

HOW AI IS SHAPING THE 21st CENTURY SPACE RACE

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HUMANS IN OUTER SPACE BEYOND LOW EARTH ORBIT (LEO)

... 50+ YEARS LATER



NASA

**Moon Landing
1969**

0:40:36
EVA ELAPSED TIME



SpaceX Polaris Dawn Mission

**First human EVA beyond LEO since 1972,
2024**

SPACE COLONIZATION

WHY THE BIG GAP?



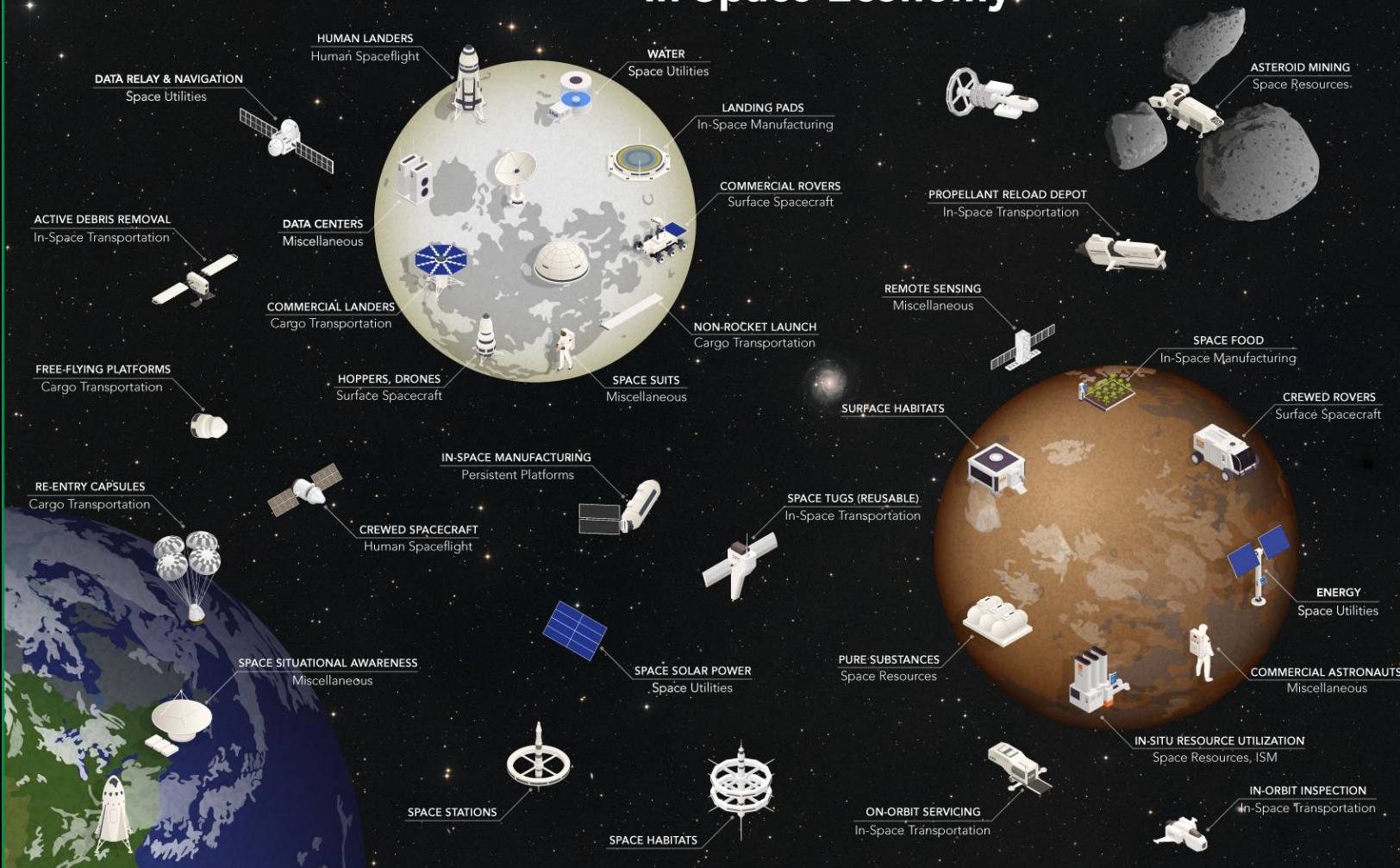
BEYOND LEO



- ▶ Focus on LEO scientific development and International cooperation
- ▶ No reliable space transport beyond LEO
- ▶ Unclear mission objectives (industrial, scientific, strategic)
- ▶ Unclear means to settle (hazardous environment, sustained colonization)
- ▶ Space Race no longer a priority

