STARSMITH SPACE

WE MAKE HIGH-TEMPERATURE IN-SPACE MANUFACTURING COMMERCIALLY VIABLE

Optically heated manufacturing in orbit and on the Moon.



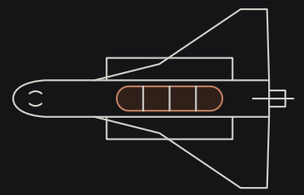
POWER & COST BOTTLENECK

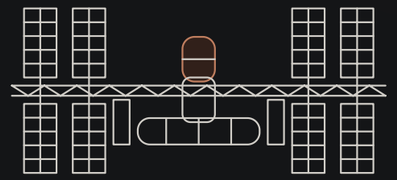
Proven quality

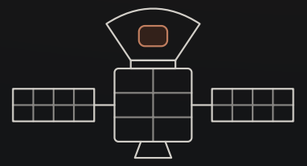
Decades of experiments on the Space Shuttle and the ISS prove higher quality in microgravity.

Cost and power held it back

The unit cost of this higher quality was too high, due to high costs and limited power supplies.







1981 Space Shuttle era starts

1985 Spacelab 3: crystal growth

1992 US Microgravity Laboratory

2000 ISS starts operating

2009 NASA and ESA furnace rack

2015 JAXA levitation furnace

2023 Commercial manufacturing

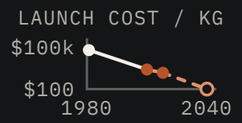
2024 First Varda return

THE GATE IS OPENING.

Starsmith is **a platform for high-temperature manufacturing in space**.

Launch

Launch costs keep shrinking, led by **SpaceX**.



Process

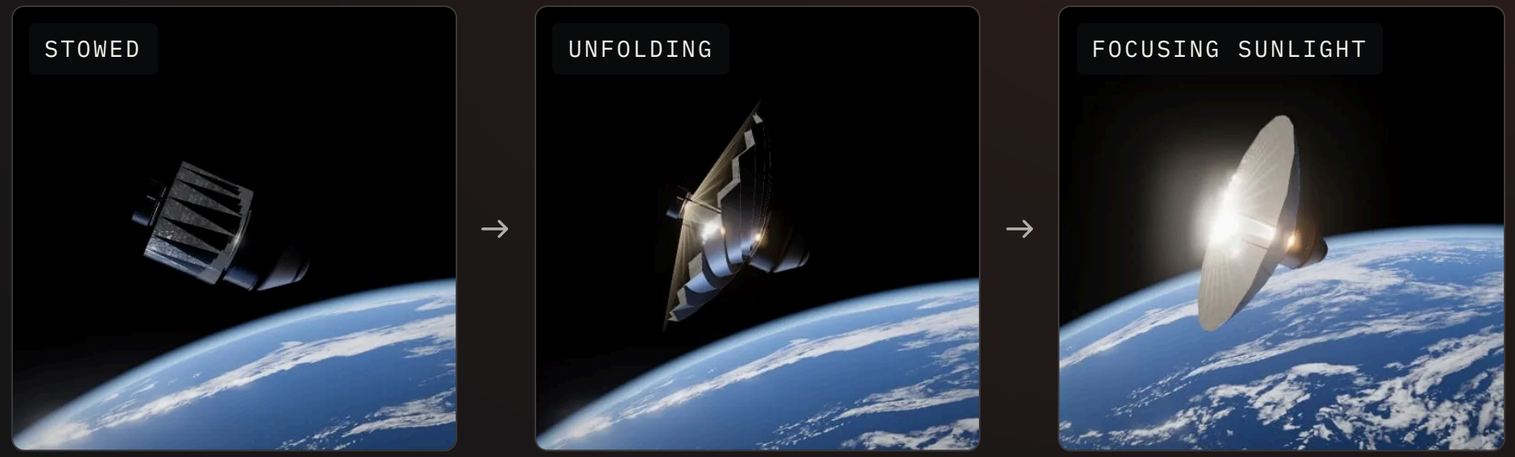
We use the Sun directly as a heat source, without conversion to electricity. We cut the cost of process heat **6 to 7.5 times**.

Re-entry

Technology and regulation advance, led by **Varda**.

6 TO 7.5 TIMES CHEAPER HEAT

Power system cost against silicon arrays.



3×

Efficiency

Solar arrays turn about **20%** of sunlight into heat. Our optics deliver about **60%** to the furnace, net of re-radiation.

