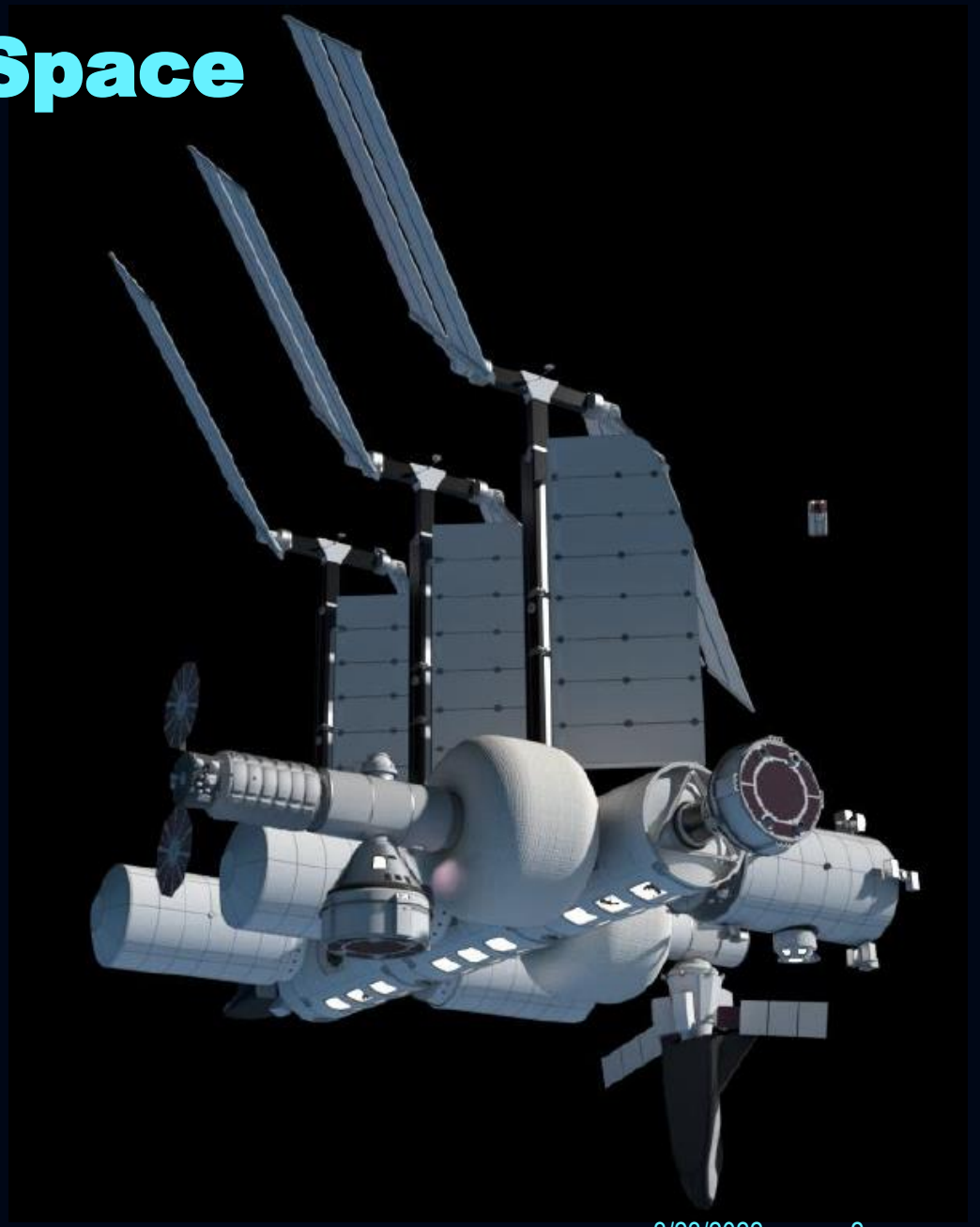
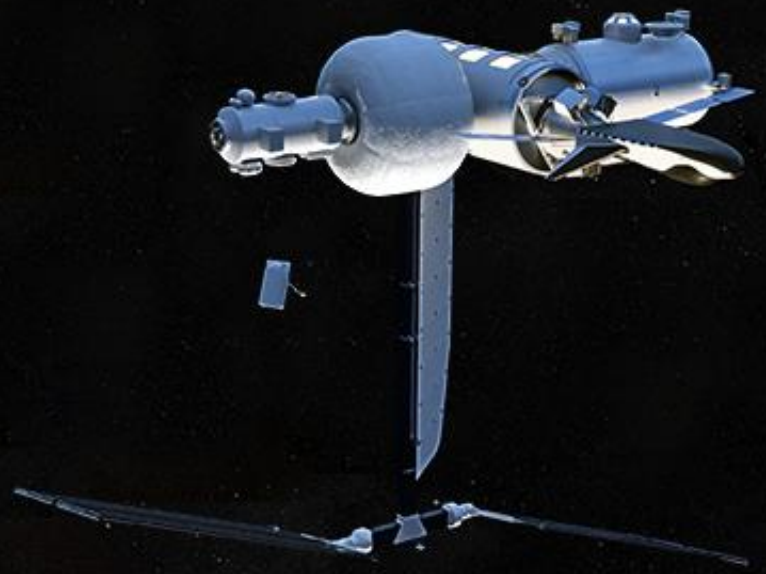
Mixed Use Business Park in Space

