

# AXELSPACE



Yuya Nakamura, President and CEO



# Axelspace at a Glance

Almost

**15**

**Years of  
History**

**130+**

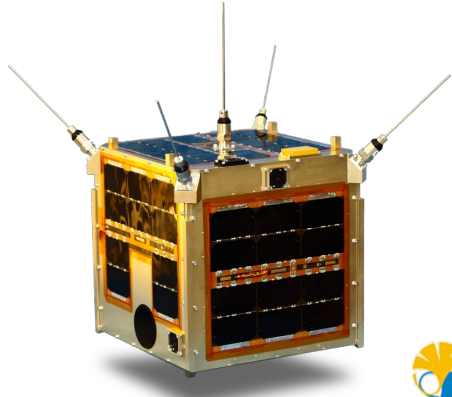
**Team  
Members**

**9**

**Satellites  
Track Record**



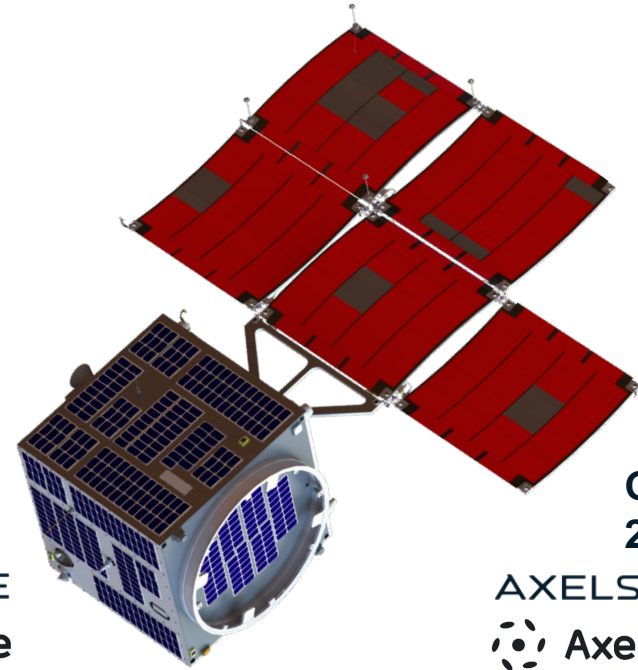
# Track Record



**Hodoyoshi-1**  
2014



**GRUS-1A**  
2018



**GRUS-1B,C,D,E**  
2021



**WNISAT-1**  
2013



**WNISAT-1R**  
2017



**RAPIS-1**  
2019



# Unique Business Model

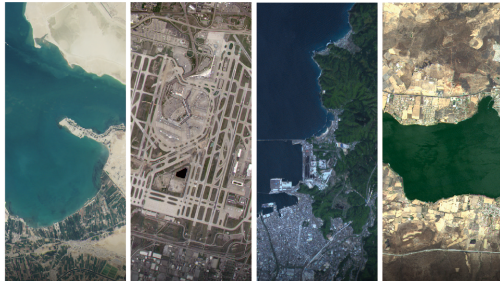


## AxelGlobe

Earth observation satellite constellation to collect mid-resolution optical images



GRUS constellation



Data service

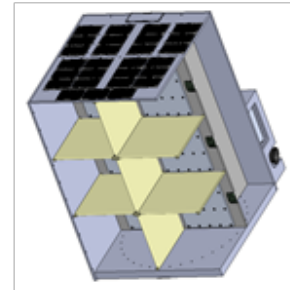


Consultation & analytics service (with partners)



## AxelLiner

One-stop “space project as a service” for 100kg-class microsatellite missions

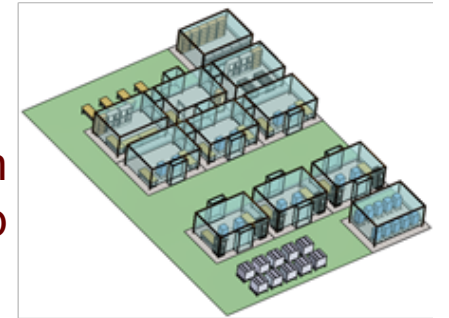


Versatile satellite design for various mission needs

Innovative mass-production through partnership



Highly automated operation system for satellite constellation





# AxelGlobe

Sensing the world, changing the future





Ground Resolution

**2.5m**

Swath

**57km**

Tokyo Haneda International Airport, Japan



0 37.5 75 150 225 300 meters





# Growing AxelGlobe Partner Network



Over 80 partners worldwide



何経宮・イノベーション大賞 表  
社団法人 科学技術と経済の会  
省、文部科学省、経済産業省、日本経済新聞社、日刊工業新聞社  
財団法人 新技術振興渡辺記念会



We won some prestigious prizes!



# Requirements for Disaster Management

## Needs

We are often requested to provide satellite imagery of damaged area as soon as possible after the disaster (like within 2 hours!)

