

Sensing the world, Changing the future

Axelspace Corporation

AxelGlobe Business Division

Min Jen, Hsu



Our Vision

Space within Your Reach

～宇宙を普通の場所に～

We are pioneers of microsatellite technology advancing the frontiers of space business, reimagining traditional ways of using space, and creating a society where everyone on our planet can make space part of their life.

Axelspace at a glance

15

**years of
history**

160+

team members

Approx. 40% are
from overseas
(24 countries)

10

**satellites
track record**

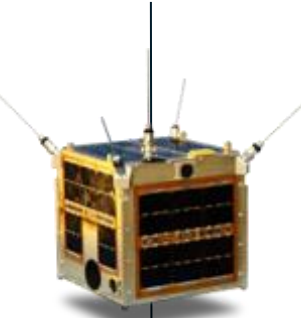


Pioneering microsatellite technologies

Succeeded in development and operations of 10 microsatellites since its establishment

AXELSPACE

2008



Establishment of Axelspace Corporation

2013



Successful Launch of WNISAT-1 - Weathernews Inc.

The world's first commercial nano-satellite. It observes the distribution of ice in the Arctic Ocean and provides safety information to ships passing through.

2014



Successful Launch of Hodoyoshi-1 -the University of Tokyo

50kg class microsatellite providing 6.7m resolution optical images. Demonstration for business application with three domestic companies.

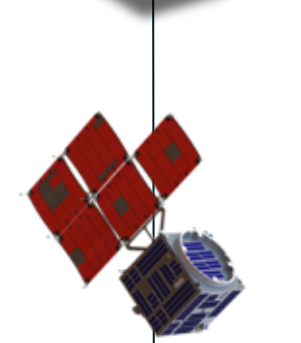
2017



Successful Launch of WNISAT-1R - Weathernews Inc.

Observations using GNSS radio waves and basic experiments of optical communication, in addition to the missions of the previous satellite.

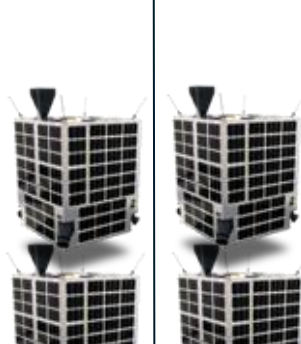
2018



Successful Launch of GRUS-1A - Axelspace/AxelGlobe

The first earth observation satellite for AxelGlobe. Equipped with two telescopes, it has a wide observation range of 55 km with a resolution of 2.5 m.

2019



Successful Launch of RAPIS-1 - JAXA

The first government satellite that JAXA ordered for its development and operation to a startup. Demonstration of new components in orbit.

2021



Successful Launch of GRUS-1B,C,D,E - Axelspace/AxelGlobe

The second launch for AxelGlobe. The four satellites were developed simultaneously, which was the first mass production case in Japan.

2024



Successful Launch of PYXIS - Axelspace/AxelLiner

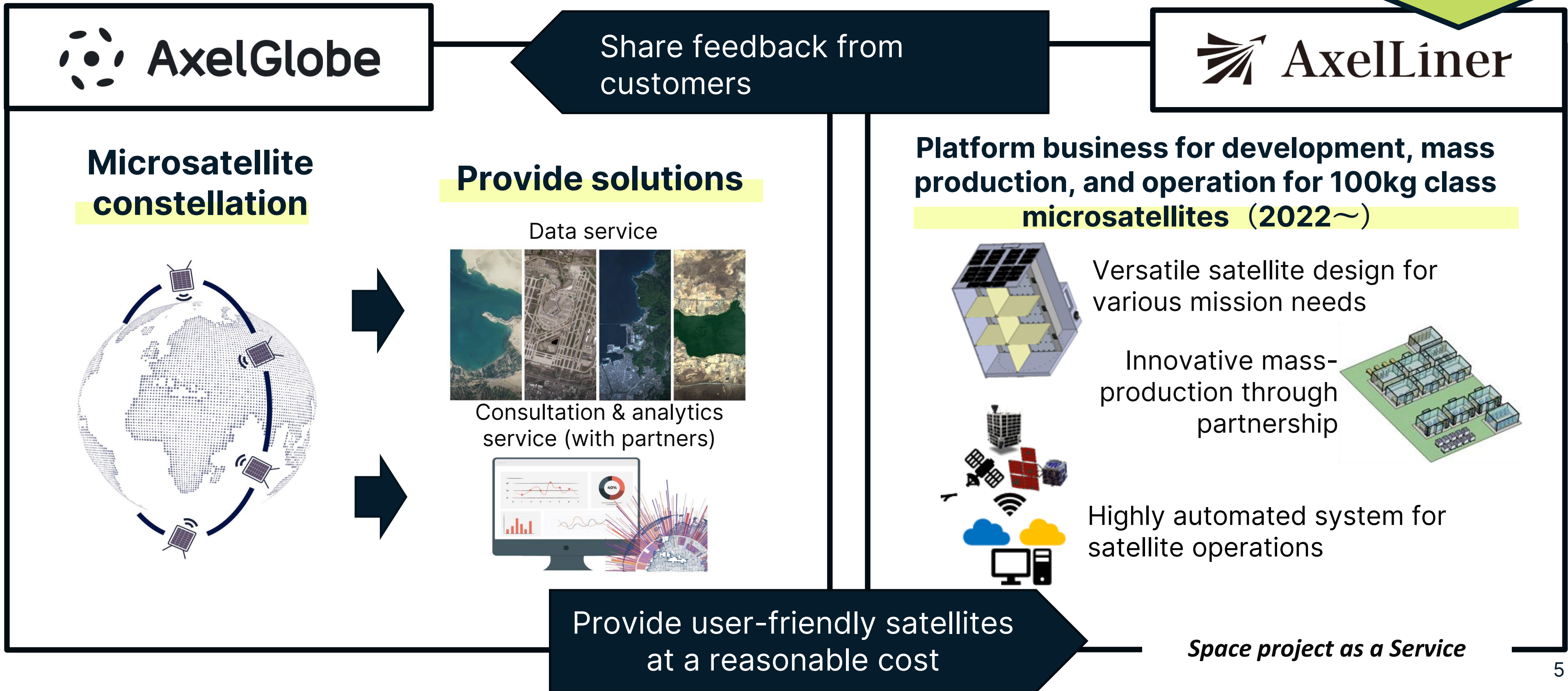
The first technology demonstration for AxelLiner.

Innovating satellite industry through synergies between two businesses

AXELSPACE

Dedicated Satellite Business (2008~)
TRANSFORMED

Streamlined approach in the design, manufacturing, and operations of microsatellites



