Introduction of Satellite x AI activities in Ridge-i

32nd IAF Workshop

27th Sep. 2025

Ridge-i

Contents

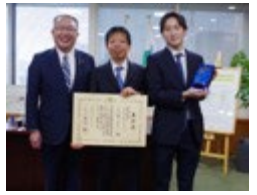
General information

Company Name	Ridge-i Ltd. (Ridge-i)
Location	1-6-1 Otemachi, Chiyoda-ku, Tokyo
History	July 2016 established April 2023 listed on the Tokyo stock exchange growth market
Members	**~ 90 (30~ members are AI Engineers)**
Our Business	Formulate business strategies Develop solutions and provide licenses Analyze Satellite data

Management Advisor: Toru Katsumoto
(Former Sony Group Vice President)

Technical Advisors: Yoshitaka Ushiku
Toru Tamaki (Professor, Nagoya Institute of Tech.)
Shunsuke Ono
(Associate Professor, Tokyo Institute of Tech.)

Major Awards: 4th Space Dev. Award: METI Award
5th Space Dev. Award: MOE Award
6th Space Dev. Award: MLIT Award


Our partners

Ridge-i business overview

Three main business

Ridge-i

Custom AI solutions business

Consulting & AI development service

Contents

- AI advisory service
- AI system design
- AI prototyping
- AI system production
- Project management

apply

Satellite data analysis

Contents

- Ridge Integrated AI
- Business consulting
- GRASP EARTH Forest report
- Create GIS software

AI operation service (MLOps)

Contents

- AI system operation
- AI system improvement
- AI engine licensing
- AI system revenue share

We would like to realize the sustainable society both with technology and business.

Satellite activities in Ridge-i

Ridge-i's position in the satellite domain

Infrastructure | **Data** | **Customer Application**

Satellites

Acquisition

MAXAR TECHNOLOGIES

AXELSPACE

Synspective

iQPS

Reception /Sales

Infostellar

SKYGATE TECHNOLOGIES

PASCO
Surveying the Earth to Create the Future

Storing

aws

Google Cloud

Microsoft Azure

Analysis

Orbital Insight

Value-added services

Ridge-i

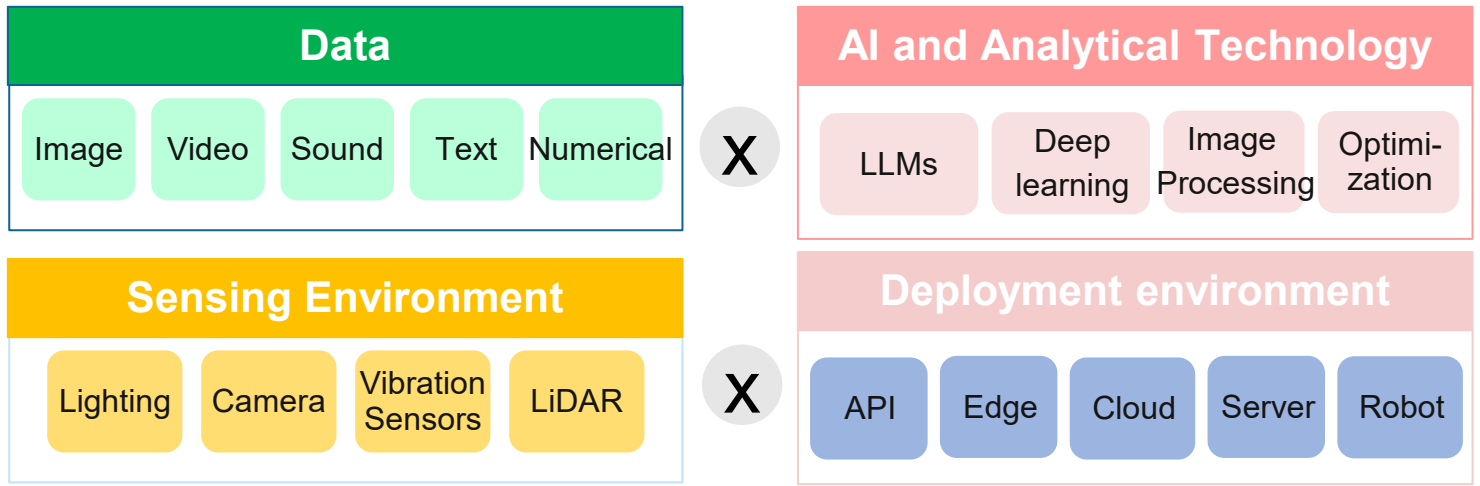
- End users
- Agriculture
- Energy
- Finance
- Logistics

Our technical strength: Multimodal AI

Ridge-i's core AI technology 4th Generation AI "Multimodal AI"

What is "Multimodal AI"?