## Problems

LEO satellites are not geostationary; the capture timing cannot be controlled

Optical imaging satellites are useless at night or during bad weather

## Possible Solutions?

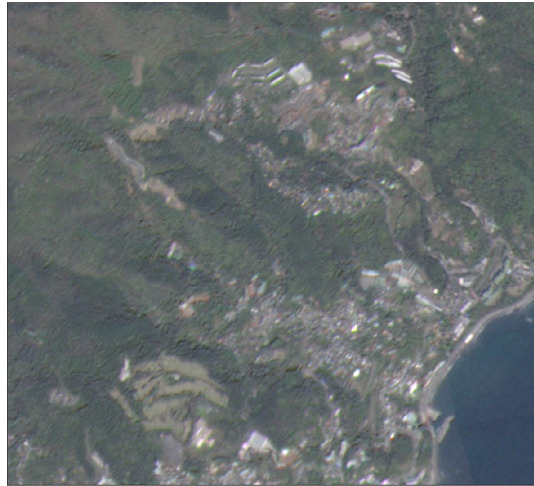
**Thousands of SAR satellites?**

...but can we afford it?

# What Optical Imaging Satellites Can Do

## Comparison between “before” and “after”

2021 Large-scale landslide in Atami, Japan



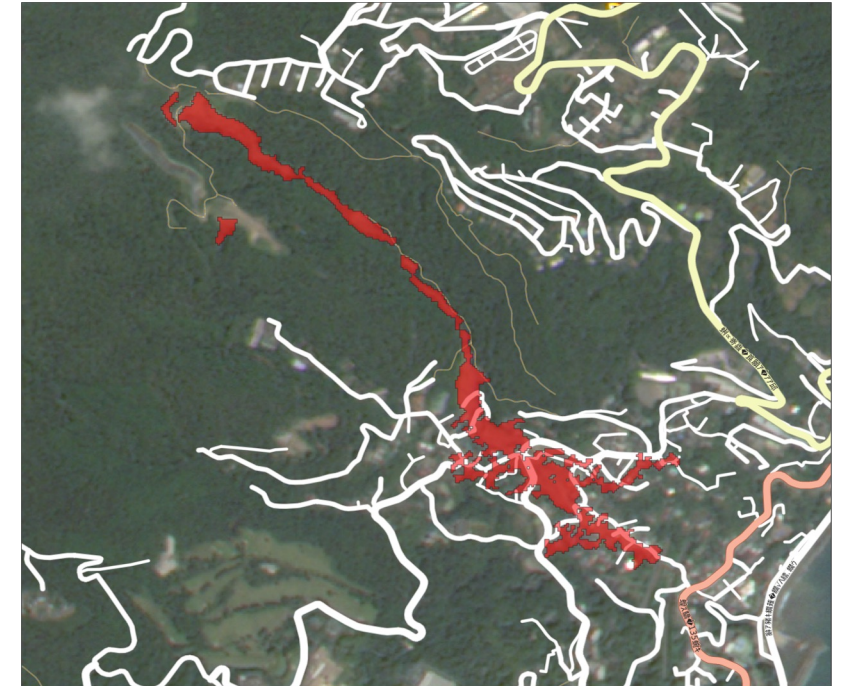
Before disaster





After disaster



Analysis



-  Roads extracted from map data
-  Affected area by landslide

We can easily and rapidly identify damaged area by comparing post-disaster images with pre-disaster ones using AI analysis

# What Optical Imaging Satellites Can Do

## Comparison between “before” and “after”

2021 Flood due to typhoon in Kumamoto, Japan



Before disaster



After disaster



NDWI analysis

We can easily and rapidly identify flooded area using remote sensing analysis technique

# Inherent Problem

The most difficult problem of disaster management from business standpoint is...

Natural disaster is **unpredictable**: *when, where and what type*

**Public sector**

Difficult to secure enough budget  
*What amount is enough?*

**Private sector**

Difficult to estimate revenue  
*Is this business profitable?*

**Disaster management-dedicated satellite solution is quite a challenge**

# Proposed Solution

Hetero-sensor, air-space combined solution is promising

|                 | Optical Imaging Satellites   | Radar Imaging Satellites   | Drones & Airplanes  |
|-----------------|--|--|---|
| Strengths       | Very wide area coverage<br>Spectrum data   | All weather conditions<br>Night-time captures                        | Very high resolution<br>On-demand monitoring                      |
| Best tool for   | <b>Archived whole-country pre-disaster data</b> to be compared with post-disaster data | <b>First comprehensive data of damaged region</b> after the disaster | <b>On-demand in-situ data of damaged place</b> after the disaster |
| Other use cases | Agriculture<br>Mapping   | Security<br>Insurance  | Infrastructure<br>Construction                                    |

