

Insights from Panel: Building a Thriving Space Economy

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See full event guide here: [☰ Mars Innovation Workshop 2025 Full Guide](#)

See full session transcript here: [☰ Session Transcripts: Mars Innovation Workshop](#)

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Long-Form Article

The Future of the Space Economy: Profit, Purpose, and the Path to Sustainability

As humanity steps closer to an increased and sustained presence beyond Earth, a critical question emerges: **how do we build a thriving space economy that balances innovation, investment, and long-term viability?** To sharpen the question even further: **how do we ensure that innovating for space delivers value on Earth, starting today?**

These questions were at the heart of a dynamic discussion at the 2025 Mars Innovation Workshop hosted by [Explore Mars](#), where panelists from government agencies and the private sector explored the economic incentives, funding models, and commercialization pathways that will shape the next era of space exploration. Workshop participants—who vigorously contributed insights, experiences, and questions to the session—came from a variety of backgrounds, including startups, nonprofits, academic research, public entities, investment, the arts, and the private sector.

During this session, one theme resonated above all others: **profit and purpose are not in opposition—they are deeply intertwined.**

For space to become more than an experimental playground for governments and billionaires, it must evolve into a self-sustaining market. Doing so requires not only bold ideas and technological breakthroughs but also a strategic framework that ensures investment in space innovation delivers real value back on Earth, supporting prosperity and peace for people around the world.

Funding the Next Generation of Space Ventures

Despite the increasing commercialization of space, government funding remains a cornerstone of the industry. Programs like [Small Business Innovation Research \(SBIR\)](#) and [Small Business Technology Transfer \(STTR\)](#) grants and [Other Transaction Authority](#) (OTA) contracts provide

essential early-stage capital, enabling startups to take their first steps toward commercialization. Yet, the transition from research and development to market-ready products—often called the "[valley of death](#)"—remains a major hurdle.

[Public-private partnerships](#) have proven successful to date, particularly in the launch sector, but many space startups still struggle to attract venture capital due to the industry's long development timelines and unclear return on investment. Unlike software or biotech, where companies can pivot quickly, space startups require [patient capital](#)—a model more familiar to energy and infrastructure projects than to software-focused investors.

This gap has sparked a need for new financing structures, such as [milestone-based funding models](#) that mitigate risk while accelerating commercialization. By shifting toward performance-driven incentives rather than traditional cost-plus contracts, both government agencies and private investors could play a role in de-risking space innovation.

While space startups often focus on long-term off-world applications, panelists emphasized that **delivering tangible value on Earth today is critical for securing investment and sustaining growth**. Why? Because investors are more likely to back ventures that serve existing markets while laying the groundwork for future space applications. Technologies developed for Mars—such as self-sustaining agricultural systems, AI-driven automation, advanced materials, and closed-loop water recycling—have direct relevance to climate resilience, food security, and sustainable infrastructure on Earth.

One workshop participant noted that investors aren't just funding space exploration—they're funding breakthroughs in **efficiency, resource management, and human resilience**, all of which have commercial potential right now. Positioning space ventures as essential drivers of economic and environmental innovation on Earth could expand the pool of funders beyond traditional aerospace players, attracting interest from impact investors, energy firms, and sustainability-focused corporations.

Scaling a Space Business: Challenges and Opportunities

For space companies, the path to success is rarely straightforward. [Talent shortages](#), regulatory bottlenecks, and limited market size all contribute to the difficulty of scaling. Finding professionals with both deep technical expertise and entrepreneurial experience remains a persistent challenge. One proposed solution: **establishing mentorship networks that connect emerging startups with retired aerospace experts**, empowering knowledge transfer across generations.

Market expansion also remains a key concern. While industries like telecommunications and Earth observation have clear revenue streams, many (but certainly not all) space-driven innovations may lack immediate commercial applications. To attract investment, companies must develop technologies that serve terrestrial markets today while laying the foundation for space-based applications in the future.

Importantly, biomanufacturing, artificial intelligence, robotics, and clean energy are among the sectors where innovations intended for space—including human habitation of Mars—could fuel breakthroughs on Earth.

Another major challenge is standardization. Without common modular designs and interoperability guidelines, companies find themselves building bespoke solutions that limit economies of scale. However, balancing standardization with competition remains an open debate. Some workshop participants argued that a more regulated approach could accelerate growth, while others feared it would stifle innovation.

The Future of the Space Economy: What Will Drive Growth?

A pivotal question emerged during the discussion: **what will be the tipping point that transforms space into a truly independent economic ecosystem?**

Several theories were put forward. Some participants argued that once 20 or more people are living full-time off Earth (for example, in public and private space stations), demand for goods and services will skyrocket, creating a domino effect of economic expansion. Others suggested that space must develop **a unique value proposition beyond Earth-based applications**—for example, manufacturing pharmaceuticals in microgravity or enabling long-term space tourism. Later in the conversation, there was substantial debate about the number 20: do we need 20 people or 20 space stations or maybe 200? Where is the economic tipping point likely to occur?