- Integrates images, voice, numbers, and text
- Makes unified decisions from diverse inputs
- Combines deep learning with sensitivity evaluation

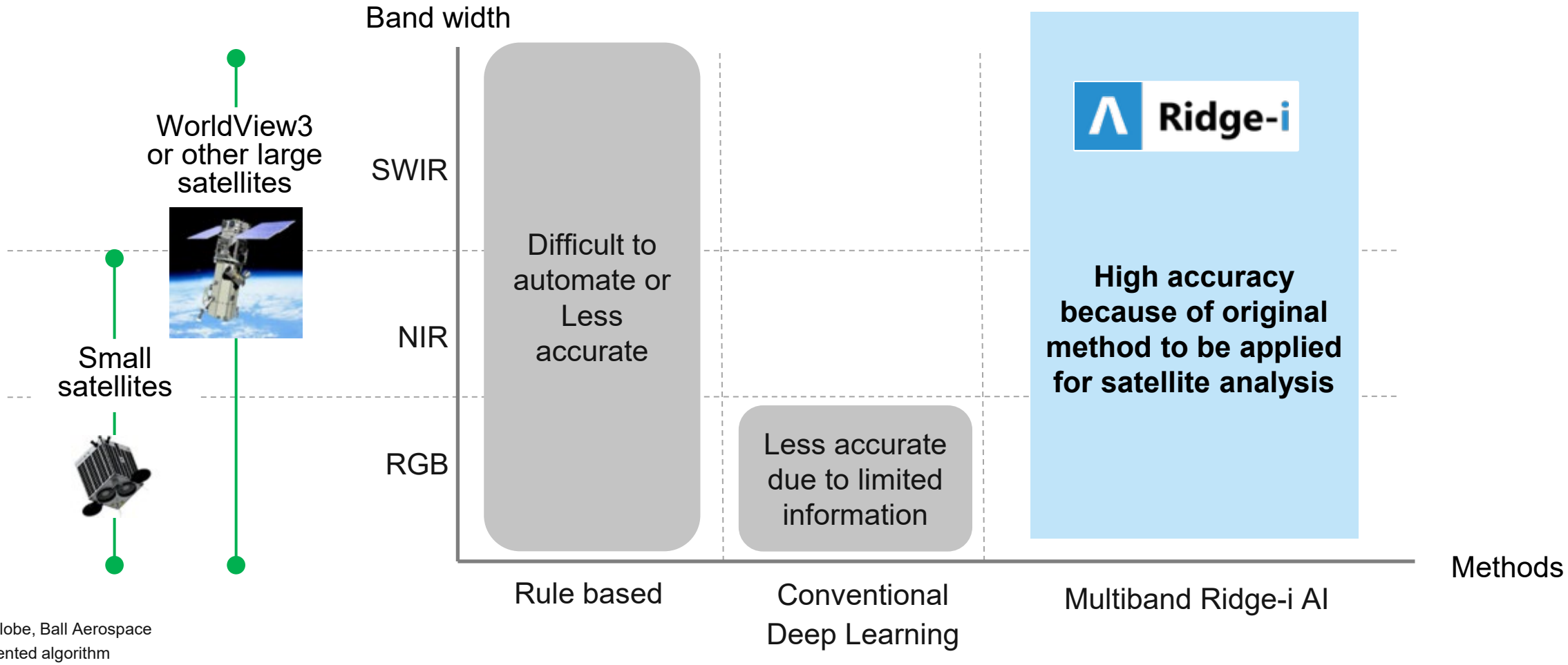


Multimodal AI solves problems that cannot be solved by a single model

Ridge-i has a strength in combining data

Satellite activities in Ridge-i

Our strength in satellite image analysis domain



©DigitalGlobe, Ball Aerospace

Note: patented algorithm

Three typical AI tasks for analysis

Object Detection

Detect the position and number of pre-defined targets

Change Detection

Detect changes by using two or more time series data

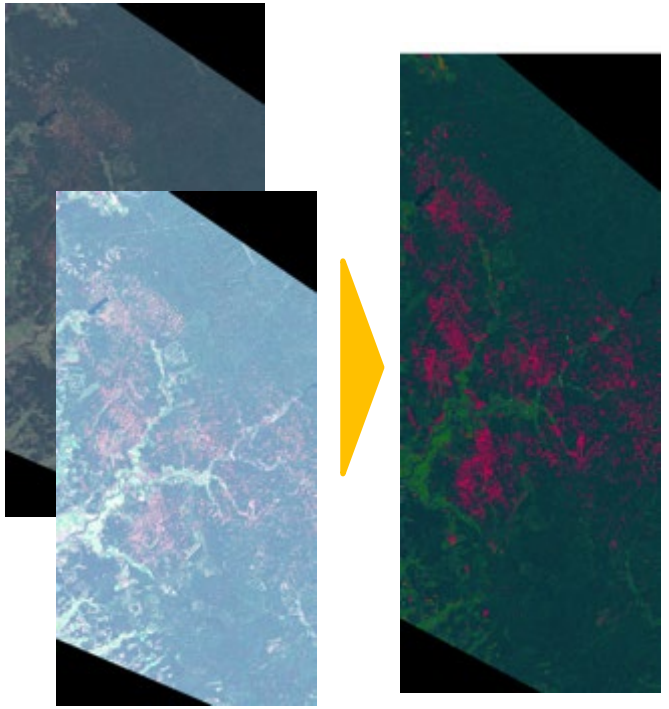