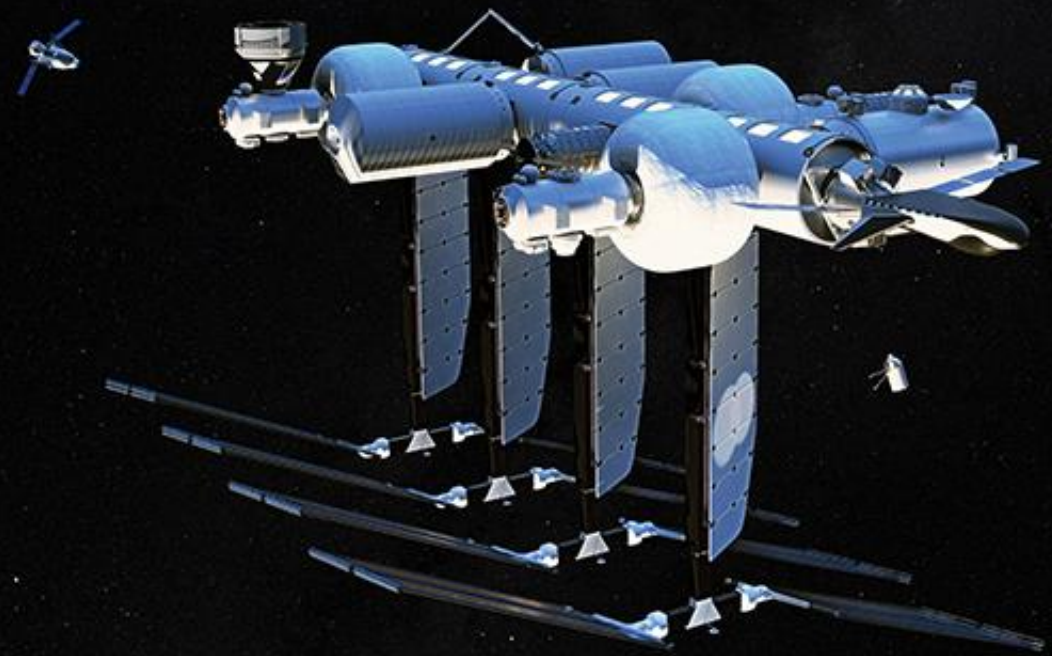
- Commercially developed, owned, and operated station in low Earth orbit
- Shared long-term vision of developing and operating infrastructure and systems to enable humans to live and work in space in large numbers
- Modular and expandable architecture grows with market demand
- Focus on commercial efficiency and reimagined logistics reduces capital and operating expenses
- International collaborations to develop and utilize Orbital Reef create a thriving global space economy



ORBITAL REEF



BASELINE CONFIGURATION | **LATE-2020s**



GROWTH CONFIGURATION | **MID-2030s**

Orbital Reef Team

BLUE ORIGIN	Utility systems, large-diameter core modules, reusable heavy-lift New Glenn launch system, and space tug vehicle
SIERRA SPACE	Expandable LIFE modules with docking nodes, and Dream Chaser reusable spaceplanes for crew and cargo delivery to runways worldwide
BOEING	Science module, station operations, maintenance engineering, and Starliner crew spacecraft
REDWIRE	Microgravity R&D and manufacturing; payload operations and deployable structures; digital engineering
GENESIS ENGINEERING	Single Person Spacecraft for routine operations and tourist excursions
ASU	Leads a consortium of global universities providing research advisory services and public outreach
amazon	Logistics management system, internal robotics and automation

