



ELEVATION
SPACE

- 1 Company Overview**
- 2 Our Service – ELS-R –**

Company Overview



ElevationSpace is a space startup company that originated at Tohoku University based on the technology of Yoshida and Kuwahara Laboratory at Tohoku University, aiming to create a world where everyone can live in space.

We will become a leading company in space architecture by realizing Japan's first space hotel in the 2030s.

ElevationSpace Inc.

Establishment : February 3rd, 2021

Representative : Ryohei Kobayashi

Number of members (Including interns, etc.) : 21

Headquarters location :

enspace, 1-4-9 Kokubun-cho, Aoba-ku, Sendai City, Miyagi

Ryohei Kobayashi

Co-Founder and CEO

His encounter with space architecture at the age of 19 has changed his life. He has been involved in researching on space architecture for The next generations at Graduate School of Tohoku University. He started ElevationSpace after completing internships at OUTSENSE (a startup company for space architecture) and in the Space Department of Shimizu Corporation.

Awards Received (Space Architecture)

- Mars City Design Challenges 2019- 2nd place
 - *Marschitecture (Mars architecture design) international competition affiliated with NASA
- The 5th Space Architecture Award – 1st place
 - *The largest space architecture competition in Japan

Educational Background

March 2020: BA in Civil Engineering and Architecture
at Tohoku University

March 2022: MA in Aerospace Engineering
at Tohoku University

Our Mission

Create a world where everyone can live in space, and elevate your future.

For us humans, it is essential for our survival that we expand our domain of existence to the Moon, Mars, and even beyond our solar system.

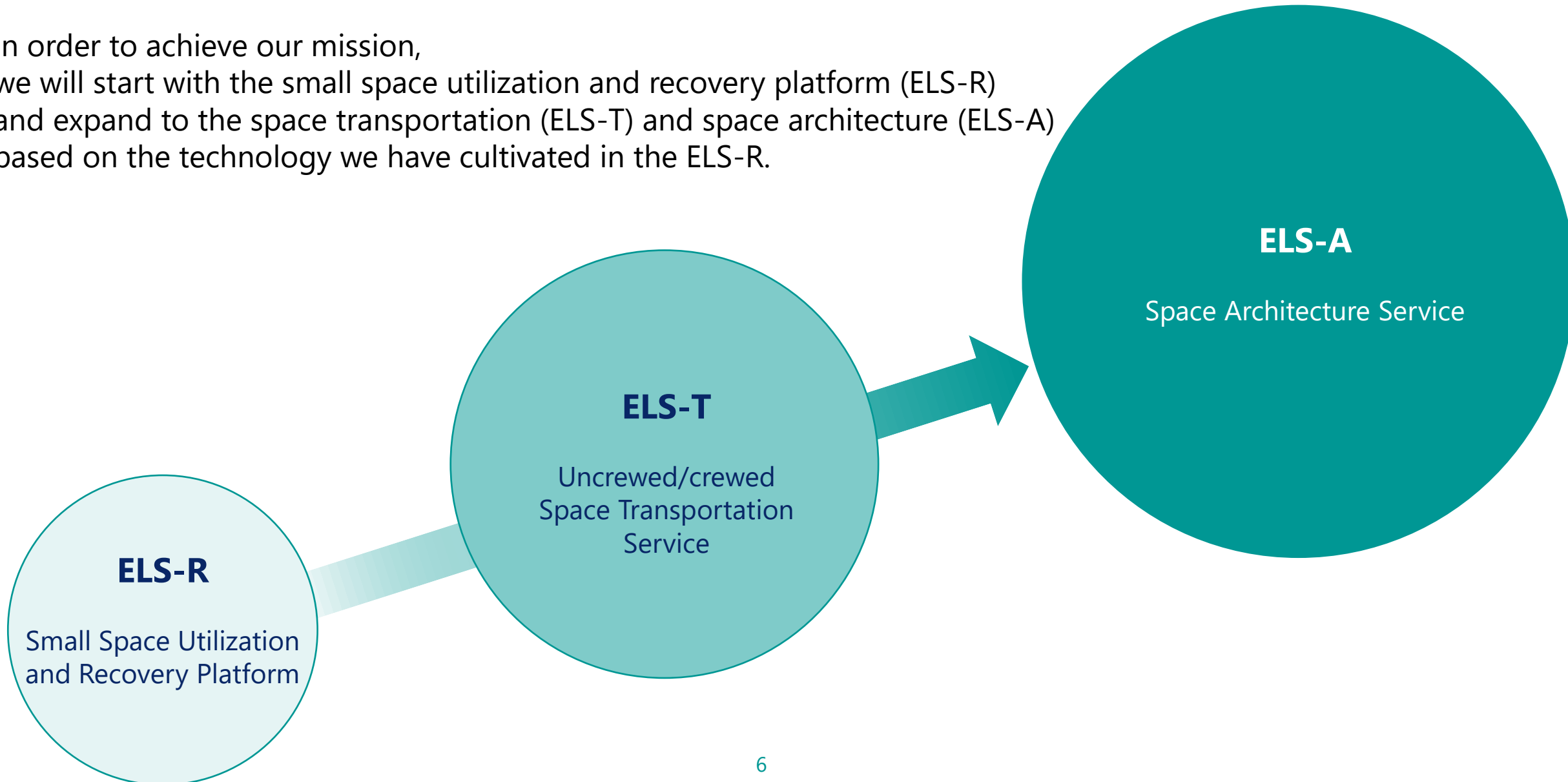
Furthermore, space has already formed essential infrastructures for our daily lives, such as weather forecasting, GPS, and communications. It is crucial to sustain this space infrastructure and improve our lives on Earth. To this end, it is necessary to increase space utilization and reduce the construction cost of space infrastructure.

