GISTDA's Strategic Focus: Driving Data Innovation and Sustainability

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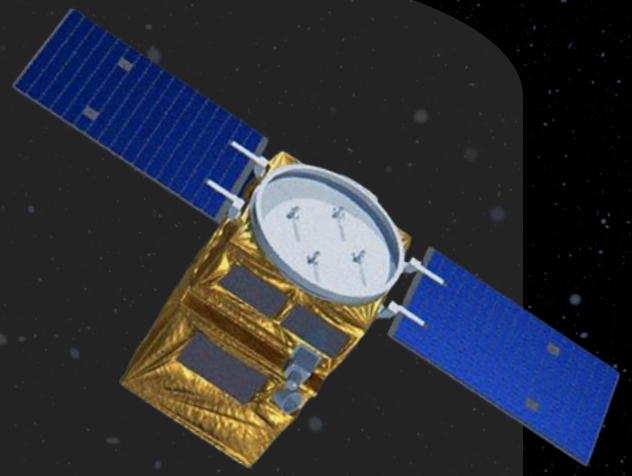
Director, Strategic Alliance Office
GISTDA, Thailand

Topics

- Introduction
- Space Strategic Goals
- Space Data for all
- Space Open Platform for all
- Space Applications for all
- Space Ecosystem & Future Vision



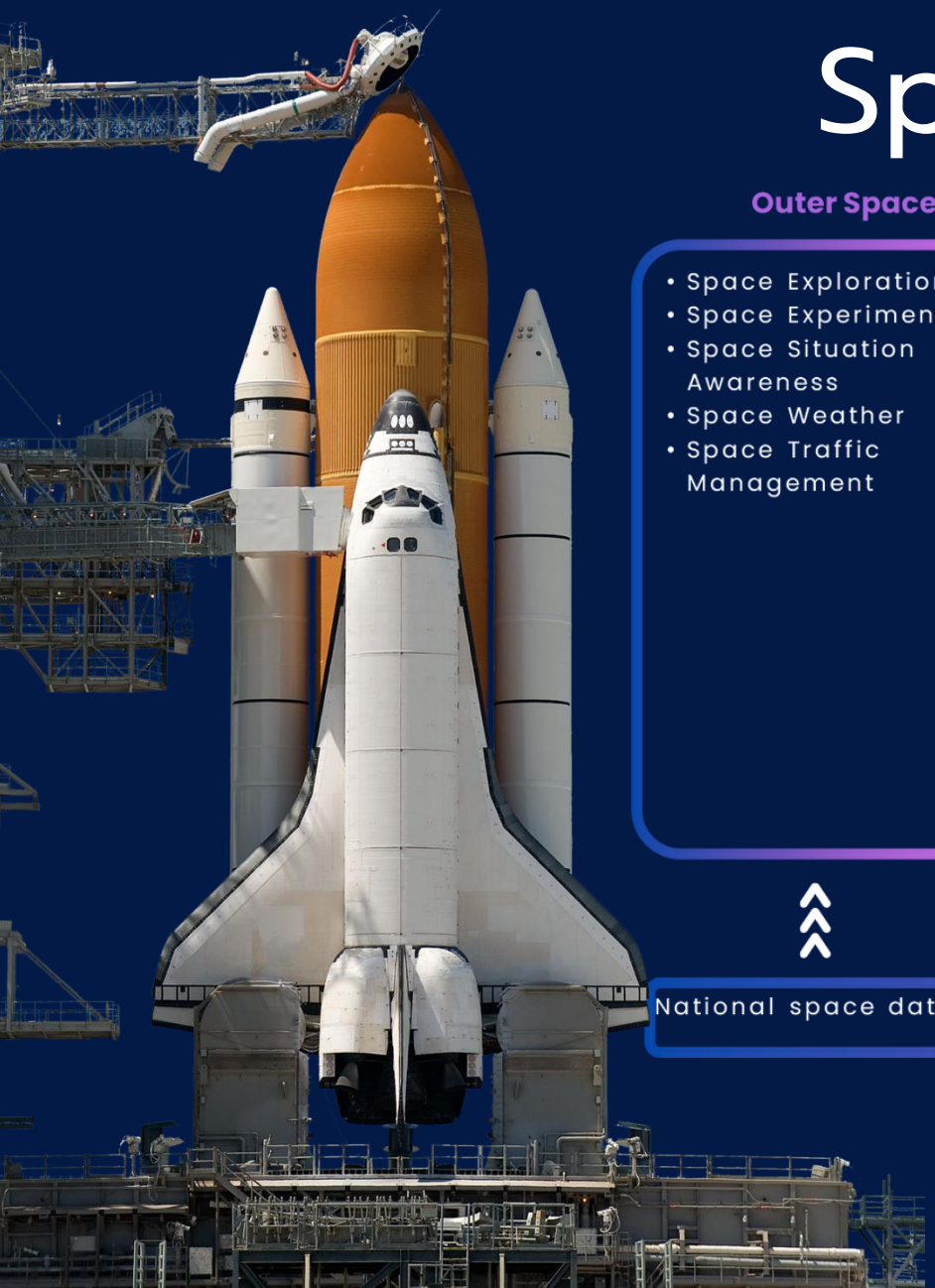
GISTDA at a glance

- Founded in 2000
- Under Ministry of Higher Education, Science, Research and Innovation (MHESI)

Our Vision

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

TELLITES	THEOS-2
ISTOMER	Geo-Informatics and Space Technology Development Agency (GISTDA)
ANUFACTURER	Airbus Defence and Space
SSION	Earth observation
ASS AT LAUNCH	417 kg
ATEFORM	AstroBus-S
VERAGE AREA	Thailand
ETIME	10 years



Space Value Chain

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
- GI ARD
- Data Cube
- MAP APIs
- Open Data Platform

Applications & Solutions
- Water Management
- Disaster
- Urban Planning
- Agriculture
- Natural Resource
- Mapping

Extended economy
- Navigation
- Logistic
- Mapping
- Tax
- Tourism

Capacity Building

National space data center | Space academy | Geospatial Intelligence Center | ARTSASCGI | Space Inspirium

Thailand’s Strategic Focus in Space Technology

GISTDA: Driving Thailand’s Space Innovation

- **National Space Strategy**: Advancing Earth observation and geoinformatics technology
- **Thailand’s EO Satellites**: THEOS-1, THEOS-2, and future missions
- **Global Collaboration**: Partnering with CEOS, WGISS, and international space agencies
- **Open Data & Digital Transformation**: Making geospatial data accessible for all

Strategic Goals

- **Strengthening National Resilience** through space-based solutions
- **Enhancing Digital Twin Technologies** for smart cities and climate adaptation
- **Expanding Thailand’s Role in the Global EO Community** through innovation and partnerships

Enable Equitable Access

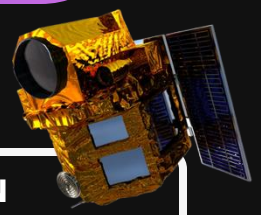
to Space Data for All

THAILAND

EARTH OBSERVATION SYSTEM

Medium Solution
2.1 - 30 m.

THAICHOTE

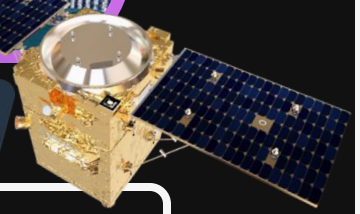


SPECIFICATION			
RESOLUTION	2 METERS PANCHROMATIC	15 METERS MULTISPECTRAL	2 METERS PANSHARPENED
SPECTRAL BANDS RGB,NIR	**SWATH WIDTH :** P22, M90 KM **REVISIT:** 26 DAYS		

LAUNCH DATE: OCTOBER 01, 2008

High Solution
1-2 M.

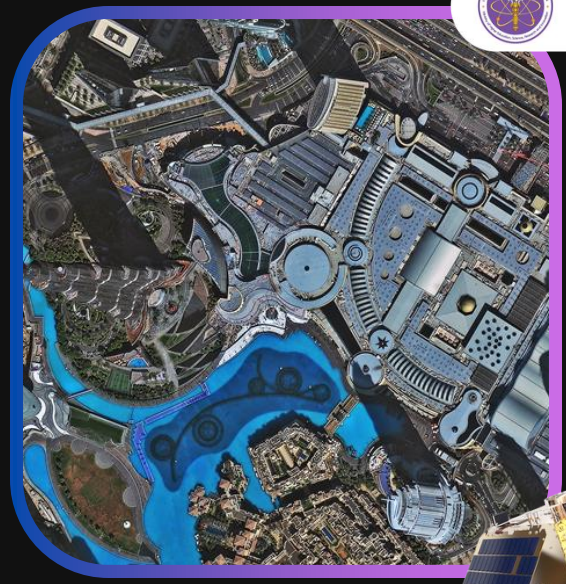
THEOS-2



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		

LAUNCH DATE: OCTOBER 09, 2023

Very high Solution
30 - 99 CM.

