



SPACE TECH EXPO
TECHNOLOGY CONFERENCE



Space Copy[®]

In-Situ Logistics and Additive Manufacturing

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CONFIDENTIAL

About Me:



Madison C. Feehan

Founder, CEO and President



- Prior NASA/ESA Experience
- UN COPUOS Subcommittee Advisor
- Chair Of The International Lunar Chamber of Commerce
- G100 Space Technology and Aviation Chair for the Province of Alberta
- Background Education in International Business and Entrepreneurship from Harvard Business School and University of Victoria

What If?

It's 1969... on the final lunar frontier, Apollo 11 astronauts are about to step foot on the Moon's surface for the first time in recorded human history.

But what if something breaks on the lander? What if an electronic control becomes unresponsive?

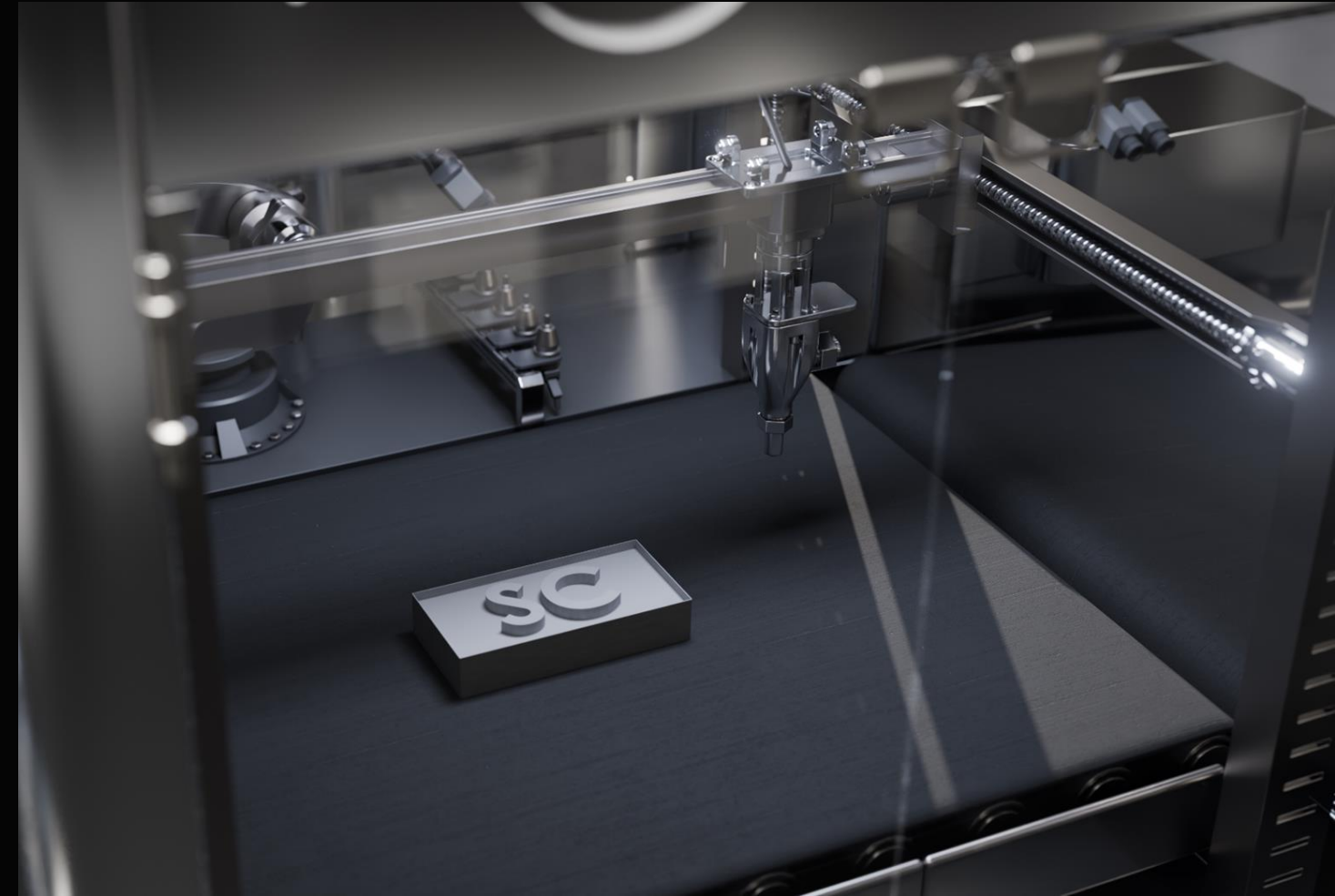
What do you do?

