

Challenges and Critical Success Factors for
Digital Transformation:
The Race to Space



Patompob (Nile) Suwansiri
CEO
Thaicom Public Company Limited
24 January 2023

10 MEGA TRENDS IN 2022

1. PANDEMIC TO ENDEMIC

6. METAVERSE

2. HYBRID WORKING

7. ULTRA-FAST FASHION

3. CRYPTO PAYMENT

8. QUANTUM COMPUTING



4. THE RACE TO SPACE

9. NFT ART

5. SUSTAINABLE LIVING PLAN

10. GAMEFI

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 MUST READ: [US warning: North Korea's tech workers posing as freelance developers](#)

Amazon founder Jeff Bezos back on Earth following successful Blue Origin space launch

Blue Origin's New Shepard successfully carried out its first commercial flight with four crew members, including its billionaire founder, in the cabin.



Written by **Aimee Chanthadavong**, Senior Journalist
on July 21, 2021 | Topic: Innovation



THE RACE TO SPACE

INVESTING IN SPACE

SpaceX launches Crew-4 mission for NASA, has now sent 26 astronauts to space in under two years

PUBLISHED WED, APR 27 2022 6:10 AM EDT | UPDATED WED, APR 27 2022 3:58 PM EDT



Michael Sheetz
@THESHEETZTWEETZ

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KEY POINTS

- SpaceX launched a group of astronauts for NASA early Wednesday morning.
- Crew Dragon capsule Freedom — carrying NASA astronauts Kjell Lindgren, Bob Hines, Jessica Watkins and Italian astronaut Samantha Cristoforetti — is on its way to the International Space Station.
- Elon Musk's company has now sent 26 people to orbit in less than two years.



**The News With
Shepard Smith**

WATCH LIVE 

UP NEXT | **American Greed** 01:00 am
ET

[Listen](#)



THE RACE TO SPACE

FIRST TO THE FUTURE

Virgin Galactic founder Richard Branson successfully rockets to outer space



By Jackie Wattles, [CNN Business](#)

Updated 1612 GMT (0012 HKT) July 12, 2021



THE RACE TO SPACE

CNBC DISRUPTOR 50

Relativity Space's massive 3D printers are reinventing rockets, and manufacturing

PUBLISHED THU, MAY 27 2021 11:29 AM EDT | UPDATED THU, MAY 27 2021 12:33 PM EDT



Michael Sheetz
@THESHEETZTWEETZ

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KEY POINTS

- Relativity Space is pushing the boundaries of 3D-printing to build rockets but CEO Tim Ellis sees the company's influence reaching beyond the space industry.
- "We're reinventing the underpinnings of not just building rockets, but the whole stack of how you actually design, develop, build and scale a company," Ellis said.
- Relativity landed at No. 23 on this year's CNBC's Disruptor 50 list.

MONEY
20/20

EUROPE
JUNE 7-9
AMSTERDAM

The place Fintech communities **LOVE** to do business

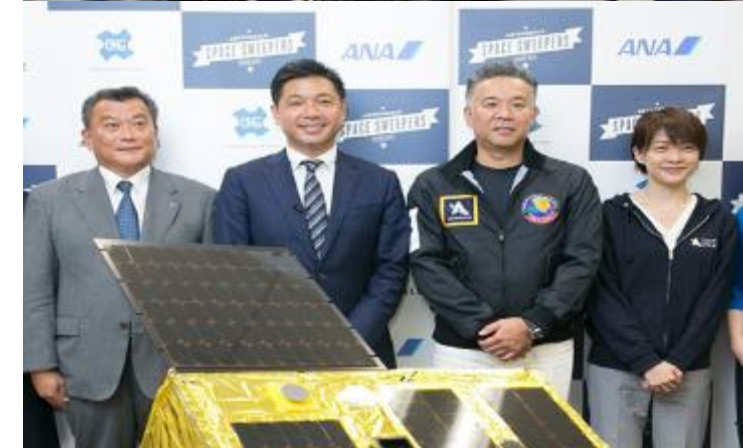
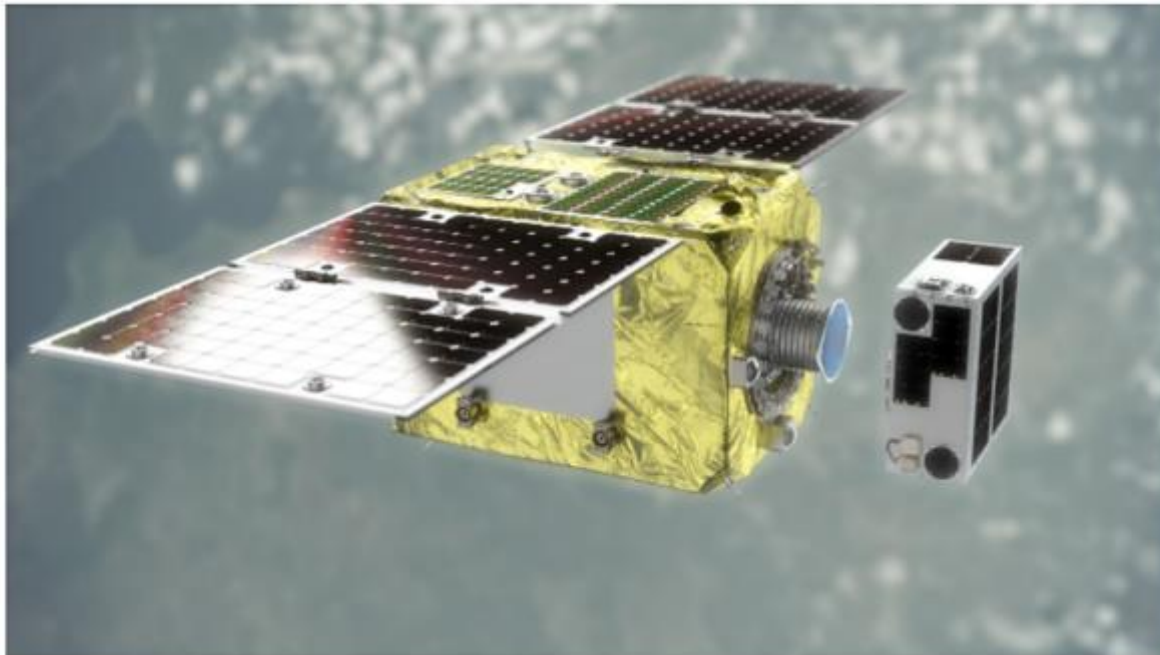


THE RACE TO SPACE

Astroscale successfully demos in-space capture-and-release system to clear orbital debris

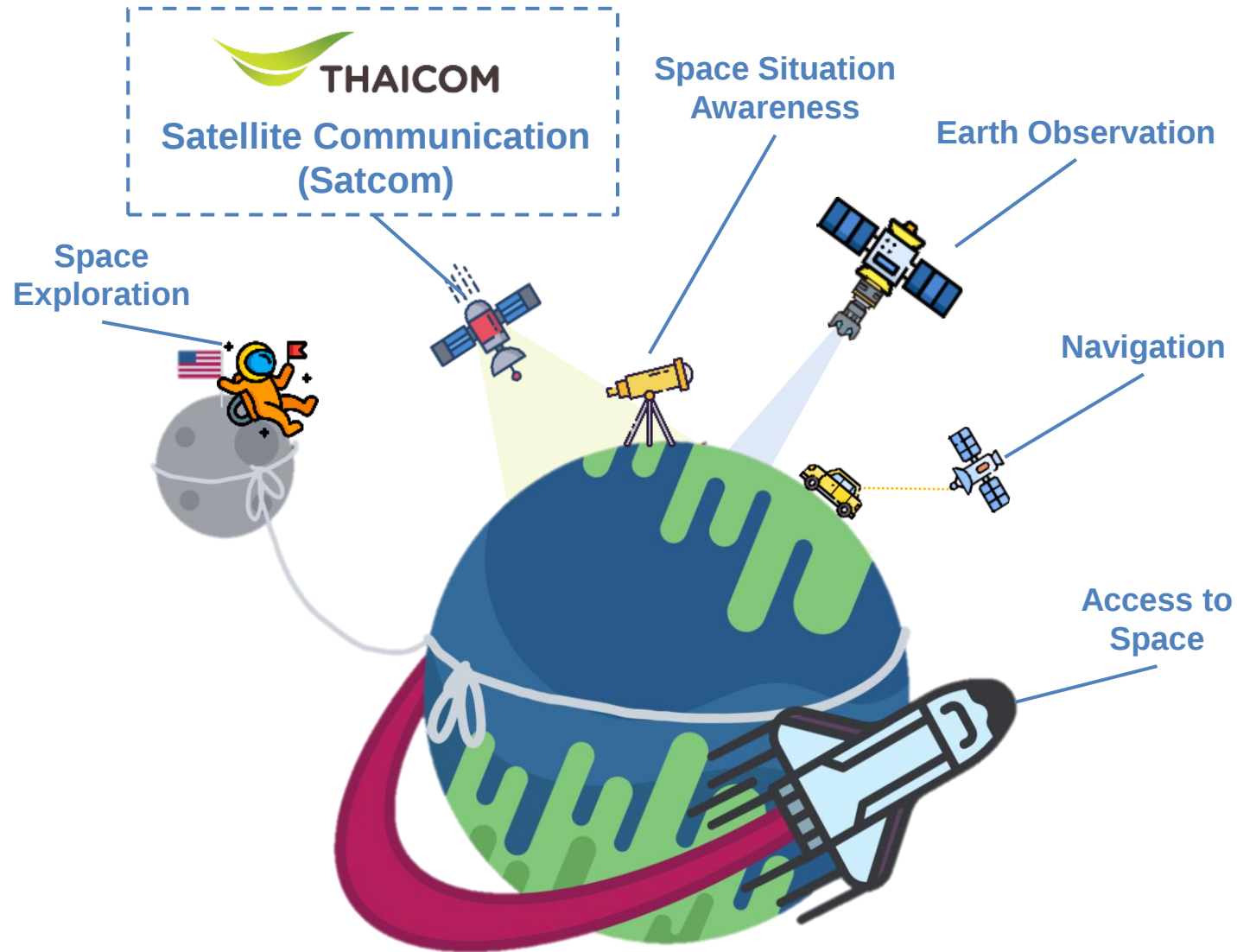
Aria Alamalhodaei @breadfrom / 2:20 AM GMT+7 • August 26, 2021