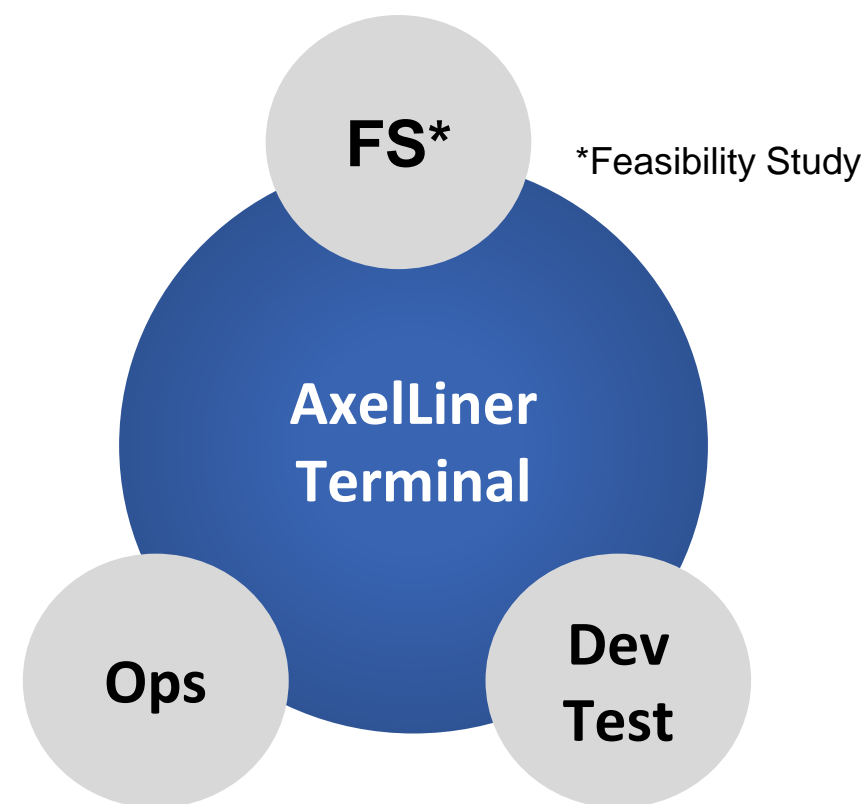


AXELSPACE

3 features

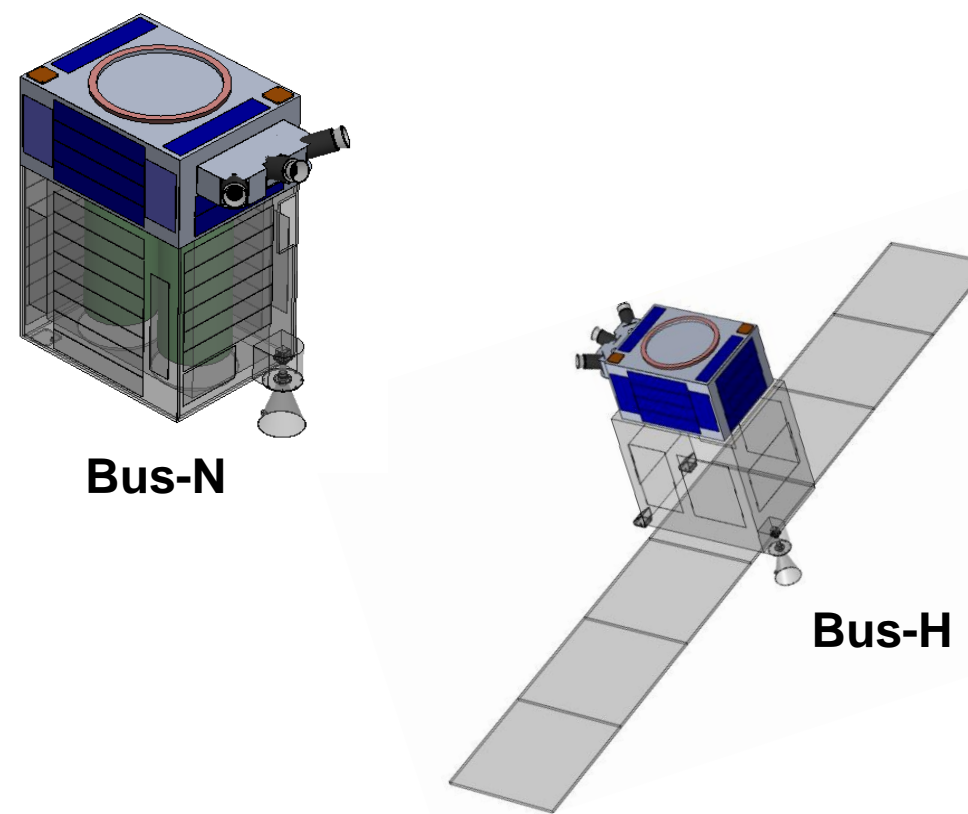
1

New User Experiences with AxelLiner Terminal



2

Versatile Satellite Platform

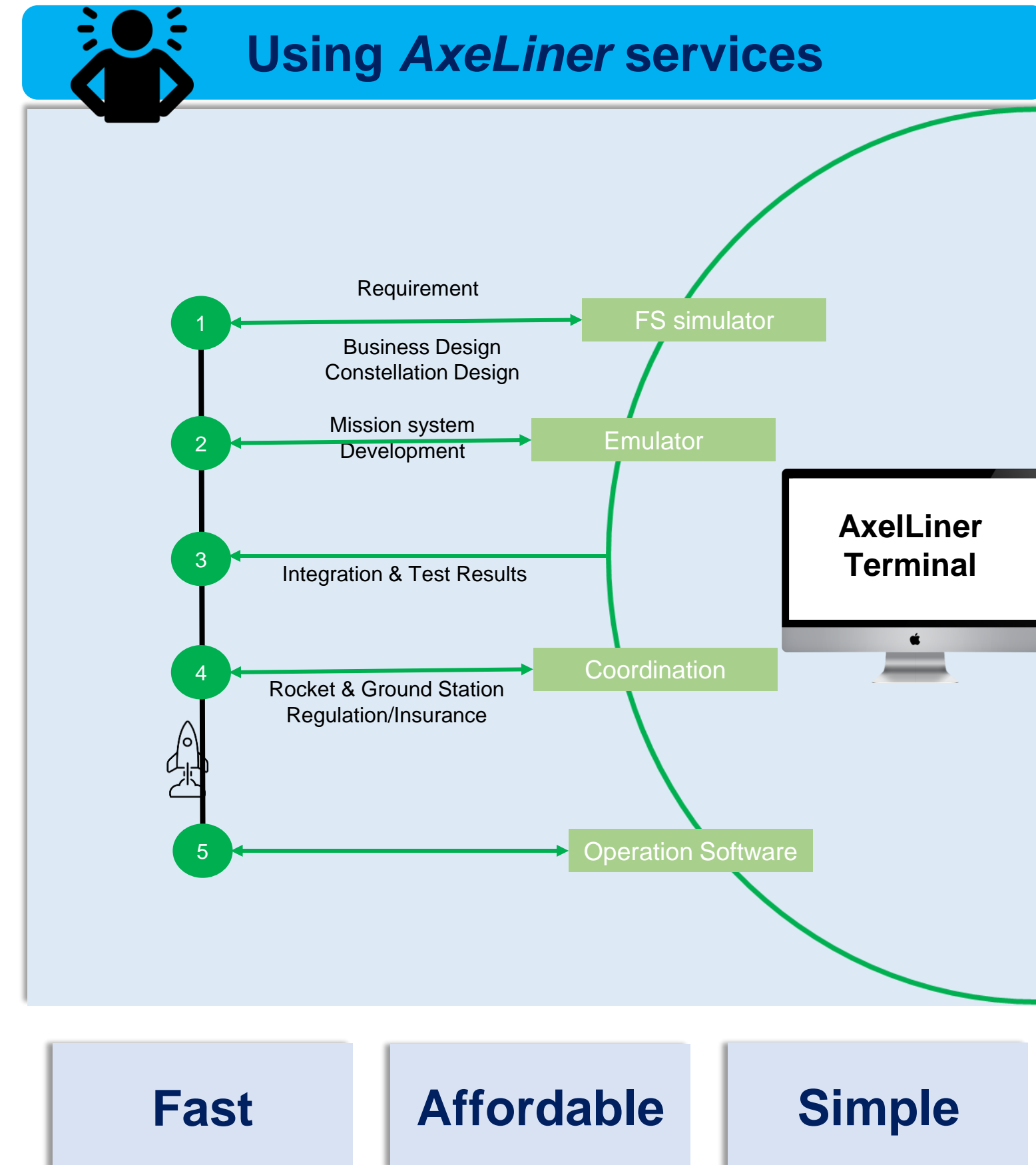
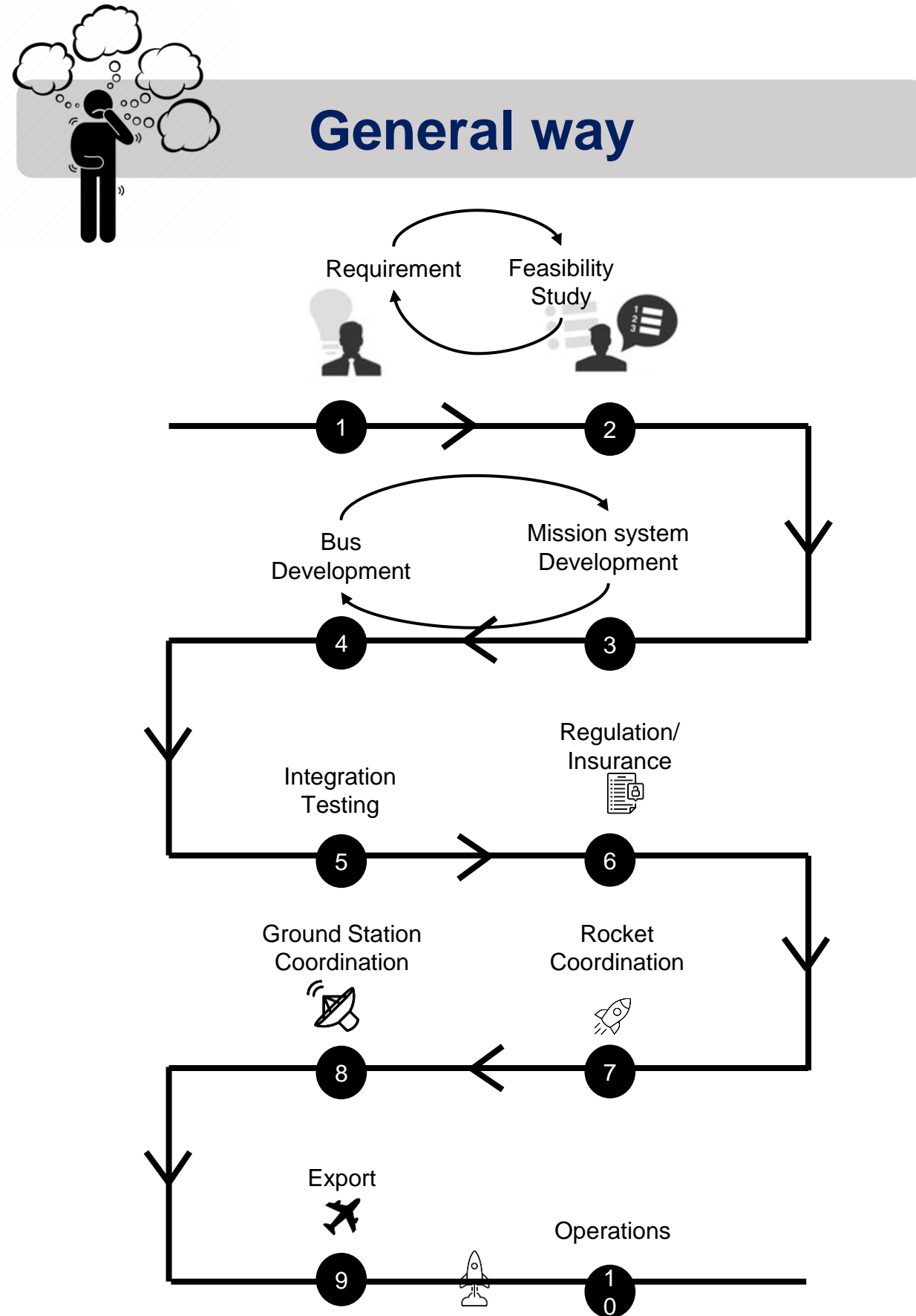


