



**HEINLEIN
PRIZE TRUST**
For Accomplishments in Commercial Space

2018 Roundtable on Value and Benefit Creation in Commercial Space Summary Report

On September 5, 2018, an invitation-only Roundtable organized in partnership between the Heinlein Prize Trust, Reed Smith LLP, and the Secure World Foundation, with support from the New York Space Alliance (NYSA), convened representatives from the commercial space community and the institutional and investment banking community for discussion of creating, measuring, and sustaining long-term value and benefit from commercial space development. The event took an interactive approach with moderated discussions between a small group (~50) of invited participants. A series of three “Discussions” was held, each beginning with short presentations from invited speakers and followed by a moderated dialogue between all attendees and participants. On balance, more time was spent in an interactive full-group discussion than was spent in typical panel-discussion format. Collectively, the event aimed to identify the questions, challenges, and opportunities surrounding efforts to create and sustain commercial ventures and value in each discussion area.

This event was held under Chatham House Rule and was not for attribution. This report summarizes the key discussion themes and questions raised by the Roundtable. The views expressed in this summary report do not necessarily reflect those of Secure World Foundation, or of the individuals in attendance or their respective institutions, organizations, or governments.

Summary

Objective

This Roundtable was motivated by a growing and diversifying commercial space sector, and the new types of societal benefit and application that this type of growth might provide. In order to sustain that growth - and derive benefit from it - there is a need to build improved knowledge of, and links between, the institutional finance community and the commercial space sector, as well as a need to better understand what policy factors can enable this growth. The Roundtable sought to stimulate a conversation around these factors.

Panel Synopsis

The Roundtable featured three primary discussion sessions (a complete agenda can be found in the Appendix of this Report). In the first discussion, panelists representing a cross section of the space industry (including both established and early-phase companies from satellite, launch, and lunar commercialization segments) presented their viewpoints as changing business models and expanding customer bases in the commercial space sector. This panel also discussed the emerging commercial space ecosystem in New York. The second discussion, featuring a mix of government, investor, legal, and business development speakers, focused on ongoing changing perceptions of the role government partnerships and regulatory competition in commercial space development. The third panel, comprised of industry analysts, focused on the role of common terminology in defining and understanding value and benefit from commercial space development.

Key Themes

While the agenda was structured into three discussion sessions, two cross-cutting key themes of discussion emerged from dialogue at the Roundtable: public–private partnerships, and the role of terminology.

Public–Private Partnerships

Public–private partnerships (PPPs) were a large topic of discussion at the Roundtable. Panelists and participants covered many aspects of partnerships, but largely raised questions about how PPPs are structured, what makes them work, how different types of PPPs can be applied at different stages of a business’s development, and how investors view the government’s specific involvement in a project. In general, “public–private partnership” describes a business relationship in which the government and the company have both invested resources (facilities, finance, personnel, and intellectual property) with the aim to produce a product, technology, and/or service that is mutually beneficial and useful to both the private company and the government.

The space domain’s history is dominated by government spending and definition of activities. Governments led the way for national security and other political purposes, and largely because access to space has been prohibitively expensive up until only the recent decades. A number of factors, including government efforts to grow commercial capacity through PPPs, are increasing the commercialization of near-Earth space.

Roundtable participants generally expressed a sense that PPPs are playing an important role in the development of sustainable commercial business models in the space sector yet noted there is not a common understanding of what makes PPPs successful and appropriate across different types of space businesses as well as different types of governmental organizations. Discussion of PPPs at the Roundtable covered three general topics:

1. What role(s) do PPPs play in the commercial space sector today?
2. What is the relationship between PPPs and other investment sources in commercial space ventures?
3. What factors are important in designing or implementing a successful PPP?

Roundtable participants noted the PPPs are not a new model, and in fact have been used throughout the history of the space age. However, in today’s evolving commercial space sector - with a growing diversity of actors and applications - the role of PPPs is also evolving. Multiple forms of PPPs exist and have different purposes and applicability to different stages and types of space businesses. Examples discussed at the Roundtable include:

- In the United States, the Small Business Innovation Research (SBIR) program is one where government agencies award monetary contracts or grants to companies throughout phases of development for specific technologies.
- The European Space Agency’s Business Incubation Centers (BICs) or other general “incubators” seek to provide a localized infrastructure such as office space near universities, access to investors, seed money, and other logistical support that may help startup companies develop.
- Space Florida as a state-level economic development agency, where the State of Florida owns and operates all of the civil launch facilities on its eastern Atlantic “Space Coast” and seeks to attract

commercial space companies with reduced facilities costs, access to a trained workforce, and financing opportunities.