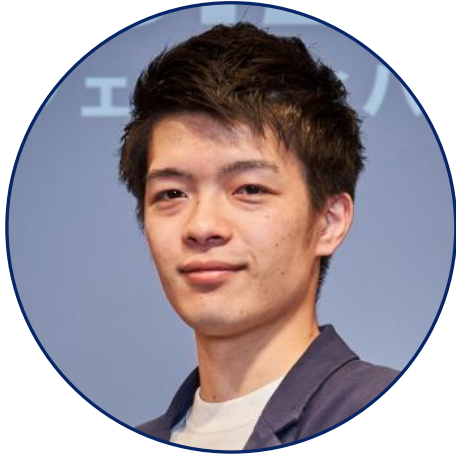
We believe that the goal is a world where everyone can live in space.

ElevationSpace will be a company that enriches the future of humankind and gives dreams and hopes to everyone through creating a world where everyone can live in space.

Our Roadmap

In order to achieve our mission, we will start with the small space utilization and recovery platform (ELS-R) and expand to the space transportation (ELS-T) and space architecture (ELS-A) based on the technology we have cultivated in the ELS-R.





Co-Founder and CEO
Ryohei Kobayashi

His encounter with space architecture at the age of 19 has changed his life.

His major was space engineering and architecture. He studied satellites and large space structures and completed a Master's program in Aerospace Engineering at Tohoku University.

He ranked first in Japan and second in the world in space architecture.



Co-Founder and CTO
Toshinori Kuwahara

Associate Professor in the Department of Aerospace Engineering at Tohoku university

He engaged in the research, development, and operation of many nano-satellites.

He works as Technical Adviser (Ex CTO) at ALE Co., Ltd, and Nakashimada Engineering Works, Ltd. Currently, he is the Chairperson at UNISEC Japan.



Technical Advisor
Yasuhide Watanabe

Professor at Aichi Institute of Technology

He engaged in research and development focusing on re-entry technology at JAXA and DLR.

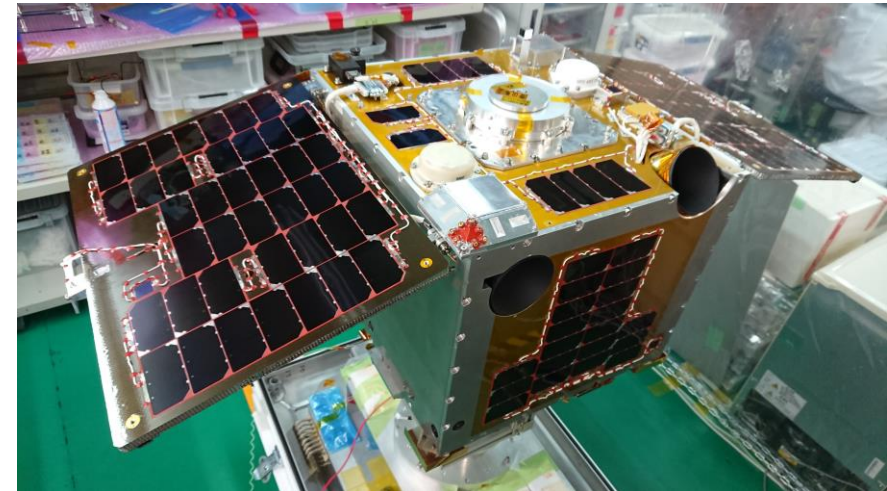
He led the development of a small re-entry capsule aboard the HTV, the first Japanese cargo recovery from the ISS.