3

Automated Operation

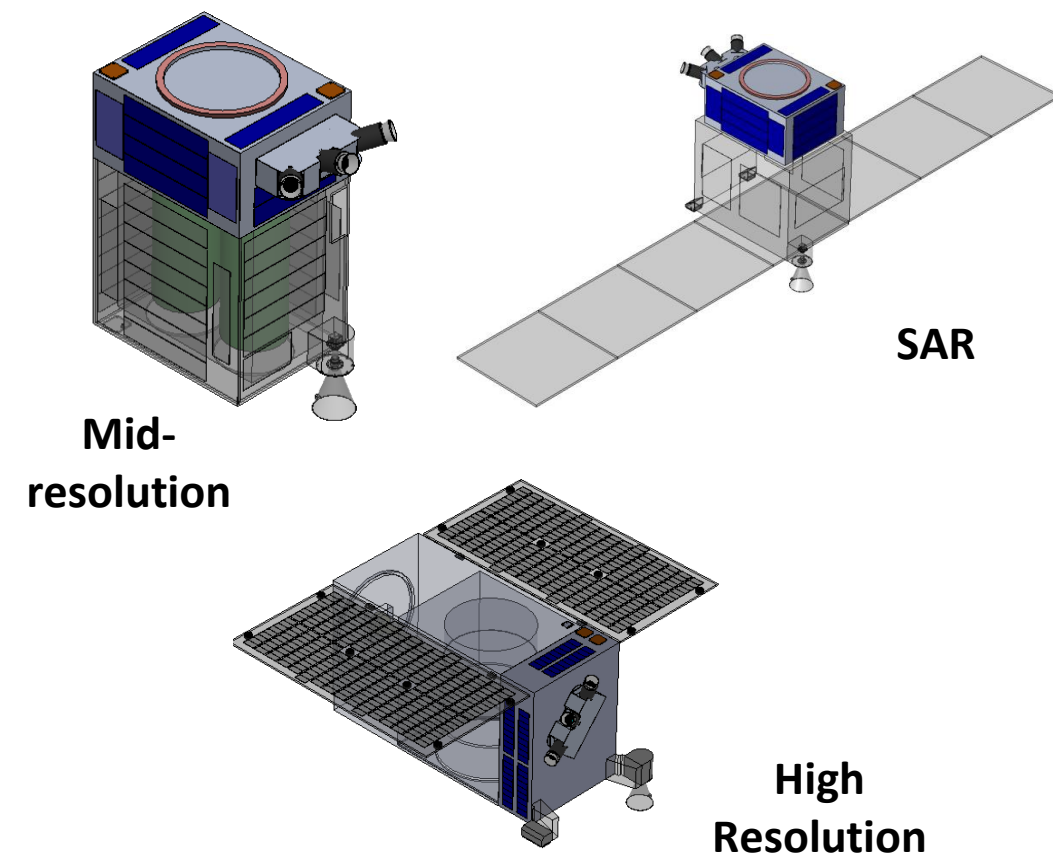


AxelLiner will offer customers the standard process including VSP and automated operation software. Customers can start their mission in orbit with affordable price, fast, and in a simple way.