Intriguing comparisons were drawn to Antarctica's economic evolution. To summarize [a complex history](#), Antarctica has gradually grown from an initially government-led research outpost to an [arena with regulated private-sector industries](#), including tourism and sustainable resource use. If space follows a similar trajectory, then government investment in foundational off-Earth infrastructure could eventually give way to **self-sustaining and peaceful commercial enterprises** that deliver value and prosperity to people everywhere.

Reframing Public Perception: Space as a Driver of Innovation for Earth

One of the most pressing challenges facing the space industry is shifting public perception, which is [quite complex](#). Many still view space as an elite endeavor, rather than as an engine for solving **major global challenges**. However, the same principles that make space innovation possible—self-sufficiency, closed-loop systems, extreme resource efficiency, and adaptive automation—are precisely what's needed to address Earth's biggest challenges, from climate resilience to sustainable urban development.

Participants at the Mars Innovation Workshop felt that educational and public relations efforts will be essential to bridging this gap. Communicating the real-world benefits of space investment—from advances in clean energy to breakthroughs in autonomous AI and personalized medicine—could attract new stakeholders beyond traditional aerospace circles.

Next Steps: Transforming Discussion into Action

Throughout the session, several actionable steps emerged as priorities for accelerating the growth of the space economy:

- **Advocating for policy reforms** that streamline funding and contracting processes.
- **Encouraging applications for Earth and space** of “space technology” to attract more investors as well as supporters and stakeholders outside the traditional space community.
- **Developing structured pathways for scaling space startups**, including mentorship and workforce training.
- **Reframing space as an essential driver of economic and technological progress for all.**
- **Identifying the "trigger event" that will push space infrastructure into self-sustaining growth.**

As the conversation wrapped up, one message was clear: **the time for action is now**. The coming decades will define whether space becomes an economic afterthought or an integral part of the global economy.

But with the right mix of investment, policy, and collaboration, the space economy **won't just be a reality—it will be an opportunity too big to ignore**.

How can you help?

Whether you’re an investor, entrepreneur, researcher, policymaker, or simply someone who believes in a positive future for humanity, there’s a role for you in shaping the future of the innovation economy for space and Mars. Here are some steps you can take:

- Join the [Explore Mars](#) community to connect with innovators tackling the biggest challenges of interplanetary and Earth-based sustainability.
- Become a [sponsor or donor](#) to support Explore Mars programs that drive collaboration, research, and real-world impact.
- In your local community and your industry, advocate for policies that accelerate space commercialization and ensure that technology benefits all of humanity.

And most importantly, stay engaged—because the choices we make today will determine whether space becomes an exclusive frontier or a thriving, sustainable ecosystem for all.

Social Media Post (point to long article)

Can We Build a Thriving Space Economy?

At the first-ever Mars Innovation Workshop hosted by Explore Mars, we kicked off our event with a big question: how do we build a space economy that is sustainable, profitable, and delivers value for Earth today? Our participants shared fascinating perspectives based on their experiences in startups, nonprofits, academic research, public entities, investment, the arts, and the private sector—both within and outside the space industry.

Read a more in-depth discussion at the link in the comments [URL TO LONG-FORM ARTICLE](#).

One thing was clear from this session: Profit and purpose aren't at odds. Instead, they are deeply connected.

For space ventures to succeed, they must serve both off-world and terrestrial markets. Critically, the same breakthroughs we need for Mars—self-sufficiency, closed-loop systems, and extreme resource efficiency—are the exact solutions that can drive climate resilience, food security, and sustainable infrastructure here on Earth.

But scaling a space business is hard. Sometimes it's really hard. Investment remains cautious, regulatory barriers slow progress, and the market is still small. So what will be the tipping point? Some participants thought that economics can take over from government funding when 20+ people live full-time in space stations ... or maybe when there are 20 space stations. Others argued that space must create its own unique economic value, like microgravity manufacturing or tourism.

How do we turn today's ideas into real-world action?

- **Multi-use technology** is key—space innovation must solve Earth's biggest challenges, starting today.
- **Standardization & funding reforms** could help startups scale faster.
- **Collaboration across industries** will make space part of the global economy and deliver value to people everywhere starting today.

Check out more insights from this workshop session at the link in the comments [URL TO LONG-FORM ARTICLE](#).

At Explore Mars, we're building the future by bringing together the people who will make it happen.

Want to be part of this movement? Join our community, become a sponsor, or donate to help us accelerate space innovation that benefits everyone.

Don't forget to join us for the Humans to Moon and Mars Summit in Washington, DC on May 28-29, 2025! [The registration link](#) is in the comments.