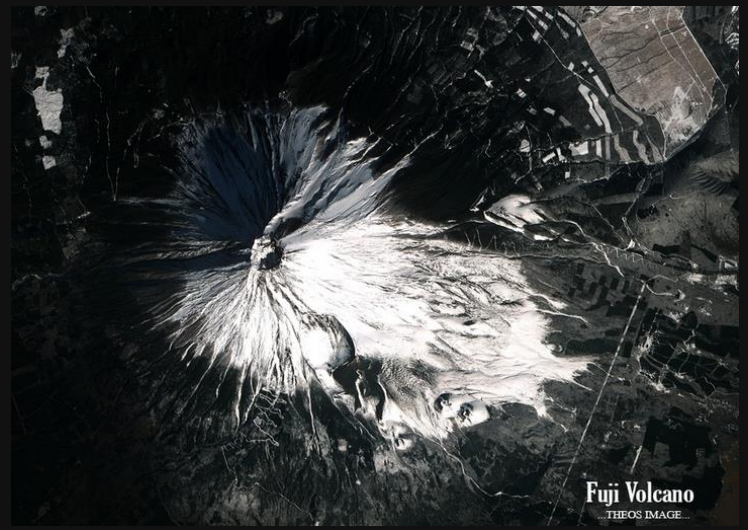


THEOS-2A

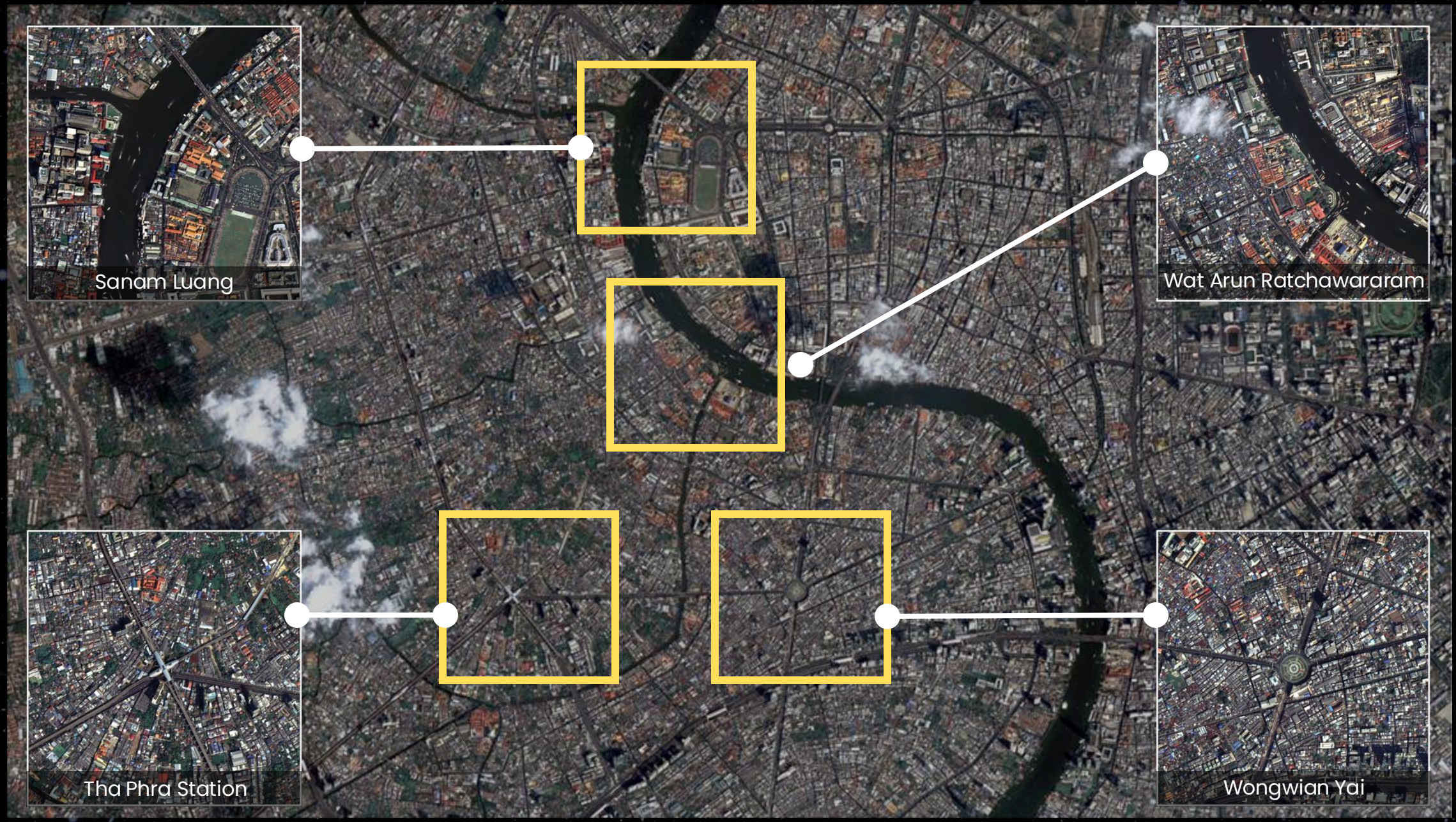
SPECIFICATION	
RESOLUTION	1.07 METERS
SPECTRAL BANDS RGB	Video Mode: High Rate, Full Frame (5120x5120), FPS (25) Long Duration, Low Rate, Full Frame (5120x5120), FPS (10) Long Duration, High Rate, Small Frame (Captured: 5120x2880 (5k) End Product Post Processing: 3840x2160 (Ultra HD/ TV 4K)), FPS (25) 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	

LAUNCH DATE: TENTATIVELY IN 2025

THEOS-2 FIRST IMAGES




BANGKOK
LANDMARK
BANGKOK, THAILAND
https://theos2firstimage.gistda.or.th
THEOS-2 FIRST IMAGE
Date : 21 Jan 2024 ~ Resolution : 50 cm
© 2024 GISTDA. All rights reserved.
N
0
0.25
0.5
1
Kilometers
GISTDA
Geo-Informatics and Space Technology Development Agency


Sanam Luang
Wat Arun Ratchawararam
Tha Phra Station
Wongwian Yai

THEOS-2: Applications

NATURAL RESOURCES & ENVIRONMENT

Forest encroachment, Deforestation, Biomass, Carbon Storage, Green area

AGRICULTURE

Smart farming (Crop status, Nitrogen recommendation, Yield prediction, Crop classification, Pest and disease risk map, Yield potential zoning map)

WATER MANAGEMENT

Water Storage, Water balance

DISASTER

Flood extent, Flood level/ Volume, Burn Scar

URBAN & SOCIETY

3D building, Urban planning

MAPPING

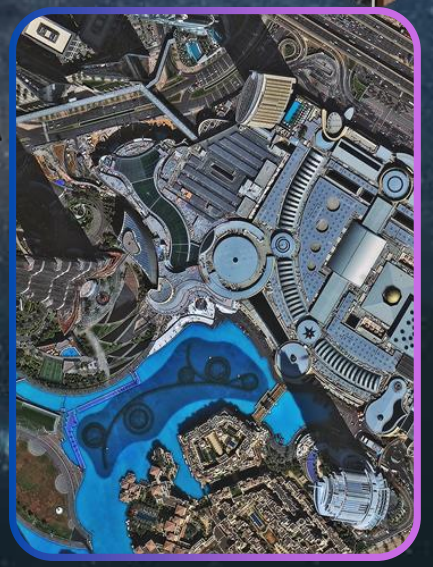
Satellite base map, DEM/ DSM, 3D mapping

IMAGERY SERVICES

Medium Resolution 2.1 - 30 m.

High Resolution 1 - 2 m.

Very High Resolution 30 - 99 cm.



Open Platform for all

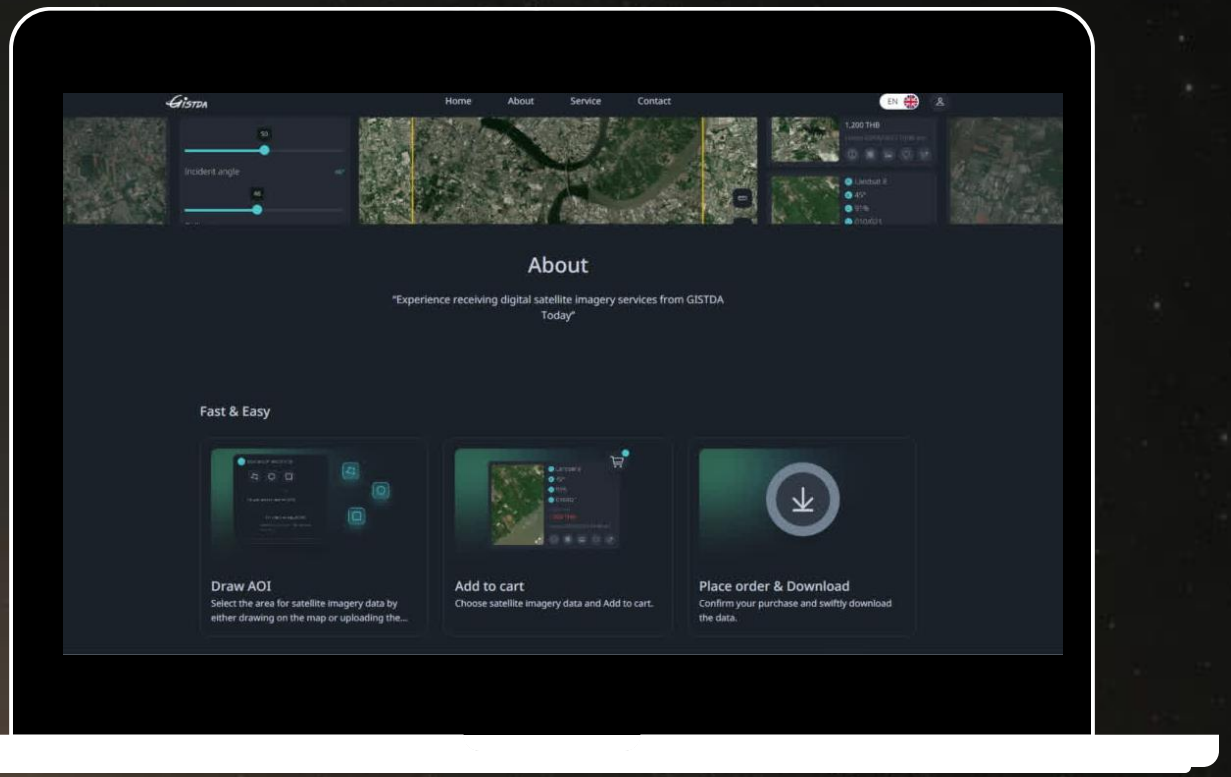
Digital Services Platform

One stop service to access satellite imagery

Accessibility

Availability

Affordability



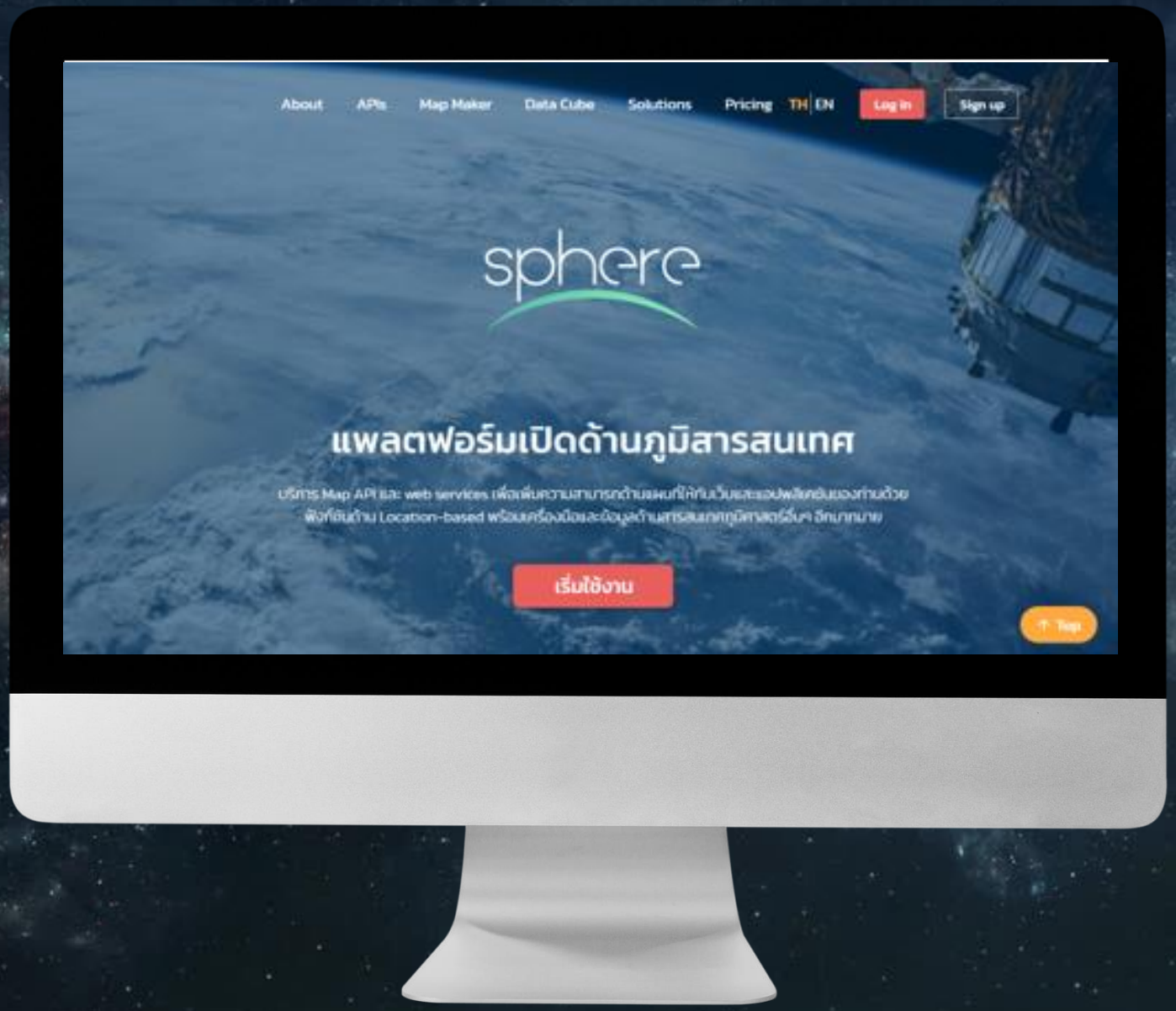
AWAGAD PLATFORM

Digital Gateway to Geospatial Data

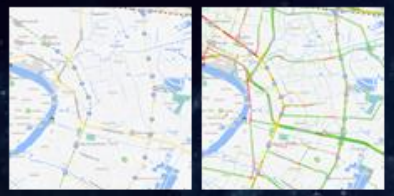
awagad.gistda.or.th

- FAIR Principle:
  - *Findable*
  - *Accessible*
  - *Interoperable*
  - *Reusable*

sphere



Basemap



Street

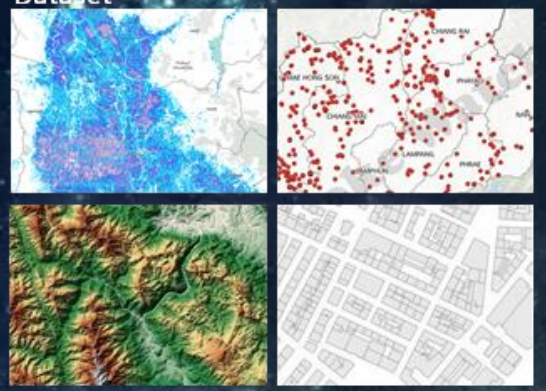
Traffic

Hybrid

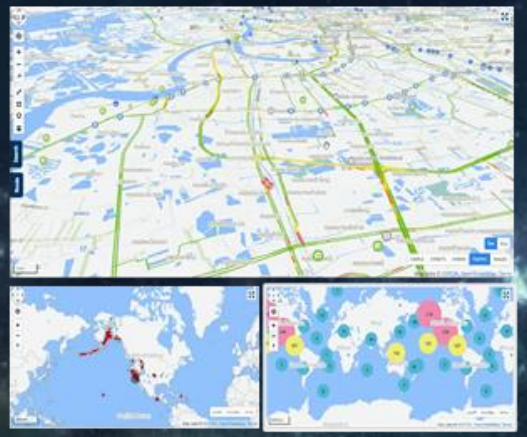
Image

Satellite-as-a-Service (SaaS)