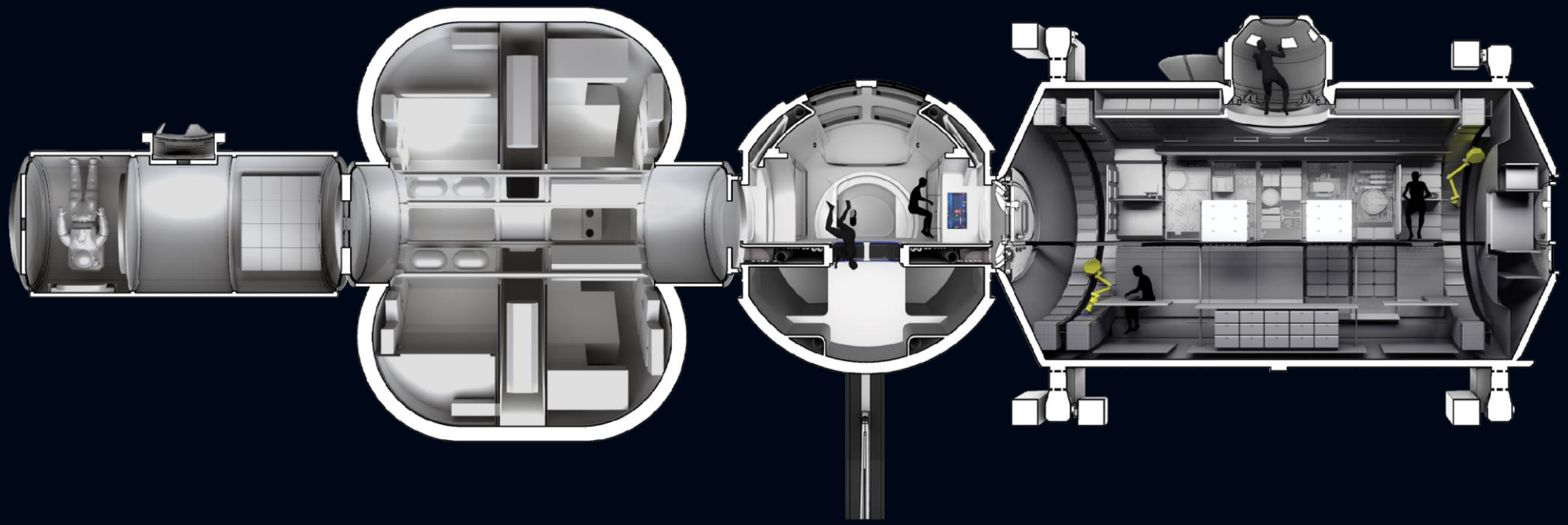
University Advisory Council

A global consortium of leading research institutions convened to:

- Establish guidelines and standards of conduct for ethical research on Orbital Reef
- Provide consulting for those new to space research
- Inform the academic user experience aboard the station
- Conduct STEM outreach and education programs.

- **Arizona State University**
- Colorado School of Mines
- International Space University
- MIT
- Oxford University
- Purdue University
- Southwest Research Institute
- Stanford University
- University of Central Florida
- University of Colorado at Boulder
- University of Florida
- University of Michigan
- University of Texas at El Paso
- University of Texas Medical Branch
- Vanderbilt University

Baseline Configuration



LIFE + Node (Sierra Space)