Let's not just imagine the future—let's build it together!

Summary & Key Insights

Summary: Panel on Building a Thriving Space Economy

This panel explored **how to balance profit, purpose, and innovation in space ventures**, focusing on **economic incentives, funding mechanisms, market challenges, and pathways to scale space businesses**. Panelists from **government agencies (NASA)** and the **private sector (Acubed)** discussed strategies for **sustaining private sector investment in space innovation, overcoming commercialization barriers, and ensuring that space advancements create value on Earth**.

Key Themes & Insights

1. Purpose & Profitability Are Not Opposed—They're Intertwined

- Space businesses must generate value—whether for **government contracts, private investors, or broader markets**.
- The concept of profitability in space is evolving. While some areas (telecom, Earth observation) have a clear profit model, **emerging technologies like space nuclear power are benefiting from long-term R&D funding before commercial viability**.
- Sustainability principles from space exploration (efficient resource use, recycling, self-sufficiency) **can drive innovation for both Mars and Earth-based industries**.

2. Funding & Investment Pathways

- Government programs like **SBIR (Small Business Innovation Research) and OTA (Other Transaction Authority) contracts** play a major role in **early-stage funding for space ventures**.
- Public-private partnerships (e.g., **NASA's involvement in commercial launch**) have accelerated progress.
- The "**valley of death**" between R&D and commercialization remains a challenge, requiring new financing structures and demand-pull incentives (similar to the **DOE's energy programs**).

3. Scaling a Space Business: Challenges & Solutions

- **Capital & Talent Shortages:**
 - Space startups struggle to **attract senior talent** due to high-risk government contract cycles.
 - Finding professionals with both **deep technical expertise and entrepreneurial experience is difficult.**
 - Potential solution: **Leverage retired experts as mentors for emerging space startups.**
- **Market Size & Product Development:**
 - The space economy is **still relatively small**, making VC investment difficult without a clear terrestrial market.
 - Many startups **start as Earth-based companies, then pivot to space applications** (e.g., biomanufacturing, AI, robotics, energy).
 - **Dual-use technology development (for space and Earth) is essential for long-term viability.**

4. The Role of Government in Commercialization

- Government contracts are **a major driver of space investment**, but bureaucratic hurdles (e.g., Space Act Agreements taking years to approve) slow growth.
- **Standardization of space technologies** could help startups develop modular, scalable products, but companies resist regulation that might limit competitive advantage.
- Potential policy shifts, such as moving from **cost-plus contracts to milestone-based fixed-price contracts**, could increase **private sector engagement and speed up commercialization.**

5. The Future of the Space Economy: Triggers for Growth

- **When will space truly become its own economic market?**
 - Some argued that **once 20+ people live in private space stations full-time**, demand for goods and services will rapidly increase.
 - Others suggested that **space needs to develop a unique value proposition beyond Earth-based applications** (e.g., manufacturing pharmaceuticals in microgravity, space tourism).
 - Space tourism and luxury experiences **could be a major economic driver**, just as air travel started as a luxury industry before becoming widespread.
- **Comparing space commercialization to Antarctica's economic model:**
 - Antarctica's research stations and tourism industry **evolved from government-funded operations into self-sustaining commercial ventures.**

- Space could follow a similar path, with **government seed investment leading to private-sector infrastructure development**.

6. PR & Public Perception of Space Investment

- Many people still perceive space as "**for billionaires and governments**," rather than as an engine for global innovation.
- There is a **need to reframe space investment as essential to solving major Earth challenges** (e.g., climate resilience, clean energy, disaster response).
- **Educational and PR campaigns** are needed to **build public support and attract a broader pool of stakeholders**.

Actionable Future Steps Identified by Participants

1. **Advocate for policy reforms** that streamline **funding and contracting processes** to accelerate space innovation.
2. **Increase cross-sector collaboration** to ensure space technologies have **terrestrial applications** that can attract broader investment.
3. **Develop pathways for scaling space businesses**, including **mentorship programs, workforce development, and modular tech standardization**.
4. **Explore dual-use commercial applications** for space tech in industries like **energy, AI, and biomanufacturing** to attract investors.
5. **Shift public perception** of space from an elite endeavor to **a driver of economic and technological advancement for all**.
6. **Identify the "trigger event"** that will push space infrastructure into **self-sustaining economic activity**, whether it's **tourism, manufacturing, or large-scale habitation**.
7. **Create an initiative to leverage the expertise of retired industry professionals** to support emerging space startups.

Conclusion

The discussion made it clear that **profit and purpose are not at odds in the space economy**—but realizing this vision requires **smarter funding models, cross-sector collaboration, and clearer pathways to scaling businesses**. The **next steps** involve **policy changes, industry partnerships, and an intentional strategy to integrate space innovation into global economic systems**.