Dataset



Map API

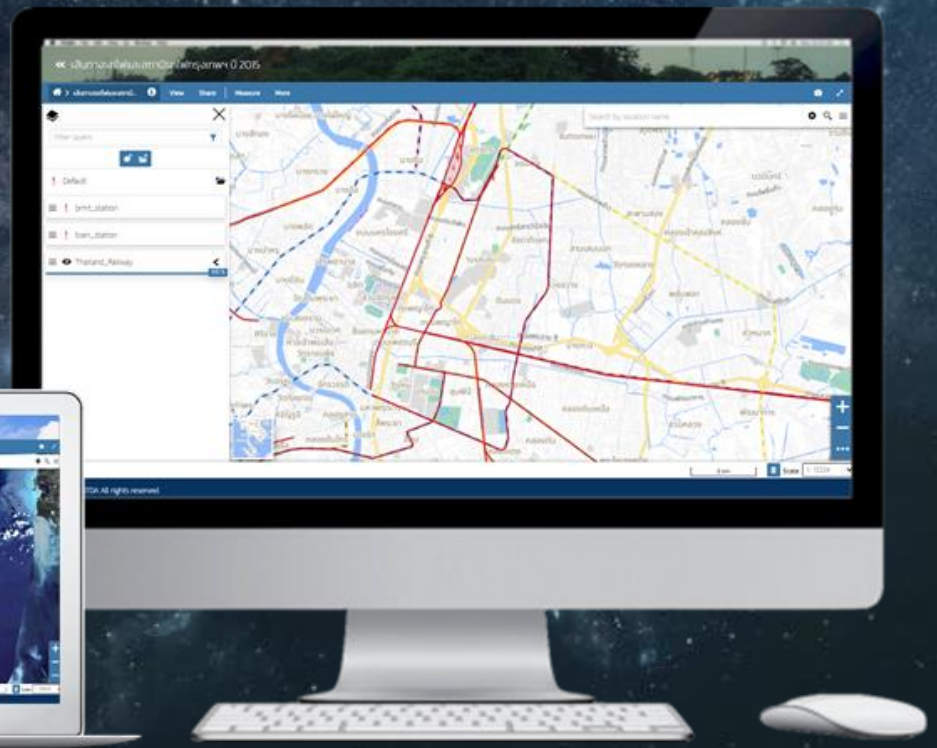


sphere

sphere.gistda.or.th

WHERE

mapMaker



GET IT ON Google Play

Download on the App Store

Key Services

SPHERE provides fast and reliable access to these services, unifying the interface and facilitating reducing the time to start analyzing the data. The SPHERE initial service offer is organized according to the following categories:

DATASET

- Basemap
  - 2-meter resolution with simple access
- Satellite-as-a-Service (SaaS)
  - Satellites use remote sensors to obtain information about diverse features of the Earth's surface
- More…
  - DEM | POI | AOI | Building Footprint | Admin. Boundary

TOOLS

- Maps API
  - Open-source map library for web browser and mobile-friendly interactive maps.
- mapMaker
  - “Make & Share”
- eXeCube
  - Easy web-based spatial and space-time computation

APPLICATIONS

- WHERE
  - Turn-by-turn navigation. Select your destination, plan your own route. WHERE will navigate you. On road, as you wish.

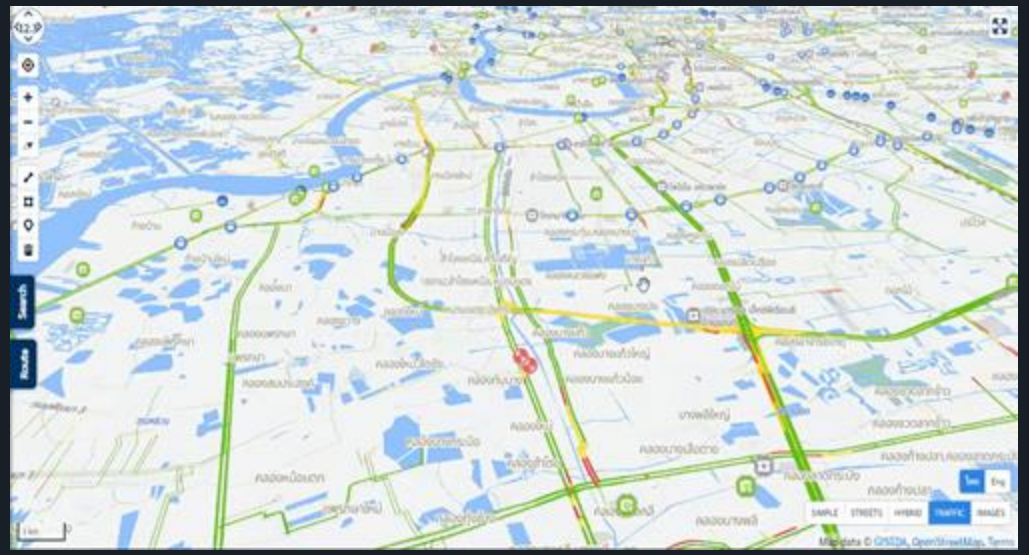
National Basemap

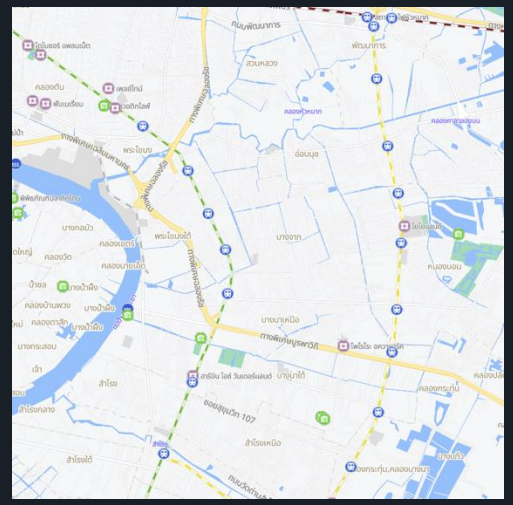
GISTDA Basemap API

SPHERE gives you 2-meter resolution Basemaps with simple access to an off-the-shelf, complete and consistent coverage of Thailand. Made out of the highest-grade satellite imagery, sharp and fresh with year-over-year consistency. you can fully rely on our service to support your business.

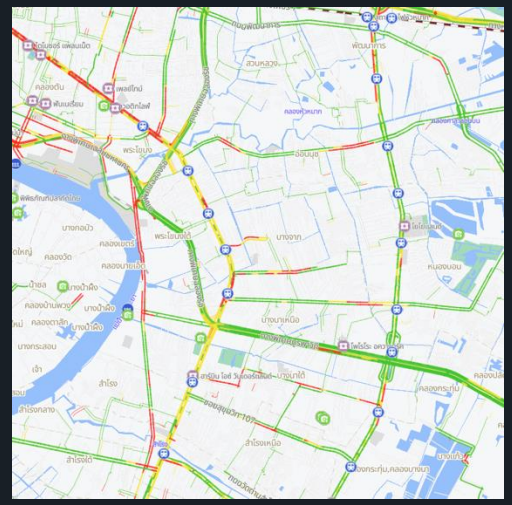
Service:

- Tile Maps API
- WMS | WMTS

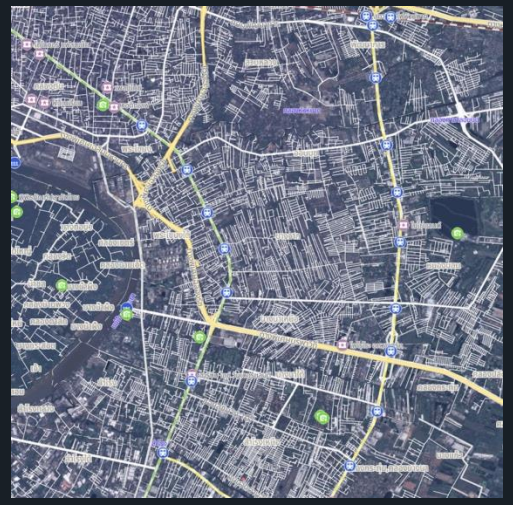




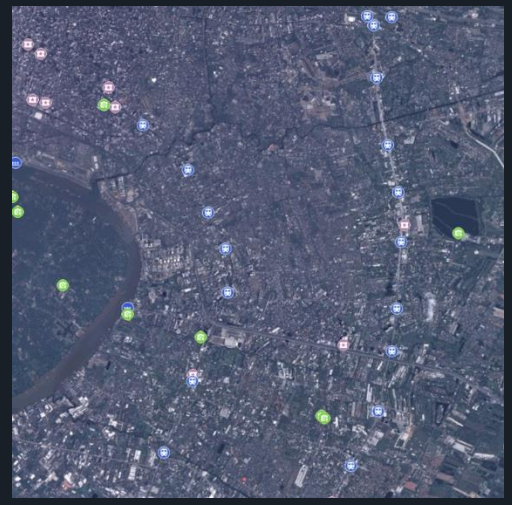
Street



Traffic



Hybrid

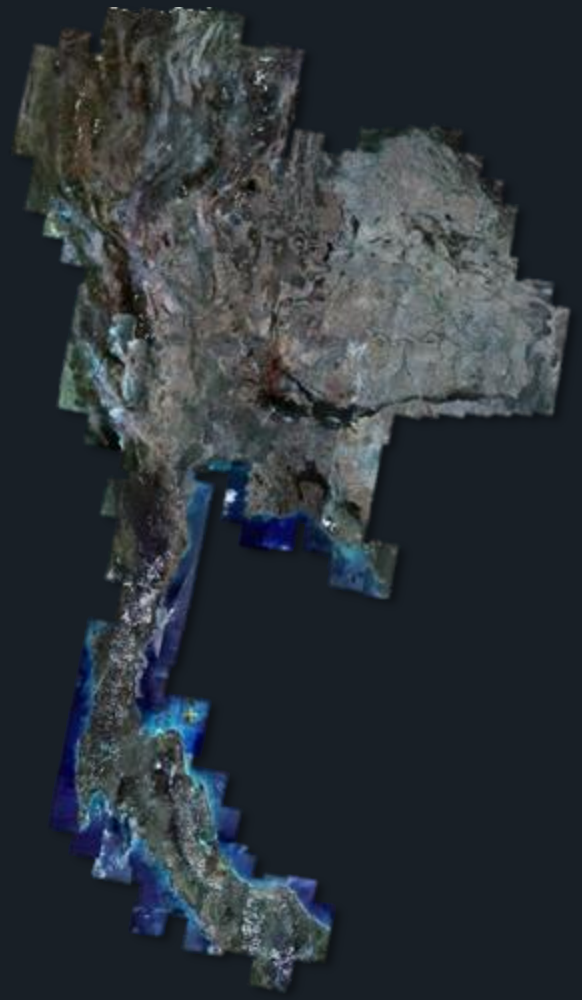


Image

Satellite Basemap

A very high resolution (VHR) satellite basemap for visualization that provides a detailed and visually appealing representation of the Earth's surface using very high-resolution satellites image. It offers a visually rich and accurate representation of the landscape, enabling users to explore and analyze specific areas with exceptional clarity and detail.