You manufacture a replacement



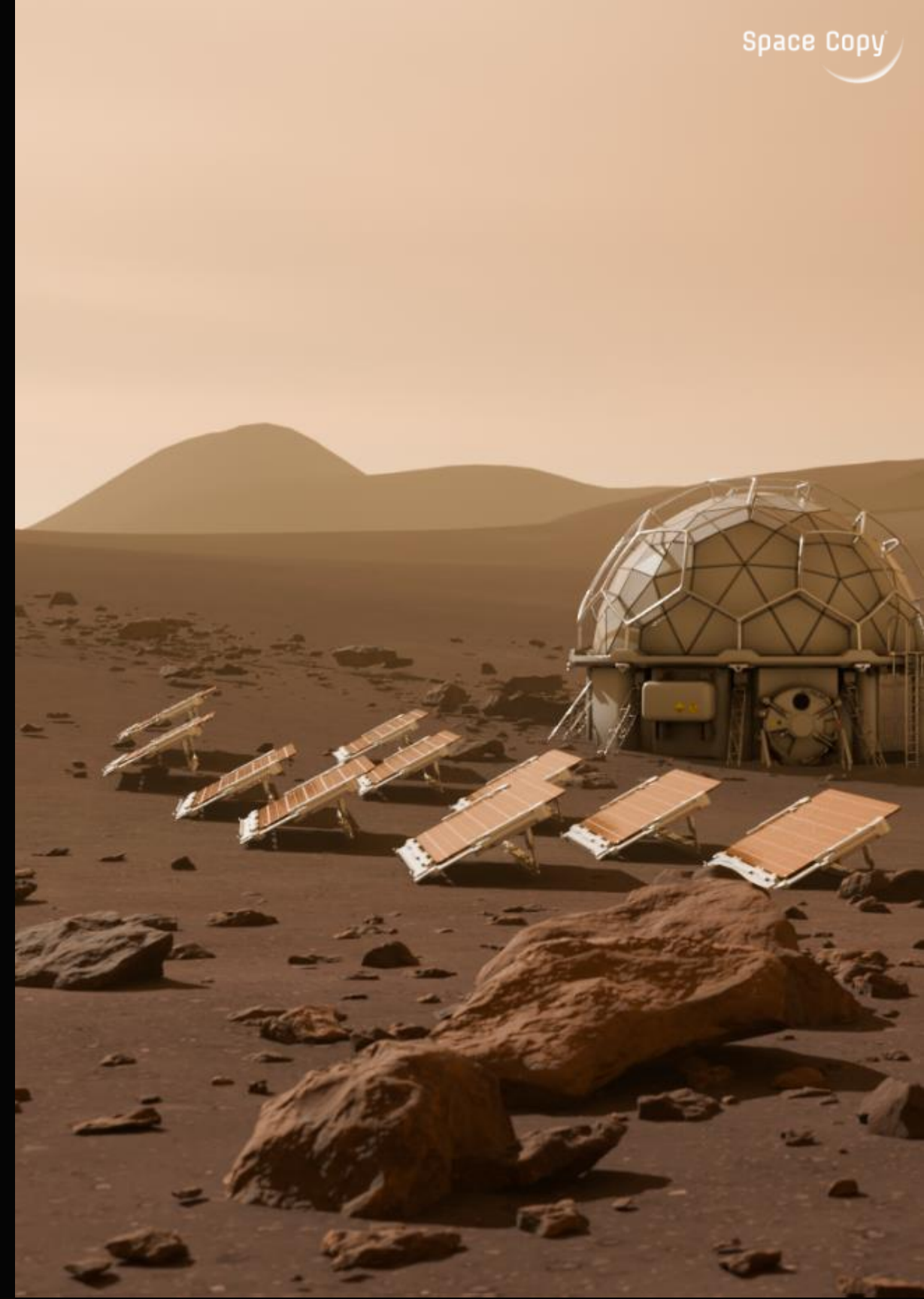
What Is In-Space Manufacturing (ISM)?