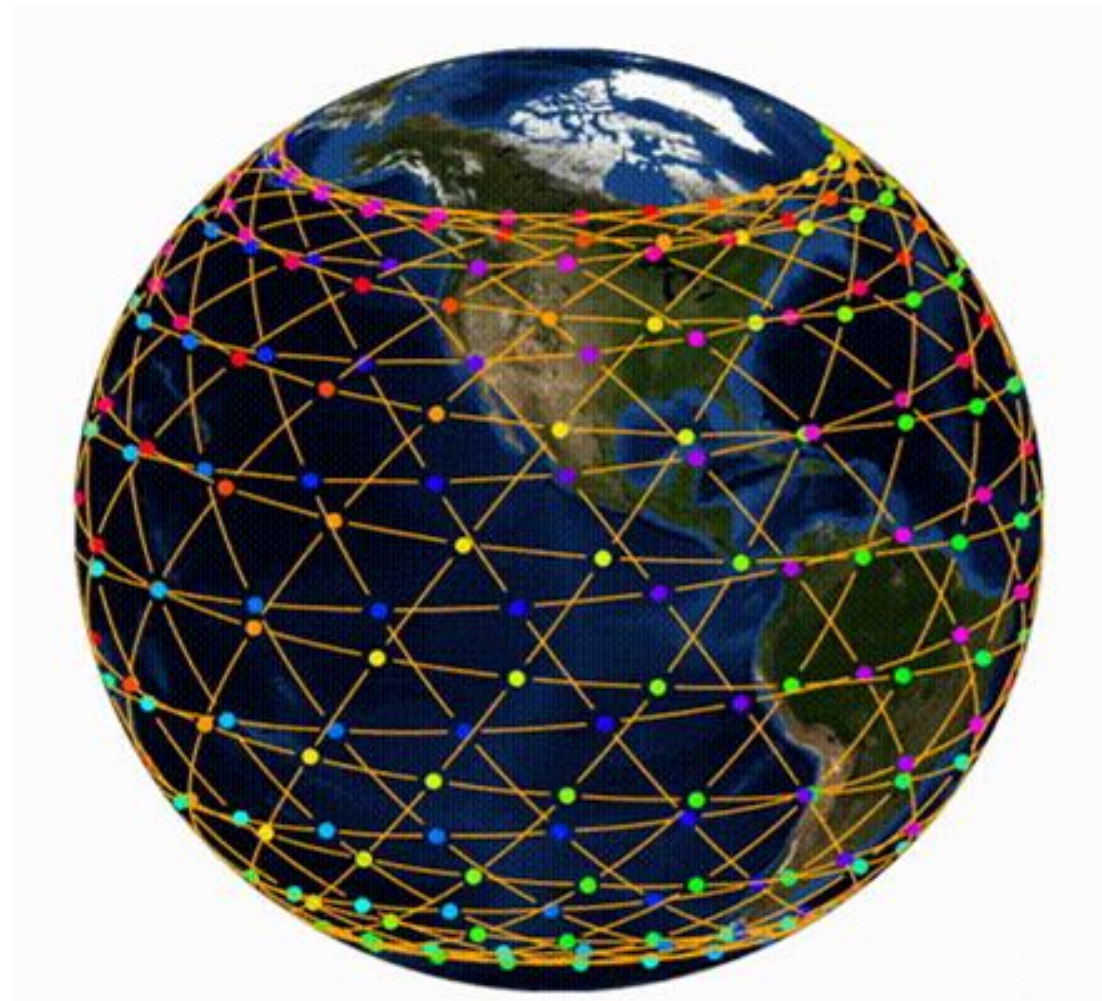
Various Potential Mission

Earth Observation



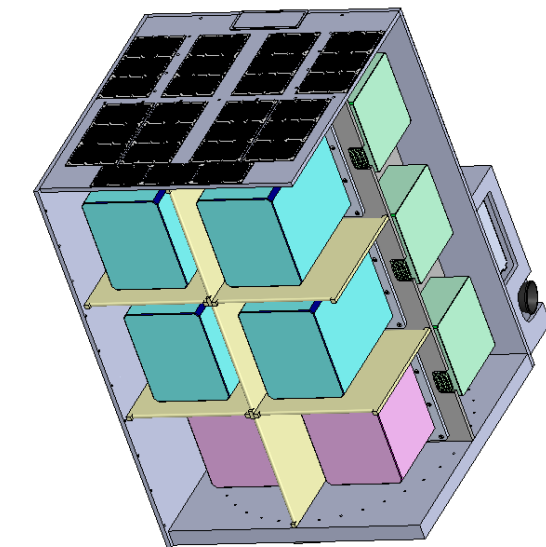
Based on the professional operation knowledge in AxelGlobe business, we can deliver automated operation system to adapt the unique EO requirements such as capturing the specific areas with preferred frequency.

Communications



Leverage our knowledge built through AxelGlobe constellation operation to deliver the automated system for LEO communication constellation.

Demonstration



Based on our experiences of demo satellite for JAXA, leverage our knowledge on processing various demo requests in the orbit to deliver the flexible system to meet various types of demo requests.



AxelGlobe

Sensing the world, changing the future

An aerial photograph of the Tokyo Haneda International Airport, showing its extensive runways, taxiways, and terminal buildings. A white-bordered inset in the upper left corner provides a magnified view of a specific section of the airport, highlighting the ground resolution of the imagery. The main image shows a wide expanse of the airport, with numerous aircraft visible on the tarmac and taxiways. The surrounding area includes some urban development and water bodies.

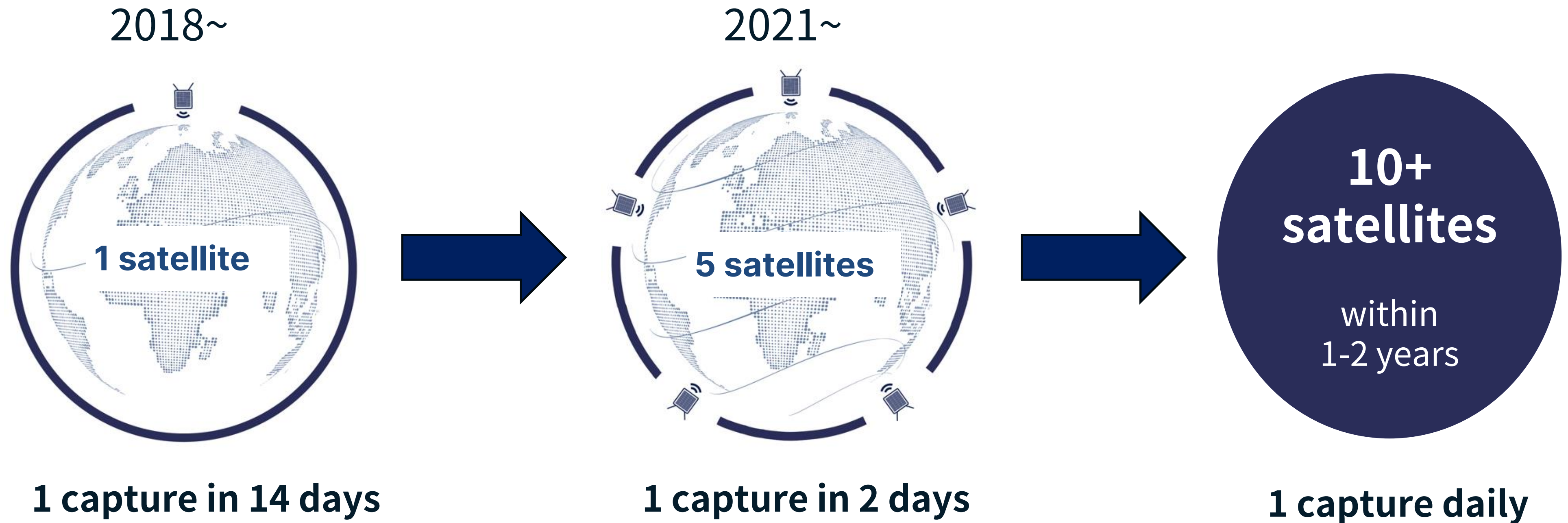
Ground Resolution
2.5m

Swath
55km

Tokyo Haneda International Airport,
Japan

Growth of AxelGlobe constellation

5 satellites are currently available to cover wider range of demands.
 We are also preparing increase the number of satellites to meet the growing demand.