5×

Light and compact

Folded film stows in **formats arrays cannot reach**, at about **a fifth of the mass** of silicon arrays.

Scalable

Up to 20 m

No scaling obstacle below 20 m: a **17.6 m** mirror delivers **200 kW** at **2,350 °C**, where the gap widens to **7.4 to 9 times**.

Passive

Less hardware

Arrays are wired into the spacecraft's bus. Our mirror is just film: **no cells, no electronics, no rare earths**.

Our concentrator technology is based on research by the Morphing Space Structures Lab (MSSL) at Stanford University.

MATERIALS GRAVITY HOLDS BACK.

Our platform, **their process**: we host seed growth processes that our partners can **grow further terrestrially**, multiplying the advances and profits coming from microgravity quality.

IN ORBIT



Power semiconductors

Ga_2O_3, AlN

Grown at **1,800 to 2,300 °C**, limited by crucibles and seed size.



Detector crystals

CdTe, CdZnTe, CdZnTeSe

Shuttle samples: **20 to 200 times fewer dislocations**.

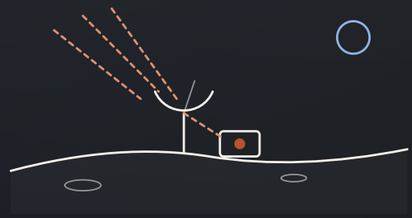


Laser crystals

Ti:sapphire

Convection spreads dopants unevenly, **capping crystal size**.

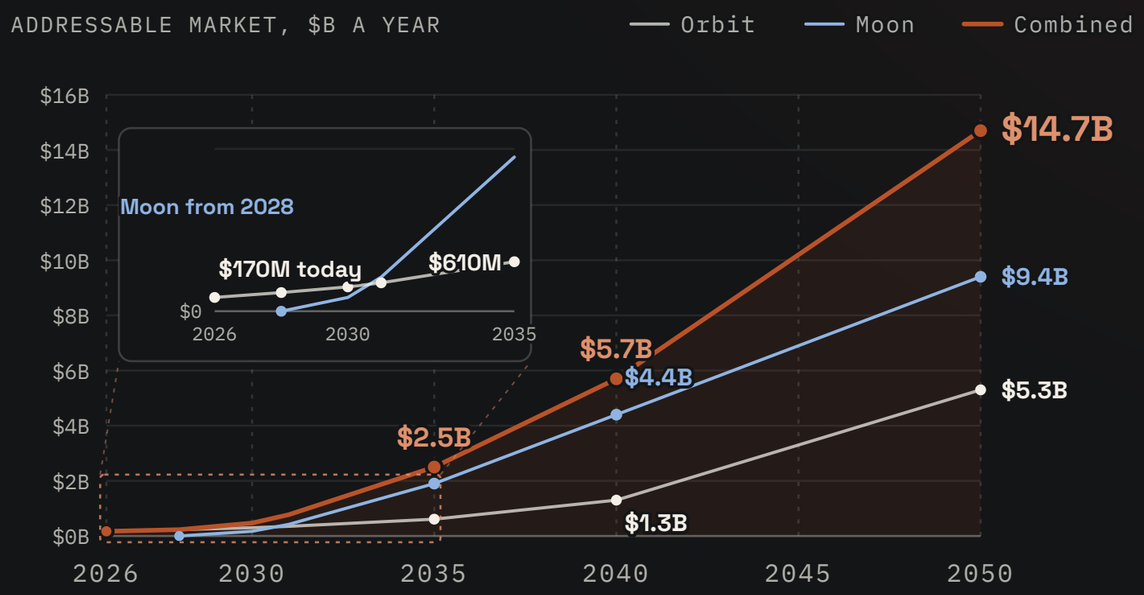
ON THE MOON



Lunar resources

Silicon and metals refined from lunar soil, **instead of launched from Earth**.

A $15B A YEAR MARKET BY 2050.



Orbit

The space-grown part of a $27B terrestrial crystal market by 2050: AlN, Ga_2O_3, detector and laser crystals.

Our share by 2050: $1.6B of crystals from our seeds, of which we earn 10%.

Moon

Resources, production, power and construction, growing with NASA's Moon Base plan. The alternative is launching it, at $200,000 to 1M per kg.

PwC's low case, $93.9B over 2026 to 2050. Our 15% share: $1.4B a year by 2050.