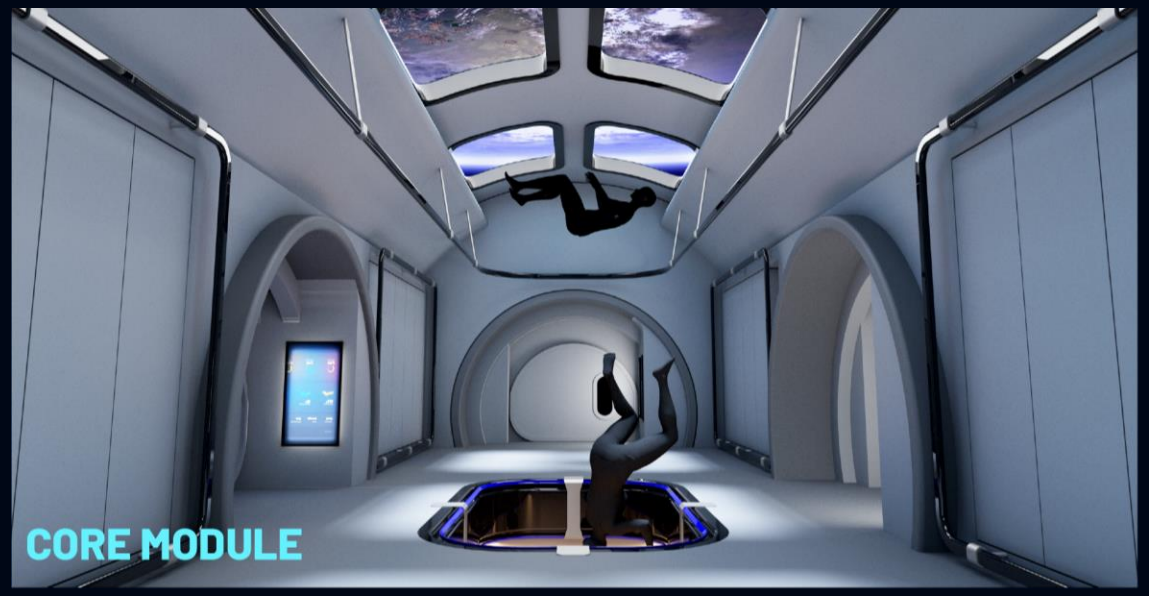
- Docking ports
- Airlock for EVA and SPS
- Crew quarters, galley, commodes, exercise equipment
- Science payload support
- ECLSS
- Astro Garden

Core + Mast (Blue Origin)

- Power generation
- ECLSS
- Radiators
- Modular equipment
- Consumables storage
- High-power compute
- Secure communications

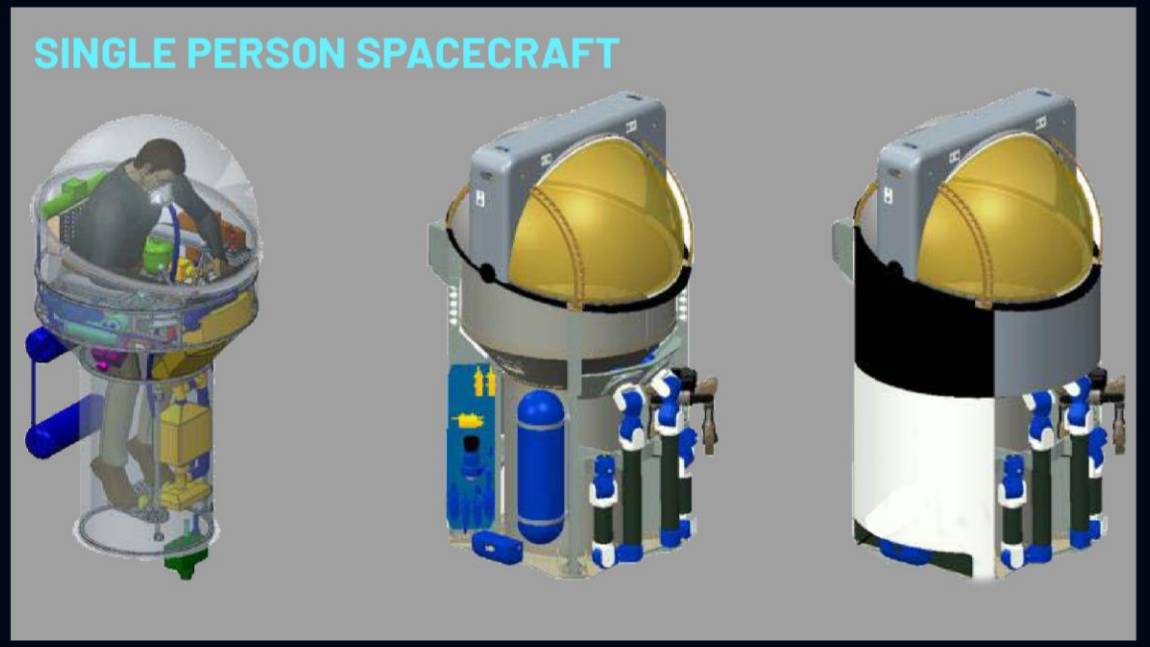
Research Module (Boeing)

- Robotically served MLEs
- External payloads
- Science airlock
- Human research / bio lab
- Materials research, quantum physics facility, rodent habitat
- Freezers, gloveboxes


