

GISTDA 2050:

Shaping the Future of
Earth Observation for a
Sustainable Society

➤➤➤➤➤ 持続可能な社会のための
地球観測の未来を形作る

Dr. Tanita Suepa

Director of Office of Strategic Alliance and
Business Development





Thailand's government agency leading Space and Geo -informatics

宇宙・地理情報科学を主導するタイの政府機関

Established 2000 under Ministry of Higher Education, Science, Research and Innovation

高等教育科学研究革新省の下に2000年発足

Vision

1. Collaboration Opportunity
2. Regional/ Global Earth Observation Networks
3. Expanding Thailand's Space Capabilities

Action

1. Data/ Solutions: Co-development/ Share function
2. Satellite Projects: EO Satellites, Research Satellites
3. Technological advance: Expand AI/ ML based predictive models

**To be an organization that brings together the values of
space technology and geo -informatics for the greatest benefit of humanity**

宇宙技術と地理情報科学の価値を結集し、人類の最大の利益のために貢献する組織となる



GISTDA's main Missions

GISTDAの主な事業内容

Geo - informatics
For All

EO Satellite
Operation

Space Economy
Promotion

National Space
Law and Policy

Manpower
development and
Capacity building

GISTDA SPACE VALUE CHAIN

GISTDAの宇宙
バリューチェーン

Outer Space

- Space Exploration
- Space Experiment
- Space Situation Awareness
- Space Weather
- Space Traffic Management

Upstream

Mission Design

- Architecture Design
- System Design
- Satellite Design
- Spacecraft
- AIT, GALAXI Lab

Manufacturing

- Raw Material
- System Integration
- Satellite, Payload

Midstream

Launch Service

- Insurance
- Launch Facilities, Spaceport

Operators

- Ground System
- Satellite Operations

Downstream

Service

- Satellite Data
- UAV
- Sensor
- GIARD
- Data Cube
- MAP APIs
- Open Data Platform

Applications & Solutions

- Water Management
- Disaster
- Urban Planning
- Agriculture
- Natural Resource
- Mapping

Extended economy

- Navigation & Logistic
- Mapping
- Tax & Insurance
- Tourism

Capacity Building

能力開発

National Space Data Center

Space Academy

Geospatial Intelligence Center

ARTSASCGI

Space

Inspirium

THAILAND

タイの地球観測システム

EARTH OBSERVATION SYSTEM

中解像度

Medium Solution

2.1 – 30 m.



高解像度

High Solution

1–2 M.



超高解像度

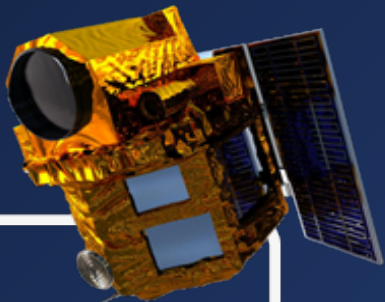
Very high Solution

30 – 99 CM.



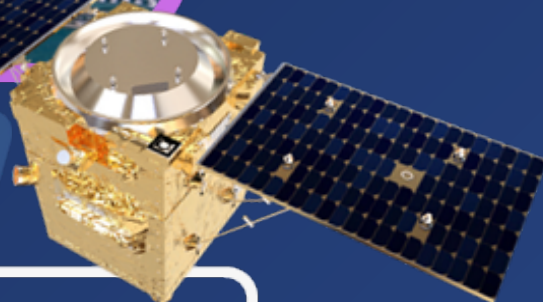
THEOS-2A

THAICHOTE



SPECIFICATION			
RESOLUTION	2 METERS PANCHROMATIC	15 METERS MULTISPECTRAL	2 METERS PANSHARPENED
SPECTRAL BANDS RGB,NIR	SWATH WIDTH: P22, M90 KM REVISIT: 26 DAYS		

THEOS-2



SPECIFICATION			
RESOLUTION	0.5 METERS PANCHROMATIC	2 METERS MULTISPECTRAL	0.5 METERS PANSHARPENED
SPECTRAL BANDS RGB,NIR	SWATH WIDTH: 10.3 KM AT NADIR revisit: 26 days life cycle: 10 year		



SPECIFICATION

107 METERS

SPECTRAL BANDS

RGB

Video Mode:

High Rate, Full Frame (5120x5120), FPS (25)

Long Duration, Low Rate, Full Frame (5120x5120), FPS (10)

Long Duration, High Rate, Small Frame (Captured: 5120x2880 (5k)