Overview: Kuwahara Lab at Tohoku University

- It is a top-class quality space lab for developing satellite in Japan.
- Currently, it has launched more than **15 satellites**.
- It has received numerous awards and recognitions from the Japanese Government and JAXA.

This lab wholly goes through the processes of developing satellites

- Cleanroom
- Tohoku University ground station
- Control room
- Analysis Software



History of ElevationSpace

November 2019
Formation of ElevationSpace

February 2021
Demutualization

June 2021
Raised approximately \$260,000 in pre-seed funding

Raised from Japanese VC and prominent angel investors.



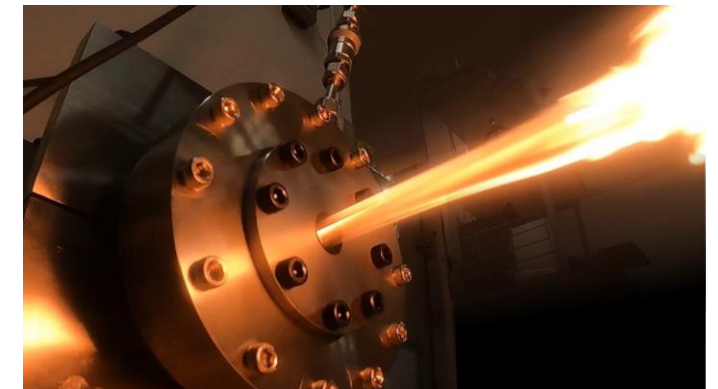
November 2021
Appointed Dr. Yasuhide Watanabe as a technical advisor

March 2021
Raised approximately \$45,500 by crowdfunding

September 2021
Started joint research on a hybrid thruster with the world's highest performance

February 2021
Received WeWork award at TOHOKU GROWTH Accelerator

December 2020
Selected as a Silicon Valley Selection in Next Innovator sponsored by Japanese Government.



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Current Status of Space Environment Utilization

**Microgravity
Environment
unique to space**

The microgravity (weightlessness) environment unique to space is used in a wide range of applications, from experiments necessary for human advancement into space research that contributes to life on Earth, such as drug discovery.

**Transportation of
8,000kg of
experiment goods**

The United States, Japan, Europe, and Russia, among the ISS participating countries, transport experiment-related payloads. Japan carries more than 900 kg of experiment-related payloads every year.

**Japan spends
\$170M to \$350M
on the ISS annually**

The annual budget for ISS as a whole is approximately \$7 billion, and Japan spends about \$170 million to \$350 million annually, mainly for the operation of the Kibo laboratory. More than half of this amount is spent on experiments.

1

The limitations on available countries

Space emerging countries which not involved in ISS cooperation do not have enough opportunities to conduct experiments in space.

2

Difficulty of use

The use of space stations on the crew is subject to extremely strict safety standards, and some experiments are difficult to conduct. Even if it were available, the development requirements are quite stringent, so the time and cost to launch would have to be spent considerably.

3

The plan to end ISS operation in 2030

NASA has announced plans to end ISS operations and enter the atmosphere at the end of 2030 due to the deterioration. And the space utilization platform itself will cease to exist.

ELS-R

**ELS-R is Small Space Utilization and Recovery Platform.
It allows everyone to access the utilization of the space environment
instead of the space station.**



Service Flow

Users only need to prepare the payload.

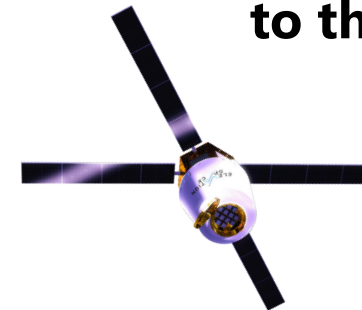
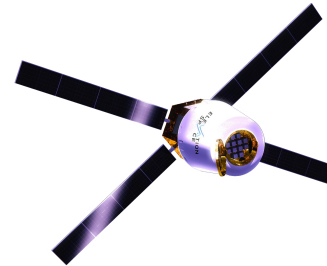
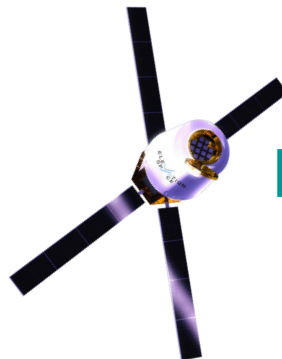
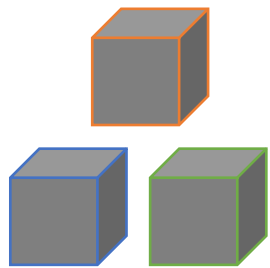
③ **Conduct experiments etc. in the satellite (uncrewed)**