- In-space manufacturing is the practice of creating mission critical supplies, infrastructure, medicine, and more to support astronaut and robotic missions in orbit and on planetary surfaces outside of Earth.
- The most sustainable and scientifically compelling form of in-space manufacturing uses a process referred to as: in-situ resource utilization (ISRU), which is the practice of extracting valuable commodities from space to use as raw manufacturing feedstock.
- For construction applications on the Moon and Mars, lunar soil (regolith) is able to be extracted, processed, melted and fused together through 3D printing and additive manufacturing technology.



Defining The Space Economy:

- The space economy has a current value of \$464B USD. This is slated to increase to \$737B USD by 2031, and \$1.2T USD by 2040.
- The lunar manufacturing market is currently valued at \$1.5B USD. This is slated to increase to \$7.5B USD per year by 2030.
- The lunar economy is recognized globally as the most fast-paced growth induced economic market since the dot com bubble.
- The next generation of spaceflight can only be safely conducted if in-space manufacturing is widely developed and utilized. This notion is recognized by global industry leaders in space, government, academia, and industry.



Enabling Infrastructure Scalability Through ISM

- Precision tools
 - Small replacement parts
 - Pieces of equipment for drones, rovers, tanks, spacecraft, vehicles, etc.
 - Nuts, bolts, nails, screws
 - O-rings
 - Fasteners
 - Small load-bearing parts
 - Textiles
 - Trusses
 - Pipes
 - Rods
 - Scaffolding-like supports
 - Precision tools (wrench, screwdriver, hammer)
 - Larger replacement parts
 - Large load-bearing parts
 - Turbine blades
- And More...

Why Manufacture In Space?

Sending raw materials to the Moon is extremely costly, with a cost of

~\$443,333 per kg with an upper limit of \$1.2M USD per kg.

In-situ manufacturing reduces need to transport finished, heavier products.

Making tools and building materials locally using Space Copy's FDM and SLM technology can significantly reduce logistics costs by up to 70%.

Source: [Aquarius Reef Base Overview](#)

Source: [Defense Logistics: Preliminary Observations on Logistics Activities](#)

Source: [Astrobotic's \\$79.5M NASA contract for lunar payload delivery](#)

Source: [NASA's \\$199.5M Astrobotic contract for VIPER mission](#)

Source: [Big Supplies on Its Way to Arctic Military Bases | The Independent Barents Observer](#)

Capabilities Of Space Manufacturing



Speed



Produces rapid parts and consumables for onsite provisioning & reduces downtime impacts by <70%



Ease of Use



Space Copy specializes in closed-loop additive manufacturing and materials processing



Flexibility



Uses local, onsite materials to create infrastructure tailored to your operational needs.