Comment

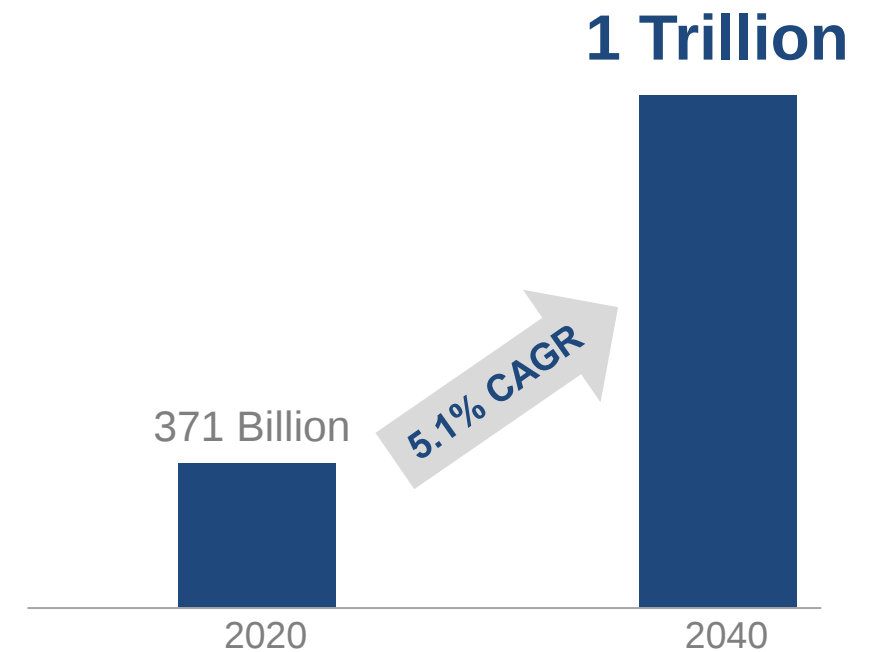


SPACE ECONOMY OVERVIEW

SPACE ECONOMY TREND 2020-2030



GLOBAL SPACE ECONOMY IN 2040

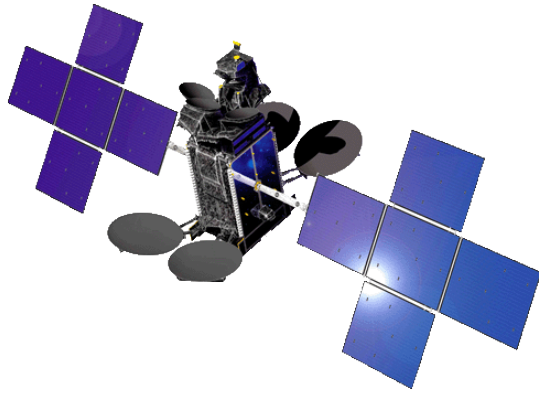


Source: PWC, Market and market research, BryceTech and Morgan Stanley Researches

A satellite with large solar panels is shown in space, orbiting Earth. The Earth's horizon is visible with a blue glow, and the surface shows clouds and landmasses. The background is a dark field of stars.

**Next Generation Satellite Technology will be an
essential enabler for Digital Transformation**

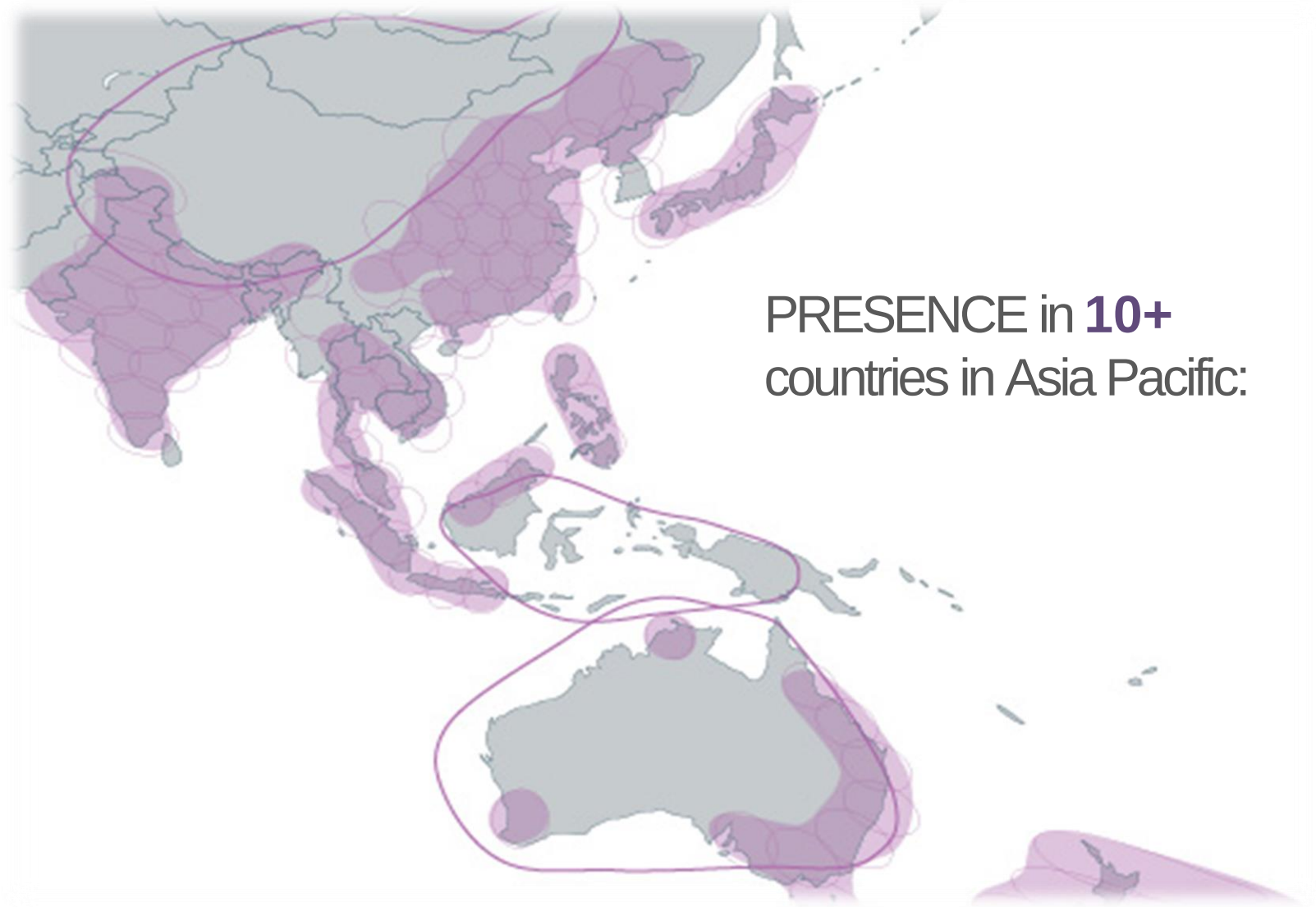
High Throughput (HTS) Satellite



THAICOM 4 (IPSTAR)

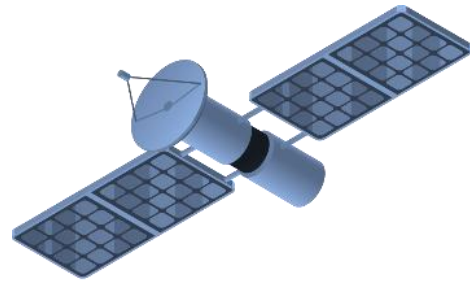
The World's first High Throughput Satellite (HTS)

- ✓ High Capacity
- ✓ Low Unit Cost
- ✓ Broadband Application



PRESENCE in **10+**
countries in Asia Pacific:

Software Defined High Throughput (SD-HTS) Satellite

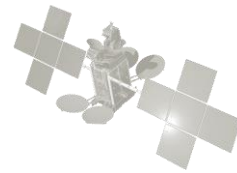


SD-HTS

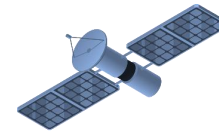
The Next Generation High Throughput Satellite (HTS)

FLEXIBLE SATELLITE

✓ **UP TO 20X HIGHER CAPACITY**



50 Gbps



100 -1000 Gbps



Lower Unit Cost

✓ **FLEXIBLE SERVICE AREA**



LEO SATELLITE CONSTELLATION BRINGS TRULY GLOBAL BROADBAND SERVICES



STARLINK INTERNET CONSTELLATION



SpaceX is developing a satellite internet constellation named Starlink to provide global commercial internet service.

