Starlab Space Station

UNLEASHING THE NEXT GENERATION
OF SPACE DESTINATIONS

The International Space Station is set to be decommissioned in 2030.

- 25 YEARS
- 270+ ASTRONAUTS
- 4,000+ INVESTIGATIONS

- Research onboard the International Space Station has benefitted life on Earth and laid the groundwork for future deep-space missions.

Post-ISS Problem: Once deorbited, research and commercial product and services markets have no destination for valuable microgravity projects.

National space agencies and businesses need full capability and continuity of space capabilities.

Unleashing the **Next Generation** of Commercial Space Stations

- A **global joint venture and network of partners**, ensuring a continued human presence in LEO and a seamless transition of microgravity research from the ISS into the new commercial space station era
- An **AI-enabled** space station designed to facilitate scientific discovery and technological advancement in space through its advanced, **user-driven design** and robust capabilities

Competitive Advantage

JV PARTNERSHIP

- Experienced industry leaders reduce execution, technology and funding risks
- Cost transparency driven by commercial cost matching
- Each global partner represents a large, existing space station user and opens opportunities for international demand and funding

TECHNOLOGY

- Modern design leverages advanced technologies, energy efficiency and AI-enabled science and manufacturing
- Palantir's software and AI optimize operations and reduce maintenance costs

SINGLE LAUNCH

- Starlab is the only station that requires only one launch to be fully operational
- Single-launch solution lowers costs, enables competitive pricing and eliminates complex in-space assembly

VOYAGER	AIRBUS	Mitsubishi Corporation	MDA SPACE	Palantir
Payloads and hardware	**Human space infrastructure**	**Hardware and supply chains**	**Space robotics**	**AI and software**
Largest commercial user on ISS Owns and operates the only private infrastructure on ISS	Technical design and engineering services Constructing Starlab's habitat	Accelerating terrestrial product development with space research	External robotics, robotics interface and robotic mission operations	Enterprise-wide software data management to enhance operations AI/ML payload integration

Proven Space Operations and Technical **Expertise**

VOYAGER

Payloads & Hardware

2016: Nanoracks deployed the 100th CubeSat from the ISS

2020: Acquired Nanoracks that specializes in CubeSat payload deployment

2020: Bishop Airlock launched to ISS

2023: Established Starlab with Airbus

AIRBUS

Human Space Infrastructure

2000: Integration of several space initiatives formed into Airbus, Europe's first consolidated space expert

2015: Began building European Service Module for NASA's Orion spacecraft

2025: Secured ESA contract to build part of the Rosalind Franklin Mars rover

Mitsubishi Corporation

Hardware & Supply Chains

1994: Participated in development of the H-II rocket, Japan's first domestically developed liquid-fuel launch vehicle

2008: Kibo, the Japanese Experiment Module designed and manufactured by Mitsubishi, is added to the ISS as first Japanese manned space facility

MDA SPACE

Space Robotics

1981: Developed Canadarm, the Shuttle Remote Manipulator System used on NASA's Space Shuttle

2008: Built Dextre, a two-armed robot that performs delicate maintenance tasks on the ISS

2020: Awarded contract to build Canadarm3 for NASA's Lunar Gateway

Palantir

AI & Software

2020: Signed first contract with Space Force to deliver data-crunching in space

2021: Expanded partnership with Space Force and Air Force by providing software for DAF mission

2024: Entered partnership with Voyager to apply AI and ML capabilities to space missions

NORTHROP GRUMMAN

Logistics & Exploration

2013: Developed the Cygnus spacecraft for continued ISS missions

2021: Received NASA's CLD Phase I award for developing the commercial replacement for the ISS