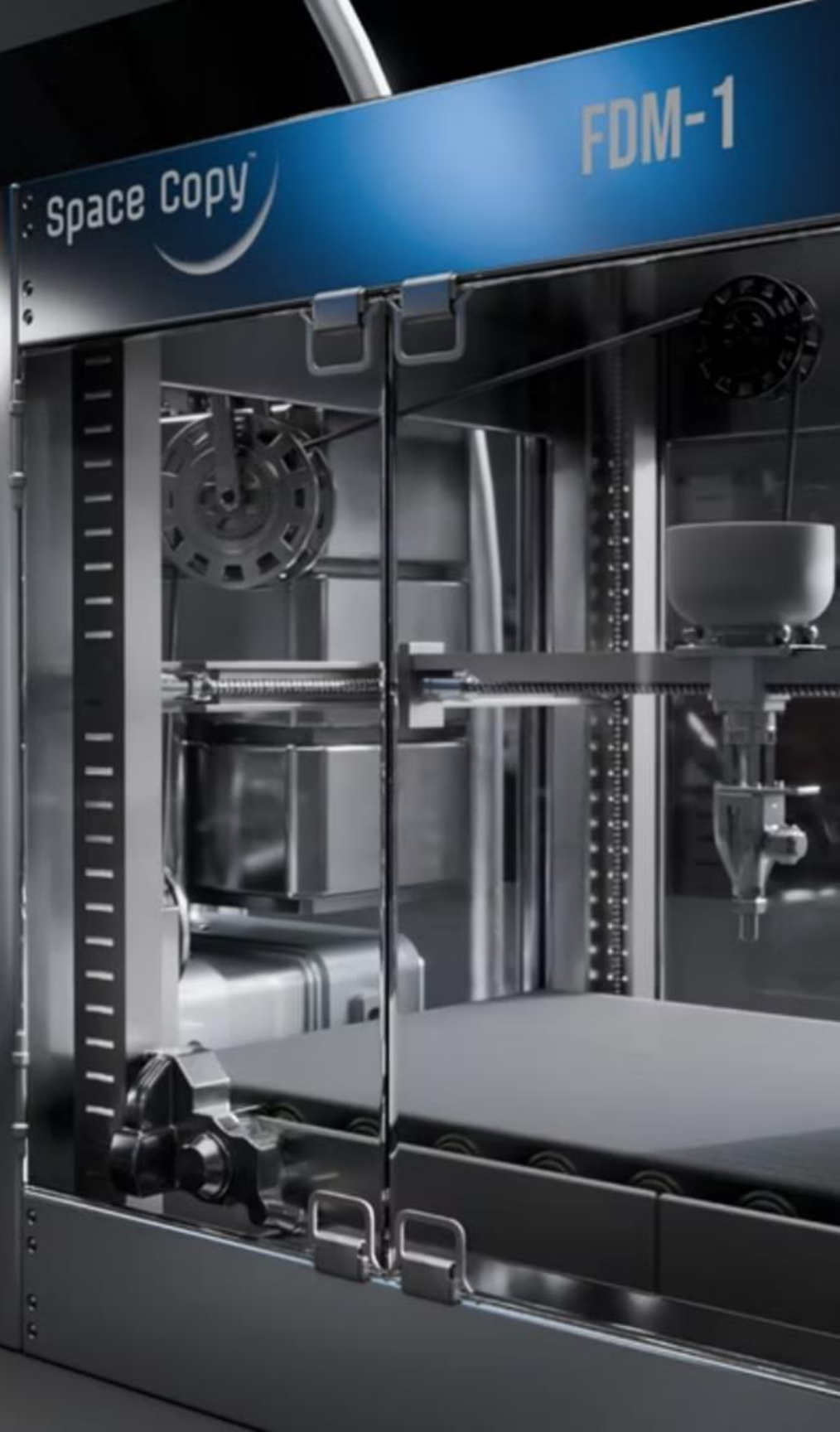


Cost Savings



Multipurpose operations management tool for integrated supply-chains

SC



About Space Copy:

Space Copy is an in-situ logistics and additive manufacturing company based in the US & Canada.

We are developing novel 3D printing systems for infrastructure development in extreme environments on Earth and in-space for civil government, defense and commercial customers.



Arctic



Desert



Subsea



Microgravity



Moon



Deep Space



Combat
Zones



Natural
Disasters



Construction
Sites

Space Copy can convert lunar regolith, soil, sand and recycled metals into usable infrastructure.