- ✓ Planned constellation of 12,000 satellites
- ✓ > 3,000 satellites launched into Low Earth Orbit (LEO)
- ✓ Inter-satellite laser link
- ✓ > 10 billion USD investment



LEO MEGA CONSTELLATIONS TO PROVIDE GLOBAL SERVICES



> 3,000 satellite launched
(out of 12,000 satellites)



542 satellite launched
(out of 648 satellites)



188 satellites to be
launched by 2026



3,236 satellites to be
launched by 2028

Starlink partnered with T-Mobile to bring connectivity to smart phone



- ✓ Bring connectivity to T-Mobile smartphones
- ✓ Connect directly over existing cellular bands
- ✓ In service 2023



Emergency SOS via satellite

- ✓ Emergency SOS on iPhone 14
- ✓ Globalstar's 24 satellites in low-earth orbit
- ✓ Currently available in the US, Canada, France, Germany, Ireland, UK and continuing to expand

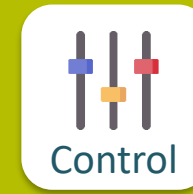


SATELLITE TO PROVIDE IOT SOLUTIONS ANYWHERE ANYTIME

Space-based: Internet of Things



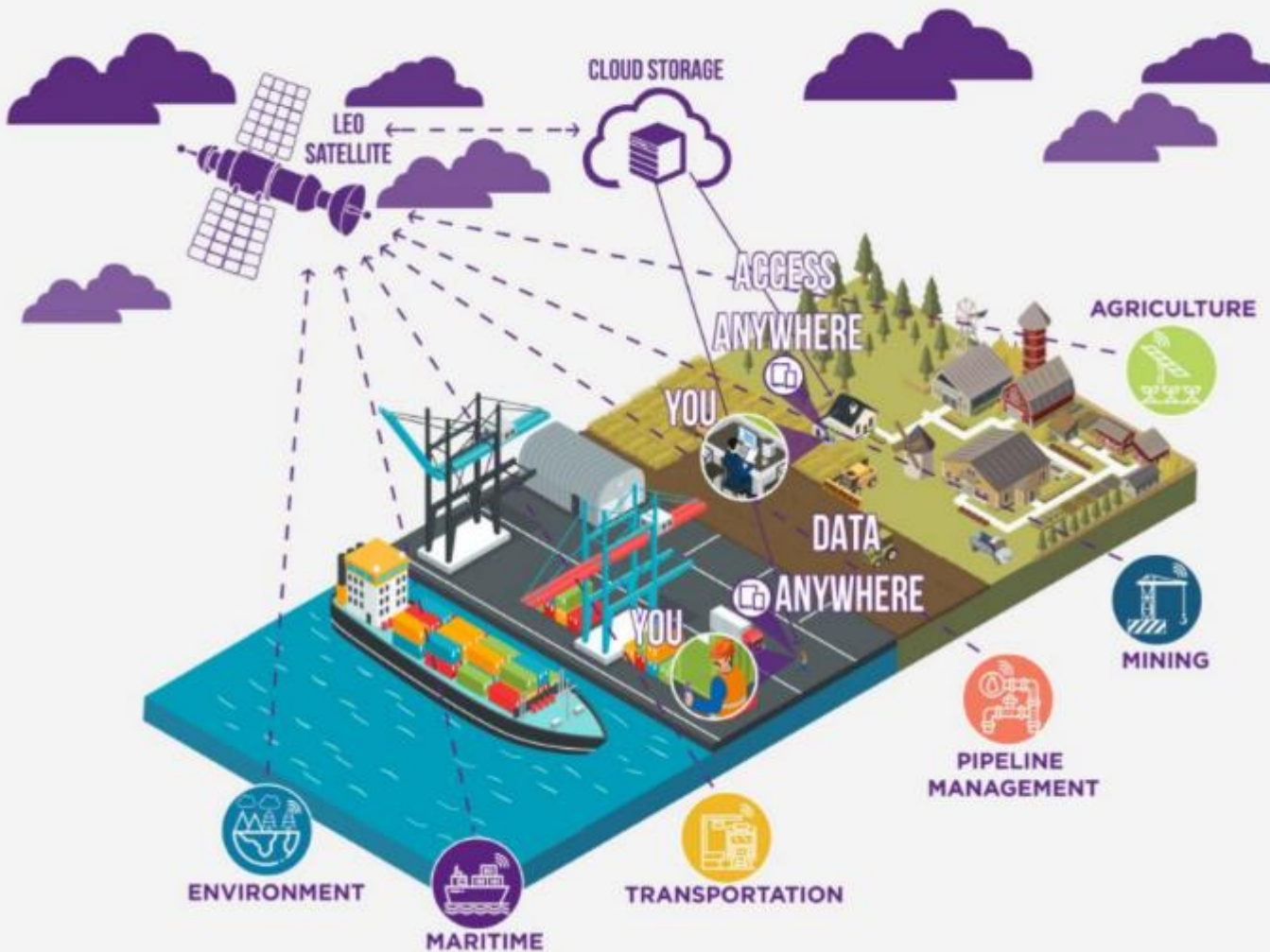
Tracking



Control



Monitor



AGRICULTURE



<https://investorwire.com/how-artificial-intelligence-and-satellite-monitoring-advance-agriculture/>

- Soil monitoring
- Weather stations
- Water level/quality monitoring
- Livestock tracking

ENERGY



<https://enterpriselotinsights.com/20170426/channels/fundamentals/industrial-iot-case-study-shell-pipeline-monitoring-tag23-tag99>

- Pipeline monitoring
- Gas and fuel tank monitoring

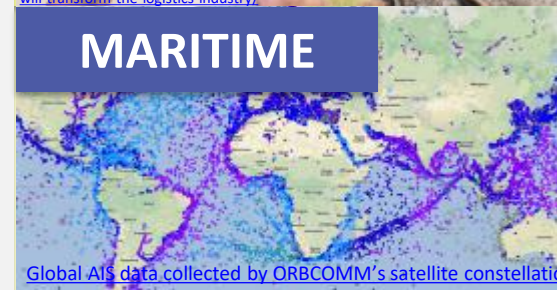
TRANSPORTATION



<https://innovationatwork.ieee.org/how-low-power-low-latency-iiot-devices-will-transform-the-logistics-industry/>

- Asset/cart tracking
- Rail and road monitoring

MARITIME



[Global AIS data collected by ORBCOMM's satellite constellation](#)

- Vessel tracking
- Health vessel monitoring
- Fishery

Thaicom's First Commercial Partnership in the LEO Satellite Business in Thailand



Operate ground station facilities



Reseller for GlobalStar services and IOT solutions

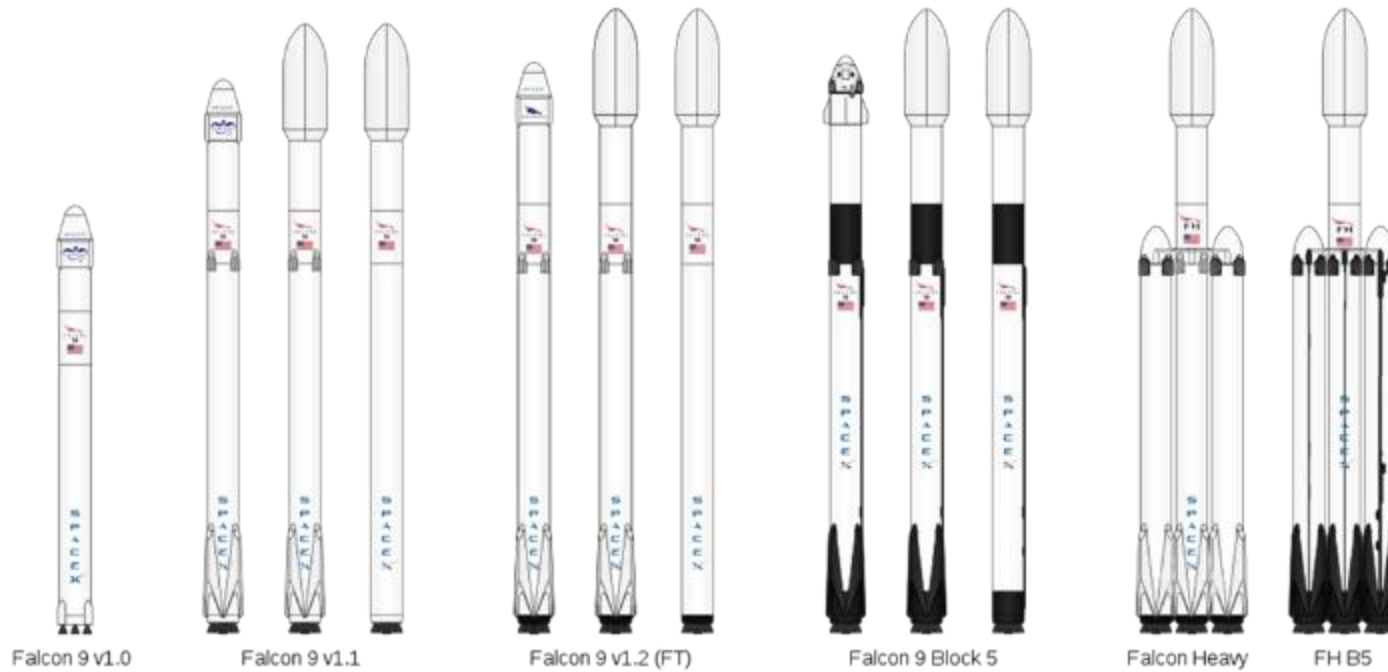


"Smart Life Jacket" launched in Phuket

A wide-angle photograph of a rocket launch. The rocket is a slender, dark object ascending vertically, leaving a bright orange and yellow flame trail. At the base, a massive, billowing cloud of white and grey smoke and steam rises, partially obscuring the launchpad. Several tall, thin service towers stand around the launch area. In the foreground, there are various ground support structures, including white cylindrical tanks and smaller buildings. The background features a clear blue sky with scattered white clouds and a bright sun in the upper right corner, creating a lens flare effect.