2023: Northrop exited CLD and joined Starlab

Station **Current Status**

On-going & Completed

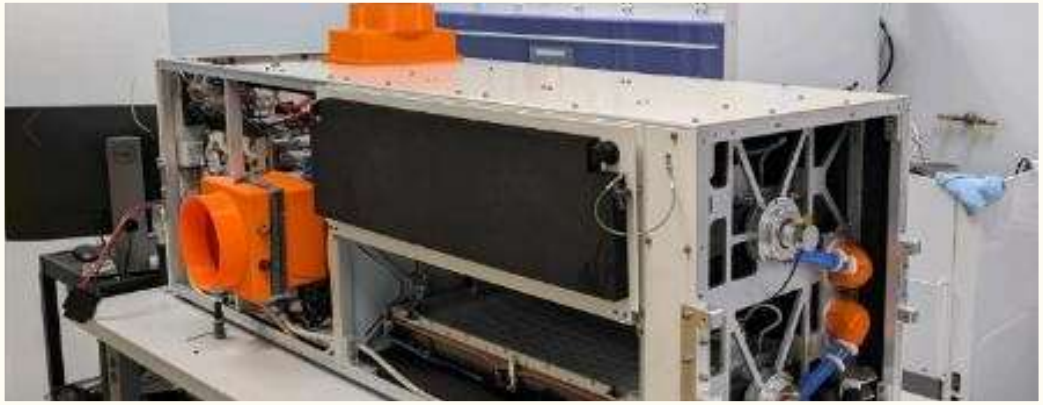
2024

- Q3: IOR and SIR successfully completed
- Q4: PDR successfully completed

2025

- Q1: Risk Reduction, ECLSS AUP HW delivered early
- Q1: Optical Link Demo Mission review completed
- Q1: Phase 1 safety reviews at subsystem levels completed
- Q2: Payload MCC Completed
- Q2: System Integration Lab in development
- Q3: Structural Test article in progress

Upcoming



- Cygnus and HTV options for PPE augmentation trades
- Cygnus Docking Demonstration
- Hi-fi mockup under construction and will be operational in JSC building 9
- System Equipment and Payload Racks builds for SIL integration and test
- Critical Design Review

Specifications

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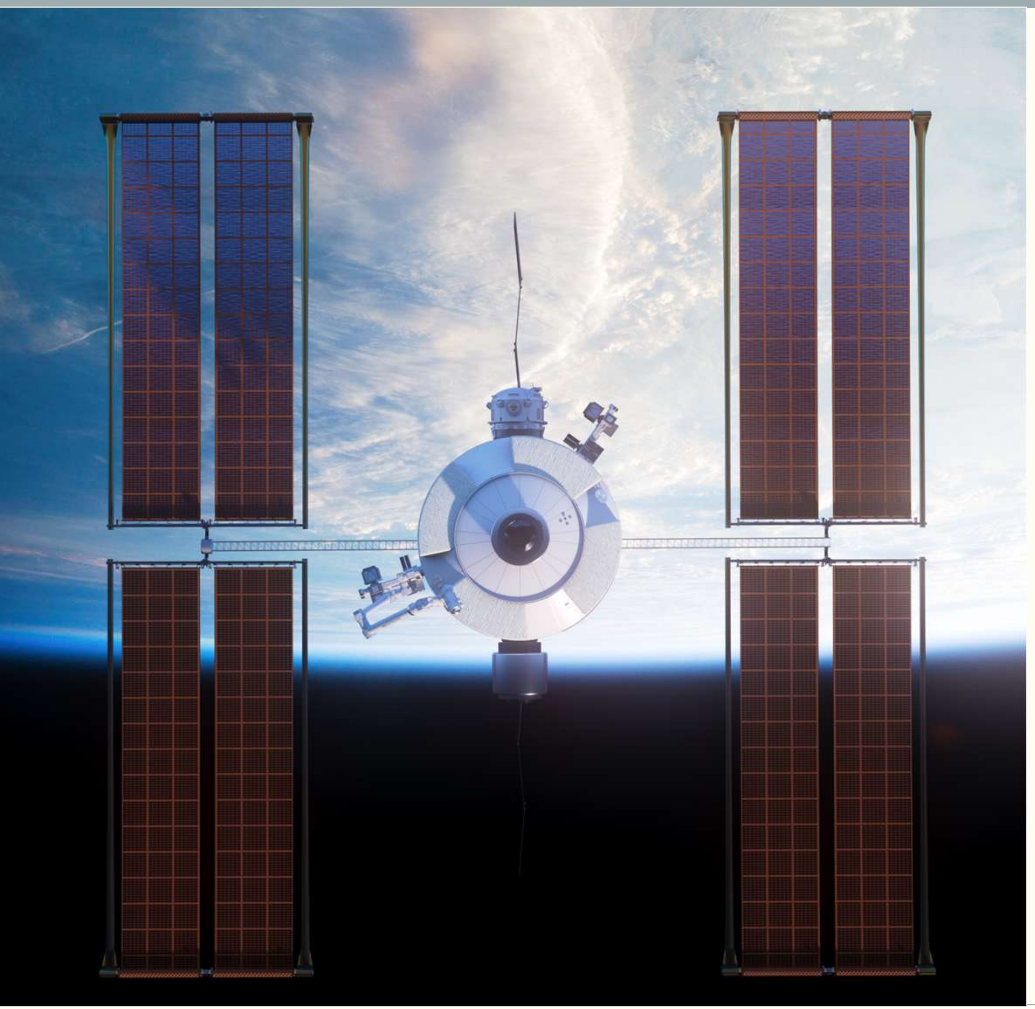
Station **Specification Overview**