- ▶ Expansion of LEO scientific development and International cooperation
- ▶ Low-cost space transport beyond LEO possible in the next decade
- ▶ Emerging mission objectives
- ▶ 4th Industrial Revolution (4IR) with robotics and AI at the forefront enabling space colonization
- ▶ 21st Century Space Race has begun

In-Space Economy



In-Space Economy Classification:

- Human Spaceflight
 - Crewed Spaceships & Shuttles
 - Crewed Landers
- Cargo Transportation & Landers
 - Robotic Landers (Moon, Mars)
 - Re-Entry Vehicles & Capsules
 - Cargo Resupply Services
 - Reusable Satellites
- Surface Spacecraft
 - Surface Mobility
 - Robotic Rovers
 - Drones, Hoppers
- Space Stations & Habitats
 - Persistent Platforms
 - Robotic Space Stations
- Surface Habitats & Structures
 - Surface Facilities, Infrastructure
- In-Space Manufacturing (ISM)
 - In-Space Production
 - Space Food, Space Agriculture
 - Microgravity Manufacturing
 - In-Space Assembly & Construction
 - Geoen지니어링
- Space Resources
 - ISRU (In-Situ Resource Utilization)
 - Pure Substances (Ice, O₂, Metals)
 - Space, Lunar & Asteroid Mining
 - Prospecting, Processing, Recycling
- Space Utilities
 - Energy, Power Beaming
 - In-Space Internet, Data Relay
 - Navigation
 - Water, Propellant
- In-Space Transportation
 - Space Tugs, Space Trucks
 - Orbital Transfer Vehicles (OTV)
 - On-Orbit Servicing
 - Propellant Reloading Depot
 - Active Debris Removal (ADR)
 - In-Orbit Inspection
 - In-Space Mobility, Space Logistics
 - Satellite Life Extension
 - Last Mile Delivery
- Miscellaneous
 - Microgravity Payload Services
 - In-Orbit Computing, Storage
 - Space-Flown Items
 - Space Suits & Garments
 - Commercial Astronauts
 - Space Entertainment, Advertising
 - Space Traffic Management
 - Space Tourism Support, etc.