- Programs such as the NASA Commercial Orbital Transportation Services (COTS) program and the European Union Copernicus Earth observation program in which the government acts as both an investor and a customer in private-sector provided capabilities.

Roundtable participants also noted the increasing role of partnerships between private entities occupying a similar role and function as PPPs. Increasingly, established aerospace companies are entering into partnerships with early phase companies to help mature early stage technology and services while providing the established companies with access to talent development and innovative approaches that might not otherwise fit within a traditional firm structure and culture. This type of relationship is similar in concept to many of the benefits expected for both the industry and government sides in a PPP. Roundtable participants expressed a desire to see improved industry discussion of the various range of functions and roles the PPPs play in the sector, including whether lessons from PPPs can be applied to private-private partnerships.

Relationship between PPPs and Private Sector Investment

The aerospace sector is dominated by government spending and investment, especially in the development of leading-edge technologies. A developing company's relationship to the government can help and hinder their ability to access private sector investment. Participants defined a spectrum of government involvement that spanned from the seed investment, to sole customer, to one of many customers. Across that spectrum, government money can act as a "proof of concept," but without development beyond, government dependency can be damning. Additionally, regulatory certainty is a challenge across any industry, but aerospace's proximity to national security demands more certainty in the eyes of investors. Government partnership can provide regulatory certainty and influence in future regulation development.

Investors present at the workshop expressed recognition that regulatory certainty is something that they look for in evaluating a business model and that the presence of a PPP can help provide or demonstrate that certainty. For example, one participant stated, "As an investor we don't invest just in ideas, we invest in companies that can execute their ideas. Look for government not just being an investor, but also a customer. In this way PPPs can be a conduit to private equity." PPPs can help government policymakers understand the needs of novel and emerging business sectors. Yet, while noting the importance of this link, the investors present at the Roundtable also expressed a cautionary note: the risk of early-stage companies becoming dependent on government contracts as a result of early partnership with government. Participants noted the bridge from government contracts to commercial viability can be difficult, so successful PPPs must develop commercially relevant companies, not pure government contractors.

PPP Design Factors for Success

While the history of government involvement in private enterprise has yielded beneficial results, there are also myriad examples of the opposite. To defray the cost of the Space Shuttle in the early 1980s the U.S. government undercut early commercial launch providers in the satellite launch market. Even in PPPs, governments have incentives beyond profit such as job creation, tax revenue, geopolitical considerations, and many more. Yet, under the right circumstances, governments can significantly augment a company's prospects.

Given this background, the range of the PPP approaches that currently exist, and investor interest in PPP models as a complement to other investment vectors, Roundtable participants were interested in identifying a list of factors that need to be considered when designing a PPP. What is necessary to make a PPP model successful and appropriate to the objective it is trying to achieve? Participants and panelists had a broad range of experience with different types of PPPs and were able to share some experience-derived best practices:

- What helps is being a subcontractor to a more experienced prime contractor.
- Get the word out, hone your message and have a good solution to an agency's problem.
- Private and public investors are looking for the same quality of business plan, regardless of the public's involvement.
- What happens in these public partnerships when intellectual property (IP) is developed? Does the government own everything? PPPs need to clearly define IP provisions, clearly doing so is beneficial from an investor-confidence standpoint.
- From the government's perspective, they're looking for PPPs that become self-sufficient or at least do not increase the cost to taxpayers.

The Importance of Terminology and Related Concepts in the Space Domain

As the commercial space sector works to expand into new markets and applications in an economically sustainable manner these companies must work with investors and customers who aren't familiar with the space domain. There is a need to educate and communicate to stakeholders who aren't educated in space to show, beyond simply the cool factor, both the societal benefits and financial returns from commercial activities in space.

In doing this, terminology is important. Words convey meaning and differing definitions can be dangerous. Recognizing that the largest revenues within the satellite industry are derived from the downstream applications of data, one panelist noted, "No one outside the space sector cares about data itself - they care about information. We need to speak the language of our customers." A venture capitalist similarly noted that "issue framing is important. It can bring other people in."

Participants noted that it is important to understand how the people you're speaking to interpret the terms you're using. For example, the term "value" — markets and companies have different definitions of "value," so it should always be defined in context. There are levels and types of value — value/benefit at a social scale vs. value/benefit at the individual scale. How you perceive the value of a particular space application or activity may not be same as how your customer, regulator, or investor views the value of that activity.