LAUNCH CONFIGURATION

- Altitude: 500 km
- Inclination: 45° circular orbit

DEPLOYED

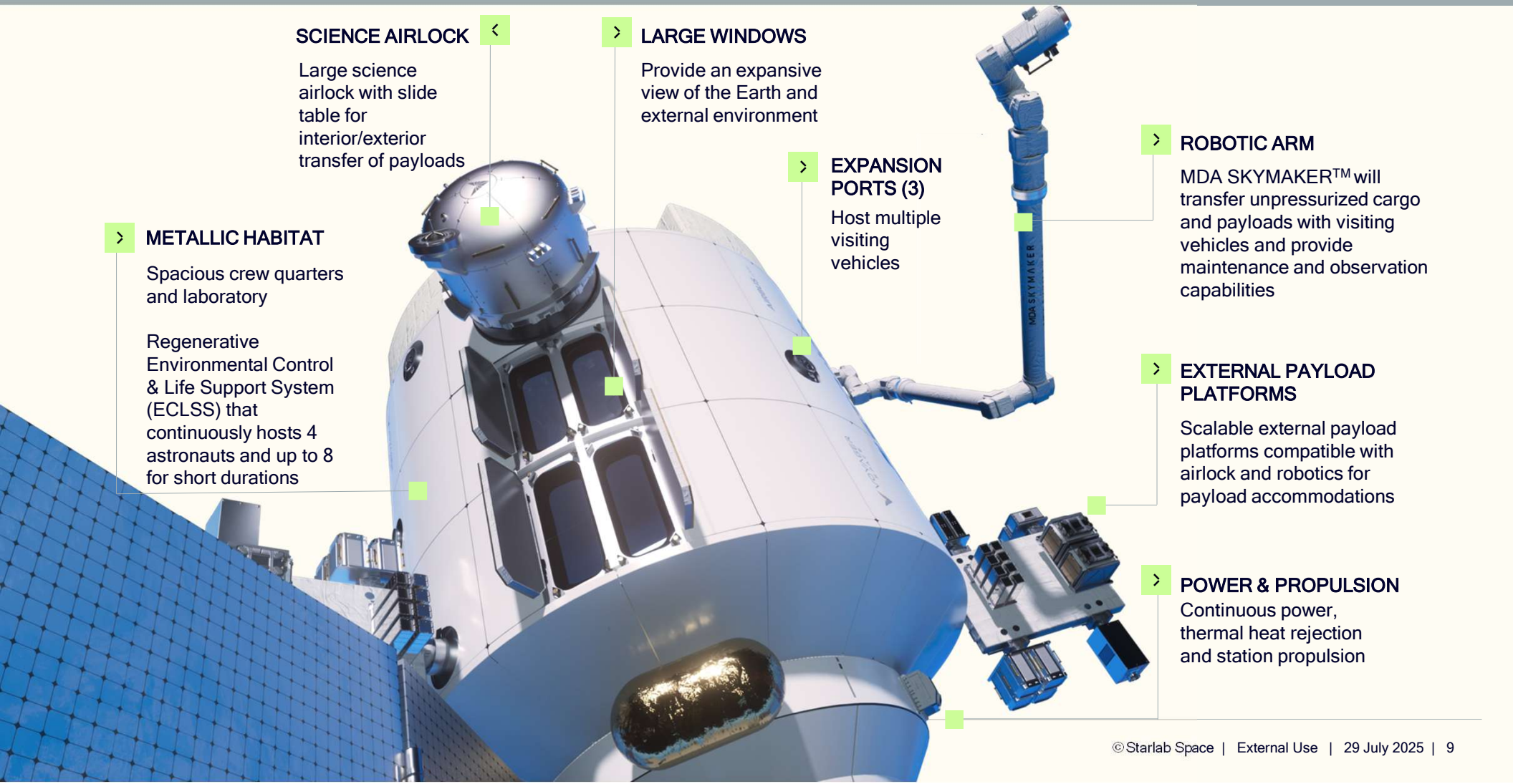
- 12 kW average payload power, internal and external
- 3 standard IDSS docking ports
- >2.5 Gbps communication to ground at Final Orbital Capability

OPERATIONAL

- Science airlock

- 2 external payload platforms for 18 external payloads
- External robotics to service external payloads
- 4 crew continuous presence and 8 crew during turnover

Key **External Features**



SCIENCE AIRLOCK

Large science airlock with slide table for interior/exterior transfer of payloads

LARGE WINDOWS

Provide an expansive view of the Earth and external environment

EXPANSION PORTS (3)

Host multiple visiting vehicles

METALLIC HABITAT

Spacious crew quarters and laboratory

Regenerative Environmental Control & Life Support System (ECLSS) that continuously hosts 4 astronauts and up to 8 for short durations

ROBOTIC ARM

MDA SKYMAKER™ will transfer unpressurized cargo and payloads with visiting vehicles and provide maintenance and observation capabilities