THE NEW SPACE AGE

21ST CENTURY SPACE RACE



SPACEX



SIERRA SPACE



BLUE ORIGIN



INTUITIVE MACHINES



AXIOM SPACE



FIREFLY AEROSPACE

THE NEW SPACE AGE

SCIENCE FICTION INFRASTRUCTURE



Star Trek IV: The Undiscovered Country (1991)
Paramount Pictures



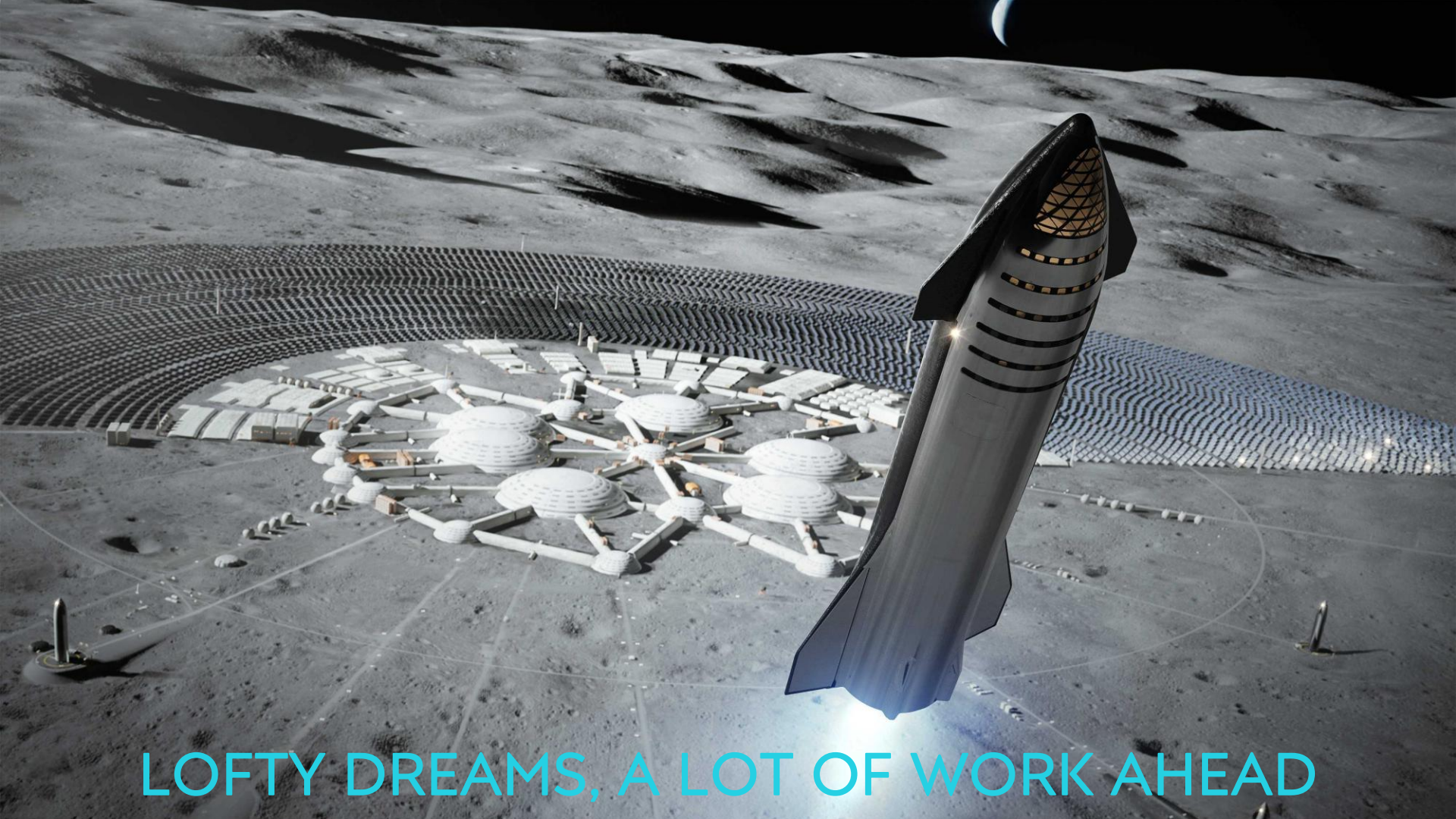
The Expanse Season 5 (2021)
TV Series, Various Producers

THE NEW SPACE AGE

SPACE INFRASTRUCTURE TODAY



SpaceX Crew-10 "Endurance" Crew Dragon Docking to the ISS, 16 March 2025
SpaceX and NASA