CORE MODULE


LIFE MODULE


RESEARCH MODULE


SINGLE PERSON SPACECRAFT

Hub for a Vibrant Emerging Space Economy

National Research
Dedicated or shared facilities

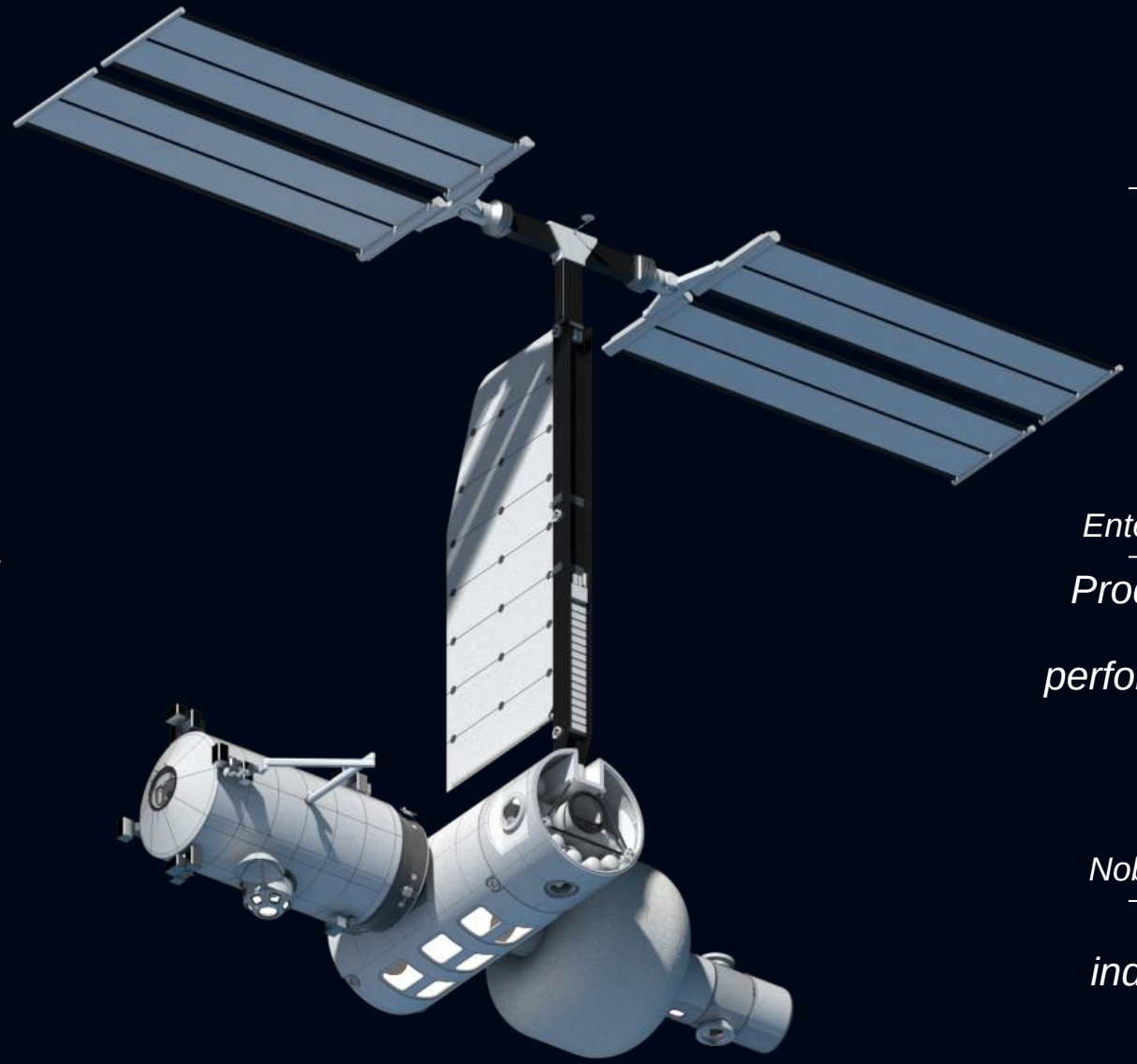
Science, tech development, human research, and other missions post-ISS

Exploration Services

Integration point and base station; platform for astronaut training and exploration systems development

Satellites
In-orbit Support

Production/assembly, delivery, deployment, servicing, and decommission



Commercial Industry
Research & Production

Microgravity to develop and manufacture products for terrestrial applications, and for use in space