EXTERNAL PAYLOAD PLATFORMS

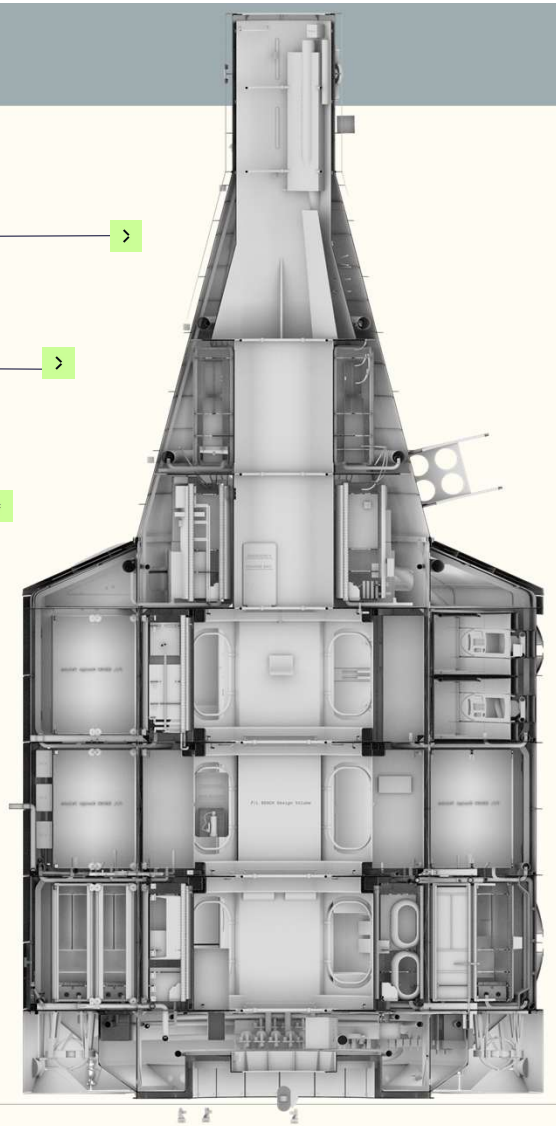
Scalable external payload platforms compatible with airlock and robotics for payload accommodations

POWER & PROPULSION

Continuous power, thermal heat rejection and station propulsion

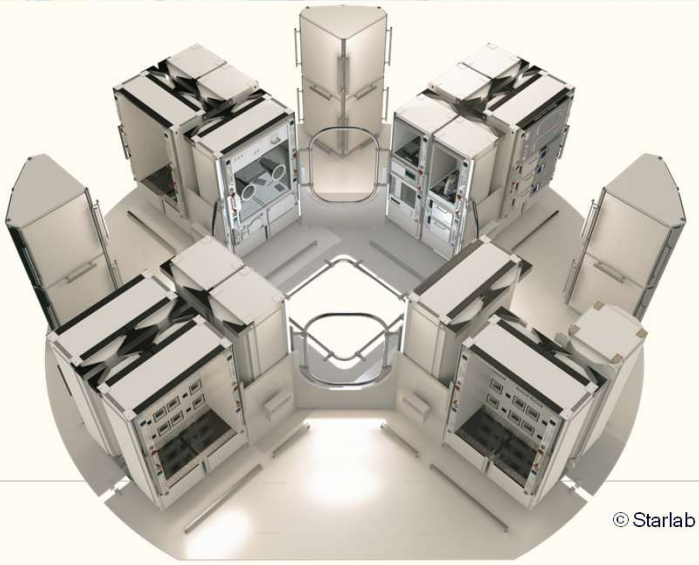
Station **Cross Section**

Deck 6	Stowage
Deck 5	Stowage
Deck 4	Stowage
Deck 3	Crew Quarters, Galley, Earth Viewing and Living Areas, 2 Internal Payload Platforms
Deck 2	Payload Bays, Orbital Laboratory
Deck 1	System Bays, Exercise Area, Lavatory, Hygenie Area
Deck 0	Subsystems, Power Distribution



Key Internal Features

- 387 m^3 pressurized volume
- ~1560 ft^2 floor space
- 13 payload platforms, up to 10 MDLEs per platform, for a total capacity of 130 MDLEs
- Modular and flexible architecture
- Full laboratory capability (e.g., workbench, glovebox, cold stowage)
- Leasable payload platform space



Payloads

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Classes of **Payloads & Price Factors**

PASSIVE PAYLOAD

No facilities needed. Static, stand-alone or inert. Passive stowage and crew time considerations.