Revisit frequency to the same mid-latitude location (including Japan)

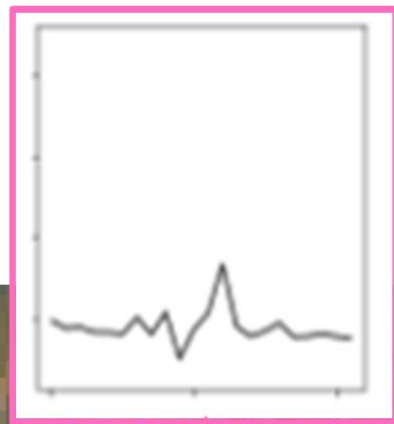
AxelGlobe use case: Smart agriculture

Utilization for smart agriculture is particularly advanced in the Americas and Australia, where tracts of land are available.

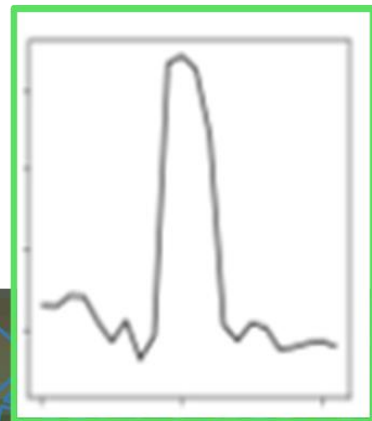


Analysis of farmland and growth conditions

One year- vegetation index plot of an abandoned farmland



One year- vegetation index plot of an active farmland



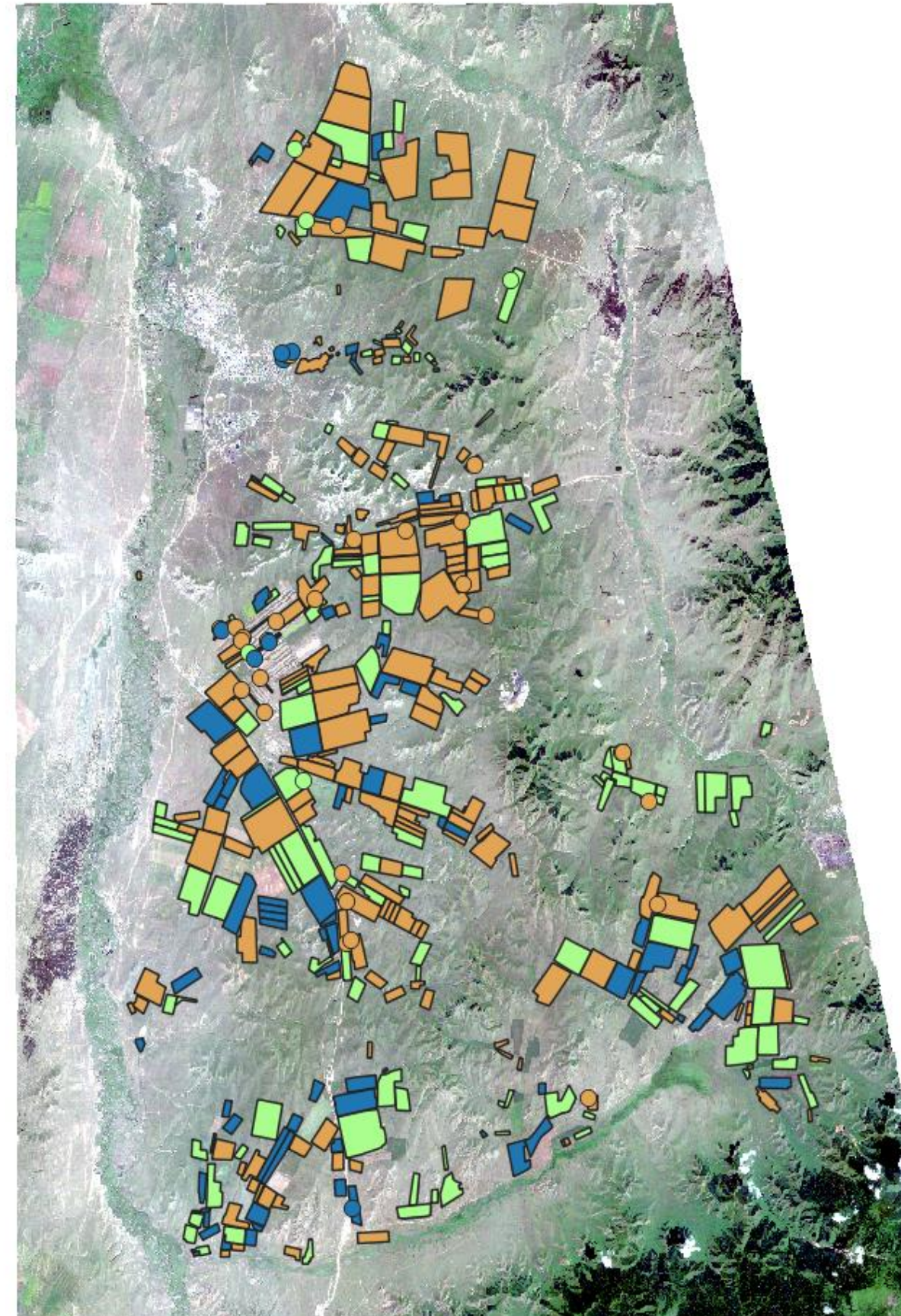
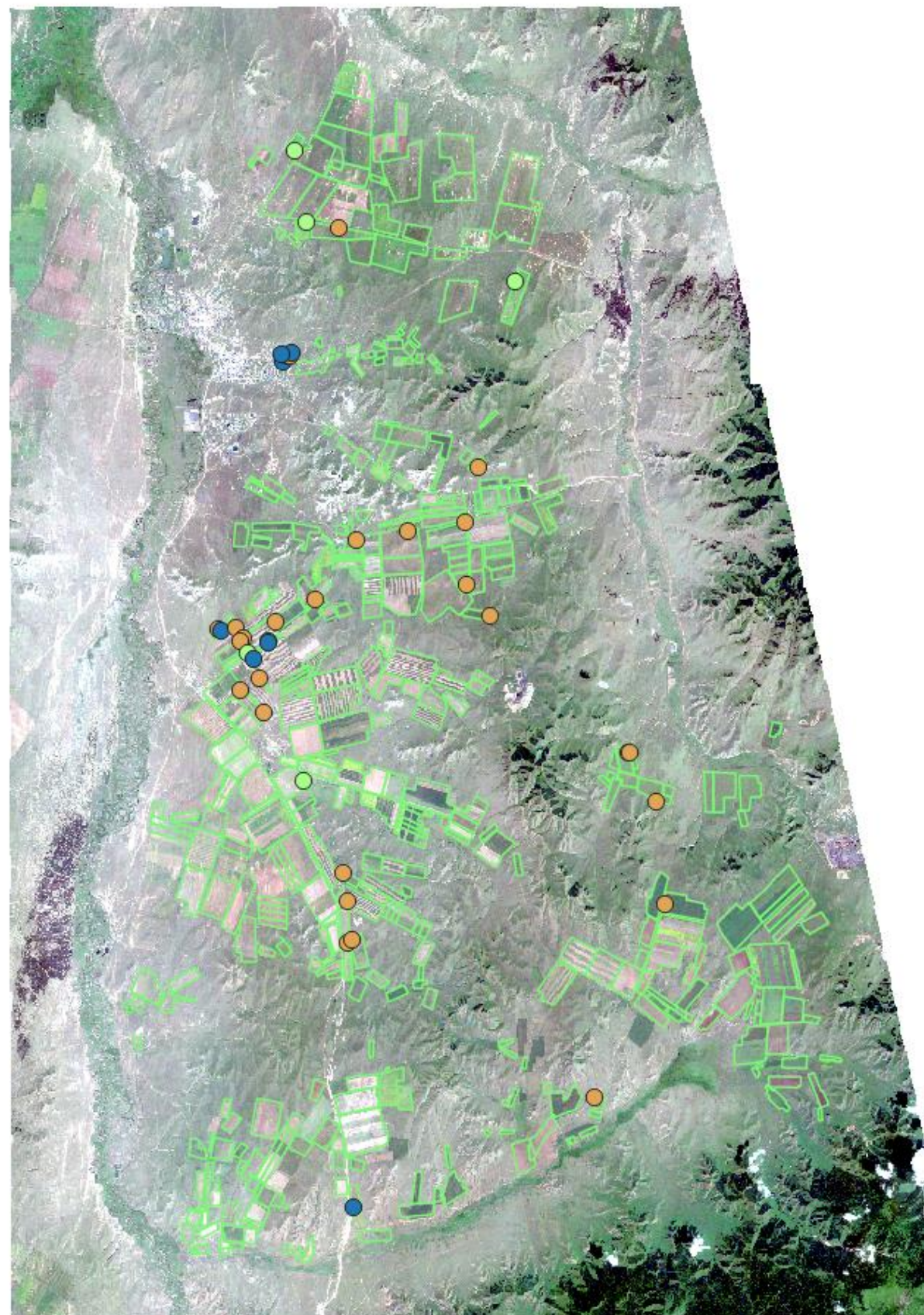
Abandoned farmland Active farmland Non-agricultural land