EVERYONE ELSE HEATS WITH ELECTRICITY.

HEAT SOURCE	CRYSTAL GROWERS CUSTOMERS / COLLABORATORS	STATIONS COLLABORATORS	FREE FLYERS COMPETITORS	END TO END COMPETITORS
CONCENTRATED SUNLIGHT			**Starsmith** Optically heated free flyer	
ELECTRICITY	**Terrestrial** **Industry:** Nitride Global, NextGEO, Tateho, MTI, Smelters **R&D institutions:** IKZ, Max Born Institute, Fraunhofer **In space** Astral Materials LOI United Semiconductors	Axiom Vast Voyager (Starlab) Blue Origin (Orbital Reef)	SpaceX Starfall Varda Rocket Lab (Photon) The Exploration Company Outpost Space	Space Forge Besxar

ORBIT FIRST. THEN THE MOON.

Ground demo

Opening of the **concentrator**, **furnace process** demos.

Cubesat demo

A deployable concentrator and a **first melt in orbit**.

Microsat demo

A bigger concentrator on a boom and the **first furnace processes**.

First collaboration with re-entry

The **first crystals grown in orbit** come home.

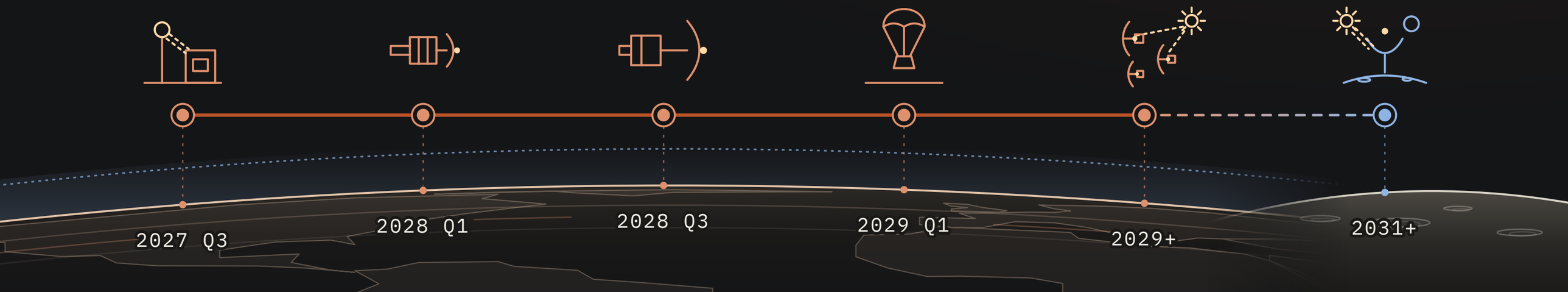
Production in orbit

Hosting partners' **high-temperature processes**.

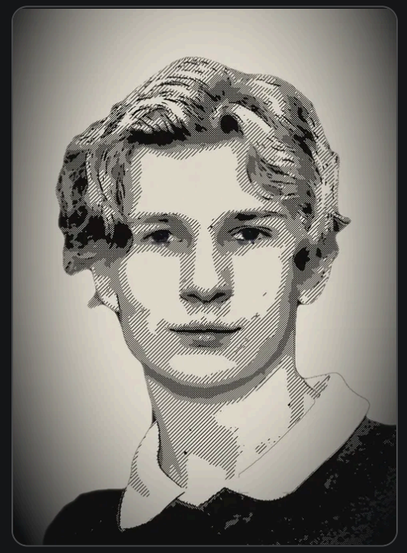
The lunar surface

Silicon and aluminium from regolith.

In parallel: demo furnace development in Hungary with the **University of Miskolc**.



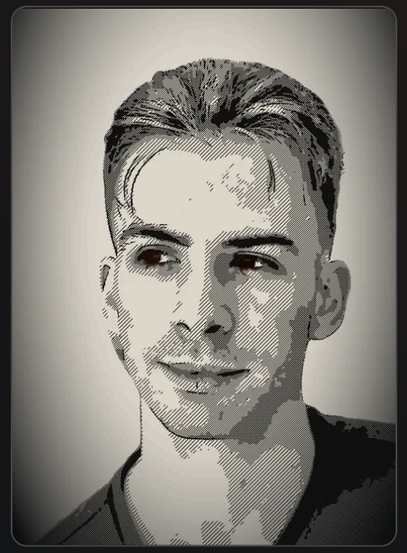
BUILT BY ENGINEERS.



