2023.10.26 ASCN High-Level Meeting

> Hitoshi KUNII Business Development



Realizing a Connected Space



Company Name : Warpspace Inc.

CEO : Hiromitsu AZUMA

Establishment : Aug 3rd, 2016

Headquarters

- : 1-10-1 Azuma, Tsukuba, Tsukuba Center Building 1F
- : 029-856-8128

Business

Tel

: Satellite Communication Service

Main Banks

: Tsukuba Bank, Mitsubishi UFJ, Mitsui Sumitomo,

and Others

How Could We Build a Sustainable Global Society?





Earth Observation by Satellite = Visualize the Earth



Types of Earth Observation Sensor



Type of Sensors	Methods	Use-Case	Major Commercial Operators	Pros/Cons
Optical (Passive)	Sensors detect the electromagnetic waves of visible light. (Same as cameras)	 Condition of the ground surface. The color, size, and a number of the object. 	 Planet Maxar BlackSky Satellogic Others 	 Easy to analyze. Not available during the night and in bad weather.
SAR (Active)	Sensors emit microwaves toward the ground and measure their reflection.	 Presence or absence of objects. Moisture contained in the soil. 	 Capella Space ICEYE Synspective UMBRA iQPS Others 	 Available in all weather, day/night. Difficult to analyze.

Applications of Earth Observation Data





Forest Fire Detected by Optical Sensor



Credit: NASA

Dark Vessel Detection by RF



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Flood Monitoring by SAR



Credit: Synspective Copyright © 2023, Warpspace, Inc. All Rights Reserved.

Limitations on Real-Timeness and Data Volume



Conventional Method = **RF Communication**

Limitations of RF

1. Limited Communication Window

2. Limited Resource

3. Limited Capacity





Limited area to install the ground stations. 90% is out of communication in orbit.

A license managed by ITU is required. Available bandwidth is **running out.** Upper limit of the data rate is **1Gbps.** Difficult to downlink **high-res. data**

Our Solution



We Build an Optically Connected Inter-Satellite Network for LEO Satellites

- MEO-Based Wide Coverage Network
- High Data Throughput by Laser Comm
- Near Real-Time Comm Infrastructure
- The 1st one to be Launched in 2025
- 3 Satellites to be Available in 2027



Size of Target Market



10% annual growth rate 30B USD Global EO Industry (2021)

TAM * Ground Segment

4B USD SAM **1.5B USD**

EO Industry spends around 5 % on telecommunication infrastructure

Source) NSR

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Business Model





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Mid-Long Term SatCom Plays a Key Role in Fusion of TN / NTN





What Does the Future We Aim for Look Like?



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WARPSPACE

The Future We Aim for Disaster-Resilient/Environmentally-Friendly Society

Well-Monitored GHG Emission Well-Managed Social Infrastructure

Well-Managed Food Supply (Agriculture, Livestock, etc.)

Well-Managed Natural Capital (Forest, Bio-Diversity, Freshwater, etc.)

WARPSPACE

Natural Disasters Early Detection/Warning System (Flood, Earthquake, Forestfire, etc.)

The Future We Aim for Develop a Cross-Cutting Collaboration



1. Make EO Data more Accesible Improve the **Data Throughput**. Warpspace Realise a **Responsive** Comm. Improve Spatial/Temporal **Resolution**. EO Develop New Solutions **Satellites** Space 1.0 Have access to real-time EO data at a low cost End Users

2. Build a Collaborative Community

Global Social Issues (Climate Change, Global Warming, etc.)





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Realizing a Connected Space