**What is next?**



# Optical Data Relay Constellation

## Space Integrated Computing Network

Truly resilient connectivity through integrating multi-orbit frequency network

**Near real-time  
communication with any  
of the satellites in orbit!**

Remote  
Satellite

Optical  
Com

to Com

B5G/6G  
Terrestrial Network

B5G/6G  
Terrestrial Network

# Optical Data Relay Constellation

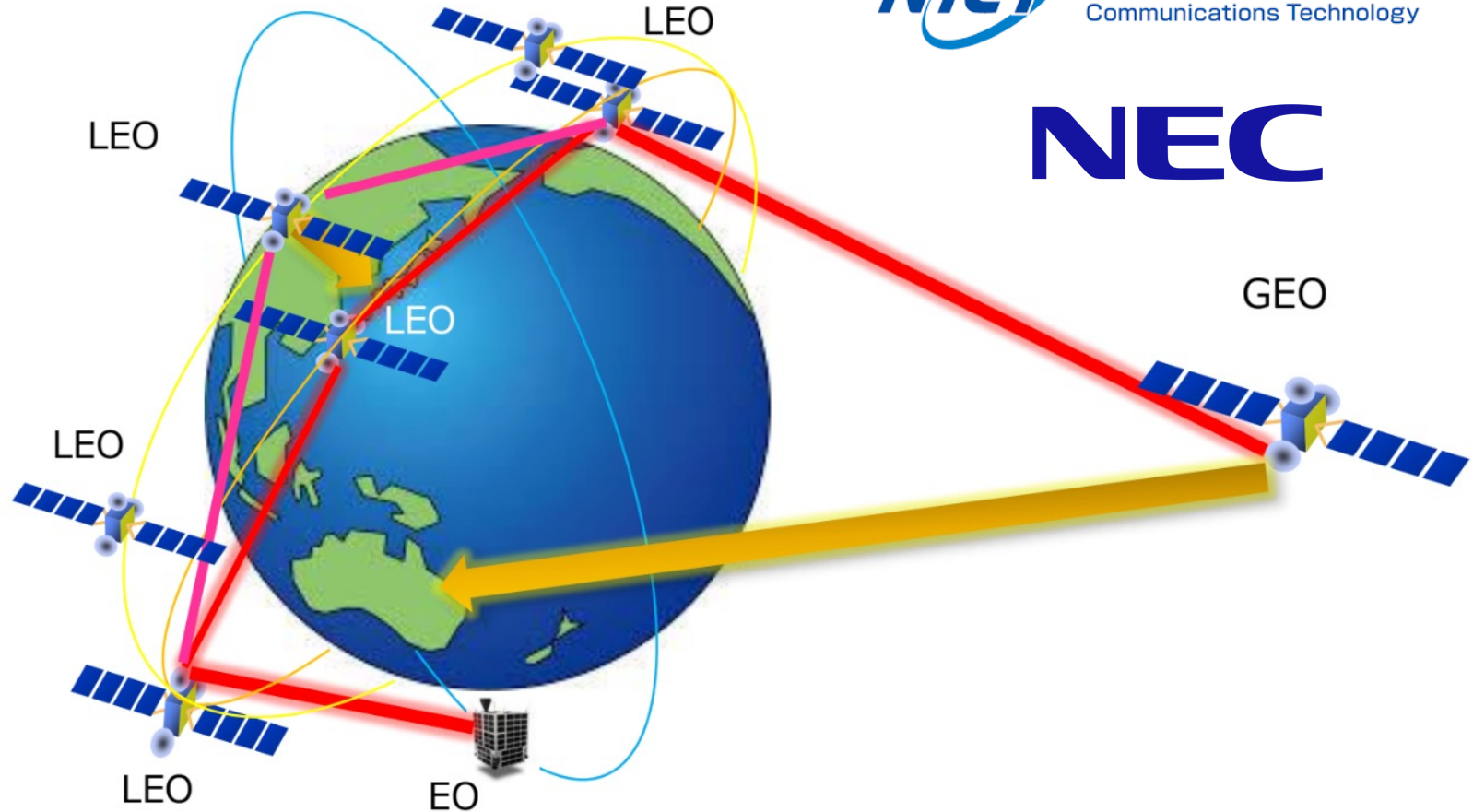
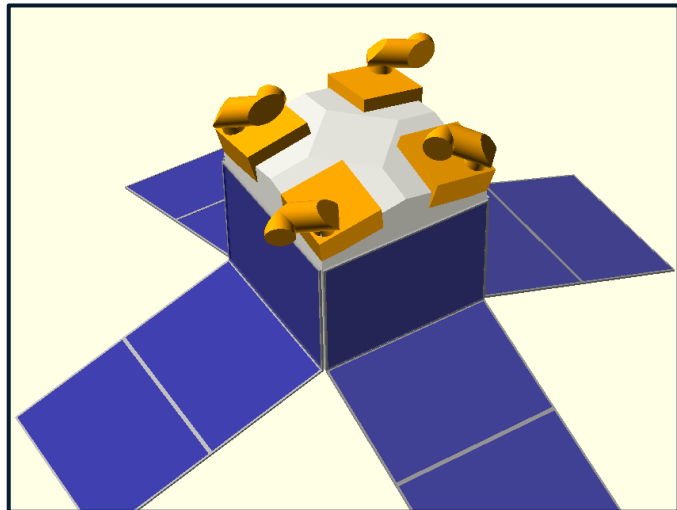
2025: Launch 2 demo satellites  
2027: Launch 7 satellites  
2028: Launch additional 7 satellites



AXELSPACE



NEC



**AXELSPACE**

**Thank you!**