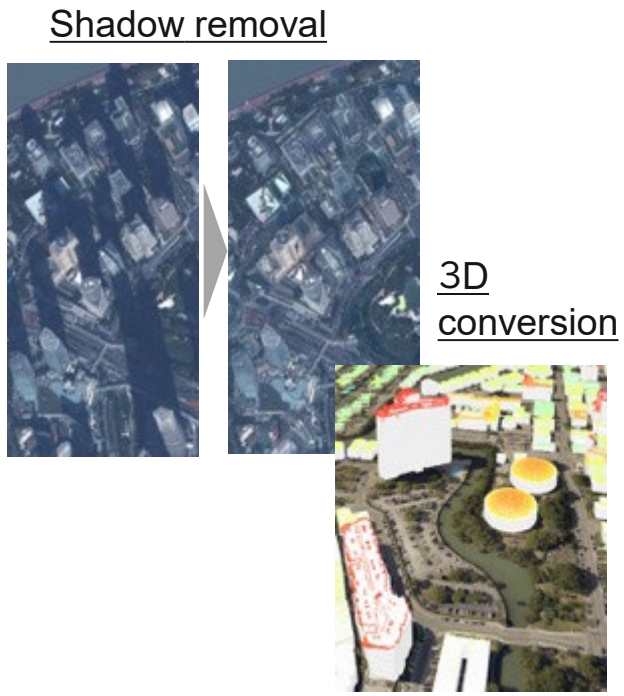


Image processing

Remove noise from satellite images such as shadow or clouds

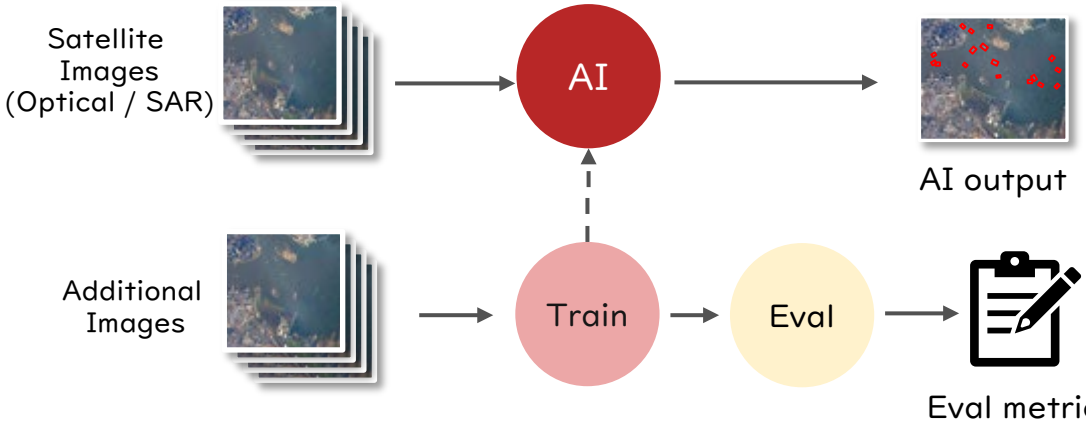


Trainable Satellite Image Analysis Product

~ Ridge SAT Image Analyzer ~

Ridge SAT Image Analyzer

✓ A specialized product for satellite images that can train and infer machine learning models to detect and extract arbitrary objects.



Features of Ridge SAT Image Analyzer

✓ Training and inference are available both in the cloud and on-premises
Even highly confidential data can be processed without risk of information leakage. Additionally, this solution resolves complex licensing issues of satellite data.