2017 – 2019



2020 – 2021

2021 – 2022

Maps API

Maps API is the leading open-source map library for web browser and mobile-friendly interactive maps. There are all the mapping features most developers ever need. Maps API is designed with simplicity, performance, and usability in mind.

MAPS

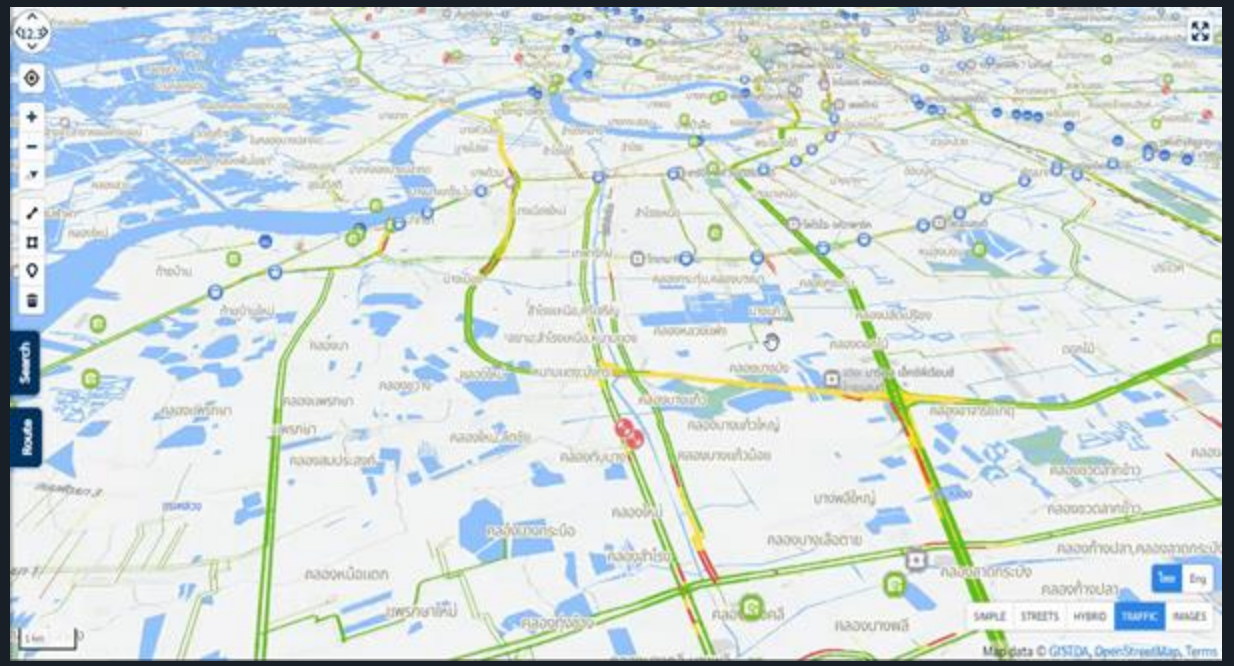
- Dynamic Map
- Maps Embed
- Static Map
- Elevation

ROUTES

- Routing
- Distance Matrix
- Road

PLACES

- Place Detail
- Place Search



Service:

- Web (JavaScript)
- Mobile (iOS, Android, Flutter, React Native, Vue)
- Data API


Space Applications for all
Space Technology for Government,
Businesses and Communities