AFFORDABLE ACCESS TO SPACE

SPACEX FALCON ROCKET



FALCON 9

- ✓ The world first reusable rocket
- ✓ Lower cost of space accesses
- ✓ Total 151 launches

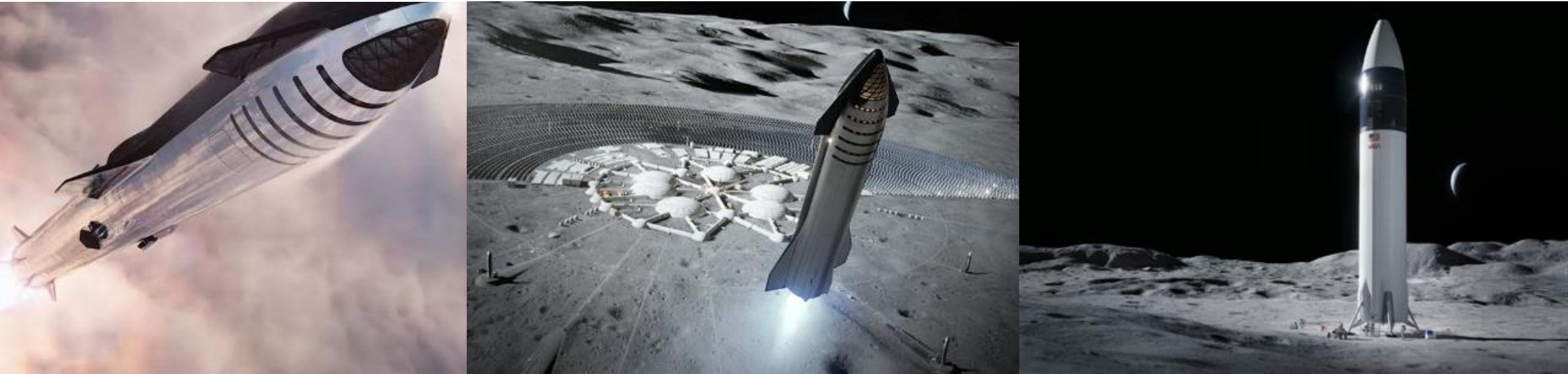
FALCON HEAVY

- ✓ The most powerful rocket in the world
- ✓ Total 3 launches
- ✓ Able to lift 64 metric tons
- ✓ Composed of three falcon 9 nine engine cores

SPACEX

STARSHIP – FULLY REUSABLE TRANSPORT SYSTEM DESIGNED TO CARRY CREW AND CARGO TO MARS AND BEYOND

✓ First private lunar mission in 2023



Starship will be the tallest, heaviest, and most powerful rocket ever built

SPACEX

FULLY 3D PRINTED ROCKET TO DISRUPT AEROSPACE INDUSTRY



- ✓ **100x** fewer parts than traditional rockets
- ✓ **10x** Faster Production Time
- ✓ **No Fixed Tooling** and a **Simple** Supply Chain

Relativity

A detailed illustration of an Earth observation satellite in orbit. The satellite features a large, green, parabolic dish antenna and a rectangular body with solar panels. Two wide, translucent white beams of light emanate from the satellite, scanning across the Earth's surface. The Earth is shown from a high-angle perspective, displaying green landmasses, blue oceans, and white cloud formations. The background is the deep black of space, filled with numerous stars.

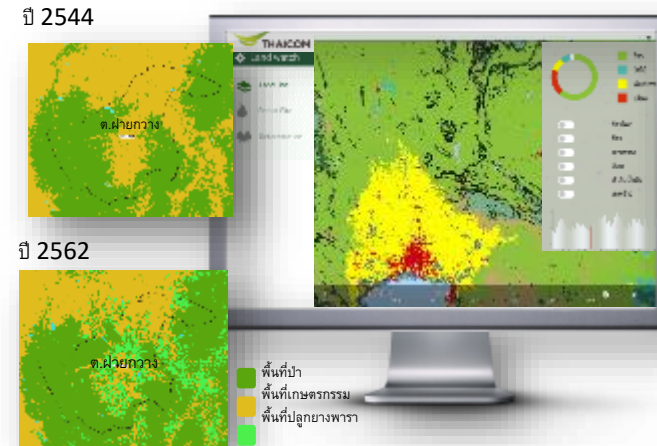
Earth observation satellite for insights and actionable data

SPACE BASED DATA APPLICATIONS FROM EARTH OBSERVATION SATELLITE

Agriculture: crop monitoring



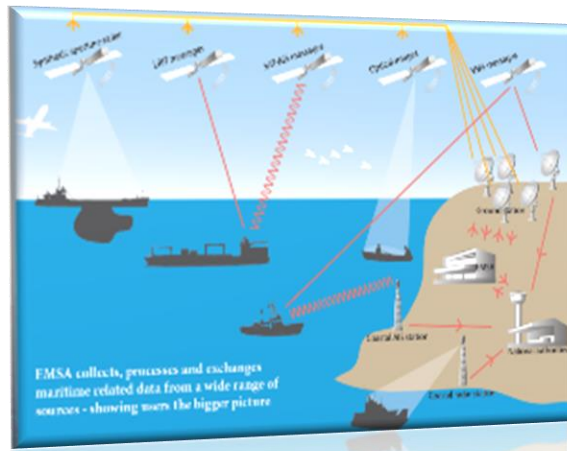
Forestry: forestry planning and prevention of illegal logging



Land use: infrastructure planning and monitoring of building activity

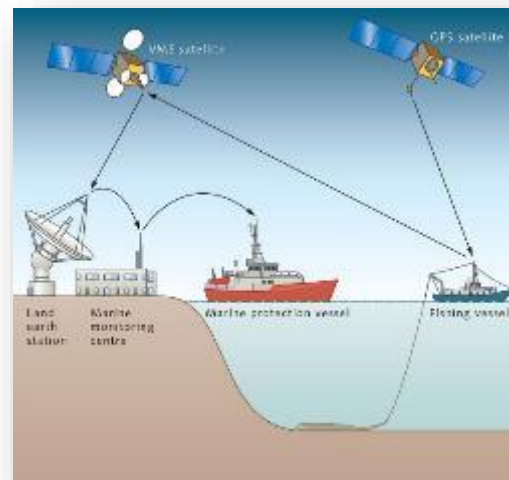


Security: coastal traffic monitoring



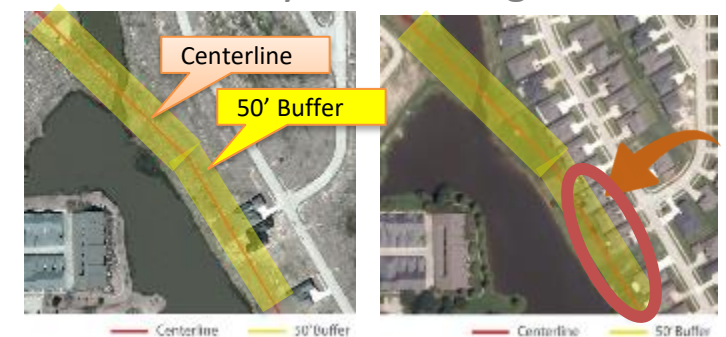
https://marine.copernicus.eu/sites/default/files/wp-content/documents/UW_2014/1-Plenary-19_June_2014/7_EMSA_SERVICES.pdf