EXPERIMENTS

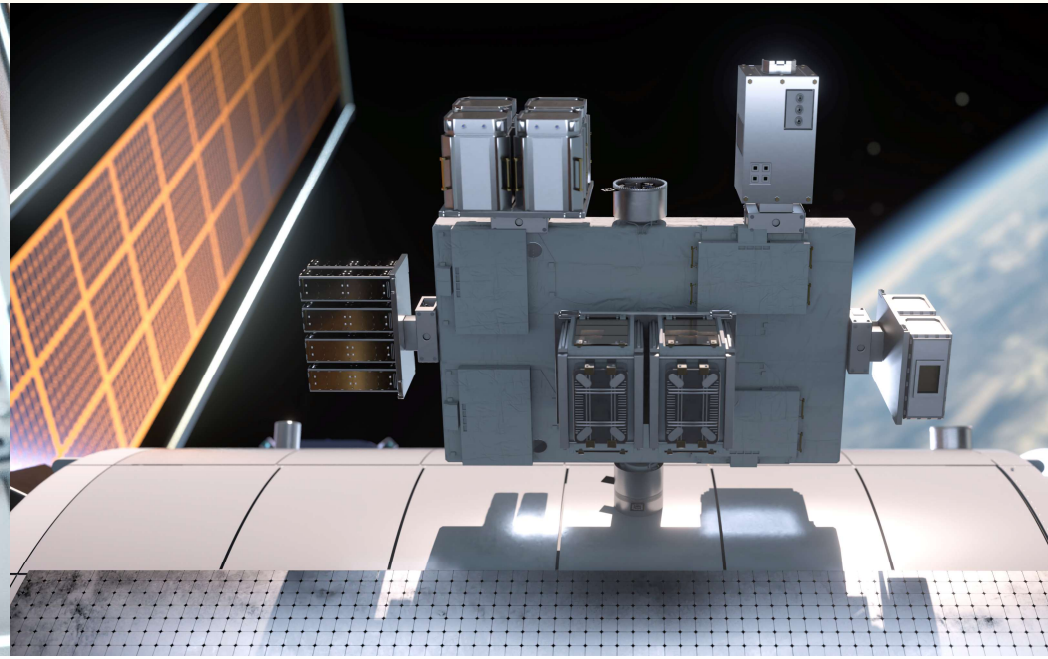
Payloads that requires other lab equipment or Starlab facility usage. Complexity factors of facilities, crew time, and services needed.

COMMERCIAL PAYLOAD FACILITY

Flexible payload slots for MDLE sized payloads. Complexity factors of crew time, services, and time in allocated payload volume.

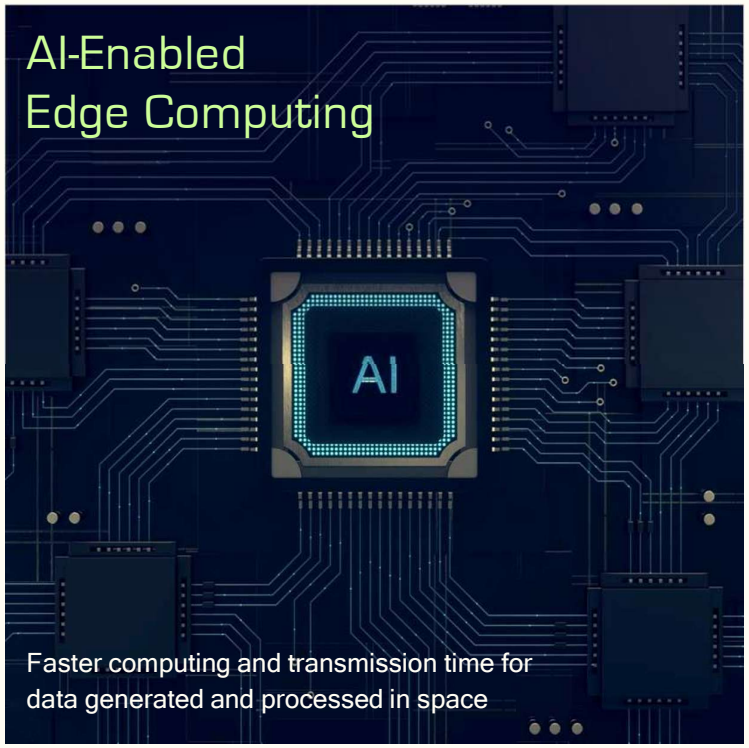
EXTERNAL PAYLOAD

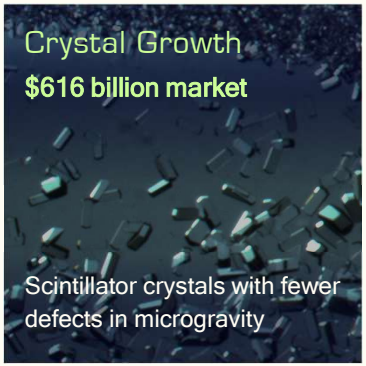
XORI slots on external platforms for ~1m^3 payloads. Size, robotic operations, cycle or run time, and resource requirements.