UrbanDigital Twin Decision-Making

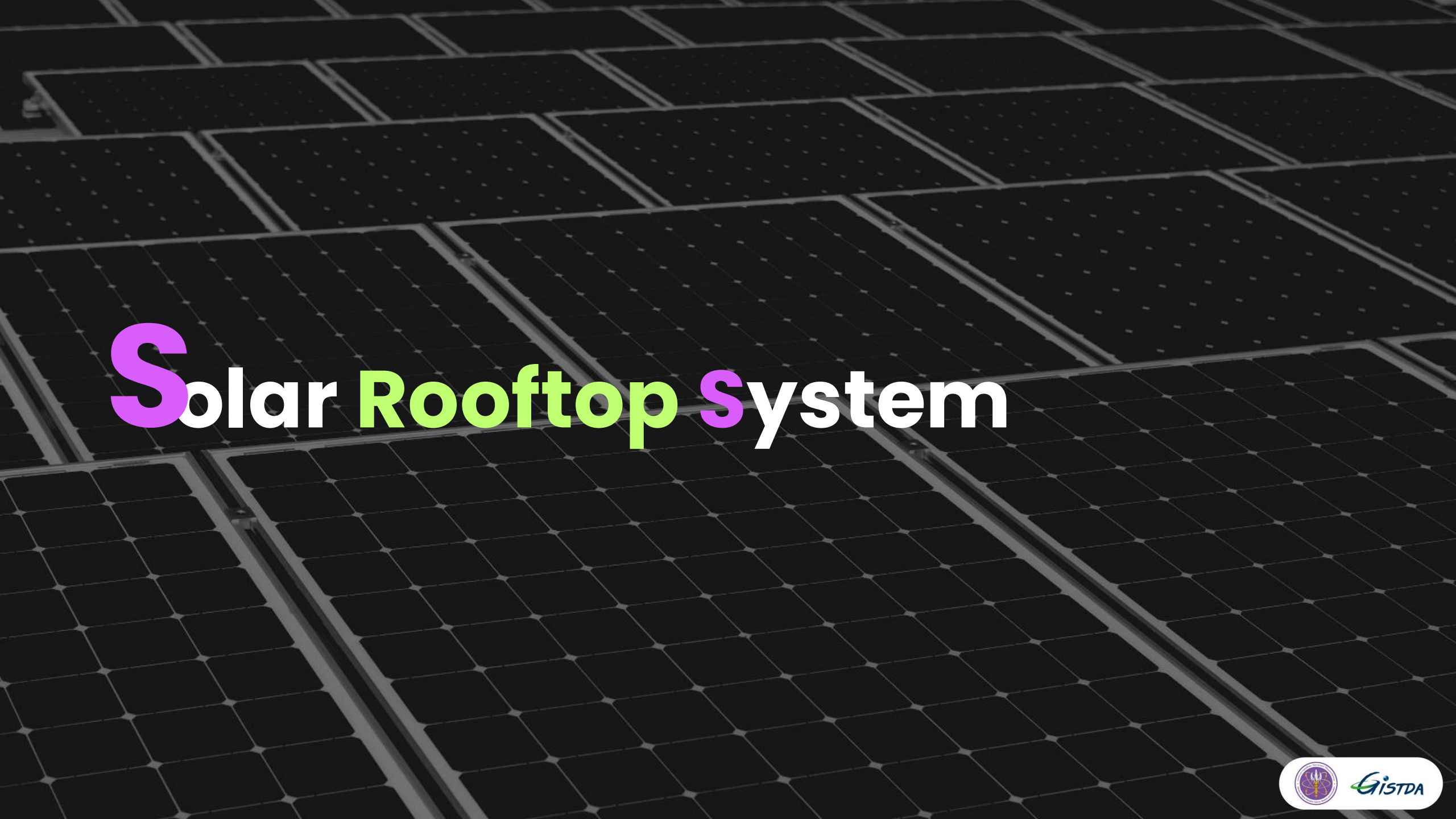
3D City Model

LOD 2 & LOD 3

3D City Model

Digital Twin

GISTDA

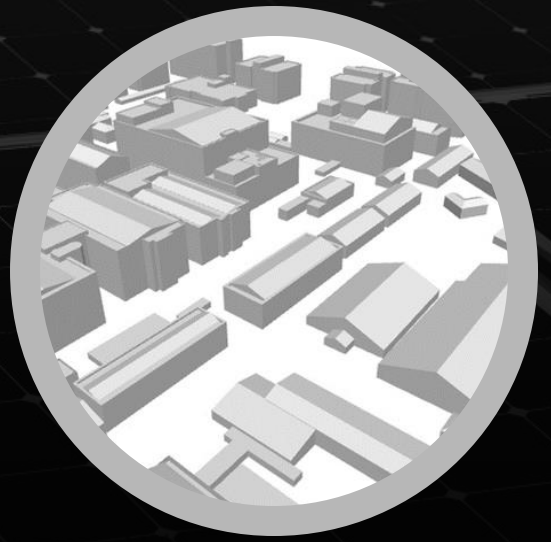

Solar Rooftop System

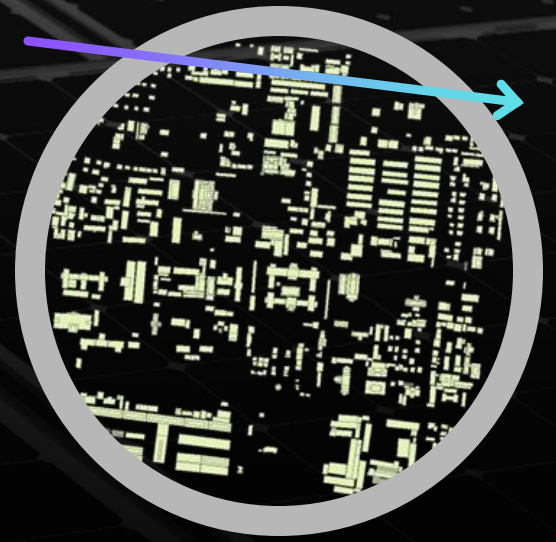
Building Footprints

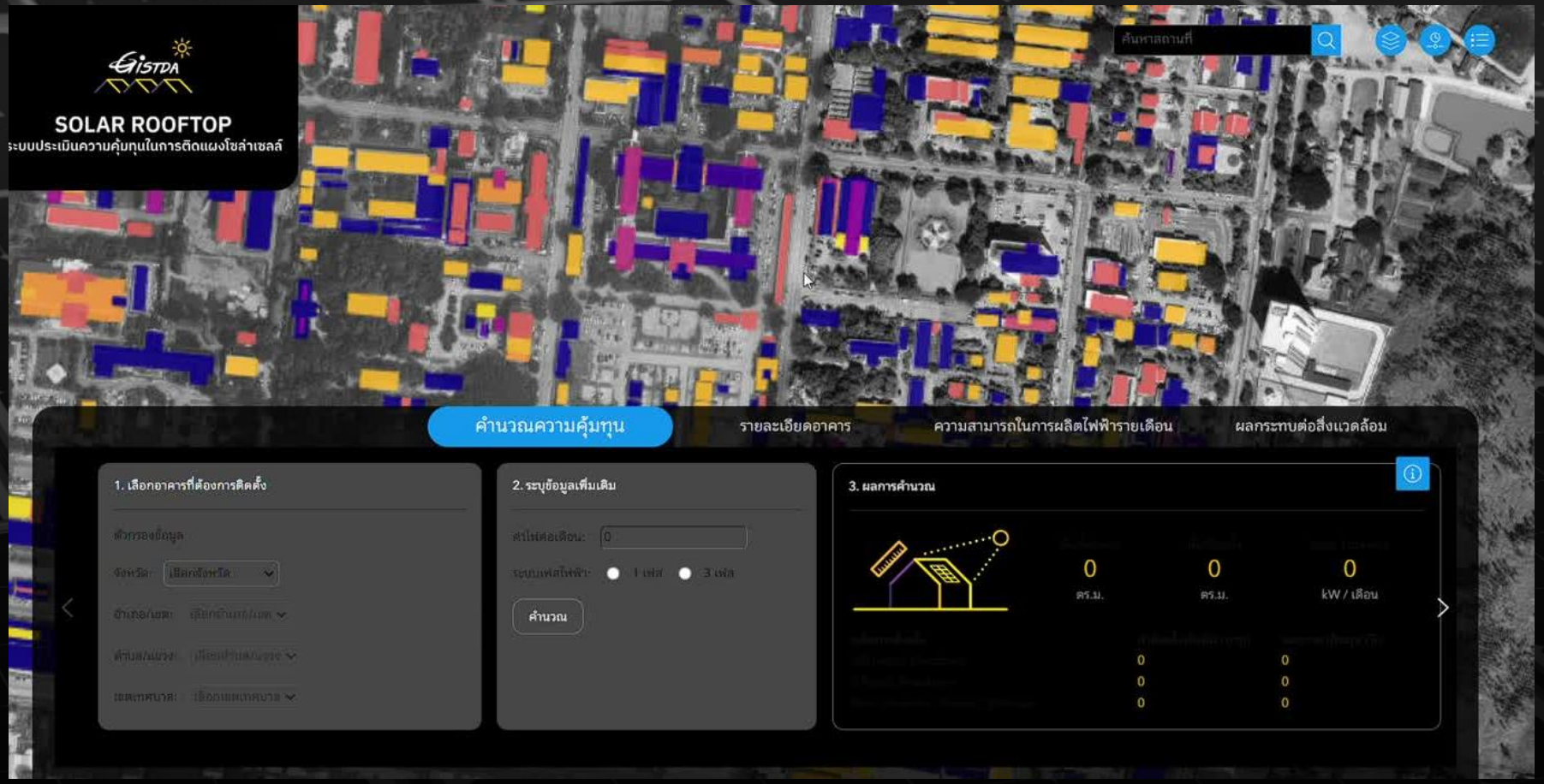
3D Building

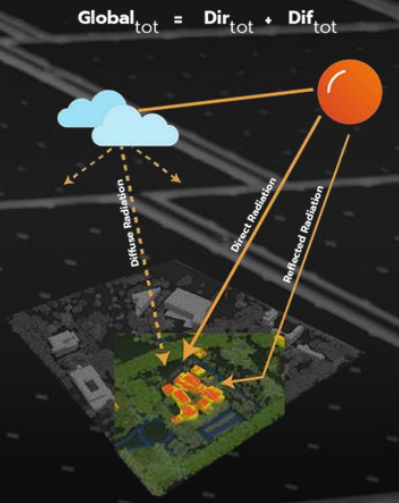
Building Footprints

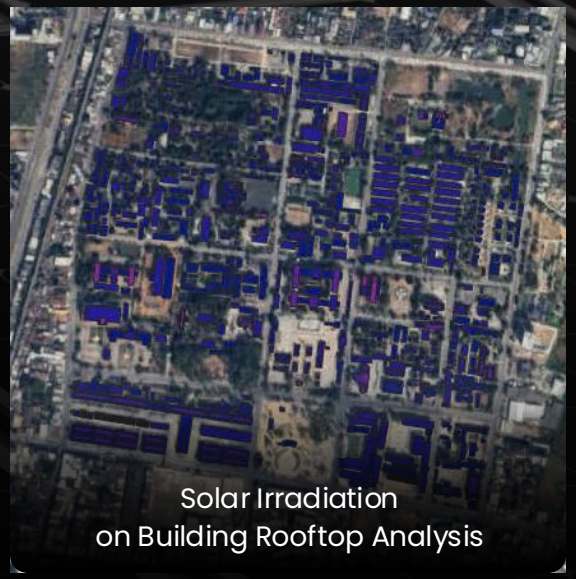
+ Height






SOLAR ROOFTOP
ระบบประเมินความคุ้มทุนในการติดแผงโซล่าเซลล์
ค้นหาสถานที่
คำนวณความคุ้มทุน
รายละเอียดอาคาร
ความสามารถในการผลิตไฟฟ้ารายเดือน
ผลกระทบต่อสิ่งแวดล้อม
1. เลือกอาคารที่ต้องการติดตั้ง
2. ระบุข้อมูลเพิ่มเติม
3. ผลการคำนวณ
คำนวณ
0
ตร.ม.
0
ตร.ม.
0
kW / เดือน


Global tot = Dir tot + Dif tot
Diffuse Radiation
Direct Radiation
Reflected Radiation


Solar Irradiation
on Building Rooftop Analysis

3. ผลการคำนวณ

พื้นที่หลังคา	พื้นที่ติดตั้ง	Solar Potential
25 ตร.ม.	18 ตร.ม.	3 kW / เดือน

แพ็คเกจติดตั้ง	ค่าติดตั้งเริ่มต้น (บาท)	ระยะเวลาคืนทุน (ปี)
ไม่มี Rapid Shutdown	123,000	6.833
มี Rapid Shutdown	135,300	7.517
Micro Inverter / Power Optimizer	147,700	8.206

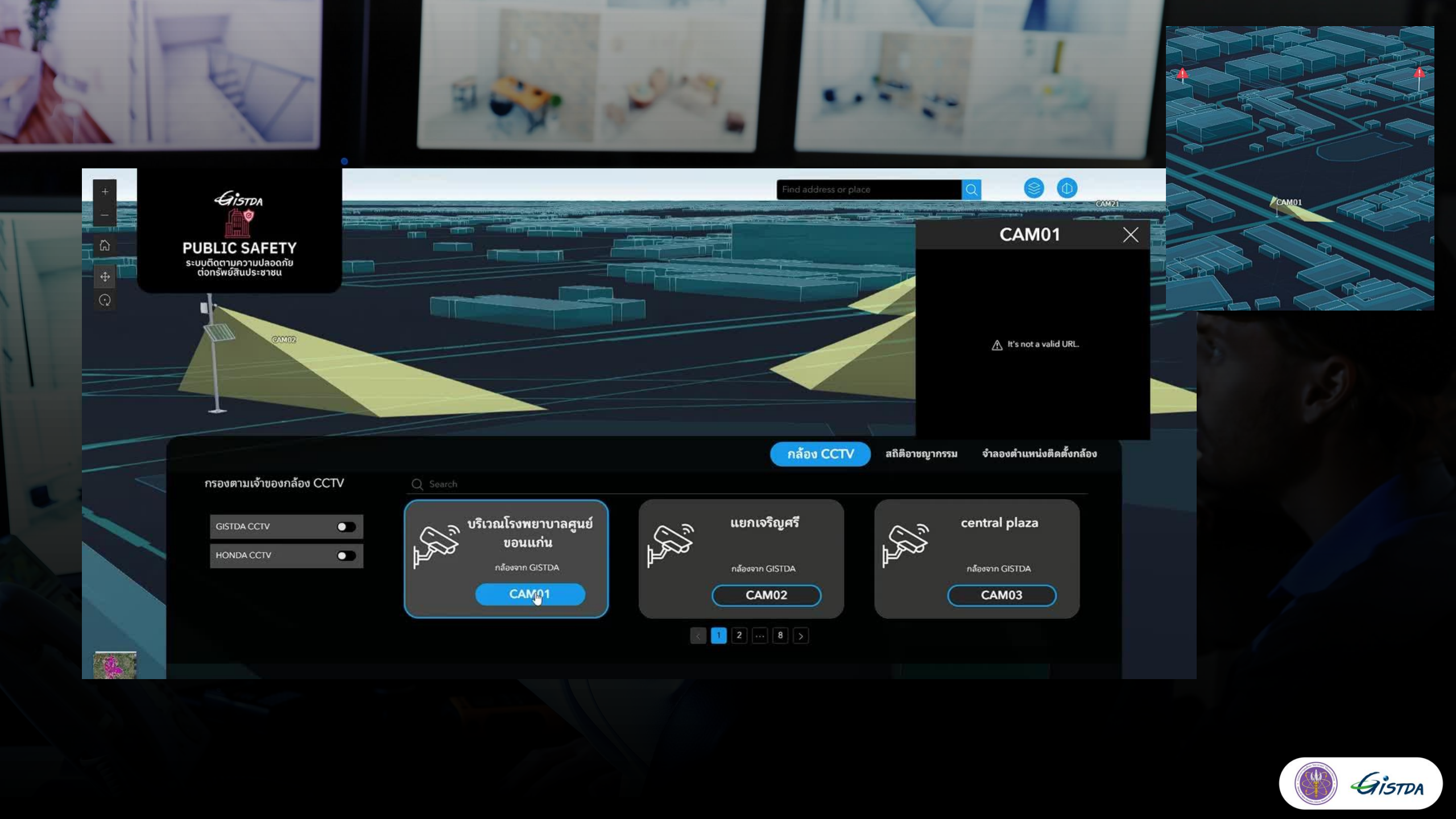
Estimating Solar Potential and Economical Value

Estimating Ecological Value

ลดปริมาณก๊าซคาร์บอนไดออกไซด์ 729K เมตริกตัน = ปริมาณรถยนต์ 172K คัน ต่อ ปี = ปลูกต้นไม้ได้ 13.2M ต้น