Repair Parts



Habitats



Launchpads



Critical
Supplies

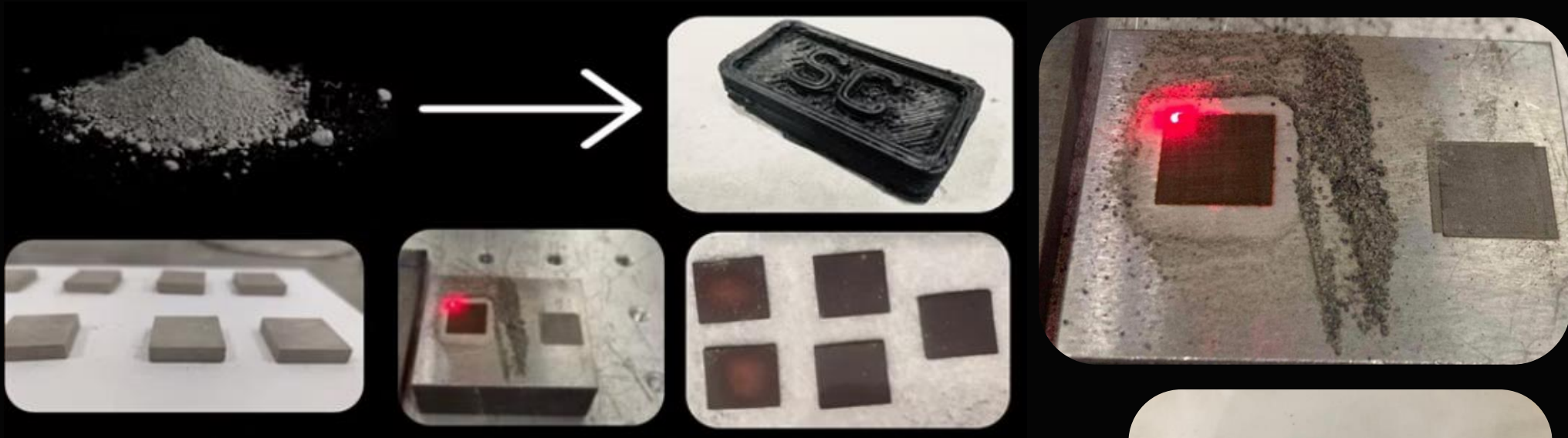
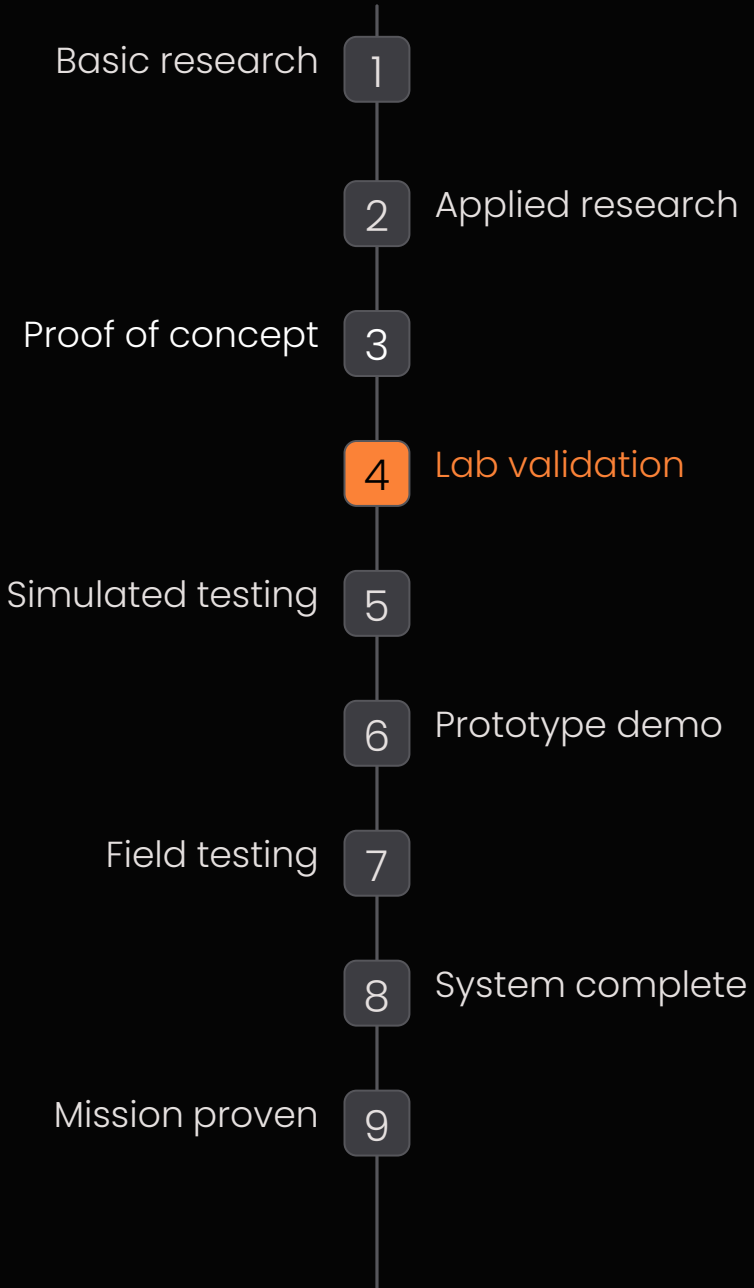