End Product Post Processing: 3840x2160 (Ultra HD/ TV 4K)), FPS (25)

AIS & ADS-B Receivers for ship and aircraft detection

SWATH WIDTH:

5.7 KM X 5.7 KM – 5.9 KM X 5.9 KM @BOL

TOKYO, JAPAN

THEOS-2 IMAGE

Date : 8 May 2024 ~ Resolution : 50 cm

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Geo - Informatics and Space Technology Development Agency

Space Infrastructure

宇宙インフラ



1. Ground Station & Satellite receiving control management

地上局および衛星受信制御管理

組立・統合・試験施設 2. AIT Facility

- Vibration testing
- Thermal vacuum chamber testing
- Thermal cycling chamber testing
- Mass property testing

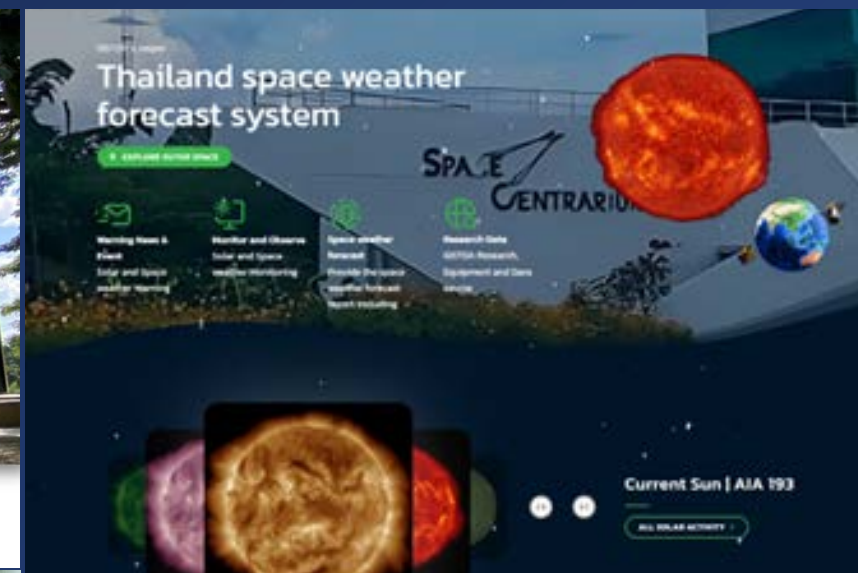


The AIT building is a modern building have international standards to support the development, parts of equipment for building, assembling and testing satellites especially small satellites in Thailand.

The building will have a satellite research and development room, clean room system, and test bench equipment for satellite prototype development.

Manufacturing

National Assembly Integration and Test (AIT) Facilities



宇宙研究 4. Space Research

- Space Situation Awareness
- Space weather
- Space/Air Traffic Management



3. Galaxi Lab Material testing 材料試験



GISTDA's Contributions

GISTDAの功績

宇宙データへの公平な
アクセスを実現

Enable Equitable Access
to Space Data for All

GISTDA manages satellite
operations for national needs.



オープンプラットフォーム

Open Platform for All

Ensuring accessible data for
research and development and
decision making.



AWAGAD

"Connecting spatially-oriented
services to service recipients in all
dimensions on a digital system"

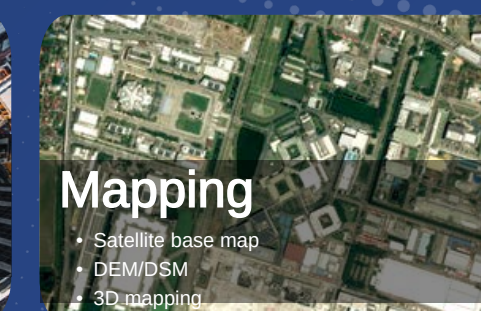
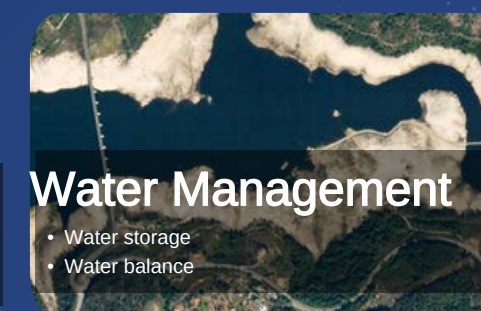
Get started