Commercial Opportunities in Space

STARLAB IS SCALING ALREADY PROVEN SCIENCE



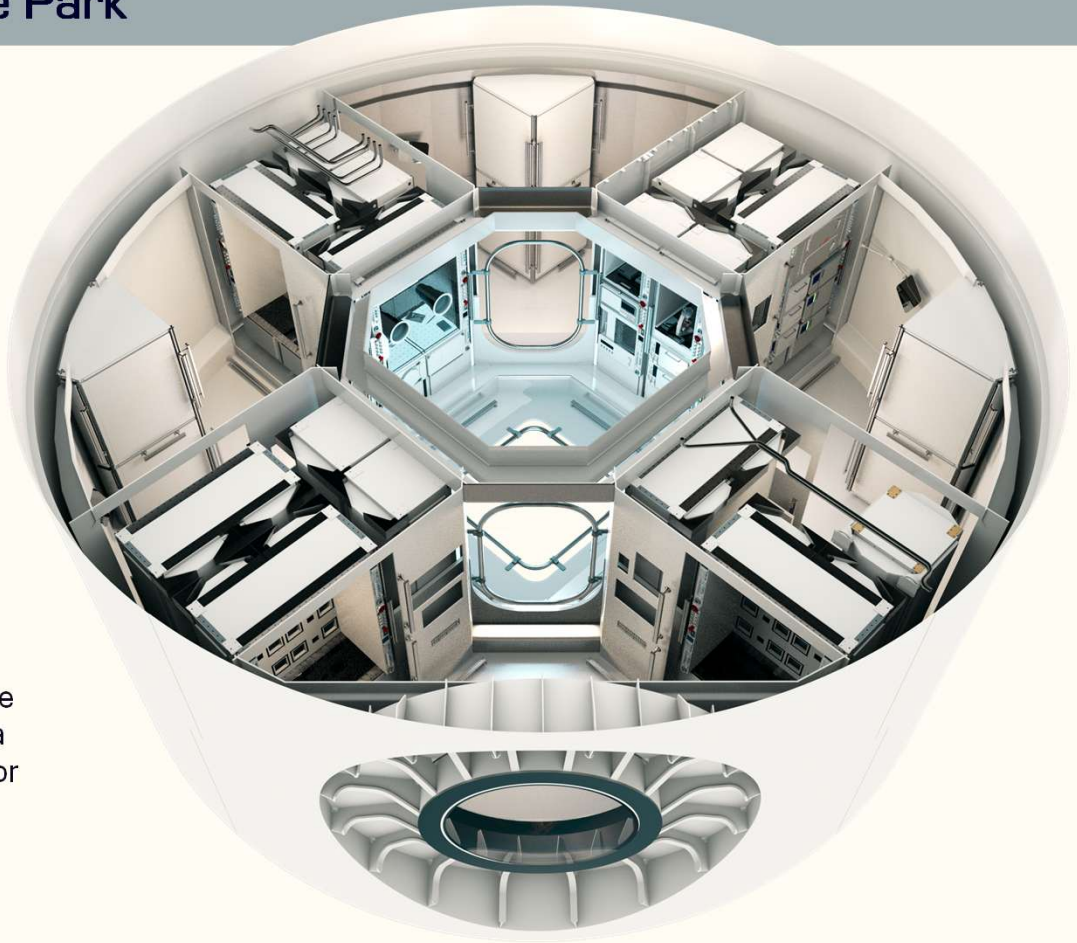


Operations

Orbital **Science Park**

THE FIRST SCIENCE PARK IN SPACE

Starlab's core is a science park. Science parks are a proven business model for industrial and scientific innovation.



OUR PROCESS

The Starlab Science Park will be reconfigurable, allowing for scientific components to be upgraded, replaced or expanded as requirements change.

LABORATORIES

Featuring specialized facilities for biology, plant habitation, physical sciences, materials research and an open workbench area.

THE FUTURE

Standard payload platforms for single, double and Quad MDLE configurations. Starlab will host and manage dedicated space for commercial leasing and utilization.

Partnerships with science parks like Voyager's VISTA in Ohio, Innovation Park Zurich and Shonan iPark in Japan for terrestrial analogs will allow for researchers to see and feel what it's like to conduct science in space.

Orbital Station **Utilization**

BASIC RESEARCH

Universities, PI's, & R&D Centers

APPLIED RESEARCH

Implementation & Channel Partners

PRODUCTIZATION

Industrialization/Production, Science Parks

COMMERCIALLY AVAILABLE SPACE

Space available:
~ 60 MDLE Equivalent Slots

Current assumption:
Direct to implementation, channel and commercial clients for utilization

Contract type:
Lessee, volumetric pricing or hybrid revenue sharing

Power and thermal management:
12 kW nominal power, with peak up to 16 kW, for all MDLE locations, plus up to 2.4 kW thermal control per IPP