Pipes and
Beams



Precision
Tools

Technology Readiness Level

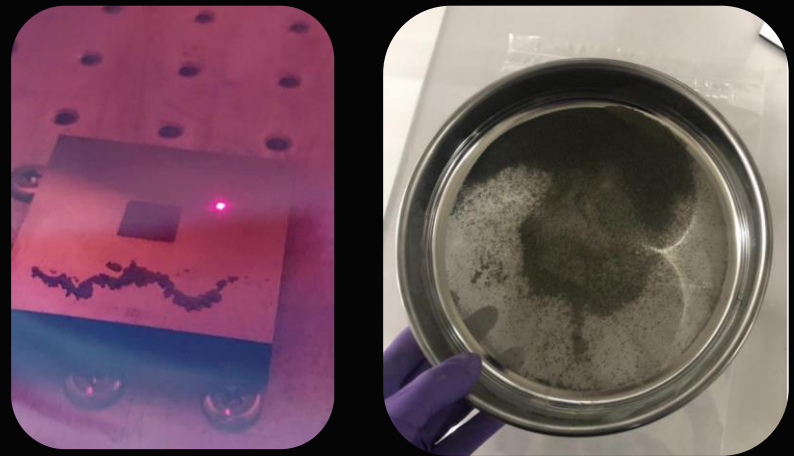


Accomplished:

- High density 3D parts generated through FDM, SLM, and sintering
- Custom lunar regolith simulant with improved granular uniformity Apollo 16 soil replica processed through beneficiation (pre-processing)
- Further structural and mechanical testing in-progress
- Successful bricks, tiles, and tools produced with 74% density

Upcoming milestones:

- Field testing in cislunar expected for 2025/26
- Arctic testing and deployment expected for 2026
- Federal contracts pending to advance MVP