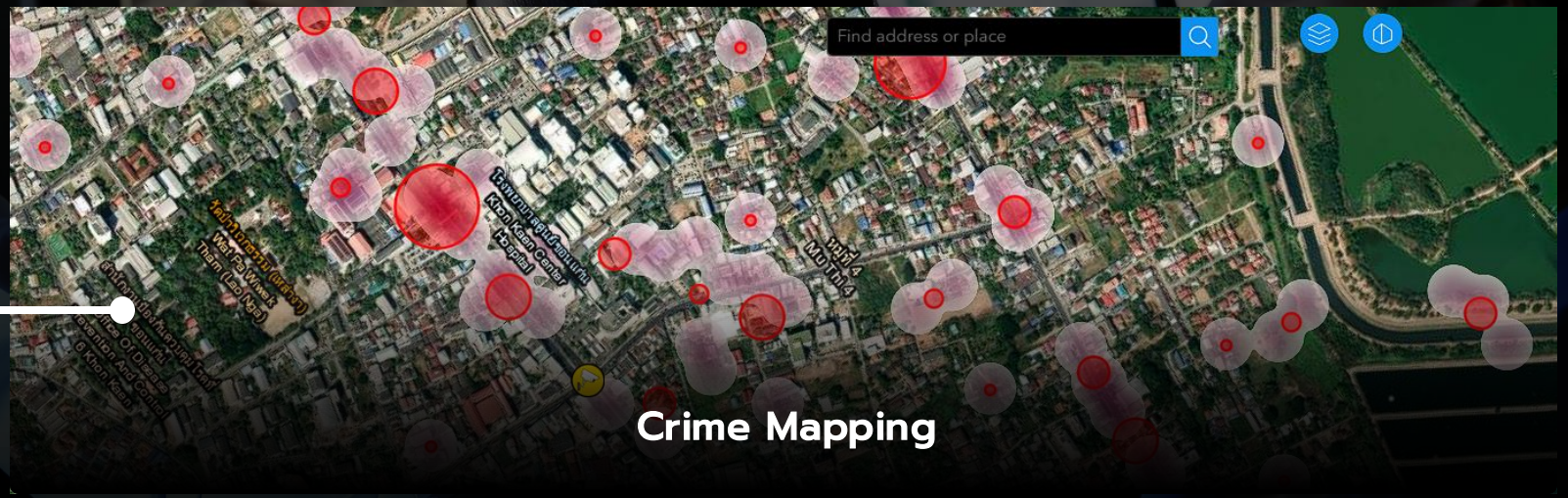
Estimating Solar Capacity


Public Safety

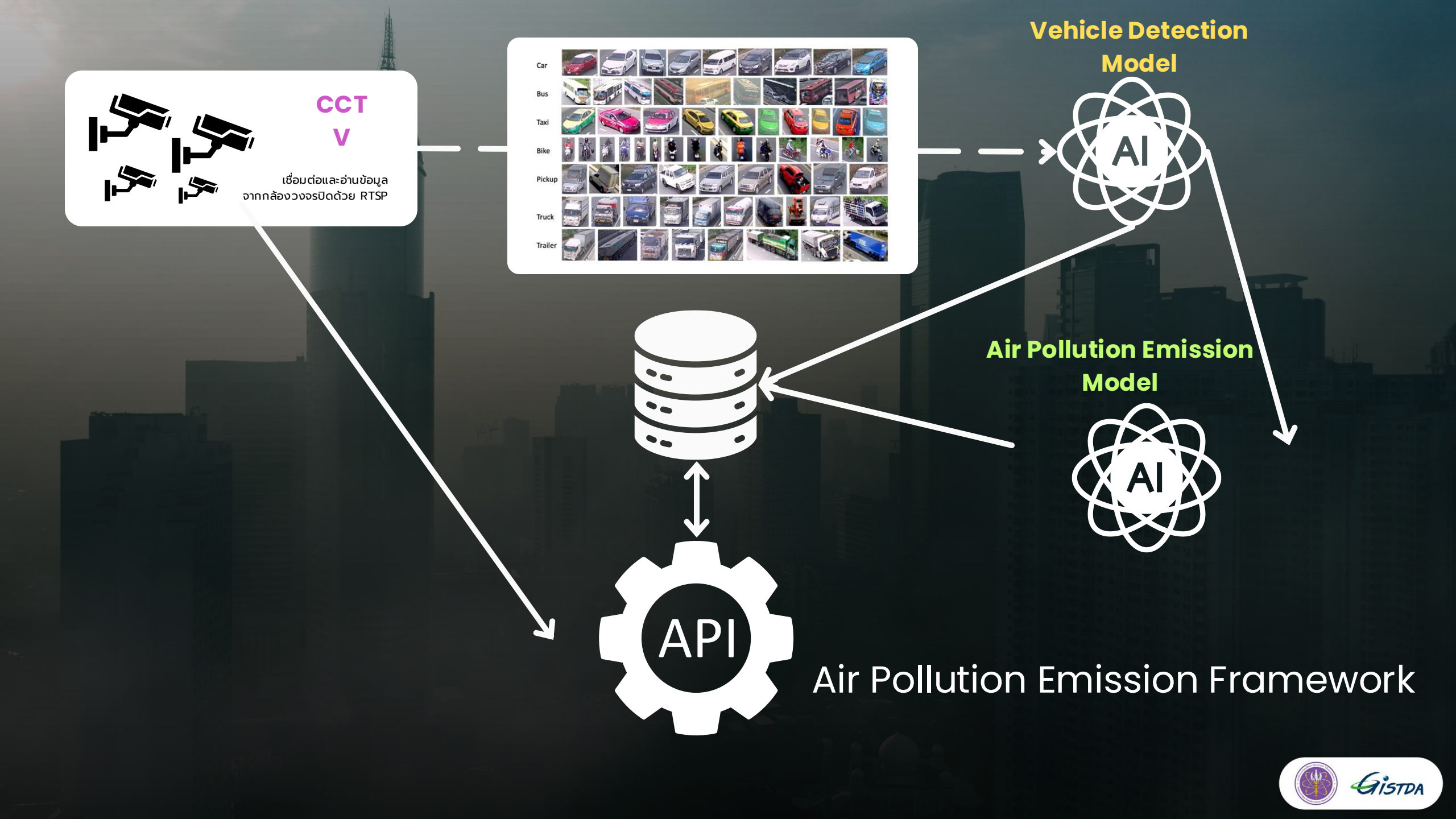

GISTDA
PUBLIC SAFETY
ระบบติดตามความปลอดภัย
ต่อทรัพย์สินประชาชน
Find address or place
CAM21
CAM02
CAM01
It's not a valid URL.
กล้อง CCTV
สถิติอาชญากรรม
จำลองตำแหน่งติดตั้งกล้อง
กรองตามเจ้าของกล้อง CCTV
Search
GISTDA CCTV
HONDA CCTV
บริเวณโรงพยาบาลศูนย์ขอนแก่น
กล้องจาก GISTDA
CAM01
แยกเจริญศรี
กล้องจาก GISTDA
CAM02
central plaza
กล้องจาก GISTDA
CAM03
1
2
...
8
CAM01

Crime Statistic Report

Suggesting CCTV location

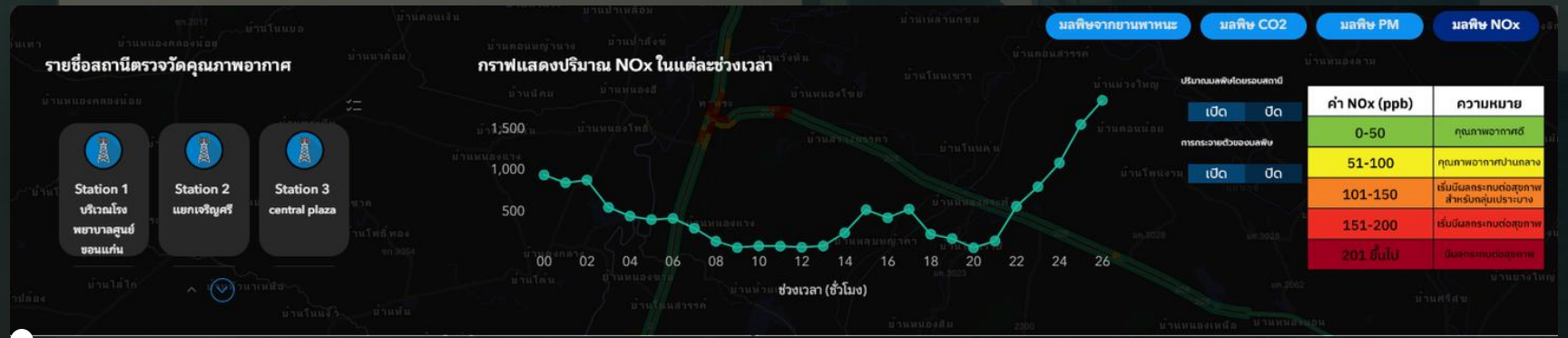



Breathable City


CCT
V
เชื่อมต่อและอ่านข้อมูล
จากกล้องวงจรปิดด้วย RTSP
Car
Bus
Taxi
Bike
Pickup
Truck
Trailer
Vehicle Detection
Model
AI
Air Pollution Emission
Model
AI
API
Air Pollution Emission Framework

Vehicle Detection

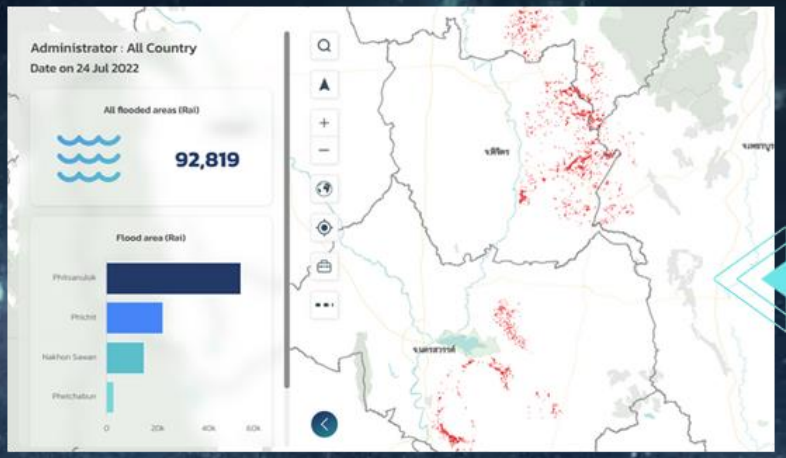
Air Quality Report

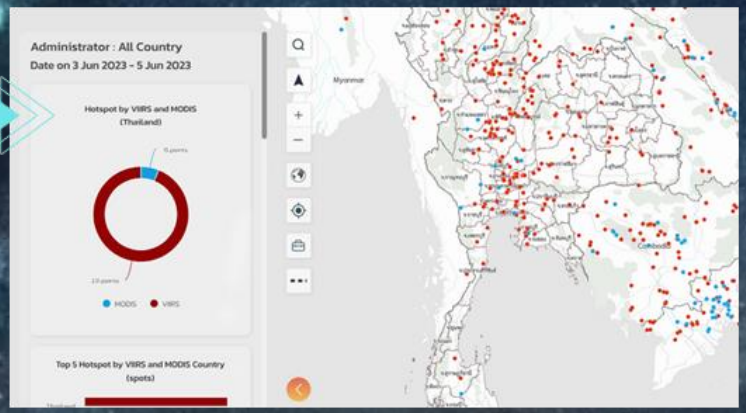


Forecasting Natural Disasters

Ensure space-based early-warning systems and real-time monitoring solutions are in place to prepare for floods, wildfires, drought