Fishing: prevention of illegal fishing



<https://worldoceanreview.com/en/wor-2/fisheries/illegal-fishing/>

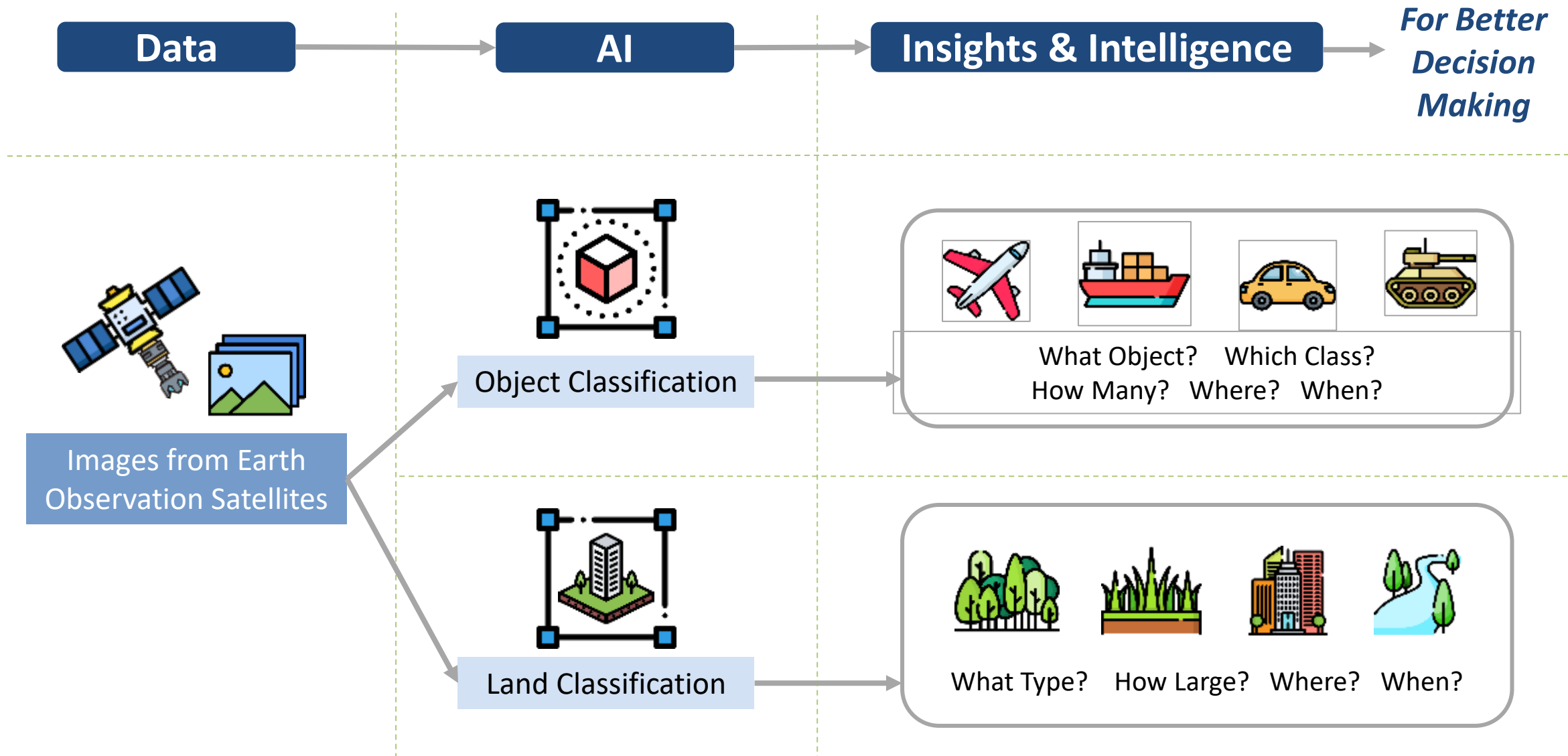
Energy: pipeline and right-of-way monitoring



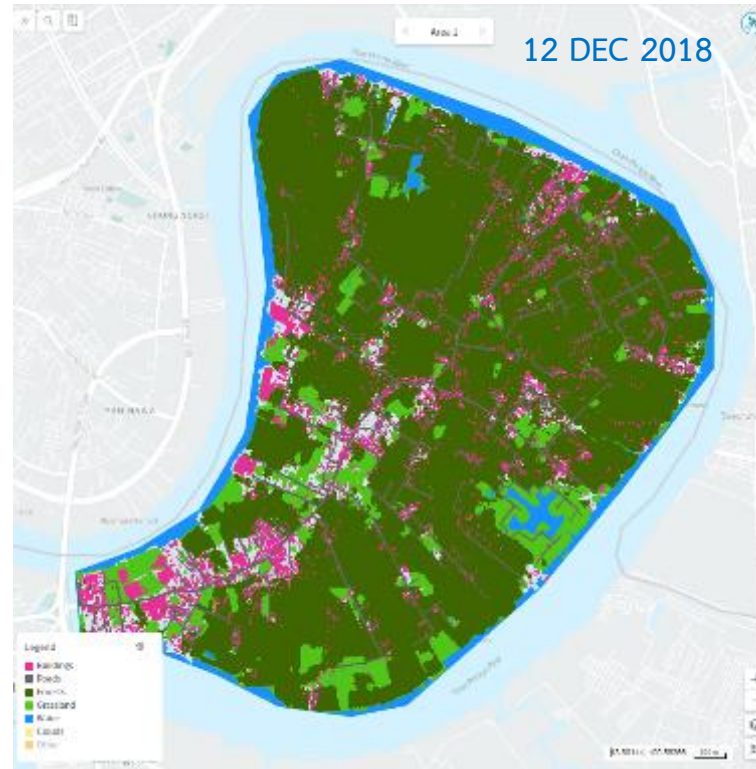
<https://www.satellytics.com/archives/2016-detecting-pipeline-right-of-way-encroachments-using-satellite-data-vehicles-heavy-machinery-new-construction-and-other-human-caused-changes>

Detection of both natural changes as well as anthropogenic changes

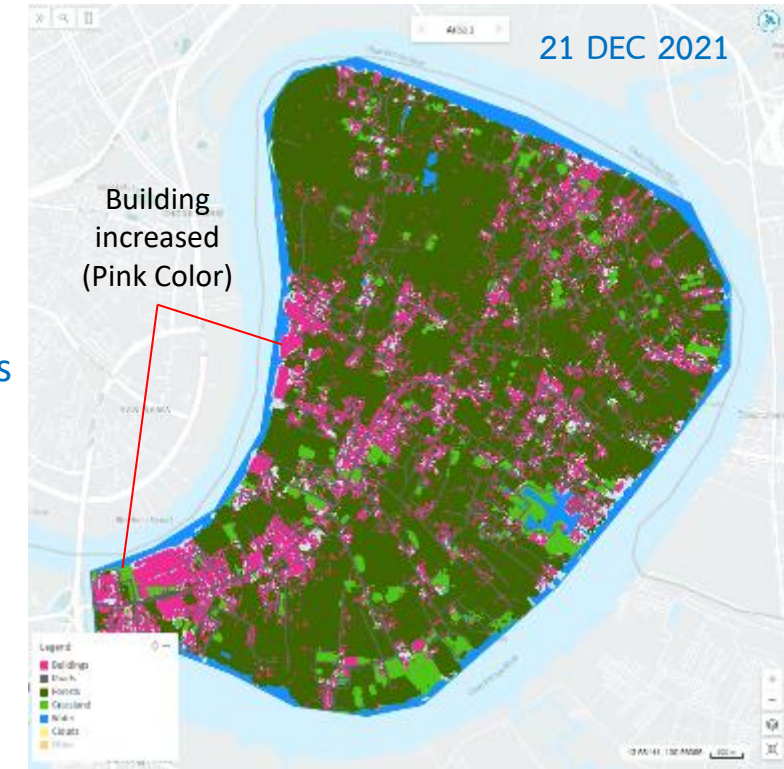
Answering basic questions: What, Where, When, How



Using satellite images and Artificial Intelligence (AI) to detect the change of buildings and forest in the Bang-Kra-Jao preserved area



Vs



Benefits of the Geospatial Intelligence (Land Use)

1. Efficiency

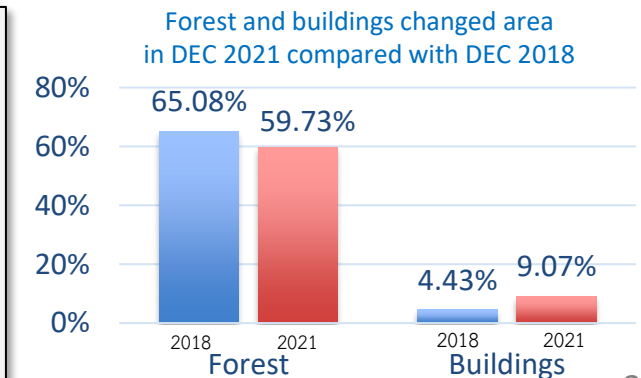
Detect changes faster and on a larger scale than can be done with traditional human analysis alone.

2. Cost Saving

Track remote infrastructure change quickly and cheaply.

3. Identify Land Use Trends

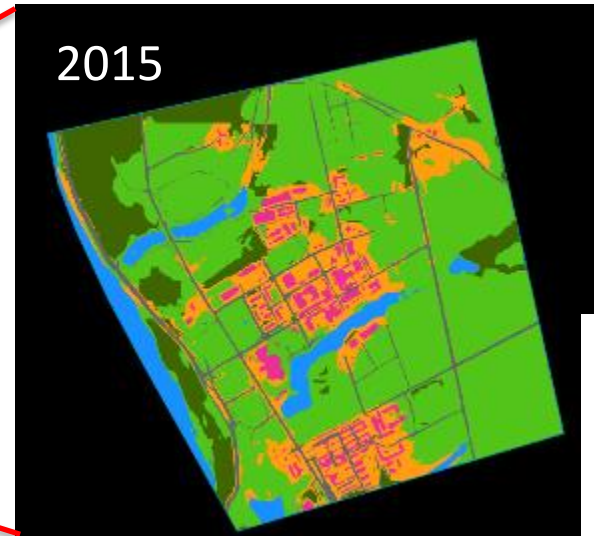
Identify how land use changes over time with infra. mapping and high-temporal frequency spatial data.