BASE LAB AVAILABLE SPACE

Space available:
~ 70 MDLE Equivalent Slots

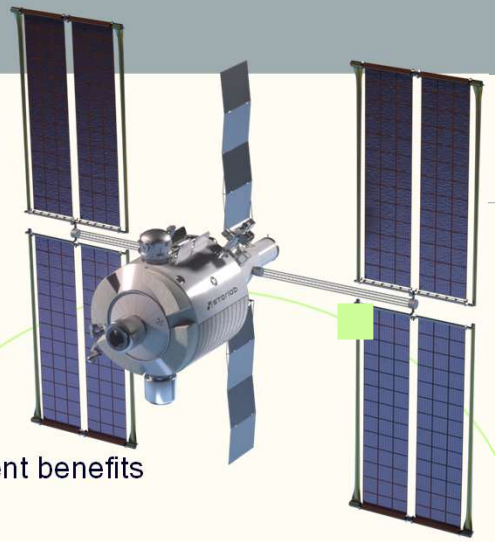
Current assumption:
High percentage for government utilization through post-ISS service contracts

Contract type:
Resource based pricing by facility utilization

Terrestrial to Orbital **Space Network**

BENEFITS:

- Collaboration and networking between research and academia
- Access to advanced facilities and payload research facilities for space research
- Expanded talent pool, supplementing with space science and engineering expertise
- Innovation ecosystem with new variable of microgravity environment benefits
- Reduced cost to orbit through collaborative missions
- Startup support and spin out of research
- Government and industry partnerships
- Public awareness and education



STARLAB ORBITAL LABORATORY & RESEARCH CENTER

TERRESTRIAL RESEARCH & SCIENCE CENTERS
(innovation parks or trade free business zones)