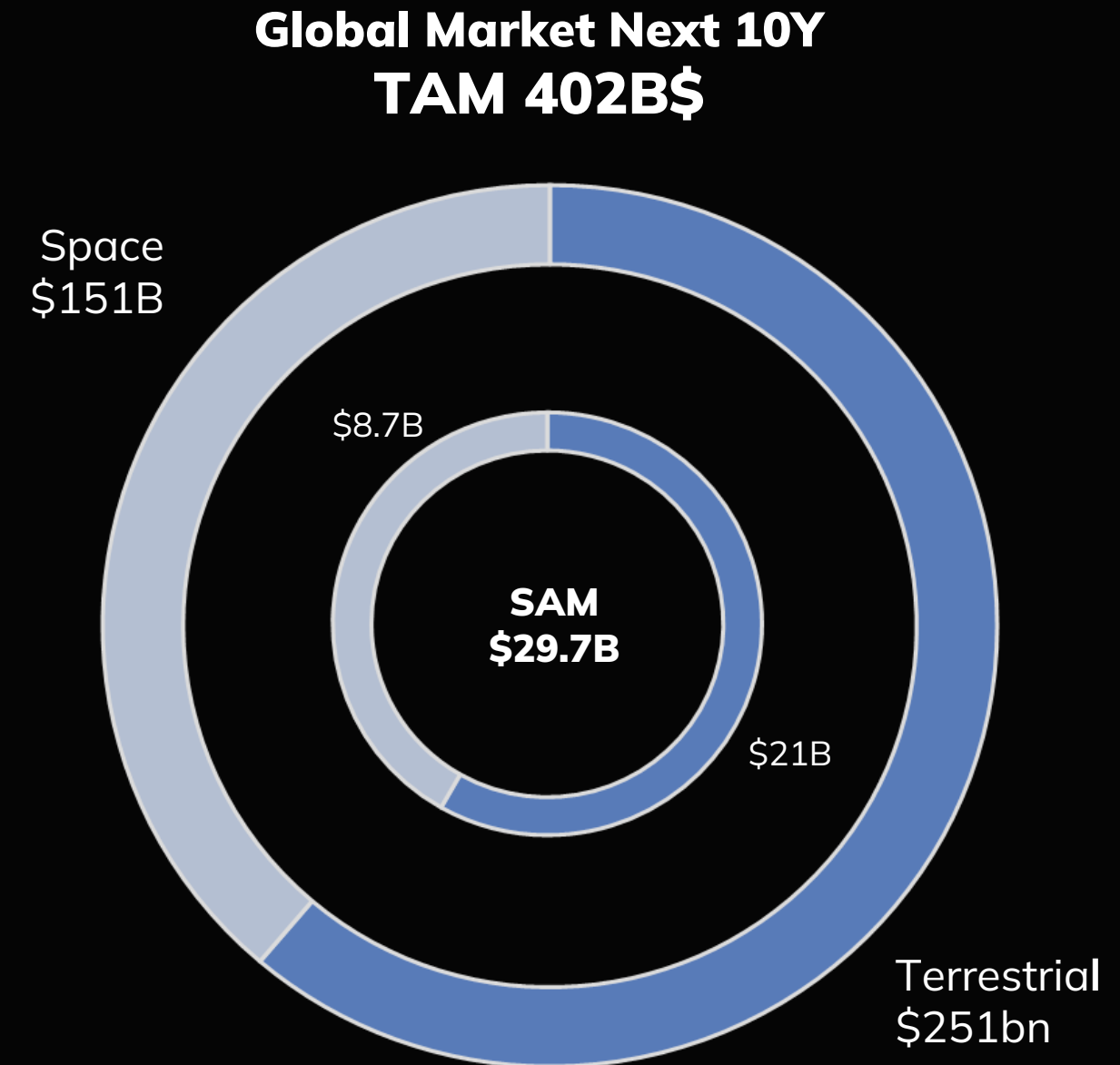
Market Size

Key Assumptions (space)¹

- Number of lunar missions over the next 10Y: 250-450
- Total revenue generated: next 10Y \$151bn
- 29% of missions related infrastructure: \$44bn
- Assuming 20% profit margin, infrastructure cost = \$35bn
- 50% assumed for maintenance: \$17.5bn
- 50% of this infrastructure spending by 2030: \$8.75bn