Tamás Kotán

FOUNDER & CEO

Electrical engineer. Deep-tech expertise from multiple projects, one supervised by a Nobel laureate.



Massimo Piazza

CO-FOUNDER & CTO

Space engineer. 6+ years in the industry, worked on SpaceX launch campaigns.



Jason Schmitt

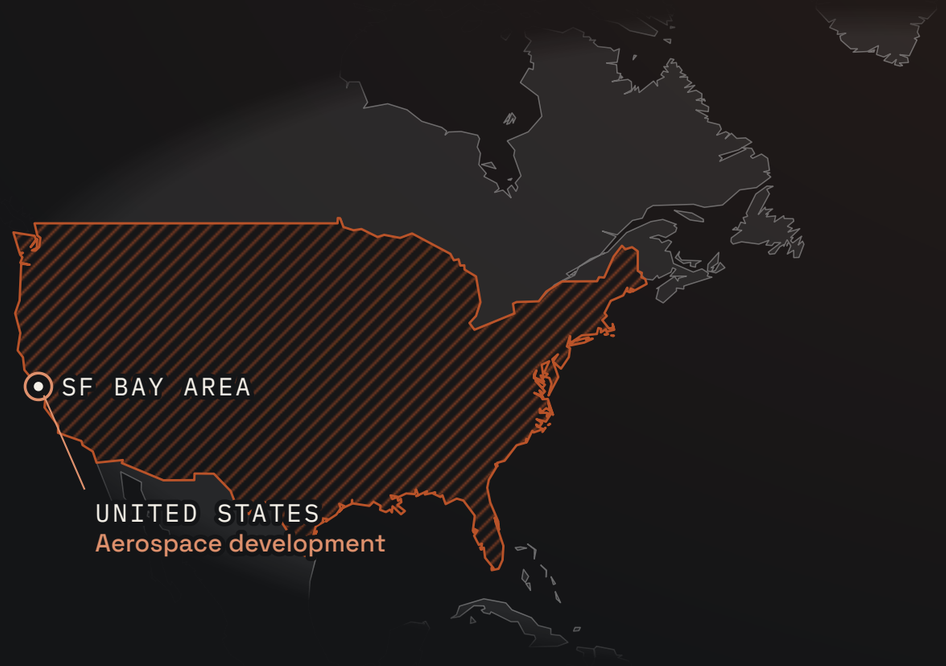
ADVISOR / VP R&D, NITRIDE GLOBAL

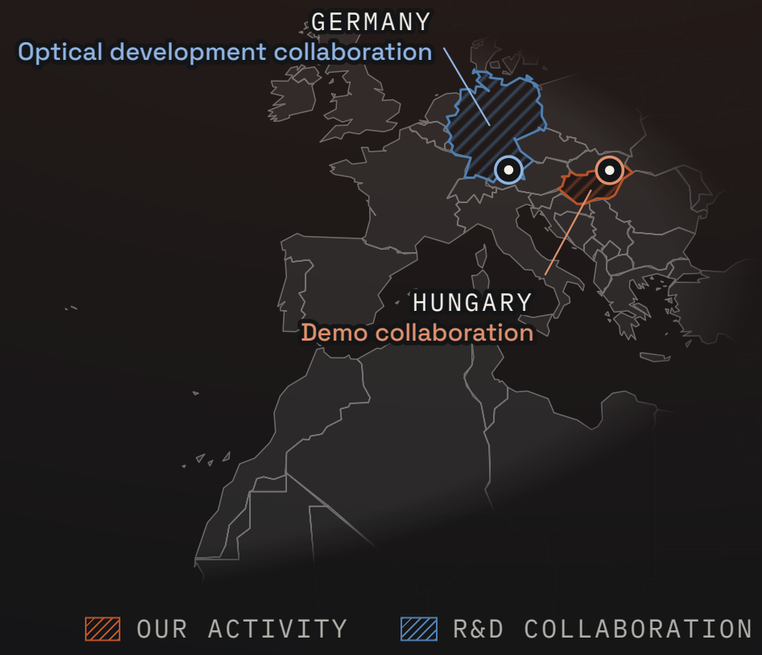
30 years in crystal growth. Designed a space furnace with Axiom Space and NASA.

WE ARE SEEKING

$3M to 5M

Be the **first** to help us reach space.





Reach out ↗

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