Participants expressed a need to avoid jargon in efforts to grow the interested investor community. Many investors in space today are space-interested people first, which helps them get interested in investing in space businesses but expanding the investor pool will require accessing non-space interested people. Following from this theme, the Roundtable engaged in a discussion of the problematic terms used in the space community:

- "Colonization" and "development" — both of these terms have negative connotations associated with them. Can the community avoid these terms and reframe the context in which they are used to a larger and more beneficial vision?

- What is meant by “sustainable”? People use it in all kinds of contexts, but it’s a vague word that means different things to different people (e.g. self-sustainable, environmentally sustainable, scalable).
- Space industry vs satellite industry — are these different? Overlapping?
- Competition vs. cooperation.

Some participants expressed concern that the space industry might be at risk of missing a current window of opportunity to capture investment interest in the sector, noting that many areas of current start-up activity are ones which have been talked about for decades, and as a result application such as space-resources development might suffer a credibility challenge. Other participants noted that the space sector has historically not been good at stimulating growth in demand or usership and that current efforts to understand how various new services and technologies relate to each other in stimulating demand (e.g the cislunar marketplace) could contribute to overcoming this historical failure. Improved clarity in the use of language within the space sector — and in its communications with users and finance sources outside of traditional bounds of that sector — could be a useful contributor toward these two areas of concern.

Conclusion & Unanswered Questions

Siloed communities are a challenge across every field. Relationships based on precedent and localized terminology serve to provide stability and efficient understanding within a silo. The space community, commercial space companies, the investor community, and the government all contain multitudes of silos. Establishing communications between these groups, identifying common issues, and seeking collaboration is a difficult task, but one that can yield results. This Roundtable discussion explored a few elements to contribute to establishing these communications. Future discussions will continue to work on these and new questions as the commercial space sector grows, and as governments inevitably work to foster and benefit from the industry.

Not surprisingly, the Roundtable raised a number of questions that were not answered during the event itself:

- What happens when the novelty of space wears off?
- What is the level of sophistication in discerning the downstream impacts of the different types of PPPs available?
- How can governments structure PPPs to make them effective?
- How can businesses convey how PPPs are working (or not working) to the investor community?
- As more commercial activities are under development, but regulation isn’t necessarily keeping up, are companies starting to jurisdiction-shop around the world?
- What does “commercial space” mean, and how important is it to have a common definition?
- How much do broader socio-economic benefits matter to investors vs. standard financial return on investment?

Roundtable Agenda

8:30 – 9:00: Opening, Welcoming Remarks, Ground Rules

- Master Moderator: Ramin Khadem, Former CFO of Inmarsat, PLC and Principal, Space Ventures, UAE
- Welcoming Remarks from Hosts & Sponsors:
Art Dula, Heinlein Prize Trust; Michael Simpson, Secure World Foundation; Del Smith, Reed Smith

9:00 – 10:30: Discussion 1: “There is no such thing as luck; there is only adequate or inadequate preparation to cope with a statistical universe.” – Drivers / Activities/ Risk – Where Industry Is

- Moderator: Sidney N. Nakahodo, Co-founder and CEO, New York Space Alliance
- Speaker 1: Torsten Kriening, Chief Commercial Officer, PT Scientists
- Speaker 2: Bernard Kutter, Chief Scientist, United Launch Alliance
- Speaker 3: Agnieszka Łukaszczyk, Director – EU Policy, Planet

11:00 – 12:30: Discussion 2: “Audacity, always audacity - soundest principal of strategy.” Government Partnerships and Regulatory Competition

- Moderator: Elizabeth Evans, Partner, Reed Smith LLP
- Speaker 1: Dale Ketcham, Vice President Government & External Relations, Space Florida
- Speaker 2: Khaki Rodway, Director, Future Launch Consulting
- Speaker 3: Stephan Reckie, Executive Director, GEN Space

1:30 – 3:00: Discussion 3: “Its very variety, subtlety, and utterly irrational, idiomatic complexity makes it possible to say things in English which simply cannot be said in any other language.” – Communicating Value - Common Understanding and Terms

- Moderator: Ian Christensen, Director of Private Sector Programs, Secure World Foundation
- Speaker 1: Micah Walter-Range, President, Caelus Partners
- Speaker 2: Armand Musey, Summit Ridge Group

3:15 – 4:00: Capstone Discussion

- Speaker 1: Art Dula, Trustee, Heinlein Prize Trust
- Speaker 2: Elizabeth Evans, Partner, Reed Smith LLP
- Speaker 3: Michael Simpson, Executive Director, Secure World Foundation