② **Launch the satellite**

④ **Return to Earth (Re-entry)**

① **Put the payload on the satellite**

⑤ **Recover the satellite
& deliver the payload
to the customer**



Atmospheric Re-entry Technology

The world's leading technology of spacecraft, that comes back to earth without burning up in the atmosphere



Application Examples

- Transportation of cargos and crews to space station
- Space Travel
- Earth Return Vehicle from Deep Space

Services that will utilize space environment in 2030

Small Satellites can provide better service in space experiments.

	Small-Uncrewed Satellite	Crewed Space Station
Player	ElevationSpace / Varda Space Industries / Space Forge ...	Axiom Space / Sierra Space / Nanoracks
Cost	Inexpensive	Inexpensive
Frequency of Use	High frequency (Launch small satellites)	Less frequency (Launch large crewed spacecraft)
Lead Time	Short (• Easy to pass review process due to lower safety standards • Easy to prepare for due to a small number of users)	Long (• Complications of the review process due to high safety standards • Difficult to prepare for due to a large number of users)
Experimental Constraints	<ul style="list-style-type: none"> • Large-scale experiments : impossible • Experiments requiring human hands : impossible • Dangerous experiments : possible • Experiments with simple equipment : possible 	<ul style="list-style-type: none"> • Large-scale experiments : possible • Experiments requiring human hands : possible • Dangerous experiments : impossible • Experiments with simple equipment : impossible

Step 1 ELS-R100

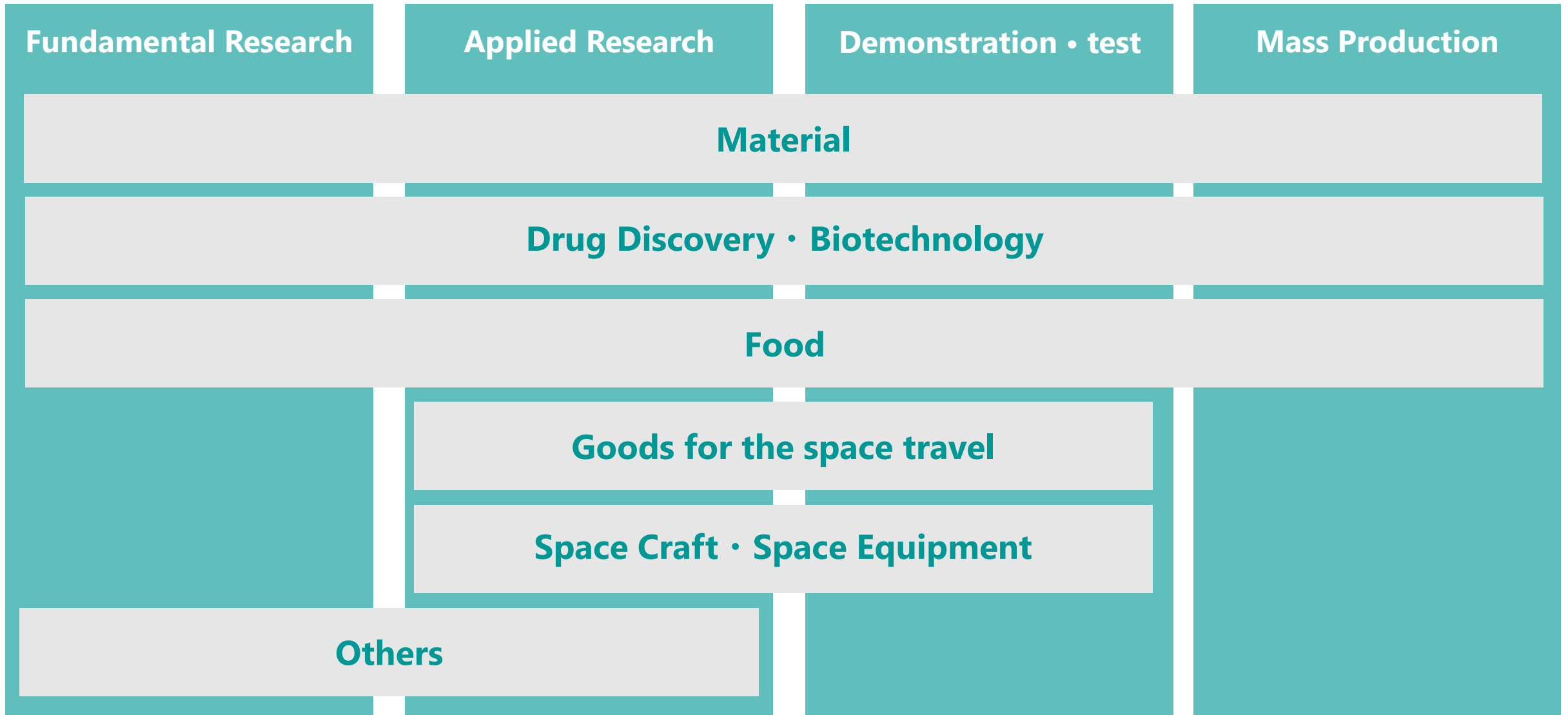
Purpose : to demonstrate
the technology
Launch : FY2023
Size : 150kg