GIソリューション

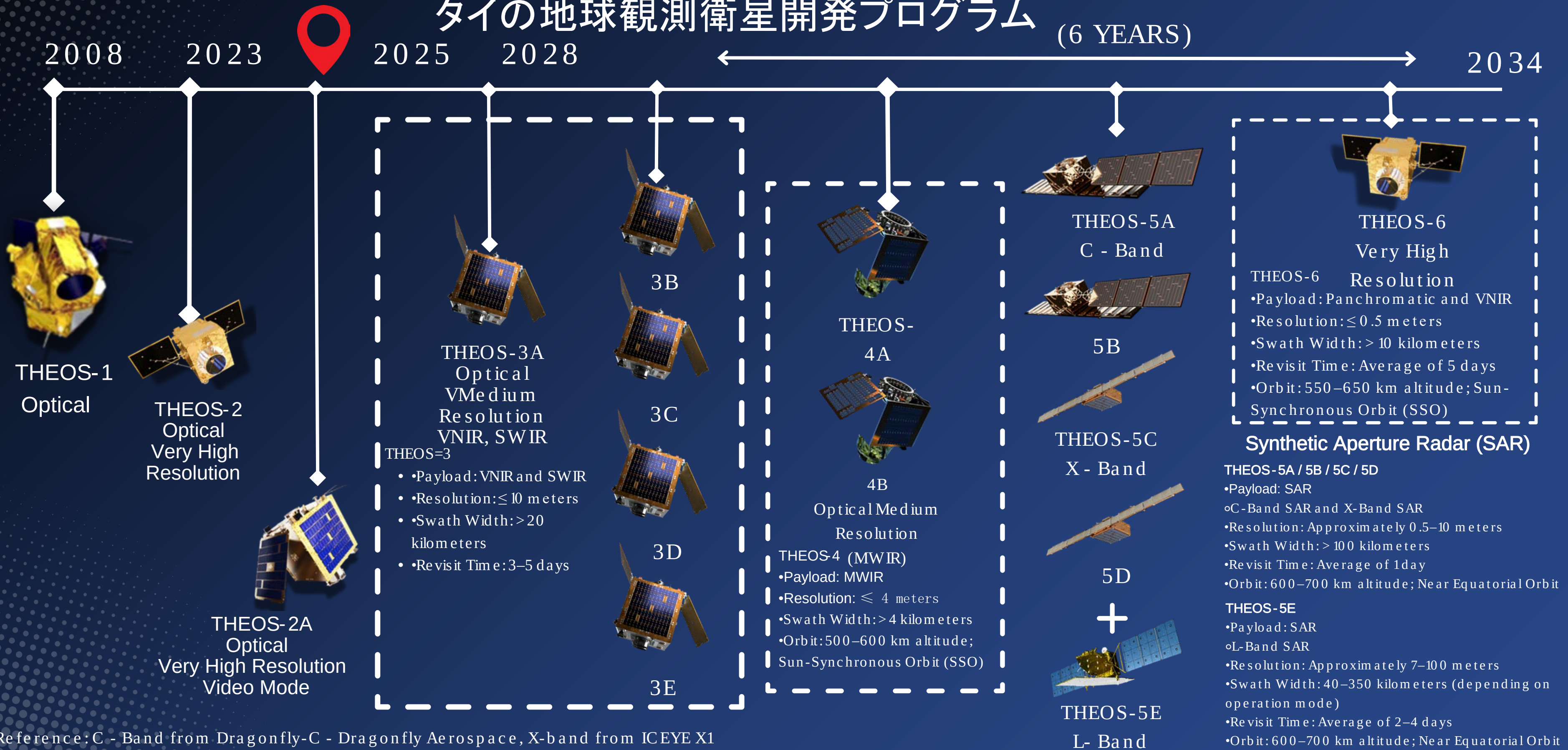
GI Solution for All

Utilizing satellites to gather critical
solutions.



Thailand Satellite Constellation Program

タイの地球観測衛星開発プログラム (6 YEARS)



National Space Master Plan 2023 - 2037(Draft)

国家宇宙マスタープラン2023-2037(計画)

Key Strategies

主要戦略

Strategy 1: Development of space technology and promotion of the utilization of space
for sustainable development

Strategy 2: Development of the Space Economy

Strategy 3: Management of space infrastructure to promote the space industry

Strategy 4: Development of high -quality and specialized personnel in space technology

Thailand Space Act (Draft)

タイ宇宙法(計画)

Principles and Justification

基本原則とその根拠

- Economic Growth and Global Competitiveness
- International Treaty Compliance
- Protection of National Interests
- Domestic Space Governance