Using satellite images and AI to detect the development progress of the casinos in the Golden Triangle (Laos)



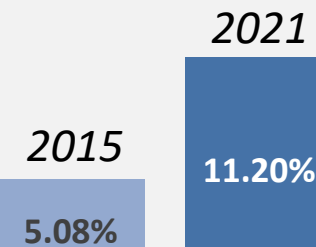
Land Use



Golden Triangle Gambling Zone



Land Change



Building



New Building in 2021
comparing to 2015



สมาคมประกันวินาศภัยไทย
Thai General Insurance Association

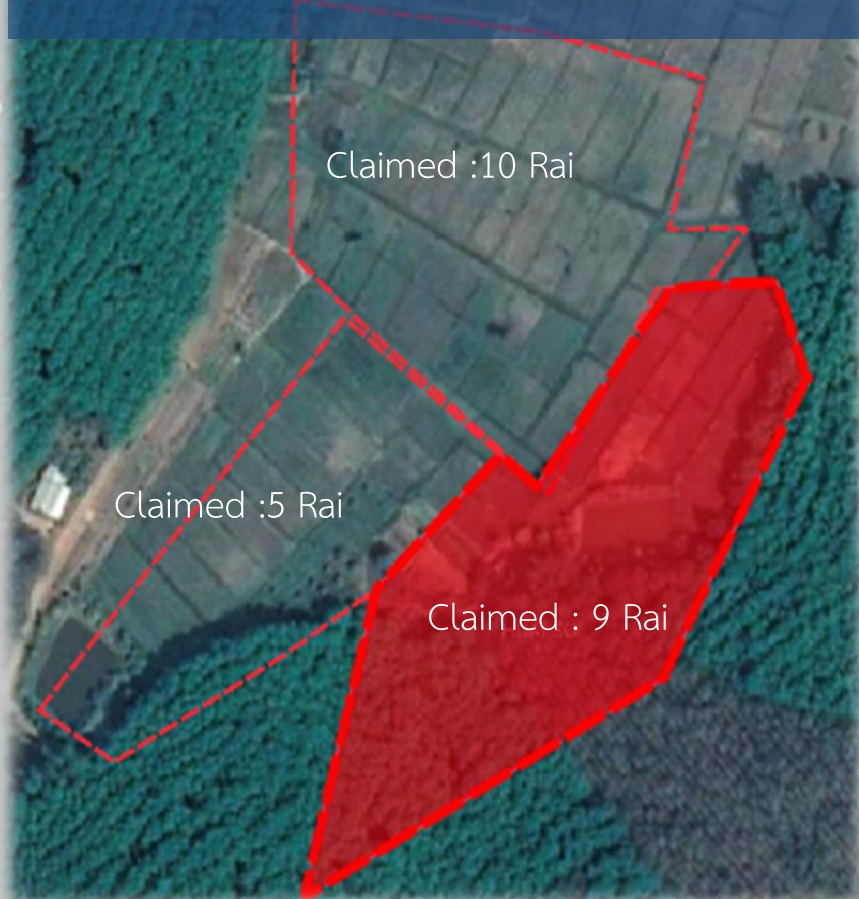


THAICOM

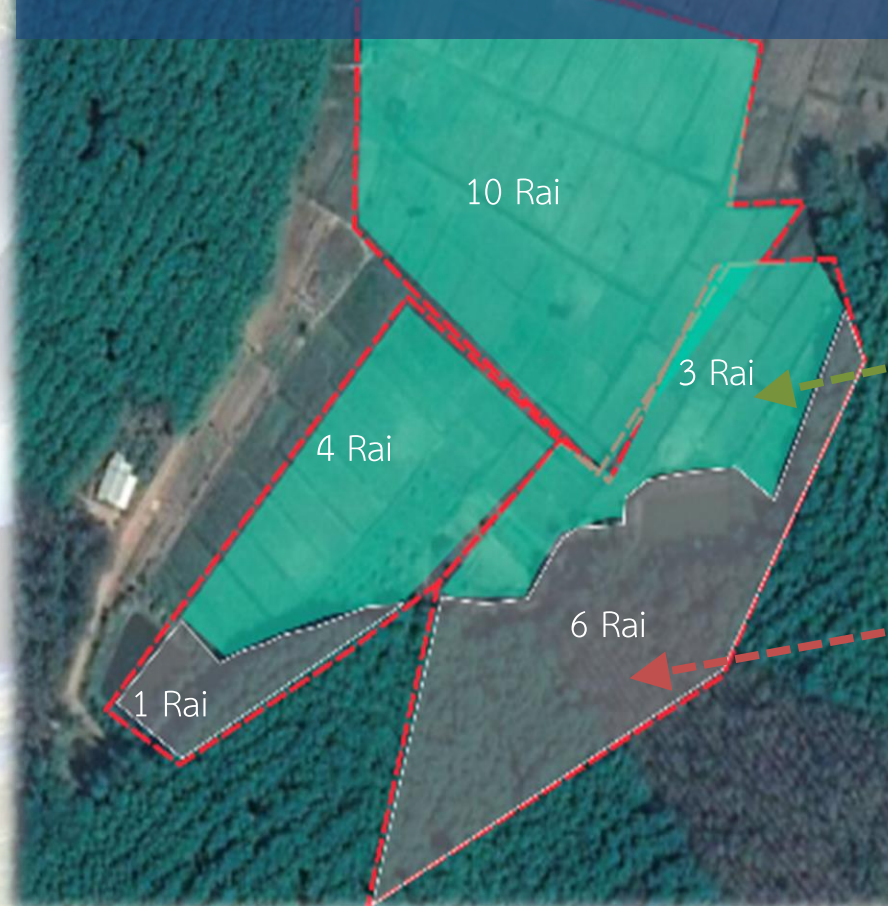
Crop Insurance Claims Analysis System

Thaicom partners with TGIA for using the satellite technology for crop insurance

INSURANCE CLAIMED DATA



DATA FROM THE ANALYSIS



พื้นที่เพาะปลูกข้าว
(Rice Planting Area)

พื้นที่ไม่ได้เพาะปลูกข้าว
(Non-rice Planting Area)

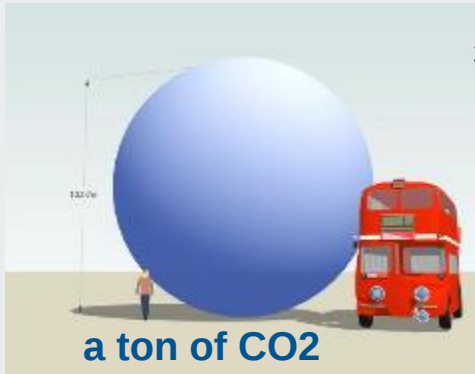
Flooding Area By Villages in Chaiyaphum Province in 2021