Consumer Productions
Entertainment, Media, & Advertising

Production of content for mass market audiences, games, performances, and competitions

Travel and Tourism
Noble Causes & Personal Journeys

Demand ramping up from individuals seeking adventure travel and legacy impact

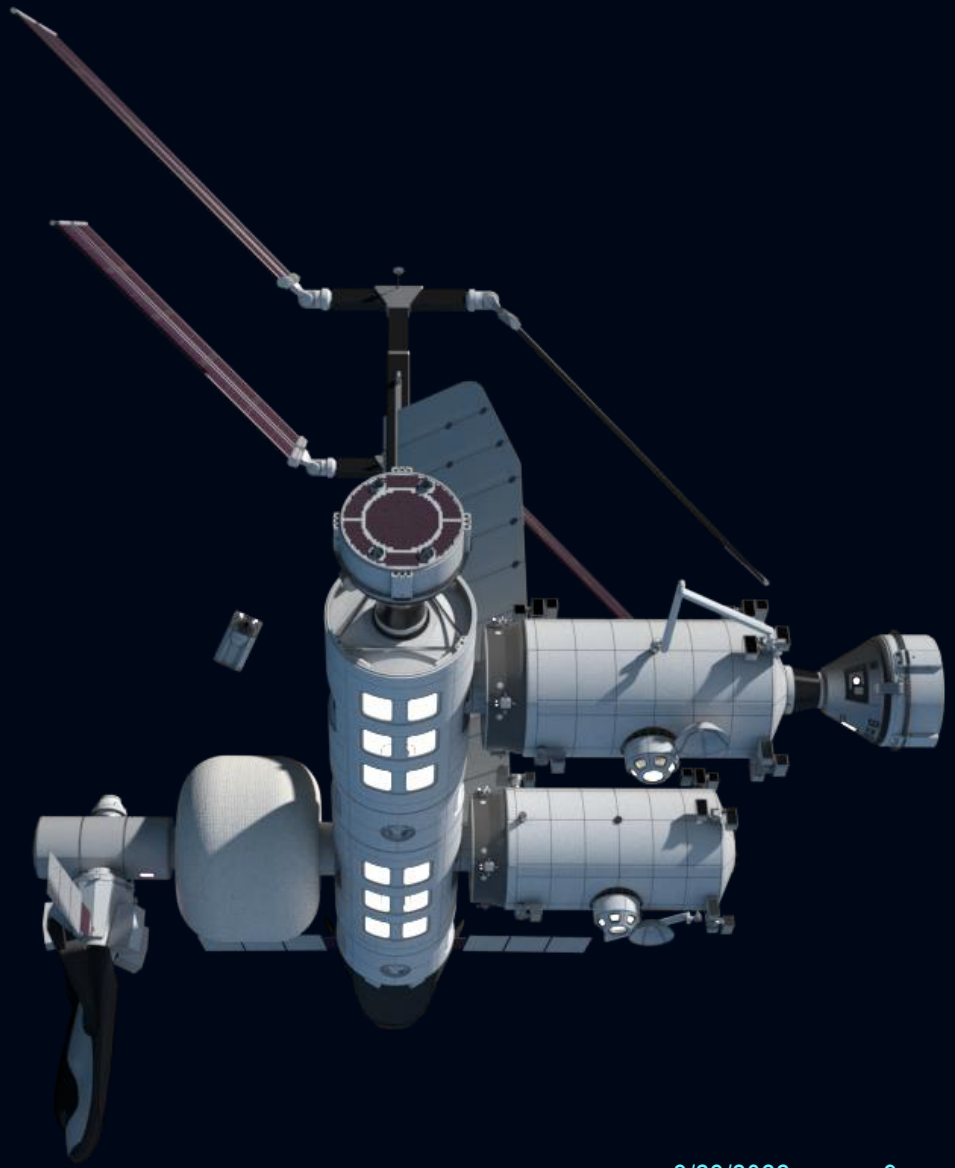
Responsive to Research Needs

Large Volume with Modular Growth

- More options for internal configuration and stowage
- Separation of sensitive functions and privacy
- Promising research can grow into dedicated labs
- Promising applications can grow into commercial facilities
- New applications based on greater volume per module