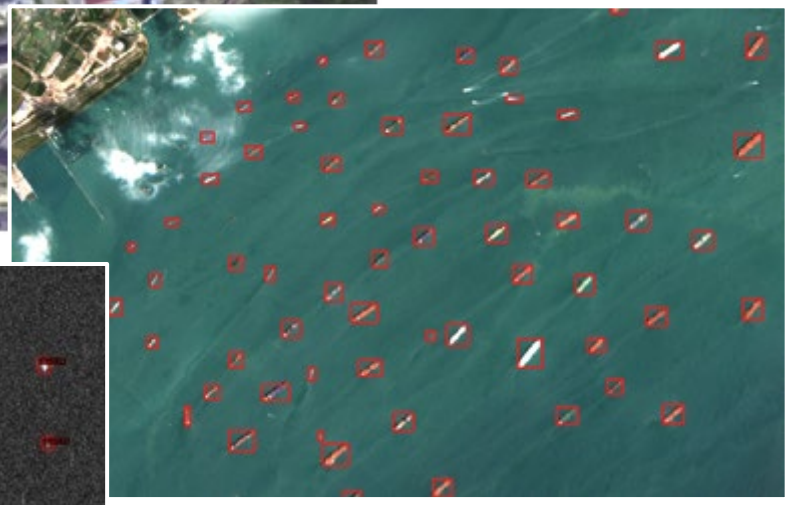
✓ Operable with a single command
There's no need to learn specialized satellite image techniques.

✓ Flexible customization
It easily integrates with commercial GIS software like QGIS and ArcGIS. It is containerized for easy integration with in-house software. Combined analysis with non-satellite data is also possible.

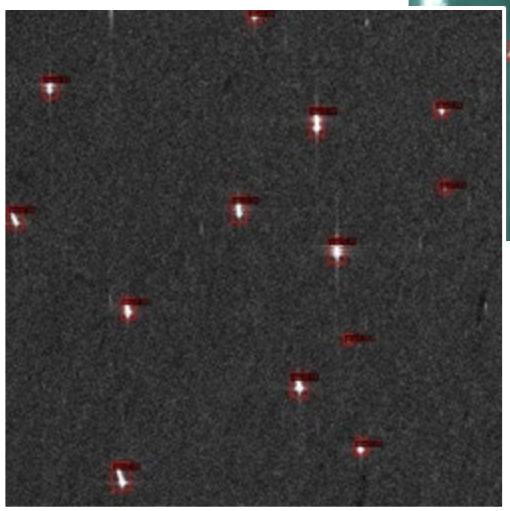
▽Solar panels detection▽

Imagery©Maxar Technologies.
Processed by Ridge-i

▽Ships detection▽



Copernicus Sentinel data [2025] ©ESA



◁Ships detection (SAR image)

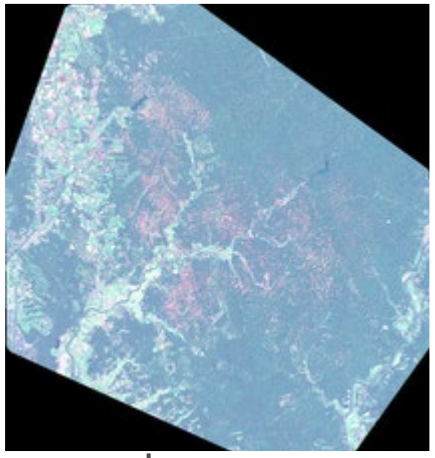
Disaster monitoring application ①

Landslide areas detection

Our deep learning–based model rapidly and accurately detected landslide areas from the Hokkaido Eastern Iburi Earthquake, achieving a mean IoU of over 80%.

Japan Aerospace Exploration Agency (JAXA)