Decision Support System for Disaster Management

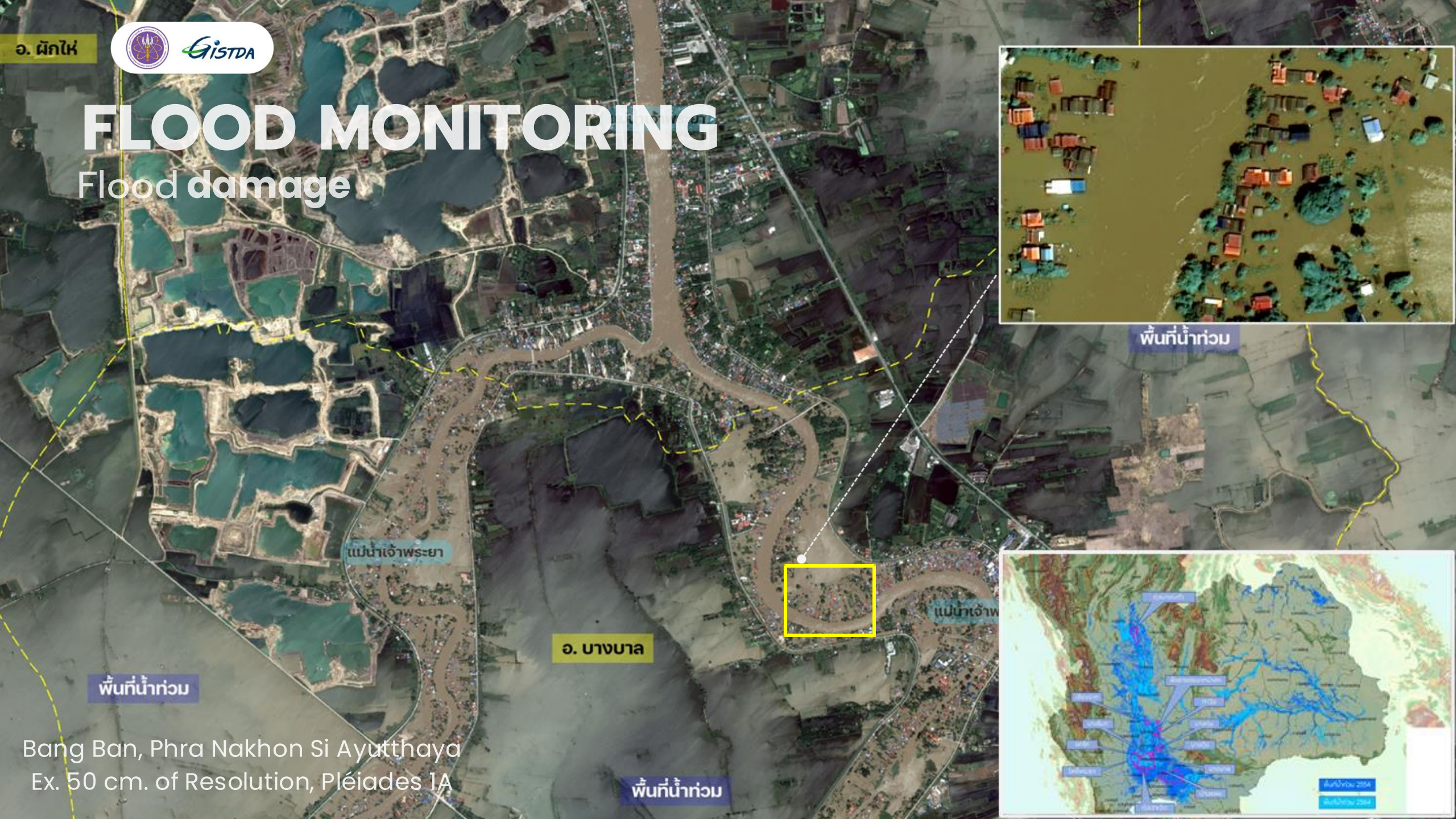




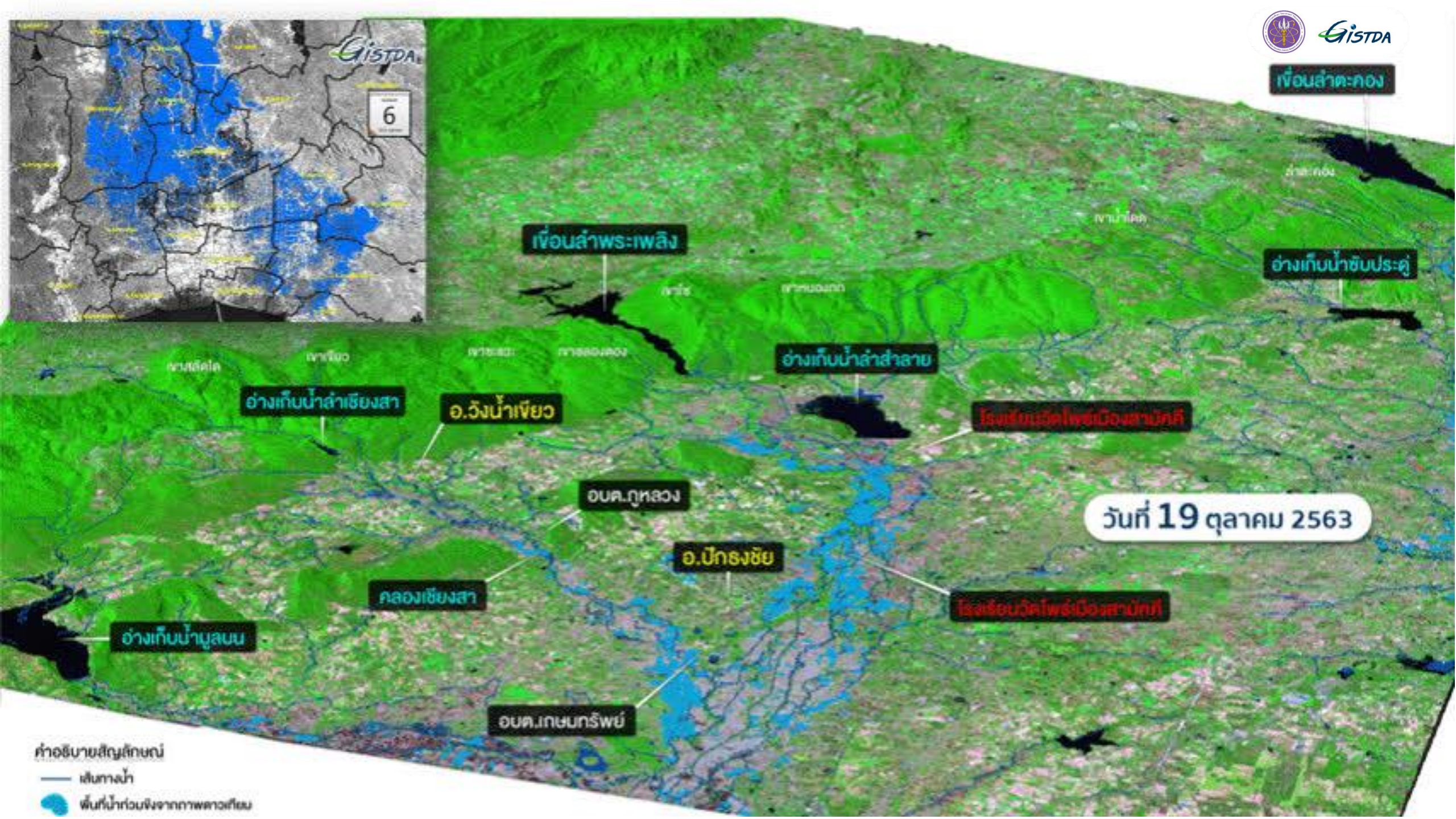
disaster.gistda.or.th

FLOOD MONITORING

Flood damage



Bang Ban, Phra Nakhon Si Ayutthaya
Ex. 50 cm. of Resolution, Pléiades 1A

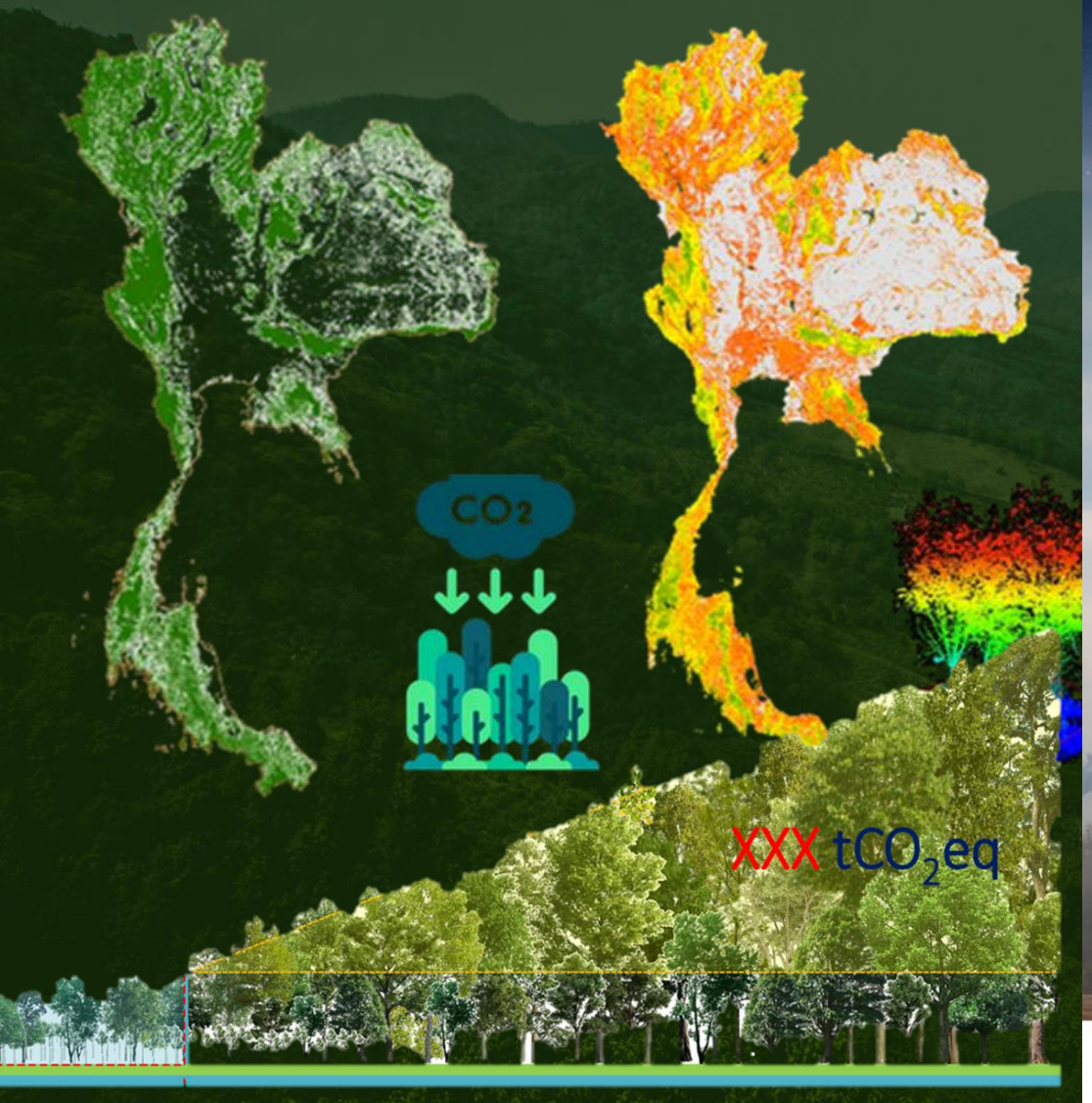

GISTDA
6
เขื่อนลำตะคอง
เขื่อนลำพระเพลิง
อ่างเก็บน้ำขับประดู่
อ่างเก็บน้ำลำสำลาย
อ่างเก็บน้ำลำเชียงสา
อ.วังน้ำเขียว
โรงเรียนวัดโพธิ์เมืองสามัคคี
อบต.ภูหลวง
วันที่ 19 ตุลาคม 2563
อ.ปักธงชัย
คลองเชียงสา
โรงเรียนวัดโพธิ์เมืองสามัคคี
อ่างเก็บน้ำมูลนน
อบต.เกษมทรัพย์
คำอธิบายสัญลักษณ์
เส้นทางน้ำ
พื้นที่น้ำท่วมขังจากภาพดาวเทียม


BURN CHECK
Welcome to Burn Check!
ระบบสนับสนุนการตัดสินใจการจัดการเชื้อเพลิง
อีเมล/เลขประจำตัวประชาชน
รหัสผ่าน
จดจำ
เข้าสู่ระบบ
ลงทะเบียน (สำหรับเจ้าหน้าที่)
ภาพรวมและสถิติข้อมูล
พัฒนาโดยสำนักงานพัฒนาเทคโนโลยีอวกาศและภูมิสารสนเทศ
(องค์การมหาชน):GISTDA
เส้นแบ่งขอบเขตอำเภอ
อ.ทองผาภูมิ
อ.ศรีสวัสดิ์
จุดความร้อน
พื้นที่ที่กำลังเกิดการเผาไหม้หรือ หัวไฟ
พื้นที่ความเสียหายจากการเผาไหม้
จุดความร้อน
พื้นที่ที่กำลังเกิดการเผาไหม้หรือ หัวไฟ
จุดความร้อน
เขื่อนศรีนครินทร์
N
GISTDA
ภาพถ่ายจากดาวเทียม Sentinel-2
ของวันที่ 23 กุมภาพันธ์ 2566
บริเวณเหนือเขื่อนศรีนครินทร์ จ.กาญจนบุรี
คาดการณ์พื้นที่เผาไหม้ประมาณ 7 พันกว่าไร่
WWW.GISTDA.OR.TH

Environmental Finance

Carbon Credit:

Opportunities for Thailand's Economy



Carbon Credit from Space

- Net Zero GHG Emission
- Carbon Neutrality in 2050

GISTDA 22 THEOS-2

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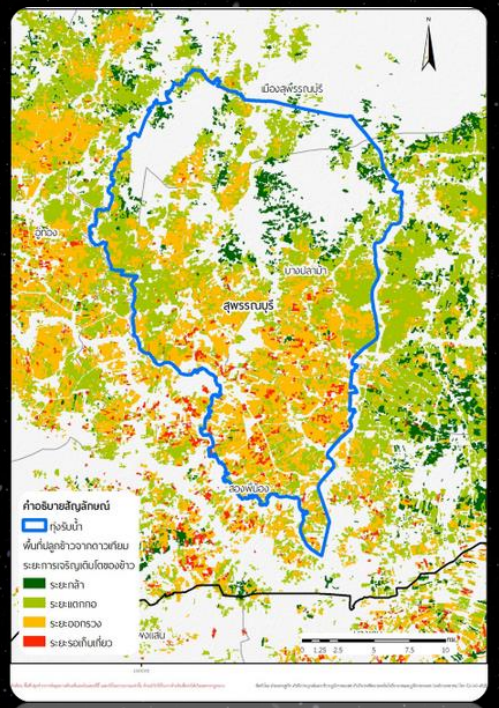
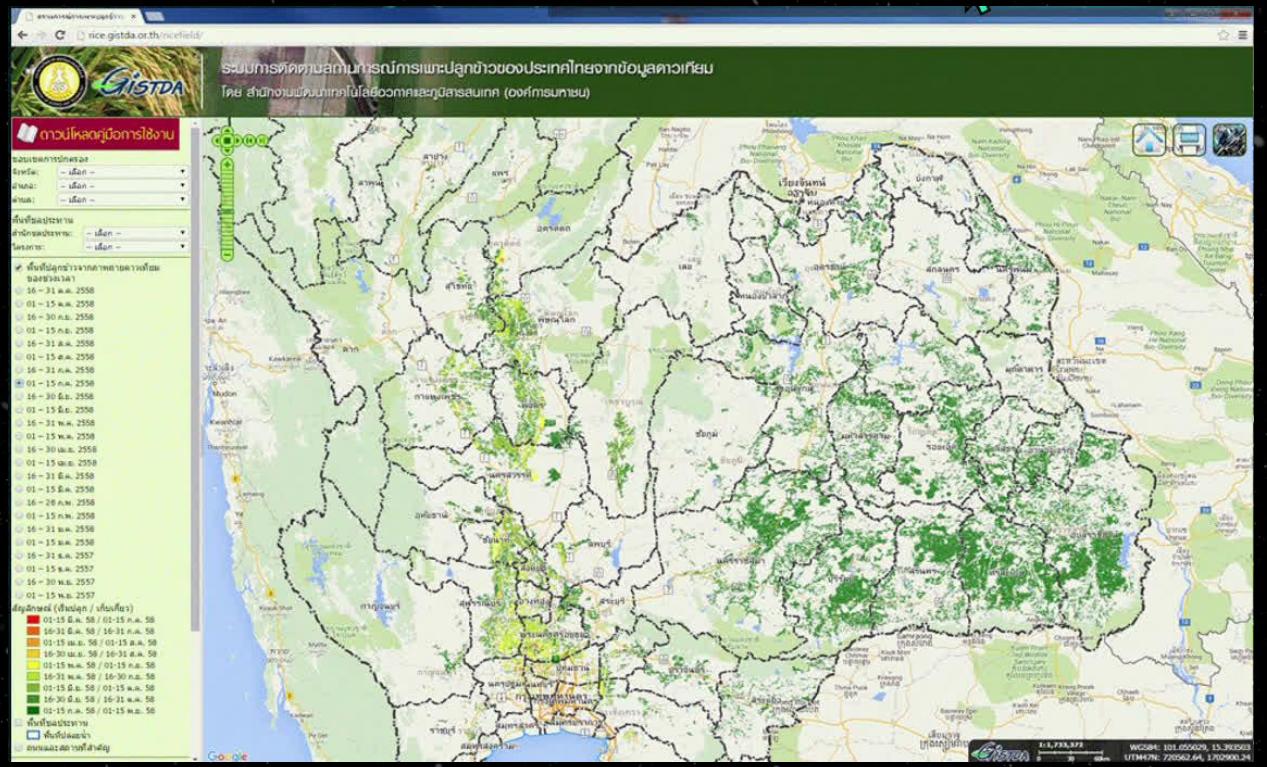
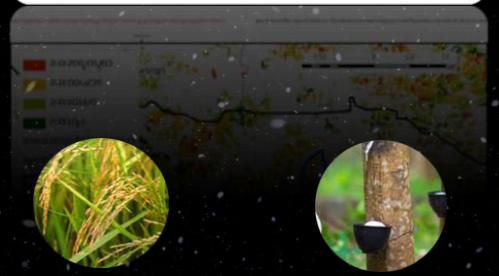
Climate-smart Agriculture for Food Security

