability of microgravity research; engage scientists in discussion of possibilities.</p> <p>Persuade them to suggest this research for their company or support it in discussions with other scientists or managers.</p> | <p>Interested in conducting cutting-edge research and value serendipitous discoveries. Enthusiastic about space exploration and "cool" technologies.</p> <p>Need good data to convince them of validity of findings, and are stretched for time and resources. Aren't able to make ultimate decision to fund research.</p> | |

Table 1: Summary of Communication Program (Cont.)

| Messages | Tactics |
|--|---|
| <p>NASA's research has a track record of providing health and environmental benefits to consumers.</p> <p>Space-based represents an important new frontier for science; making investments now will facilitate critical breakthroughs.</p> <p>NASA is developing a model for space-based research that is based on collaborative partnerships among businesses, government and academia.</p> | <p>Phase 1 The focus will be on increasing media coverage of microgravity research through media outreach via tool-kits, media pitches, story development and intensive background briefings with selected journalists. A press conference to "launch" the program is suggested.</p> <p>This phase also involves a lot of the "background" work for media outreach, such as finalizing the message platform, identifying and training spokespersons, and developing media lists and toolkits.</p> <p>Phase 2 The media activity will be sustained via another press conference and regular media pitching of specific discoveries and scientific advances.</p> |
| <p>NASA is tapping industry leaders to play a vital role in shaping space commerce and research.</p> <p>By participating with NASA, you can represent your industry's interests and help ensure that space-based research initiatives meet your industry's needs.</p> <p>Organizations that get in on the ground floor by participating with NASA now have the greatest opportunity to benefit from NASA's expertise and commitment to cost-sharing.</p> | <p>Phase 1 A series of breakfast briefings will be conducted for leaders of the primary target industries in selected markets. In addition, articles about microgravity research will be placed in publications that are read by industry executives (e.g. Ivy League alumni magazines, airline magazines) and will be amenable to feature coverage of this issue.</p> <p>Phase 2 A panel of industry leaders will be convened to guide and promote the commercialization process.</p> |
| <p>Microgravity research will help your industry develop better and more efficient products and processes (validated with examples of research and their application).</p> <p>Organizations that get in on the ground floor by participating with NASA now have the greatest opportunity to benefit from NASA's expertise and commitment to cost-sharing.</p> <p>Other companies are already participating and seeing results.</p> | <p>Phase 1 NASA and CSC staff reach out to industry via trade show exhibits. The impact of these can be enhanced by (1) supplementing exhibits with speaking opportunities and presentations at conferences, and (2) using materials tailored for specific industry audiences (e.g., a customizable tool-kit).</p> <p>NASA should also create central "front-door" point of contact for potential industry partners, and a centralized way to follow up with potential partners.</p> <p>NASA also needs to improve communications with existing industry partners to sustain and enhance their commitment to this research.</p> <p>Phase 2 Industry outreach may be supplemented by advertisements of specific opportunities and/or successes in trade publications and outreach to trade magazines to cover this research.</p> |
| <p>Manipulating gravity as a variable allows for a fresh approach and perspective on research questions.</p> <p>Space-based research is a new frontier for science. Your research will be laying the groundwork for critical breakthroughs.</p> <p>You can collaborate with the best minds in NASA and academia and benefit from their expertise.</p> | <p>Phase 1 and Phase 2 Scientists at the CSCs already reach out to corporate scientists via research presentations, publications and special briefings and this should be supported by NASA. NASA should focus on developing an up-to-date on-line database of microgravity research findings and publications so that more scientists can learn about this discipline.</p> <p>Phase 2 A select group of corporate microgravity scientists will be convened to promote the discipline and set priorities and guidelines.</p> |