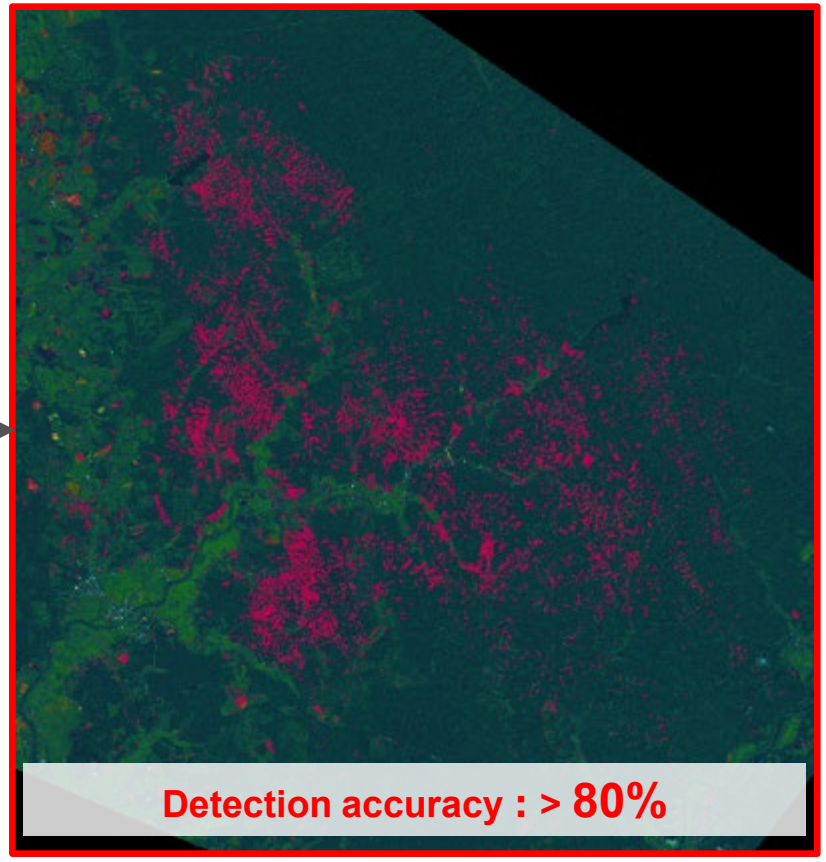
▽Input image▽



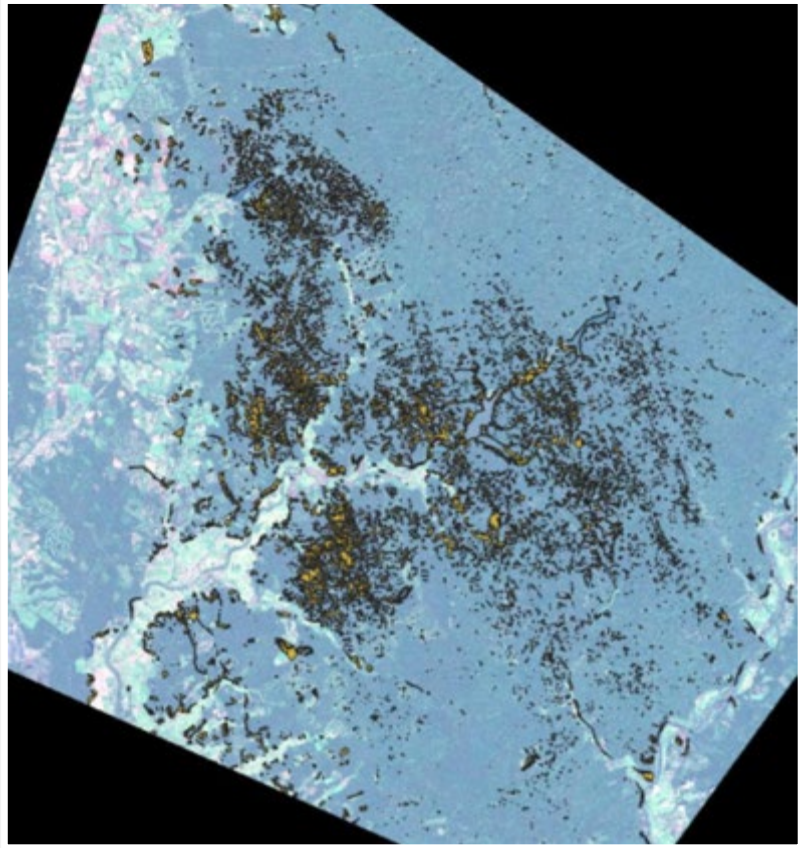
※Satellite image：SPOT6

Ridge-i's Satellite Image Processing AI

▽Model output▽



▽The area of actual landslides▽



©SPOT6

Disaster monitoring application ②

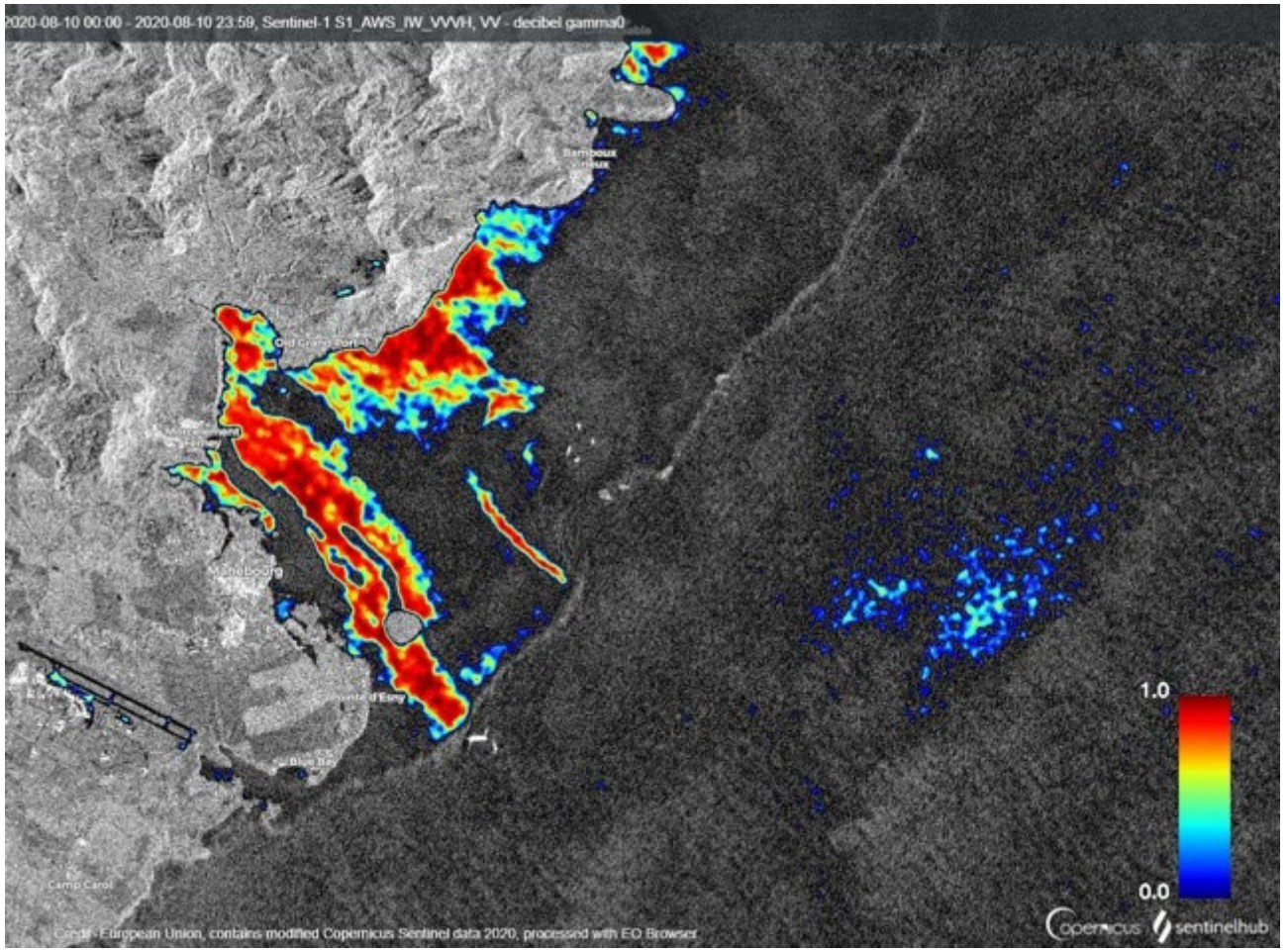
Ridge-i case study: Oil spills detection (Quick data analysis for environmental pollution)

Background

- Developed a model to output heatmap to visualize the areas affected by the Wakashio oil spill off Mauritius (2020).
- Due to the COVID-19 pandemic, on-site visits were not possible, and the incident drew media attention partly because the tanker was Japanese.

Summary

- Conducted time-series SAR analysis to estimate polluted areas
- Delivered results in a media-friendly format, enabling wide coverage on web news
- Demonstrated our approach of designing outputs with end-use in mind to maximize impact