AxelGlobe use case: Smart agriculture

Utilization for smart agriculture is particularly advanced in the Americas and Australia, where tracts of land are available.

9 産業と技術革新の基盤をつくろう
11 住み続けられるまちづくりを
12 つくる責任 つかう責任
13 気候変動に具体的な対策を
15 陸の豊かさも守ろう



Ground truth

- Rapeseed
- Wheat
- Others

Classified

- Rapeseed
- Wheat
- Others

| Crop Class | Area 2 (Ha) |
|------------|-------------|
| Rapeseed | 6, 111.944 |
| Wheat | 6, 698.288 |
| Others | 9, 559.736 |

AxelGlobe use case: Disaster response

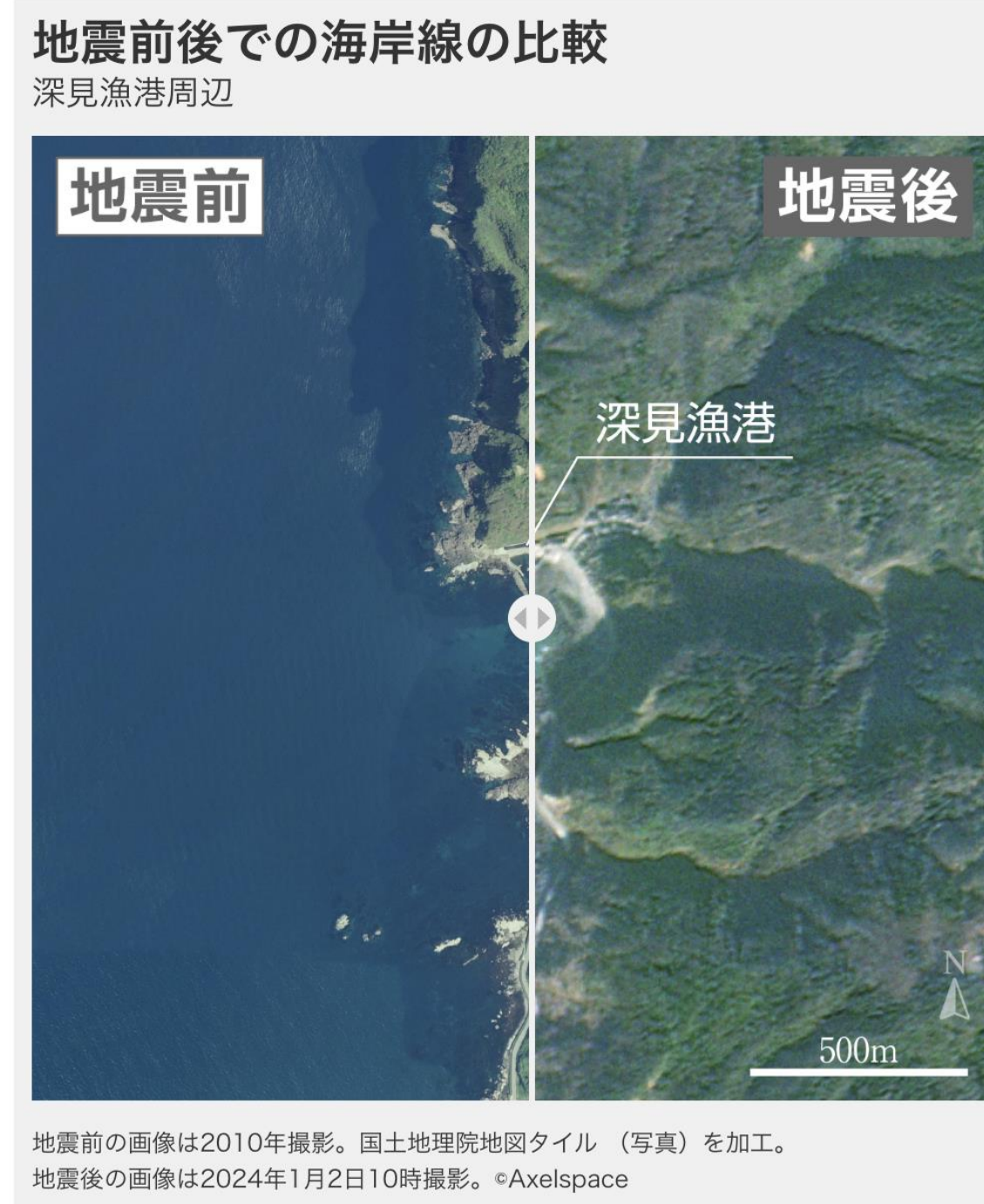
Data utilization is also expanding in areas of societal issues such as natural disasters.



Source: NHK News Watch 9



Source : Chunichi Shimbun Website



地震前の画像は2010年撮影。国土地理院地図タイル（写真）を加工。
地震後の画像は2024年1月2日10時撮影。©Axelspace

Dedicated Page for the 2024 Noto Peninsula Earthquake
<https://www.axelglobe.com/ja/the-noto-hanto-earthquake-in-2024>