Key Assumptions (Terrestrial)²

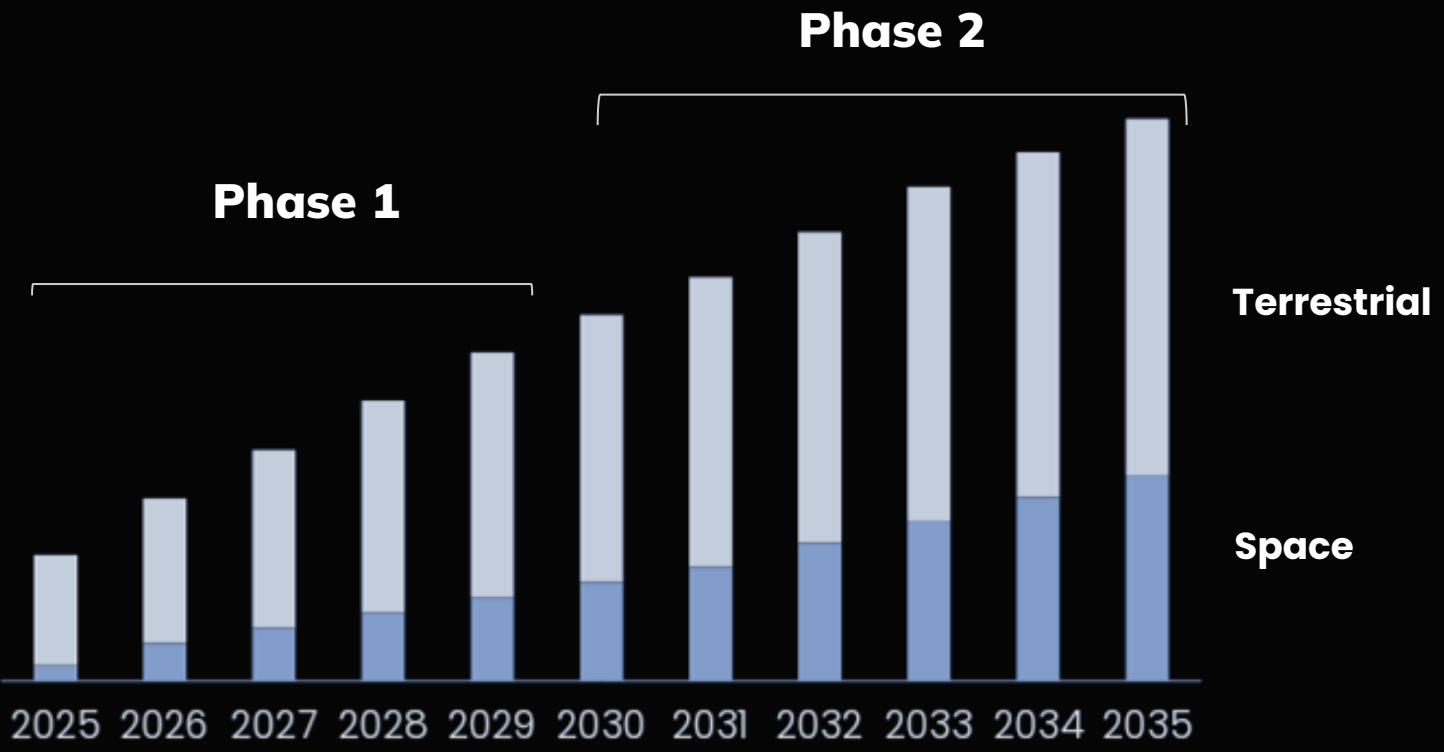
- Total DoD maintenance spending: \$251B
- Total number of Desert and Arctic NATO bases ~ 50
- Total yearly operational cost of Desert & Arctic NATO bases – \$12.5bn
- Total US DoD Maritime defence spending – \$212bn
- Total yearly operational cost of US DoD maritime maintenance ~ \$8.5bn



¹ Source : Novaspace, Analysis (Mason), 2024

Market Size

Total Addressable Market (TAM)



Phase 1

Market growth during prototyping and initial Earth commercial launch

Phase 2

Market growth leading up to lunar launches.

Insights:

“ISM is built upon the foundation of collaboration: by fostering innovation and breaking down barriers, we set the precedent for our global future.”

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Future Horizons Of ISM



TRL
Advances



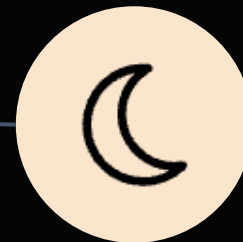
2025

Metal and plastics 3D printing validated on ISS by US and Europe.



2028

Commercial 3D printers available for testing on cislunar and lunar missions.



2031

Mass manufacturing of various tools, bricks, and support structures using regolith.

Scale & Grow

Manufacturing of structural pieces will reduce downtimes, enhance mission lifespans, and enable the potential of up to 70% cost savings.

Near-Term Objectives:

- Demonstrate material changeover flexibility
- Validate product strength of various parts & tools
- Prepare MVP for environmental demonstrations



Conclusion


In-space manufacturing holds the potential to revolutionize society's future by enabling sustainable space exploration, reducing Earth-based resource dependency, and driving technological innovation that benefits life both on and off our planet.



Thank You

Join Space Copy on our journey:

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