Copernicus Sentinel data [2025] ©ESA

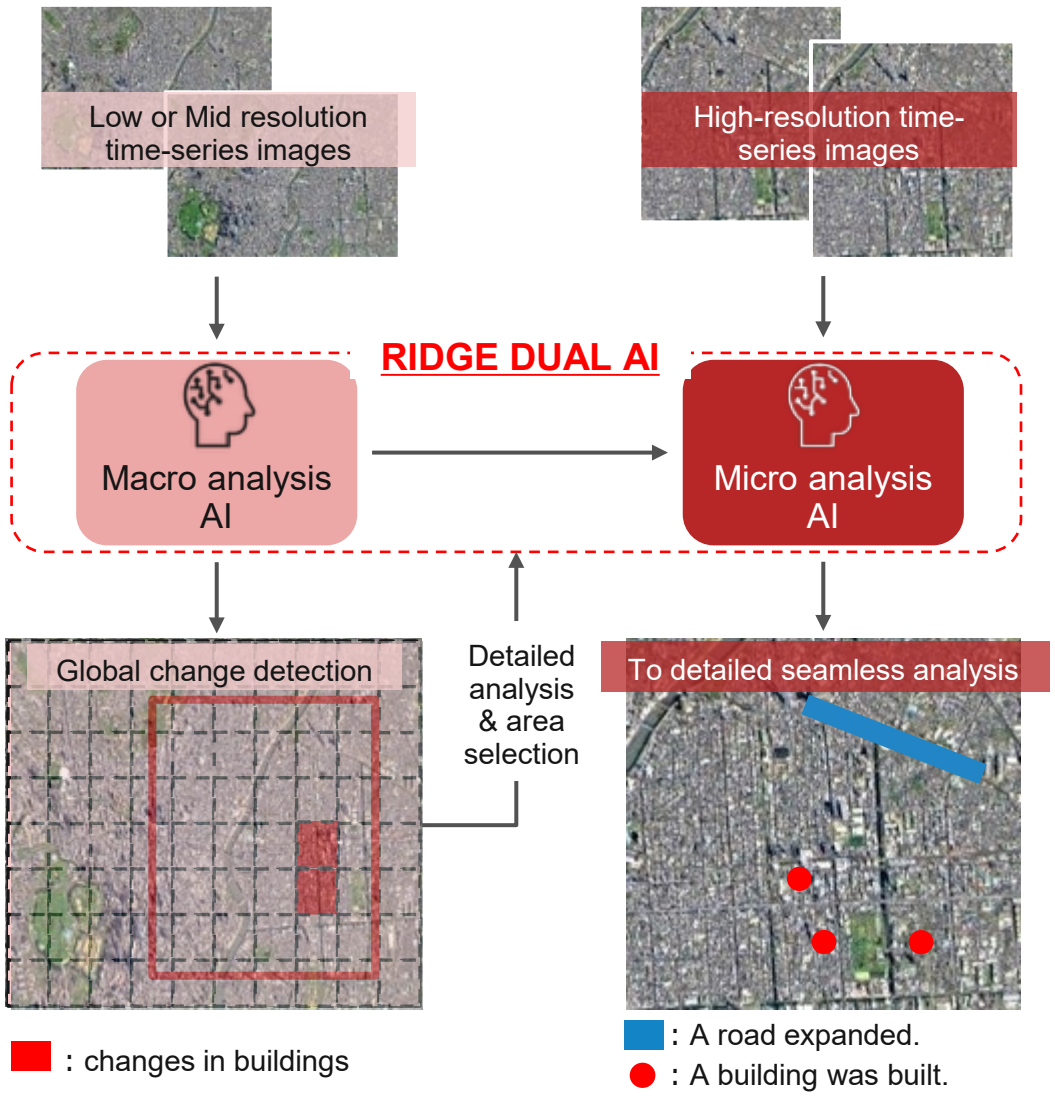
Cost-effective Time Series Change Detection Solution
~ RIDGE DUAL AI ~

Challenges to be solved

- Large-scale change detection requires balancing cost and resolution of satellite images
- Acquiring many high-resolution images is costly, while low-resolution images lack detail
- **Ridge Dual AI** solves this with a two-step process:
  ① **Macro analysis AI**: low-cost, low-resolution images for broad change detection
  ② **Micro analysis AI**: high-resolution images for detailed object-level analysis
- Enables rapid and cost-effective understanding of geographical changes
- Supports **multi-modal comparisons** (e.g., old maps vs. new satellite images) for broader applications

Major Achievement

✓ Awarded the 6th Space Development and Utilization Award, Award (2024) - use of large-scale object change detection AI in analyzing geographical changes and conflict
✓ Visualized building collapses due to the Myanmar civil war using satellite images (broadcast on NHK Special in 2022)
✓ Used by the Geospatial Information Authority of Japan for updating electronic base maps (2023) - Expected to significantly reduce the time and human costs of map updating



Change Detection Use Case ①

Visualization of the Impact of the Myanmar Civil War

Background

- In Myanmar, a civil war led to the burning of civilian houses in rural areas
- A Japanese broadcaster (NHK) planned a documentary but could not conduct on-site reporting
- They requested satellite image analysis to ensure accurate and fair coverage