Digital Agriculture Platform







Rice

Rubber Trees

Oil Palms

Cassavas

Maize

Sugarcane

- Planting areas
- Crop age
- Crop production
- Crop health
- Yield prediction

CROP CLASSIFICATION

Casava

Paddy filed

Para rubber

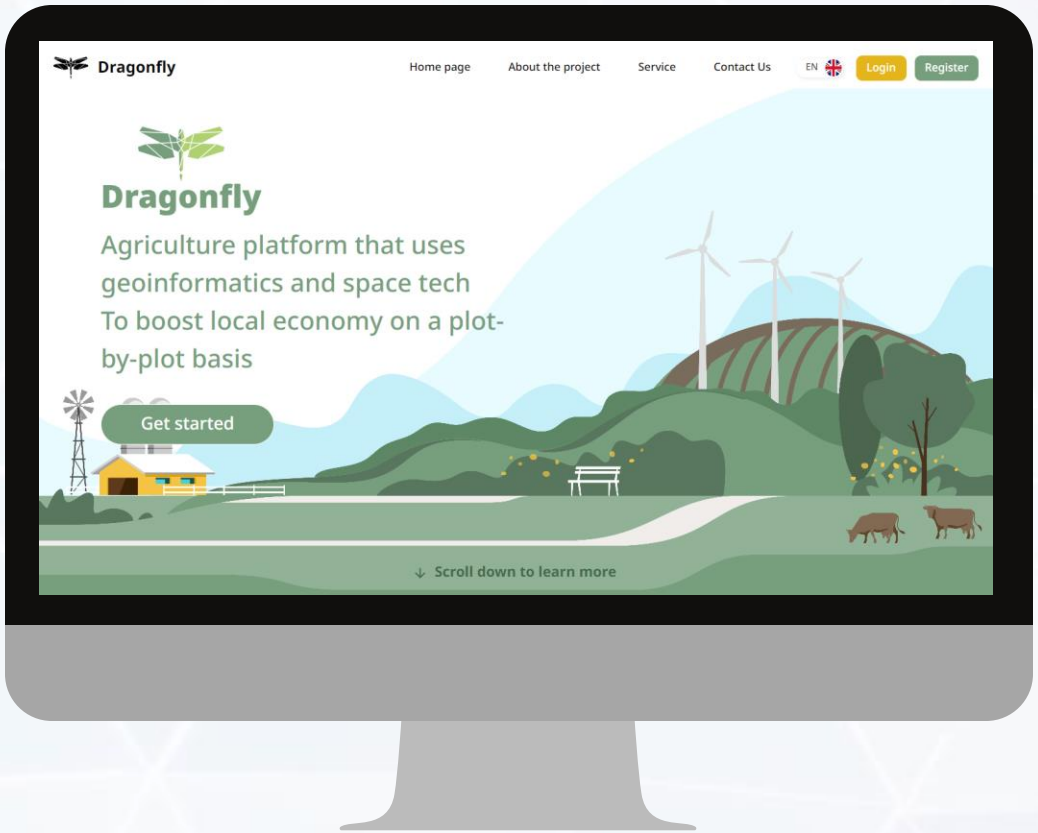
Prepared for planting

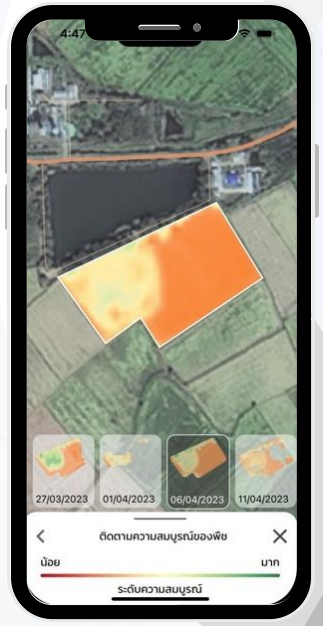
Sugarcane

Agricultural area, Kantharalak, Sisaket
Ex. 50 cm. of Resolution, Skysat

DRAGONFLY

Satellite-based insight for farm management





Space Ecosystem & Future Vision

THAILAND SPACE ECOSYSTEM

GISTDA'S PERSPECTIVE

Master Plan 2023 - 2027

1. Build up Space Economy
2. Enhance Geoinformatics for Nation - GI for All
3. Strengthen Policy Promotion
4. Transform GISTDA to a Healthy Organization

Leading Thailand's space ecosystem

- **Strategic policies,**
- **Technology development,**
- **Service innovations**

Driving the Role of Space Affairs

1. Policy Maker 2. Technology Developer 3. Service Operator

THAILAND SPACE ECOSYSTEM

GISTDA'S PERSPECTIVE

THAILAND MARKET MAIN FOCUS

Land and Urban Management

Green area / Carbon accounting

Agriculture: Crop Status/ Crop Yield / Crop Health

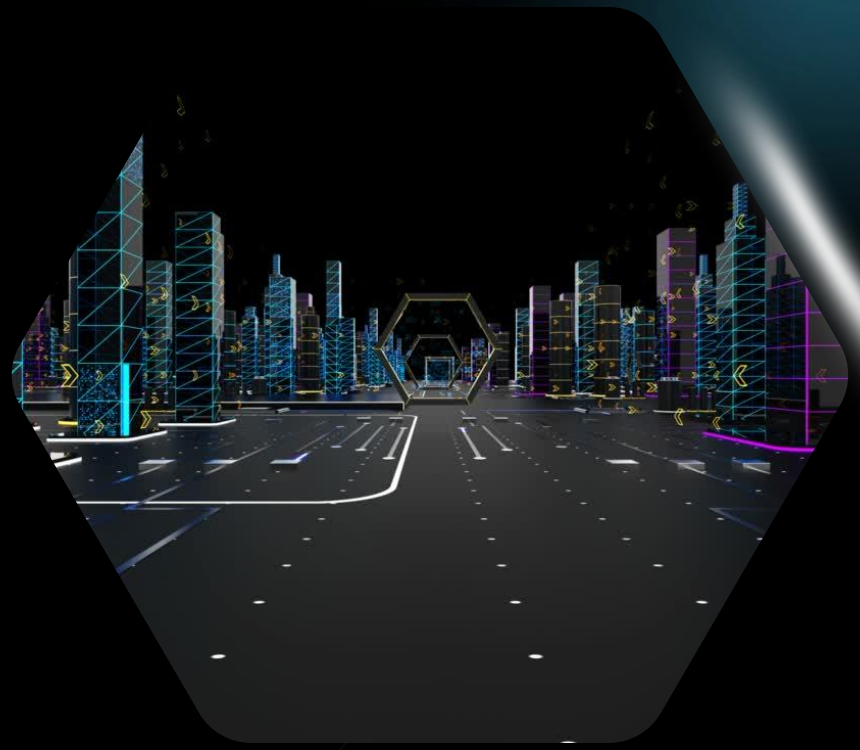
Renewable Energy : Solar City

Navigation

Disaster: Flood Monitoring

City Planning (3D Building)

Property & Insurance



Advancing Space Data Management & Interoperability

EO data management, standardization, and accessibility

Focus on improving data interoperability, sharing, and capacity building through regional and global collaboration

Key Contributions Aligned with WGISS:

1. National Space Data Center (NSDC)
2. THEOS2 ARD
3. EO Data Standardization & Interoperability
4. Calibration & Validation (Cal/Val) Activities
5. Data Exchange & Open Data Initiatives

Future Vision

Collaboration Opportunity

Regional/Global Earth Observation Networks

Expanding Thailand's Space Capabilities

1. **Satellite Projects:** EO Satellites, Research Satellites
2. **Data/Solutions:** Co-development/ Share function
3. **Space Technology/ Exploration Projects:** Opportunity for Collaboration
4. **Global Collaboration and Innovation:** WGISS and CEOS Partnerships (ARD, Calval, Climate..)


THAILAND
SPACE
EXPO 2025
Venue
ICONSIAM, 7th fl., Bangkok
Date
16-18 October 2025
Join us from October 16-18, 2025, at ICONSIAM, Bangkok for Thailand's biggest space and geoinformatics event! Explore cutting-edge innovations, connect with global space leaders, and unlock exciting business opportunities in the rapidly growing space industry. Whether you're an industry expert, entrepreneur, or space enthusiast, this is your chance to be at the forefront of the next space revolution.
Don't miss out — be part of the future!
Register Now
GISTDA

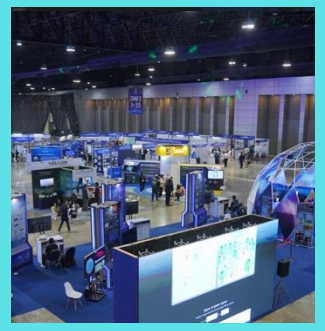
About
TSX2025

At TSX 2025, attendees will have the chance to discover cutting-edge innovations, engage in thought-provoking discussions, and forge valuable connections with experts and key players in the space sector. The event also aims to inspire the next generation of space professionals and entrepreneurs by showcasing the potential of space technology to transform industries such as agriculture, telecommunications, disaster management, and more.

Opportunities
Of Participant

TSX 2025 is set to be an exciting and impactful event, bringing together professionals, entrepreneurs, and the next generation of space enthusiasts. This dynamic expo will feature a wide variety of activities, including inspiring seminars, interactive workshops, and exciting side events. Here's a glimpse of what you can expect:

Keynote/Seminar



Exhibition

Side event/Workshop

Business Matching

Youth Activities

Opportunities of Business

TSX offers a dynamic platform for networking and exploring new business opportunities, along with a Product Showcase where you can present your innovations to a highly engaged audience. This is your opportunity to expand your network and forge lasting partnerships!

- Business Matching
- Reception Networking
- Marketplace
- Product Showcase


GISTDA
THAILAND
SPACE
EXPO 2025
OCTOBER 16-18
ICONSIAM, BANGKOK
We look forward to seeing you at Thailand Sapce Expo 2025 !