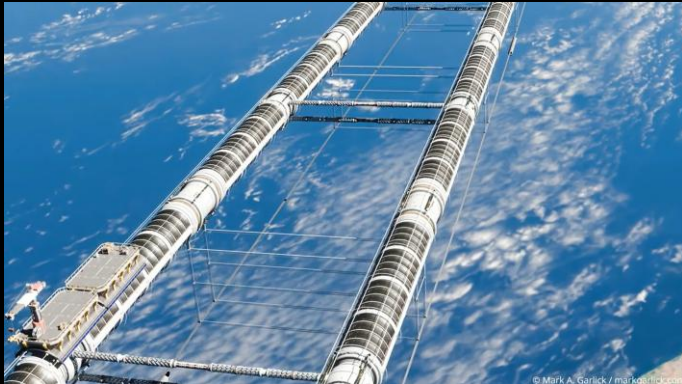
LOFTY DREAMS, A LOT OF WORK AHEAD

AI UNLOCKING PERSISTENT SPACE INFRASTRUCTURE



NASA ISS Digital Twin support robot

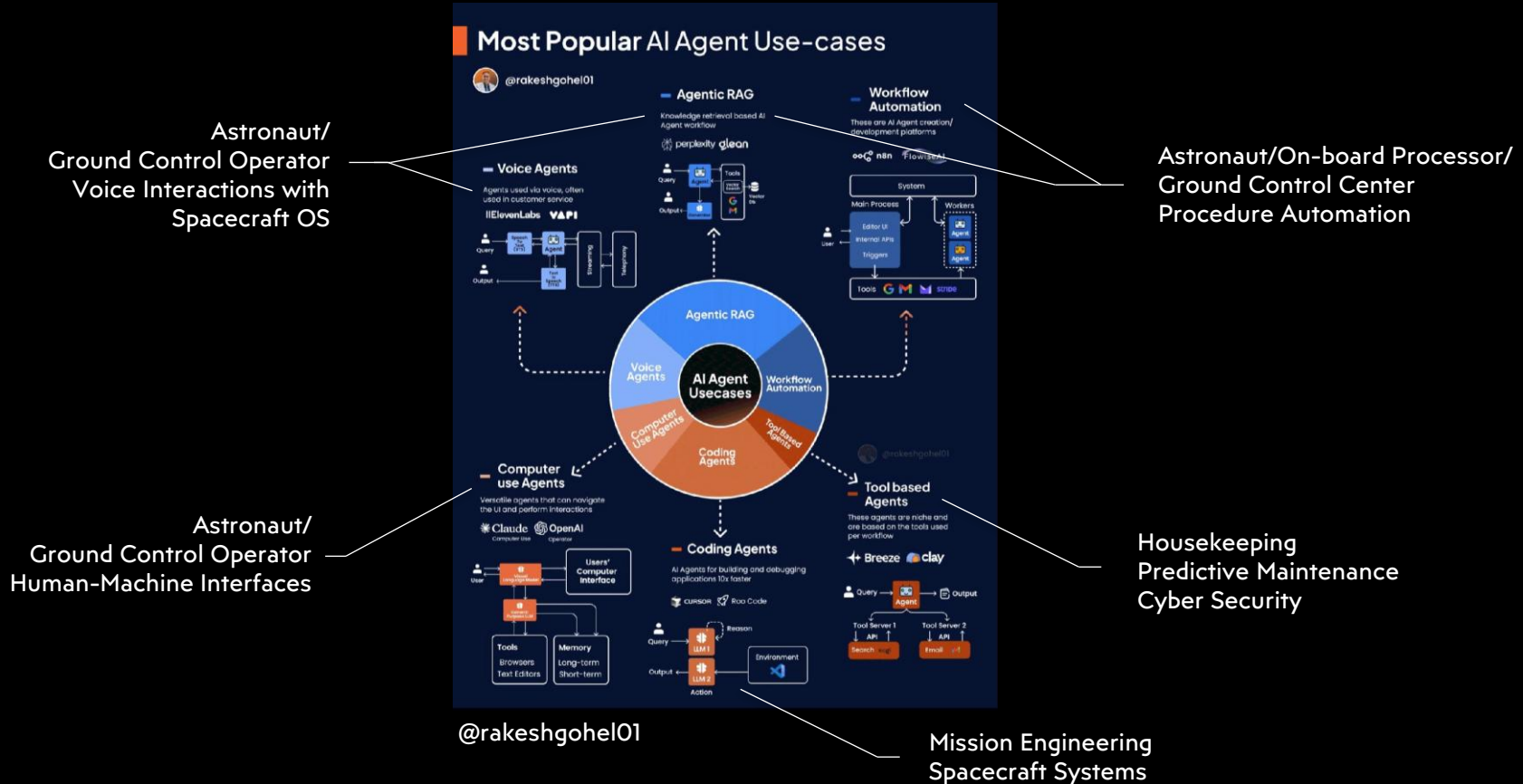
- ▶ Resilient human missions



Space Infrastructure concept, MarkGarlick.com

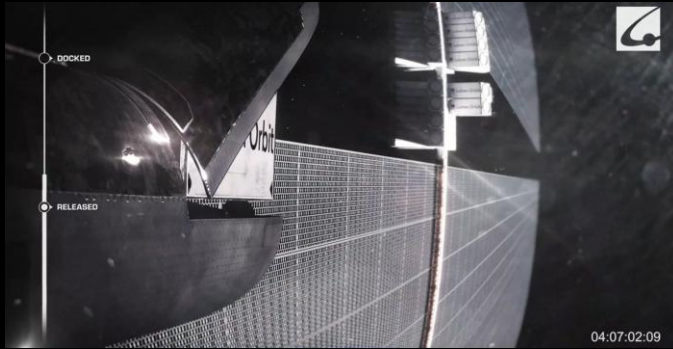
- ▶ Resilient space robotics

AI UNLOCKING PERSISTENT SPACE INFRASTRUCTURE



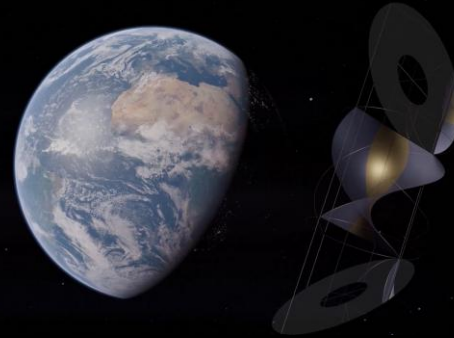
THE NEW SPACE AGE

SPACE INFRASTRUCTURE BENEFITING LIFE ON EARTH



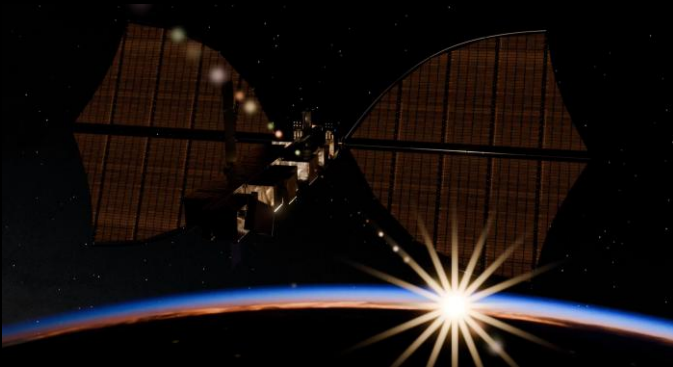
DARKCLOUD

DATA FARMS