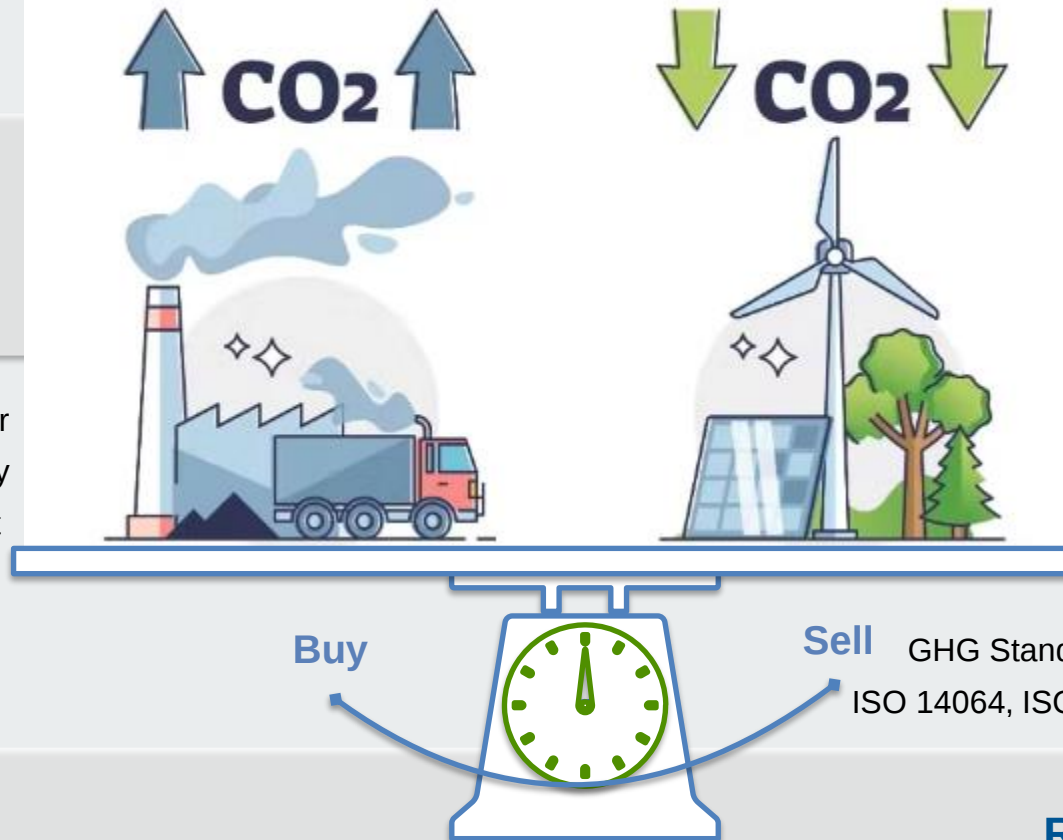
Carbon Credits and Carbon Offsets

2022

+ 263
MtCO₂eq/y



38% power generator
28% Industry
27% transport



- 91
MtCO₂eq/y

reduction
removal

2037

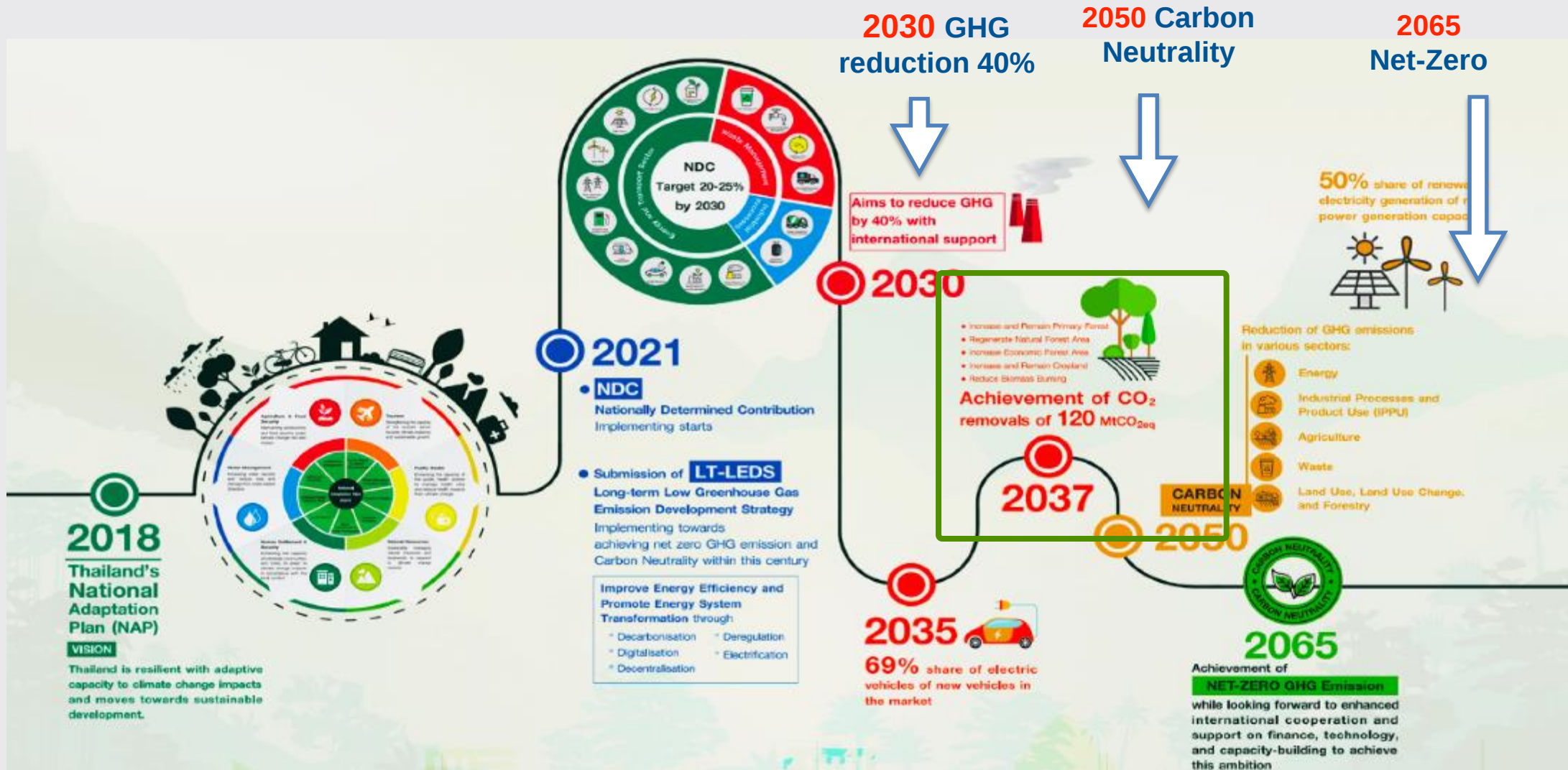
Carbon Neutrality

Reforestation Target
4.83 Mrai

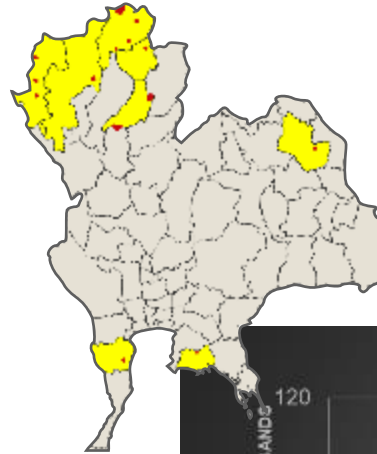
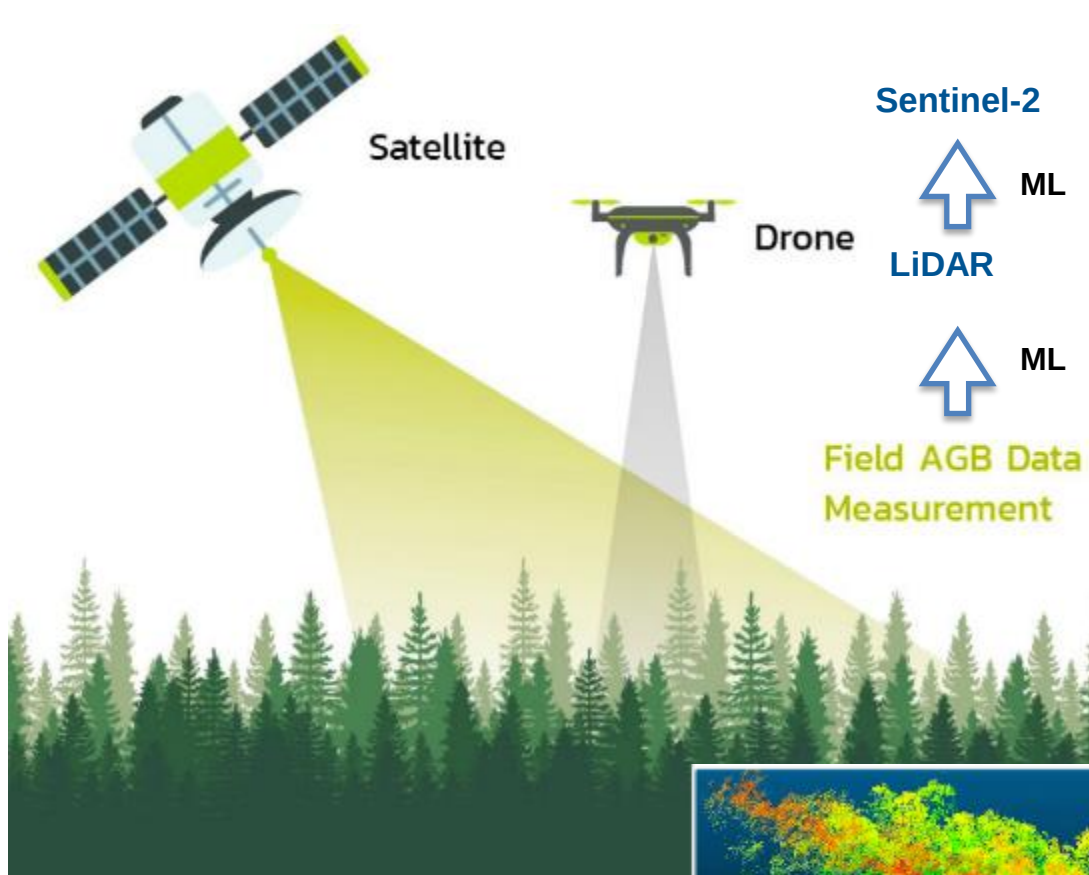
Achievement of CO₂ removals of 120 MtCO₂e

A [carbon credit](#) represents one metric ton (MtCO₂e) of greenhouse gas (GHG) emissions (CO₂, NH₄, N₂O).

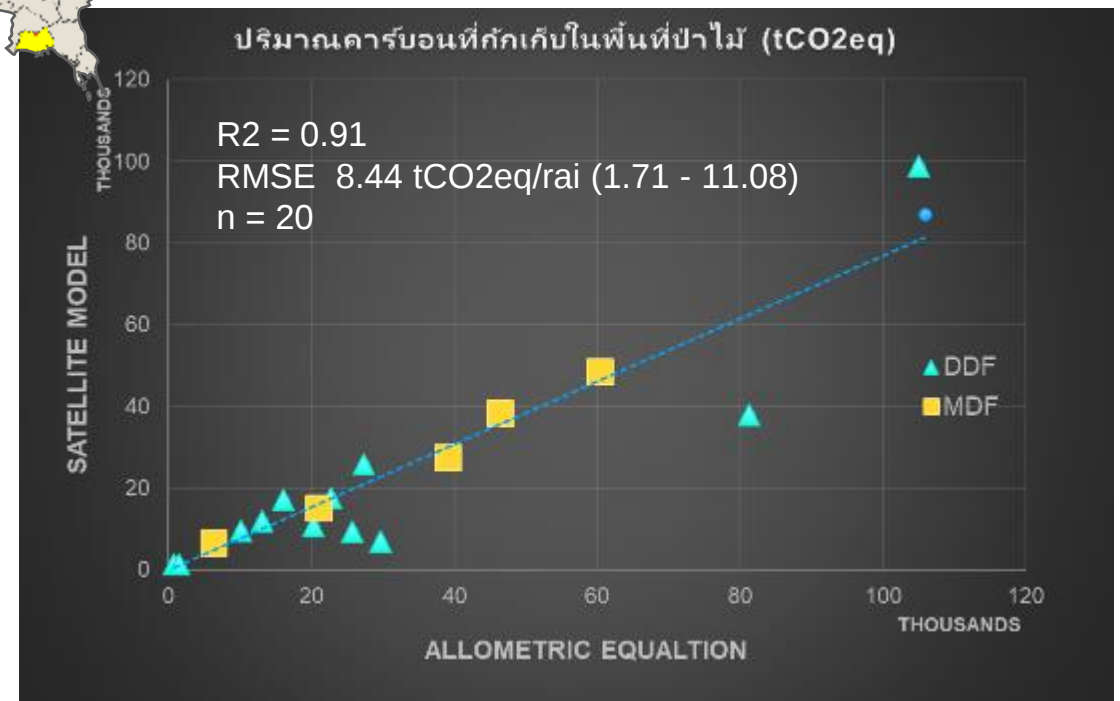
Thailand's Long-term GHG Emission Development Strategy