Explo ring New Business

新たなビジネス分野の開拓 – 宇宙技術 – Space Technology

Space Situational Awareness

- Observation sensor
- Tracking and Surveillance
- Orbit determination
- Space Object Catalog

SSA

SWF

Space Weather Forecast

- Monitor and Observe
- Forecast System
- Public News and Warning
- Solar Observation Satellite

Spac
Safety and
Security

Space Traffic Management

- Conjunction and Reentry Analysis
- Satellite Maneuver
- Radio Frequency Interference
- Breakup Model

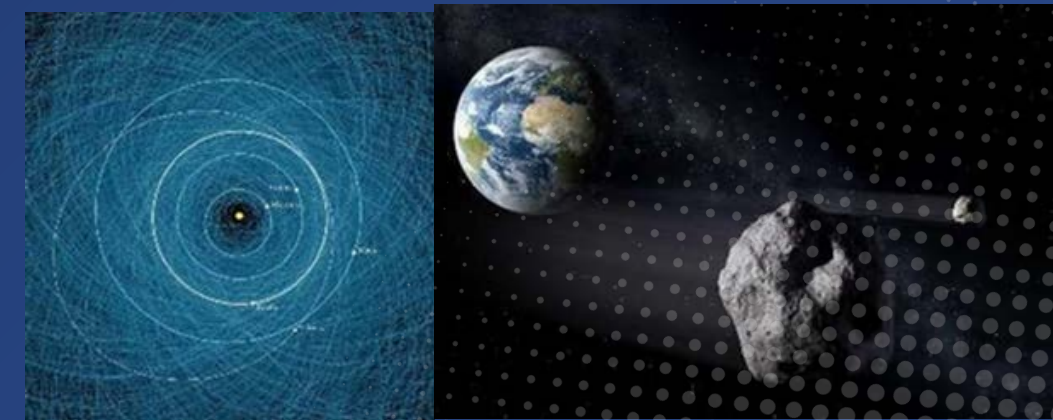
STM

Near-Earth object warning and monitoring

NEO

Others

- A.I. and Machine Learning for space applications
- Unmanned Traffic Management system (UTM)



Toward 2050

—Integrated, Intelligent, EO

AIソリューションとデータ分析

AI Solutions & Analytics

Agriculture

- Economic Crop Monitoring
- Smart farming

Disaster monitoring system

- Decision Support System for drought, flood, fire, and Crop drought

Natural Resources

- Deforestation
- Biomass, Carbon storage

Urban Planning

- 3D Building, Digital Twins

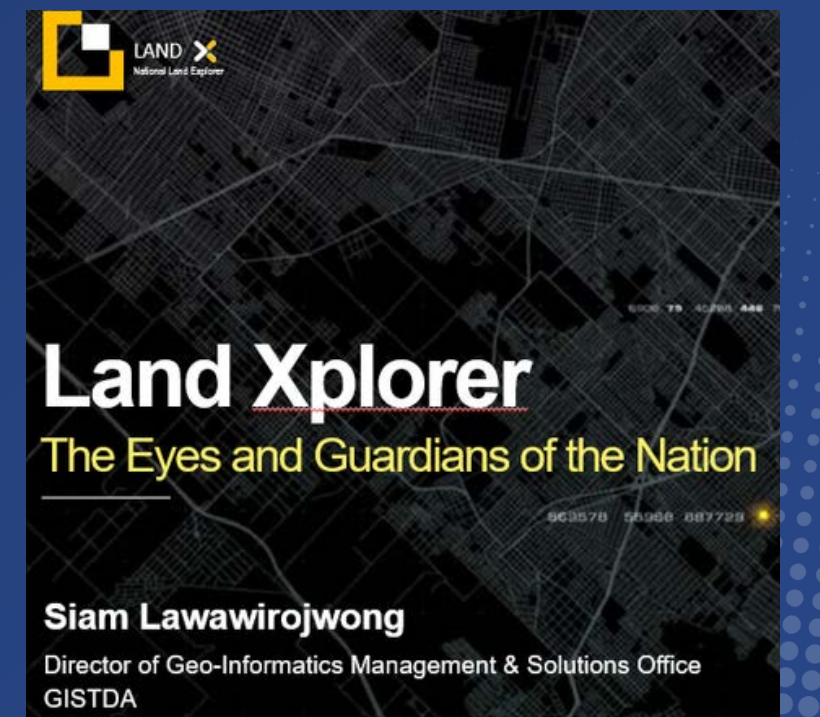
Mapping

- Satellite base map
- DEM/DSM
- 3D mapping

Water Management

- Water storage
- Water balance

2050年に向けて – 統合的で知的な地球観測へ



Toward 2050 —Capacity Building

2050年に向けて – 能力開発



Partner Organizations

The collaboration between universities and space agencies like ITC, Ireland, JAXA, RESTEC enhances knowledge sharing and drives innovation in the digital space sector.