SPACE ENERGY INITIATIVE, UK

SPACE SOLAR POWER



PLANETARY UTILITIES

SPACE PHARMA/ROBOTIC RESEARCH




AXIOM SPACE

COMMERCIAL SPACE STATIONS



Robotic servicing



Refueling



Commercial Space Stations

PROBLEM

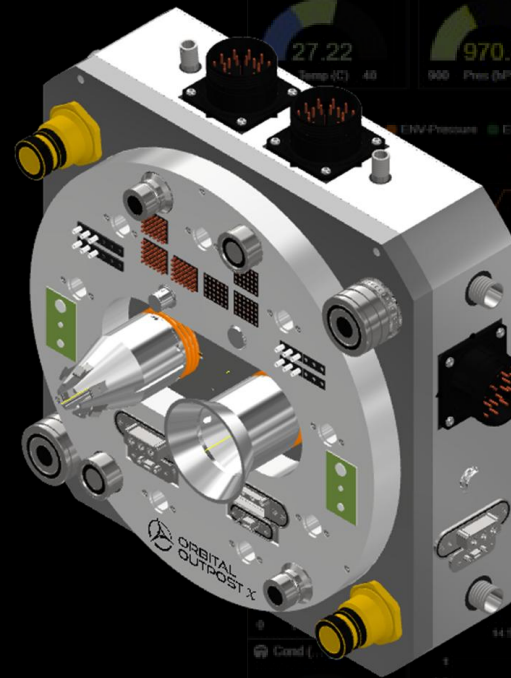
**Space infrastructure lacks
modularity and reliable connections
Costing billions and time to revenue**

BUILDING BLOCKS FOR AI DRIVEN
PERSISTENT SPACE INFRASTRUCTURE

Meet SQUID

Secure Quick Universal Interface Device

Smart Multi-Modal Off-The-Shelf Connectors
for
Power, Data, Fluids, Radio Frequency, Wi-Fi