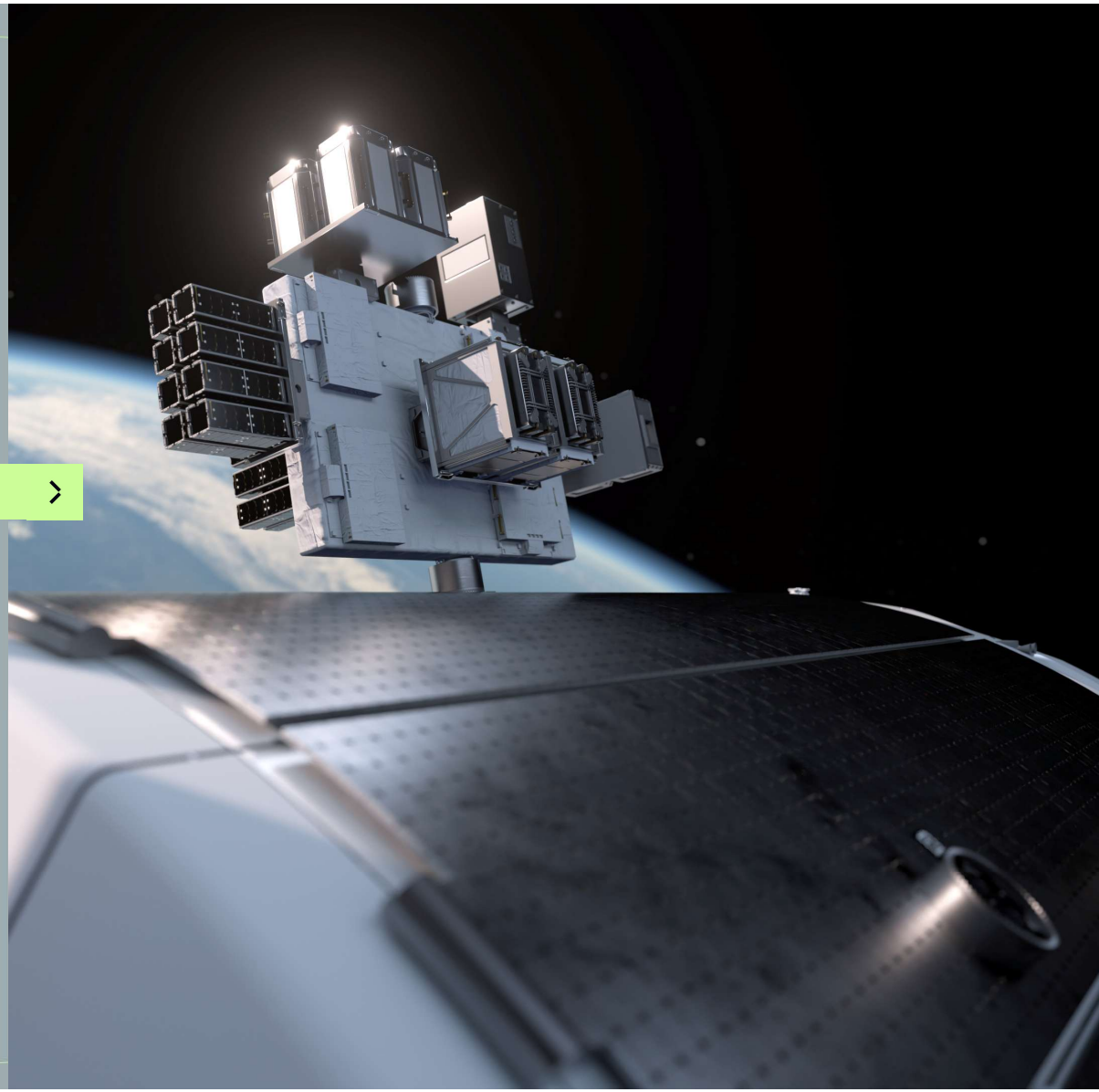
UNIVERSITIES

وكالة الإمارات للفضاء
UAE SPACE AGENCY

NATIONAL SPACE AGENCIES

Infrastructure

With the support of AI



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Optimization through Palantir

Starlab + Palantir

Fully integrated backbone architecture across the customer portal, operations and administrative functions

Starlab Digital Twin
Digital model of Starlab, allowing on-orbit resource management and streamlined operations

Crew Operation Model
Planning and automation of crew operations and experiments

Data / Insights
Monetization of data insights generated through Starlab's AI platform

Logistics Model
Optimized payload and crew transport logistics

Customer Portal Front End
Fully integrated customer portal

Business & Finance Models
Automated financial planning

Let’s get to work

How to work with Starlab

Starlab

Space **Research Journey**

01
DESIGN & FUNDING

Design research in collaboration with Starlab payload developers and identify business cases and potential funding.

02
SAFETY APPROVAL

A safety panel reviews and approves payloads on safety standards

03
BUILDING & TESTING

Payloads are built and rigorously tested to survive the journey and work properly on station

04
PAYLOAD TRANSFER

Payloads are integrated into a cargo vehicle and transferred to the launch site.

05
LAUNCH

The cargo vehicle is launched to the station on a scheduled flight

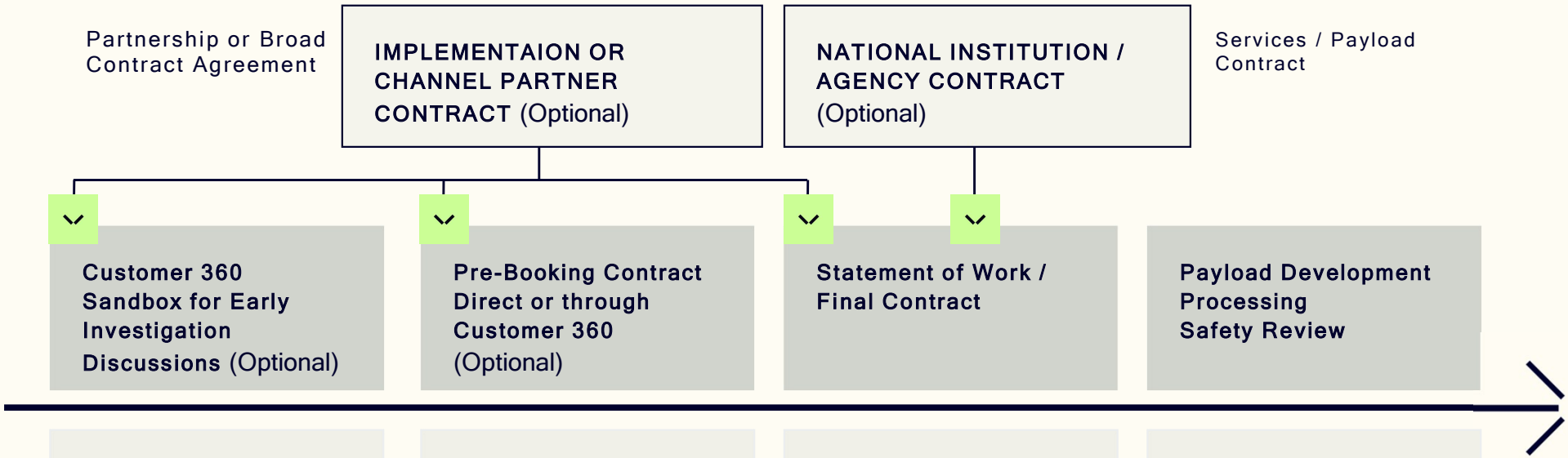
06
OPERATIONS

Resources are allocated to conduct the experiments according to the schedule

07
RETURN DISPOSAL

The hardware is either disposed or flown back to Earth on the next scheduled flight

First Steps to Access Starlab



- **International partnerships** for greater operational revenue reach
- **Premier offerings and technology** meet all customer requirements and intent
- **Payload and research capacity** (130+ MLE) meets NASA, JAXA, ESA and commercial research objectives
- Large volume in a **single launch** to IOC optimizes operations
- **Payload and science park pipeline**, with research locations in Ohio, Zurich and Japan
- Human spaceflight **experienced team**

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See You in Orbit!

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