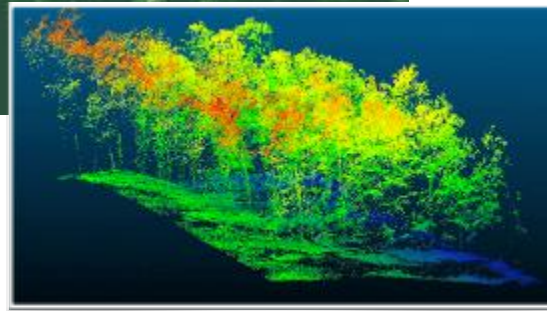
Forestry Carbon Sequestration Assessment Using Remote Sensing



Model testing results using various national forests
(TGO registration documents)



- ✓ Reduced budget
- ✓ Rapid
- ✓ Accurate

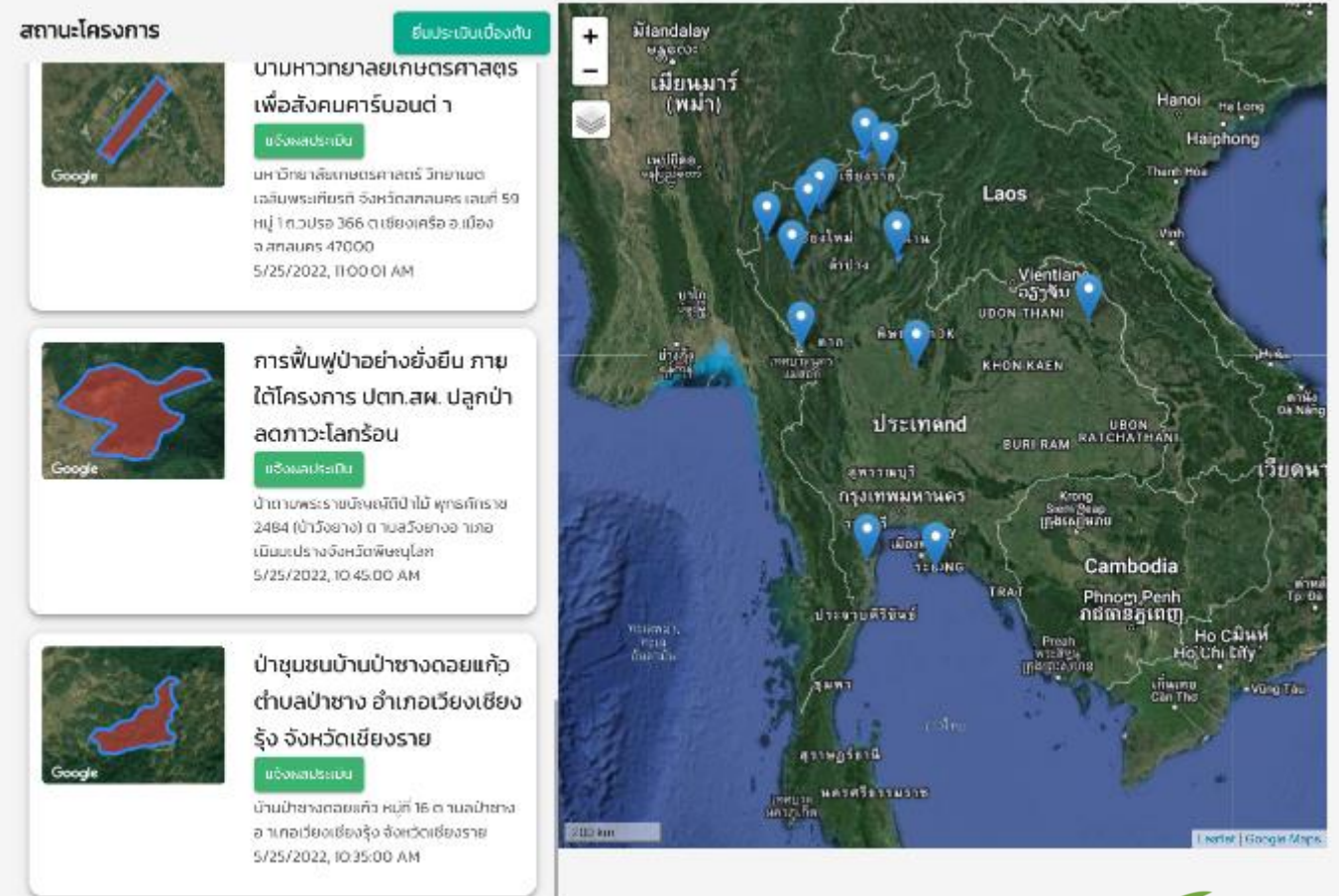


Assessment Platform for Forestry's Carbon Sequestration

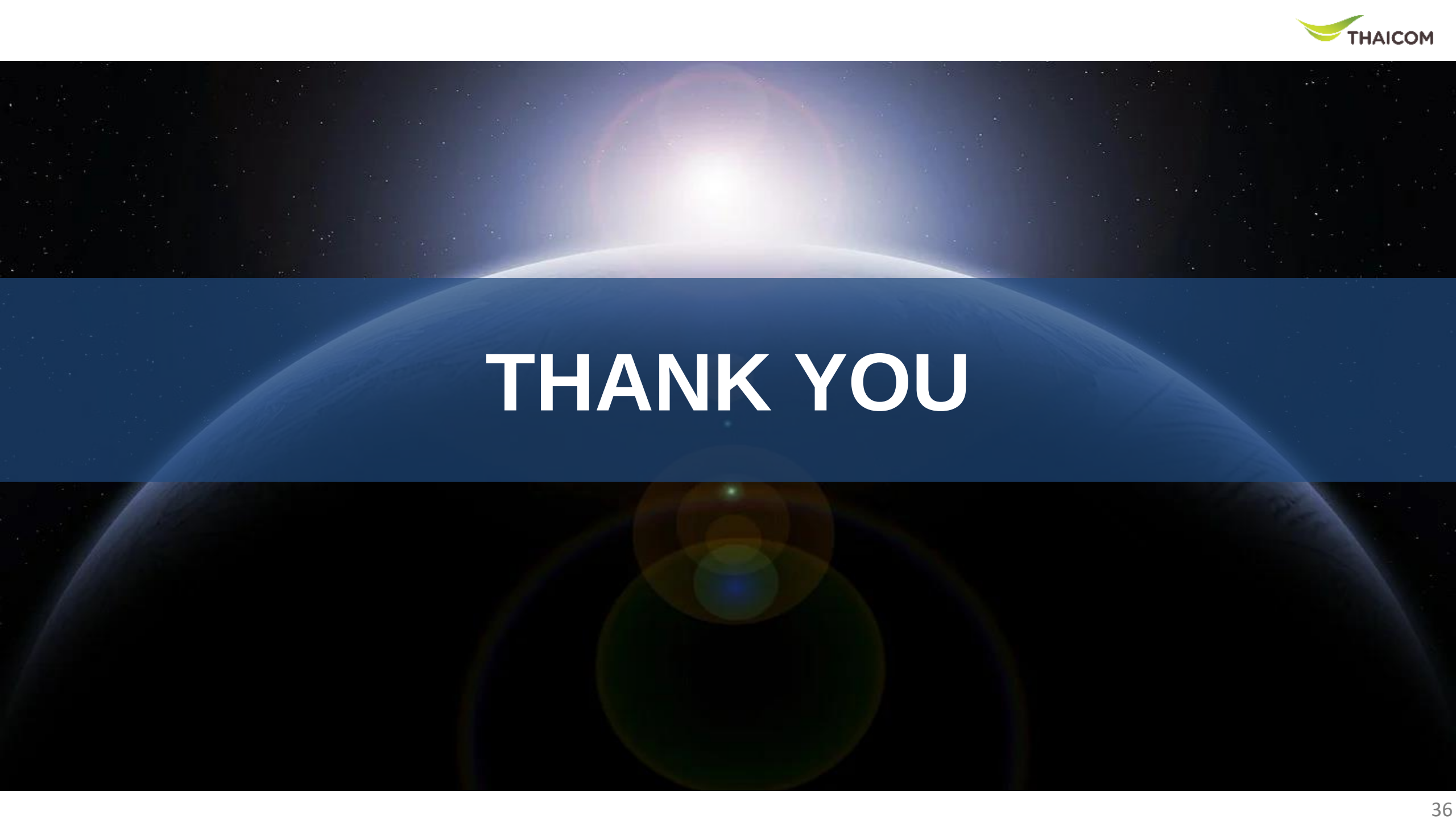
Simple to use



Follow up on multiple projects



fast and easy while document creation

The background of the slide is a high-quality image of space. It shows the curved horizon of the Earth from space, with a bright sun or star rising directly behind it, creating a lens flare effect. The sky is a deep blue with numerous small white stars scattered across it. A semi-transparent dark blue horizontal band is overlaid across the middle of the image, serving as a background for the text.

THANK YOU