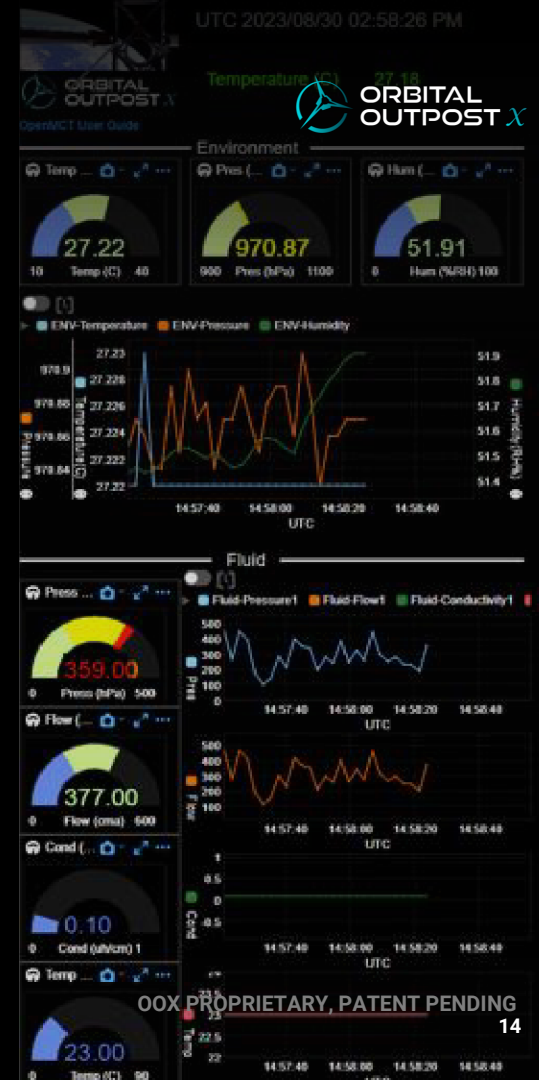


OOX PROPRIETARY, PATENT PENDING

BUILDING BLOCKS FOR AI DRIVEN PERSISTENT
SPACE INFRASTRUCTURE

Meet SQUID BRAIN

Bidirectional Reliable Artificial Intelligence Network





AI DRIVEN INFRASTRUCTURE
BUILDING BLOCKS

Empowering Every Connection

Predictive Monitoring and Management.
Trusted Links. Seamless Integration. Intelligent
operation.

Androgynous

No male-female
configuration
limitations

Multi-throughput

Power, Data,
Fluid, RF, WI-FI

Robust

Structural
support with
interlocking fail-
save ma

Secure

Cybersecure
zero trust data
connectivity

Active Monitoring

Real time
monitoring of
sensor and
throughput suite

AI Driven

AI agents for
optimization and
contingency
resolution

IN THE 21ST CENTURY SPACE RACE,
RELIABLE INFRASTRUCTURE IS KEY

AI & ROBOTICS UNLOCK SPACE INFRASTRUCTURE
BENEFITING MANKIND
IN SPACE AND ON EARTH



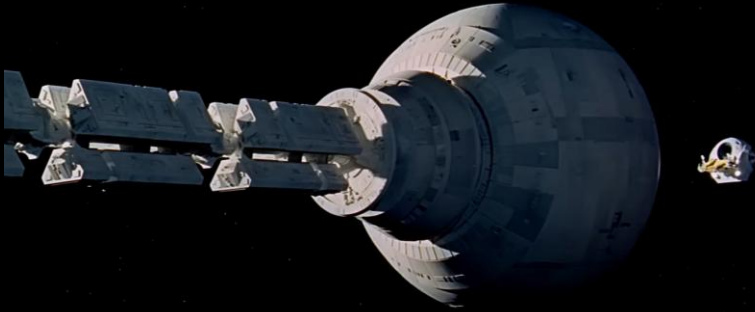
Building Connections

THANK YOU



THE NEW SPACE AGE

HOW AI BRIDGES THE GAP



2001: A Space Odyssey (1968)
Warner Bros., MGM, UA, Warner Bros. Home Entertainment



Passengers (2019)
Columbia Pictures, United International Pictures, Sony Pictures

THE NEW SPACE AGE

HOW AI BRIDGES THE GAP



Open AI and Figure (2024)

SPACE COLONIZATION

HISTORY OF HUMAN SPACEFLIGHT



BEYOND LEO

... AND 50 YEARS LATER



LEO