A satellite with solar panels is shown in orbit above a dark, textured surface, likely the Earth's surface from space. The satellite is white with gold accents and has "ELEVATION SPACE" written on its side.

Step 2 ELS-R1000

Purpose : to provide service
Lunch : FY2026
Size : 1000kg

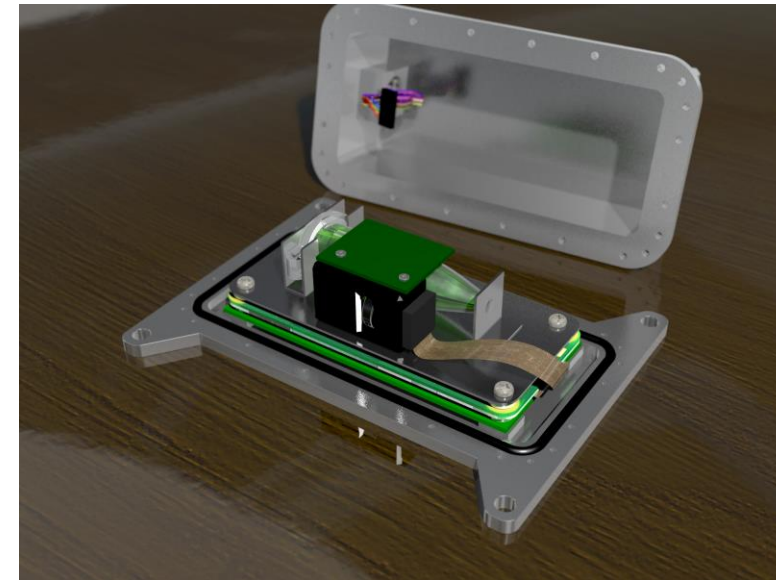
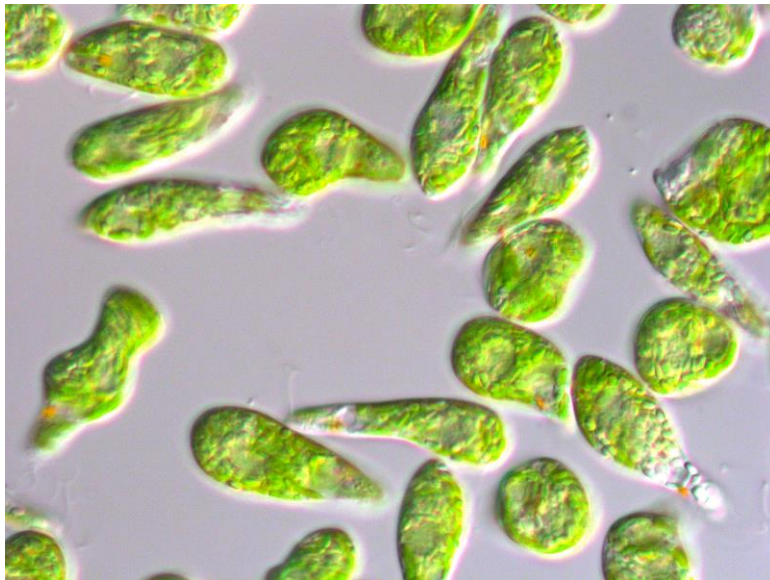
Target



Co-creation activities with Euglena Co. for space experiments

To investigate the effects of the space environment on the cultivation of the microalgae Euglena, the microalgae Euglena will be loaded in ELS-R100, a technology demonstration satellite scheduled for launch in 2023.

The experiment will observe growth and collect data in the satellite. In addition, we will recover the capsule with the microalgae Euglena in a live state. And then, the DNA changes will be investigated. It aims to use them as food in space in the future.





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