AxelGlobe use case: Forest monitoring

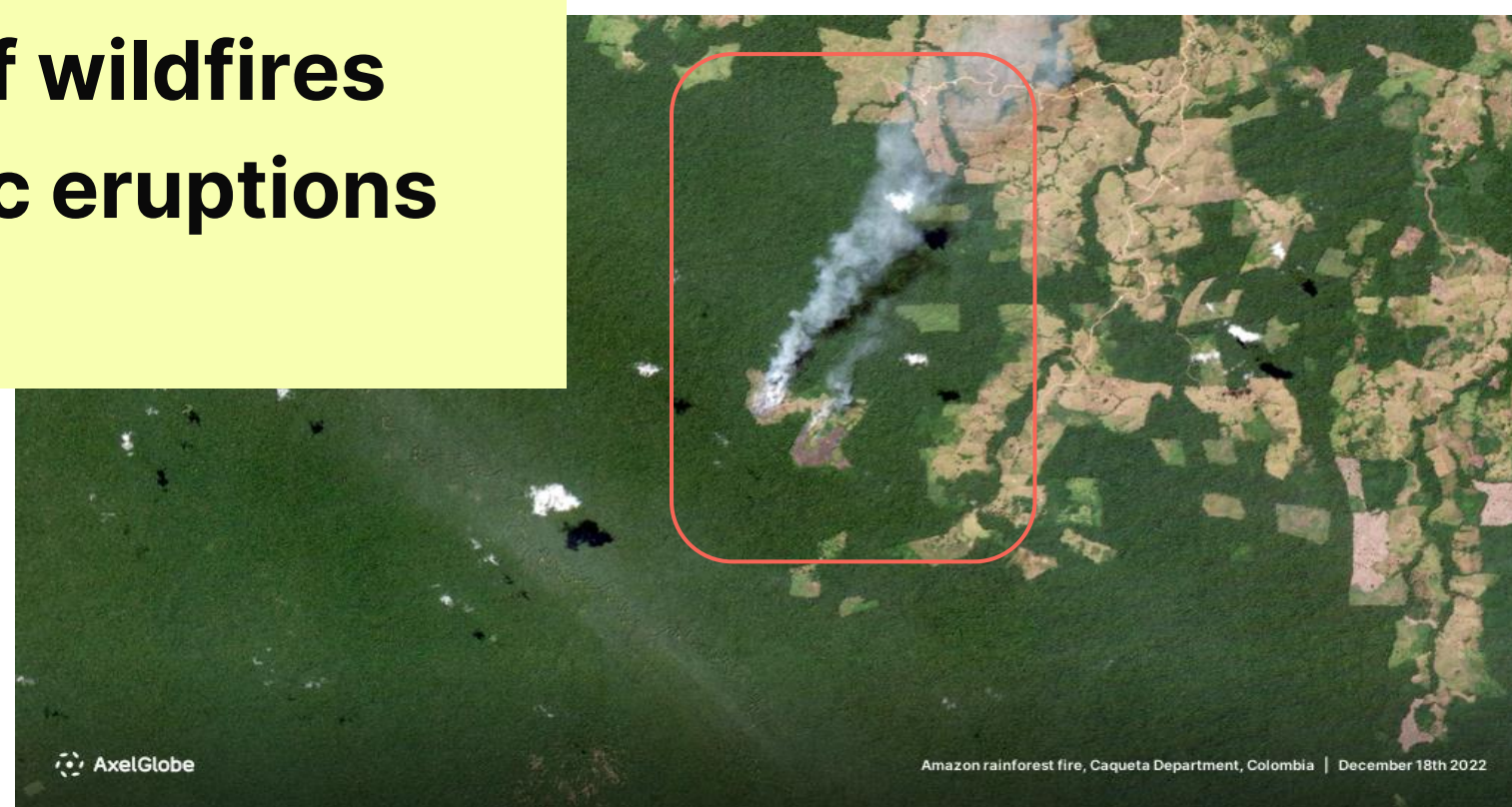
Forest monitoring also helps in early detection of illegal logging, fires, etc.



Deforestation monitoring (Periodic observation of the same point)



Detection of wildfires and volcanic eruptions

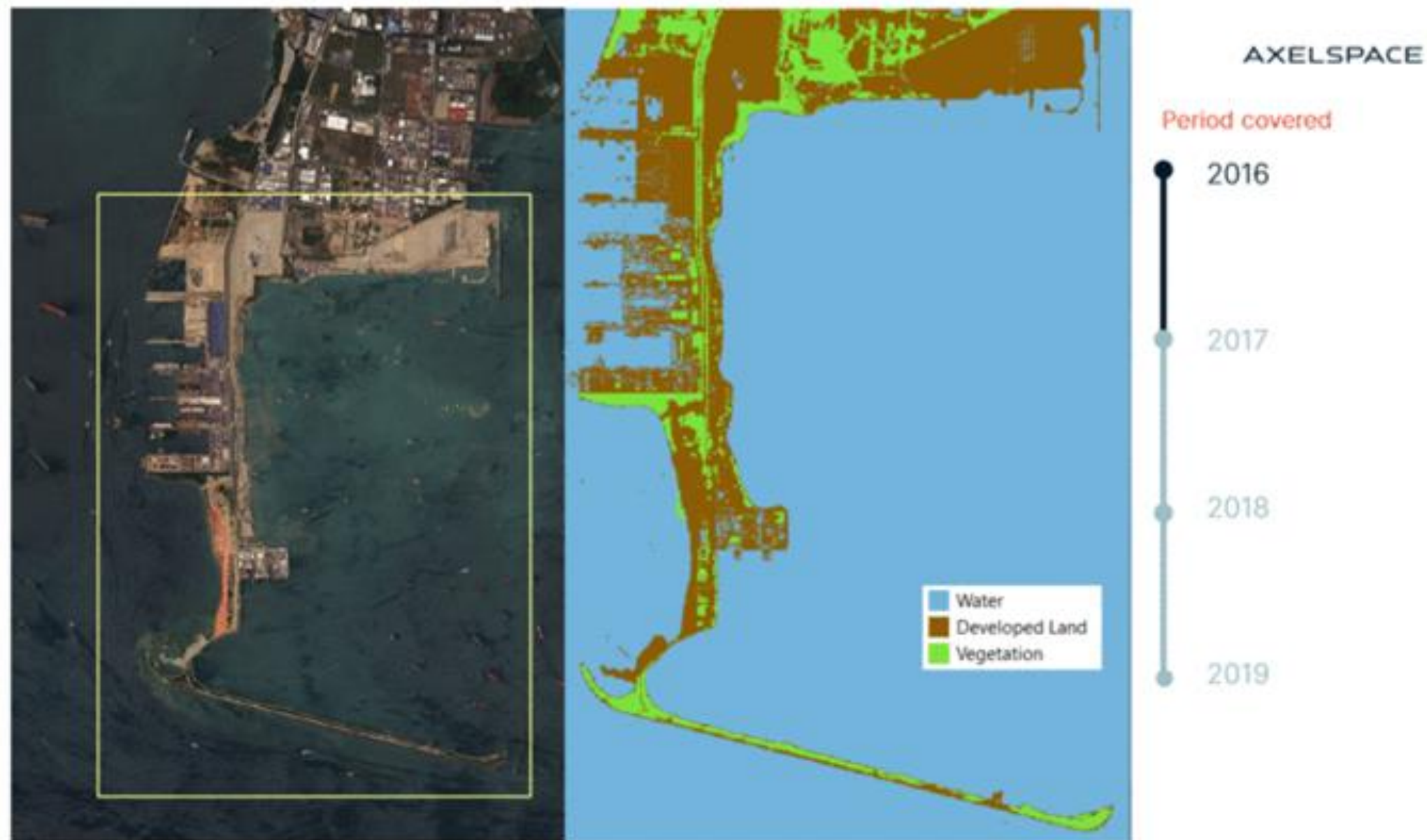


AxelGlobe use case: Infrastructure monitoring

It is used as alternative data in finance and insurance industries in addition to infrastructure monitoring