**Building capacity for
sustainable development
and innovation**



Training Initiatives

Our training initiatives help to develop skilled professionals who can effectively utilize digital innovations for space technology and applications, ensuring a robust workforce in the industry.

**The next generation of space
professionals to lead Thailand
space program**



Collaborative Program

Training, exchange program, with partners facilitate strategic planning and alignment on shared goals, paving the way for impactful projects and initiatives in the field of space technology.

GISTDA's Role in Space Development

宇宙開発におけるGISTDAの役割

Satellite Data Utilization:
Enhancing Decision -
Making

GISTDA provides
crucial data for
geospatial solution.

衛星データの活用:
意思決定の強化

Digital Platform
Development: Increasing
Accessibility

Innovative platforms
democratize access
to space data.

デジタルプラットフォーム開発:
アクセシビリティの向上

International Collaboration:
Building Global Partnerships

GISTDA fosters
strong ties with
international entities.

国際協力:
グローバルな連携体制の構築

1

SPACE FOR BETTER LIVING ENVIRONMENT



POLLUTION

CARBON

2

SPACE TO BRIDGE THE DIGITAL DIVIDE



INTERNET

3

SPACE FOR GOVERNMENT FOR SPACE



EASE OF DOING SPACE BUSINESS IN THAILAND

5

SPACE FOR FUTURE MANKIND



SPACE EXPERIMENT
MOON & MARS
EXPLORATION

4

SPACE FOR NEW SPACE BUSINESS



SPACEPORT

6

BORDERLESS SPACE APPLICATIONS & SPACE TECHNOLOGY DEVELOPMENT



BORDERLESS SPACE APPLICATIONS & SPACE TECHNOLOGY DEVELOPMENT

GISTDA's Harnessing Digital Innovations for People

GISTDAの
デジタルイノベーション活用



Agriculture/ Dragonfly

Revolutionizing
data analysis for
agriculture

GeoAI enhances
decision -making
through real -time
insights for crop
management.



Digital Twin

Creating models of
real -world virtually
systems

Digital Twins simulate
environments, enabling
efficient urban planning
and resource
management.



Sphere & Open Platform

Collaborative tools
for data sharing

Sphere facilitates
integrated solutions,
promoting innovation
in space technology
applications.



Carbon/ Carbon Atlas

Empowering
communities with
carbon credit from
space

The 'Carbon Atlas'
provides users with
current and updates
on carbon credit
management.