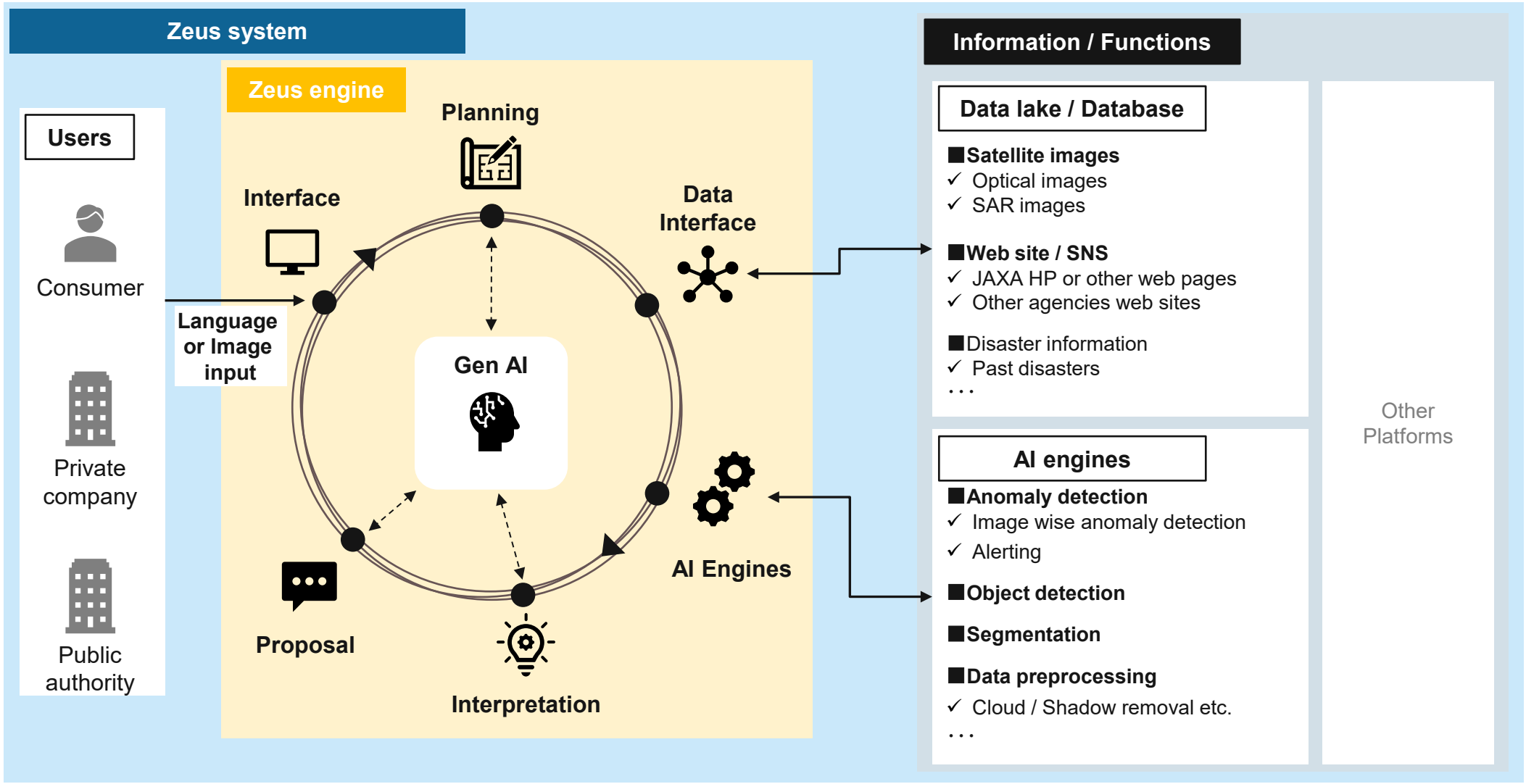
Summary

- Using **RIDGE DUAL AI** and **Ridge SAT Image Analyzer**, we counted destroyed houses over a two-week period
- Achieved **>90% accuracy** compared with manual counting
- Results were broadcast nationwide in Japan

© NHK

End to End automatic reporting system

Zeus system (Gen-AI based multi language analysis platform)



Satellite activities in Ridge-i

AI on TOP

User query:

Tell me the number of ships in Singapore on Aug 2025

Summary

1. Ridge-i introduces AI by working backward from user needs
2. With the trainable Ridge SAT Image Analyzer, customers can easily build their own AI models
3. Change Detection (RIDGE DUAL AI) enables cost-effective large-scale monitoring
4. Developing next-generation solutions leveraging LLMs
5. Open to collaboration with researchers and industry partners

Thank you for your attention!