Periodic monitoring in remote areas

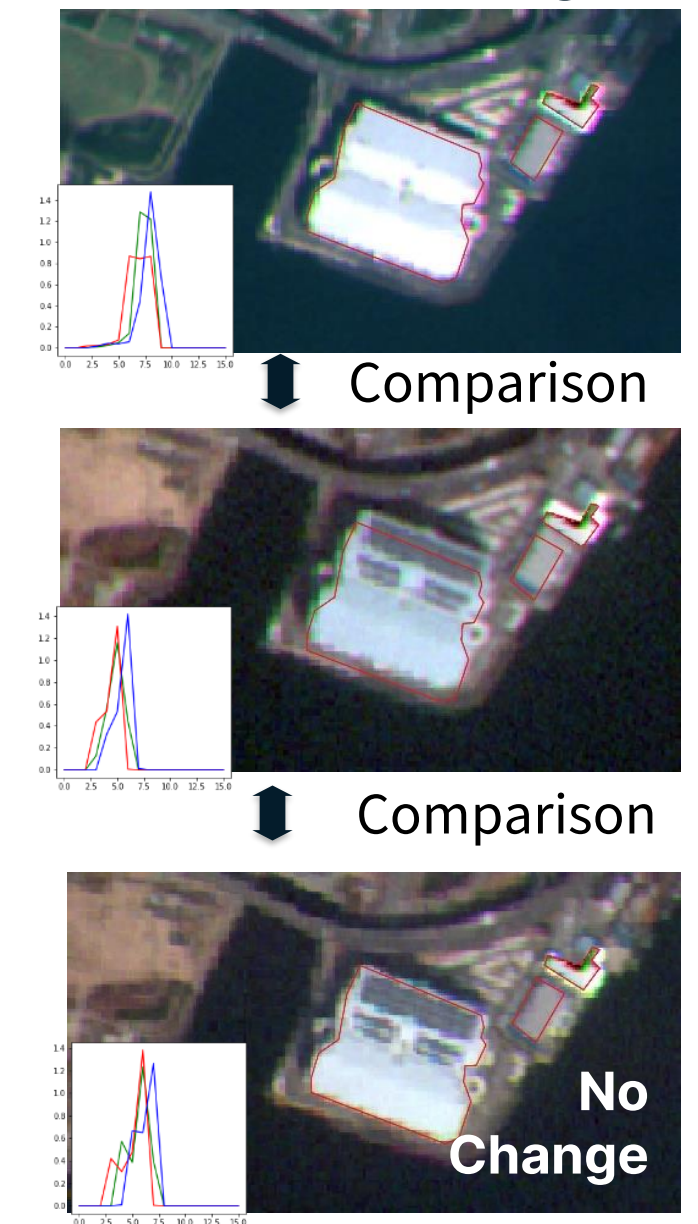


Detection of infrastructure deterioration & abnormalities (change identification)

Anomaly detection on expressways

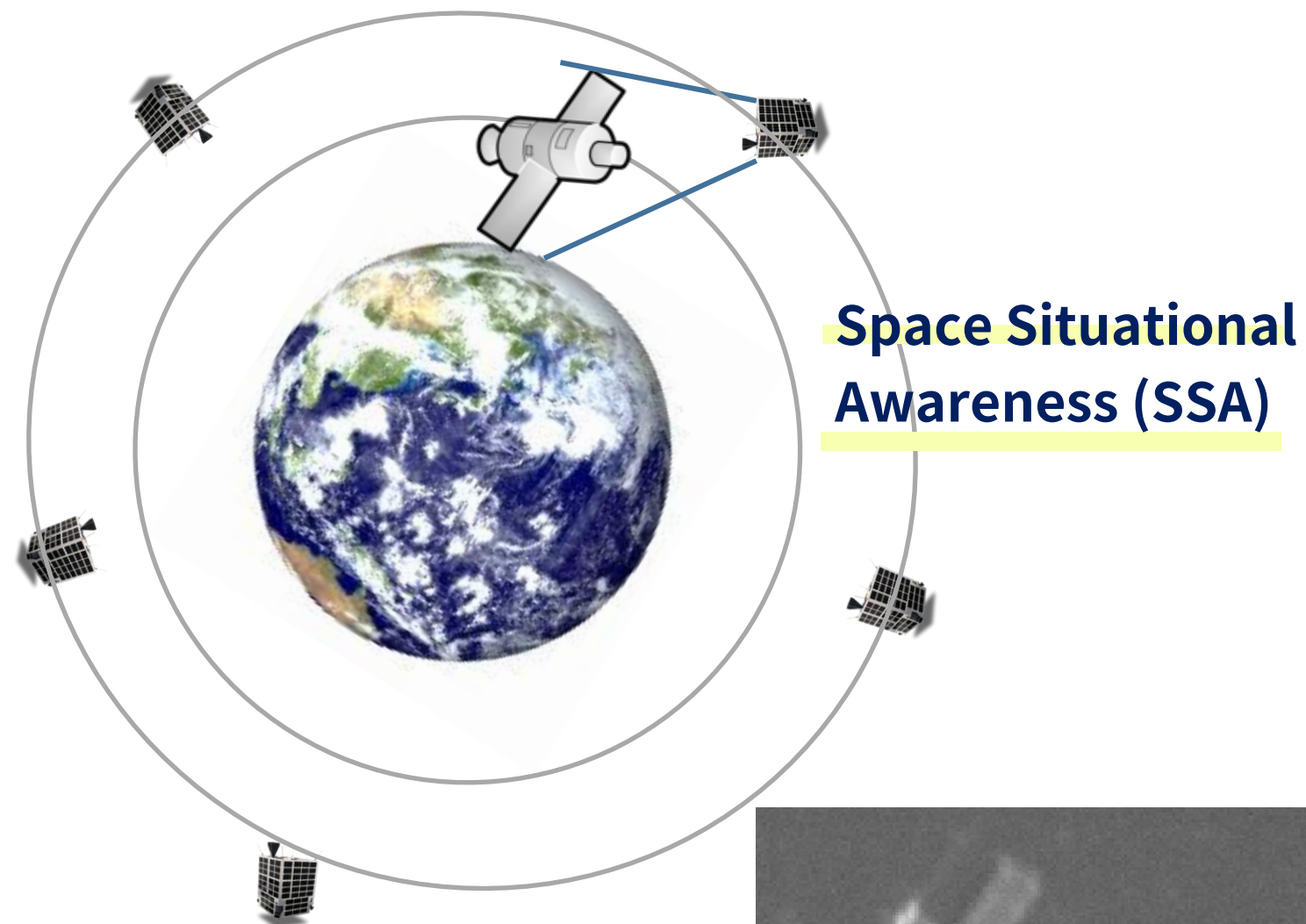
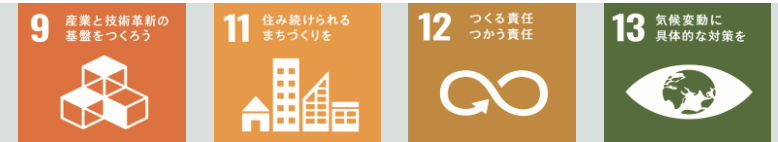


Roof deterioration of large facility



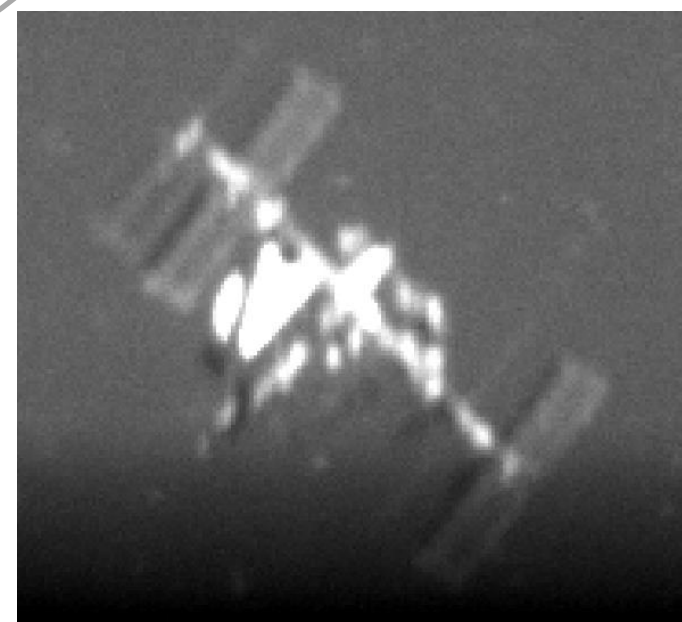
AxelGlobe use case: Space Situational Awareness

Recently application of satellite technology has expand to raise space situational awareness.



Space Situational Awareness (SSA)

Image of ISS taken by GRUS



Satellite data applications for SSA: Expanding partnerships worldwide



Australia

HEO Robotics

(Contract concluded in November 2022)

First company in the world to provide in-orbit satellite monitoring services



Canada

NorthStar Earth & Space

(Concluded in January 2023)

First private company to develop its own SSA services to minimize the risk of collisions among satellites and debris

AXELSPACE

THANK YOU!

Axelspace LinkedIn