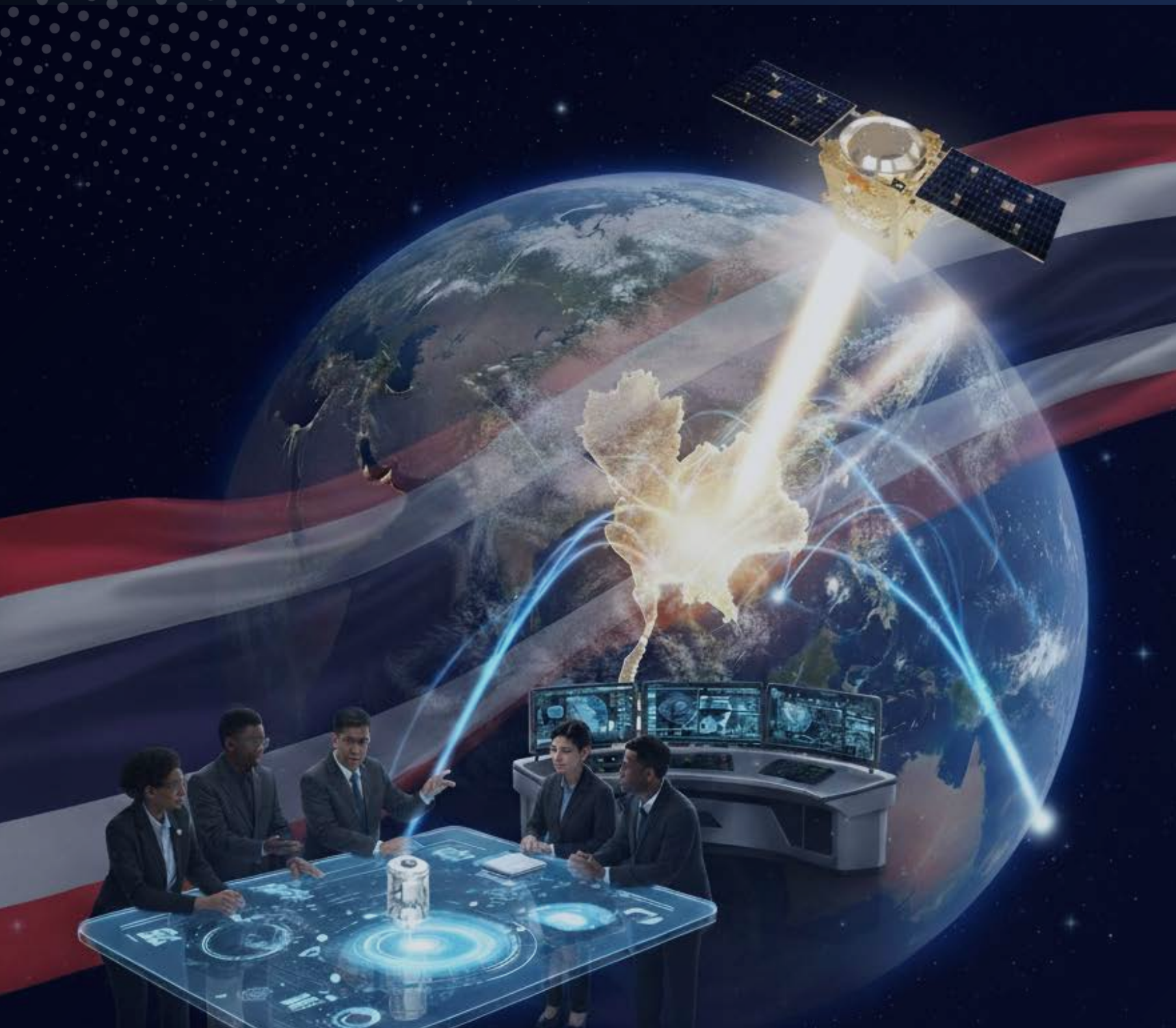
Future Innovations

Expanding the
horizons of digital
technology

Continuous
advancements
promise to drive
sustainable
development in the
space sector.

持続可能な社会のための未来を形作る

Shaping the Future for a Sustainable Society



1. Empowering the Space Ecosystem

宇宙産業エコシステムの活性化

—Boosting startup, SME, and private -sector growth in Thailand and ASEAN

2. Building World -Class Space Infrastructure

世界水準の宇宙インフラ構築

—Covering ground stations, AIT, labs, research, and capacity building

3. Creating Smart Value -Added Solutions

付加価値の高いスマートソリューション創出

—Applying AI, analytics, and platforms to open new opportunities

4. Bridging Data and People

データと人々をつなぐ

—Delivering accessible satellite data to boost life, health, and technology

5. Driving National and Global Impact

国内外へのインパクト創出

—supporting government missions and Thailand's role in space

RESTEC & GISTDA Collaboration in EO

RESTECとGISTDAの地球観測における協力



1. Opportunities for Growth

成長に向けた機会

- EO provides insights for decision - making in agriculture and disaster management.
- Improved data sharing and accessibility capabilities

2. Private Sector Startups

民間スタートアップ

Emerging startups are vital for driving innovation and enhancing Thailand's digital landscape.

3. Thailand as ASEAN Hub

タイのASEANハブとしての役割

Thailand is positioned to be a central player in the ASEAN space economy, fostering collaboration.

4. Regional Cooperation

地域協力

Strengthening partnerships across nations will enhance resource sharing and boost regional capabilities.

RESTEC & GISTDA Collaboration in Space



RESTECとGISTDAの地球観測における協力

パートナーシップの強化

**Strengthening
partnerships**

Collaborative
projects aimed at
enhancing regional
cooperation

能力開発

**Capacity
building**

Launching training
programs to develop
skills

普及啓発

**Public
awareness**

Outreach initiatives to
educate communities
about space

イノベーションの
仕組み作り

**Innovation
ecosystems**

Establishing
incubators and
accelerators to
support startups

持続可能性への
取り組み

**Sustainability
practices**

Promoting
technologies for
space solutions



GISTDA

Thank you