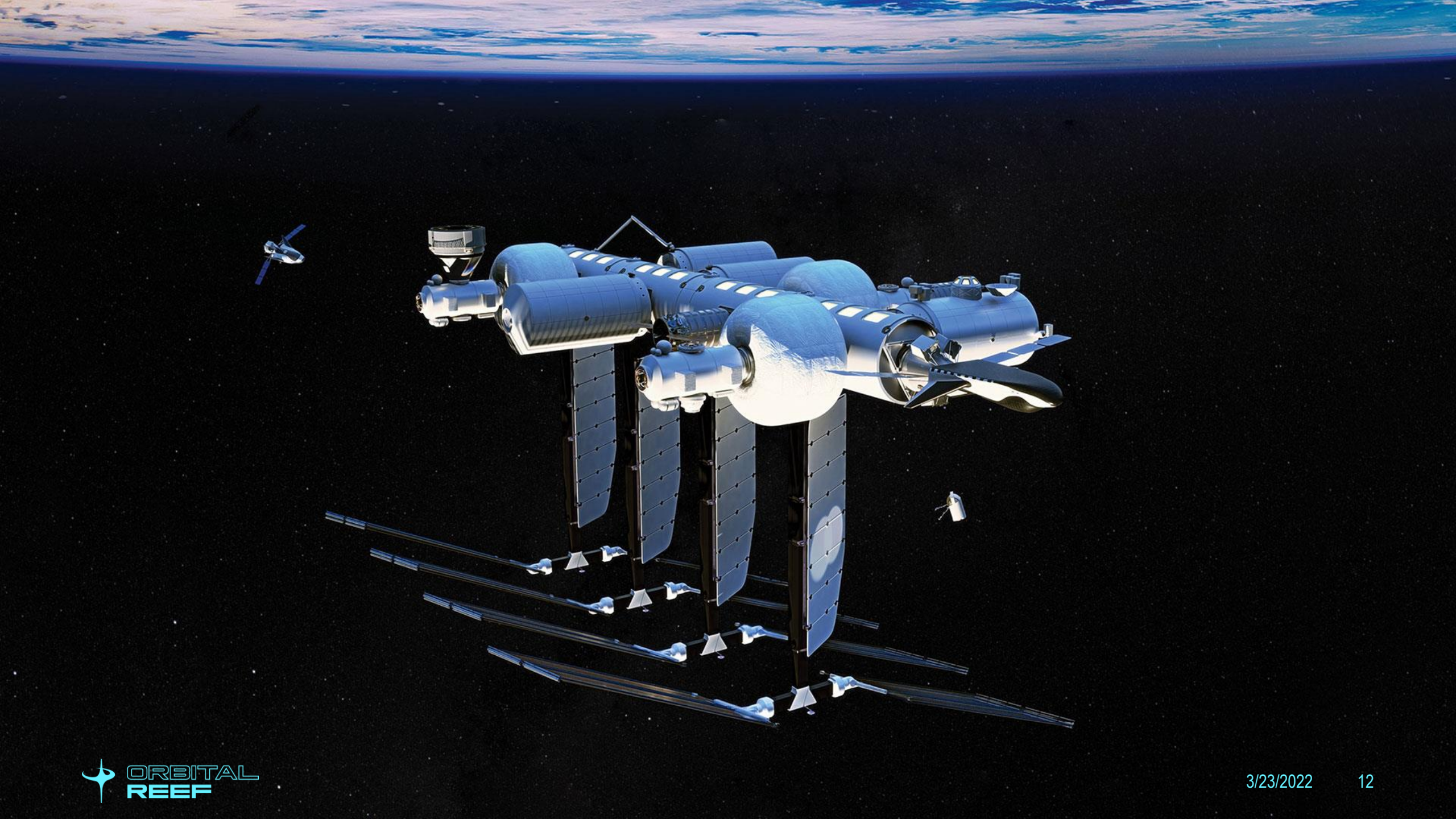
Turnkey User Experience

- Pre-flight, transportation, onboard, and post-flight services
- Flight and ground systems support a range of R&D, manufacturing, and educational uses
- Data and operational security
- Nurturing emerging space applications and experiences
- Customer-centric design



Questions

- Describe the facilities, research & educational opportunities and priorities your group plans to focus on as your commercial enterprise goes on-line.
- How do you envision prioritizing a portfolio of transformative high-risk university research while supporting applied industrial development activities?
- How do existing and future ISS international partners participate?
- What opportunities exist for government (NASA, NSF, NIH) funded research on these platforms?



ORBITAL REEF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