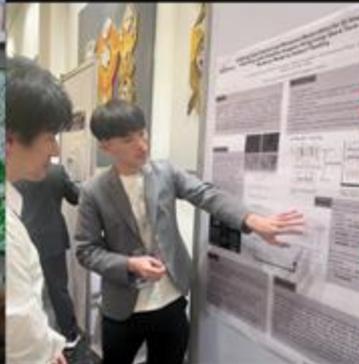# RIFFAI

AI-Powered Satellite Intelligence Solutions

Using AI to Shorten Site Search & Selection for Energy Industry with Satellites

Presented By:
Phattharapong Duangkham
Head of Artificial Intelligence

www.riffai.org

COMPANY PROFILE

RIFFAI, a Satellite & AI company that utilizes AI technology for monitoring environmental changes in Earth Observation. Focusing on the multi-hyperspectral imaging satellite and AI in image processing and time series analysis.

Industry: Aerospace, Artificial Intelligence, Satellite
Incorporated: 2 December 2024
Headquarter: USA
Operating Countries: Singapore, Thailand, UK, USA
Subsidiaries: RIFFAI LLC, RIFFAI PTE. LTD., RIFFAI Co., Ltd., RIFFAI Limited, & RIFFAI Stars Lab Co., Ltd.
Website: www.riffai.org
Email: contact@riffai.org

PROBLEM & POLICY

Challenges & Opportunities

PROBLEM

150K Energy Employers

71% Energy employers struggling to find talent to match demand Globally

14 Billion USD

In 2025, clean energy projects canceled or delayed in the U.S.

81% of projects

failed since sites couldn't meet the weather & geometric elements.

Source: Rueters & Forbes & World Economic Forum

LABOUR SHORTAGE

CLIMATIC ELEMENTS

SITE INTELLIGENCE
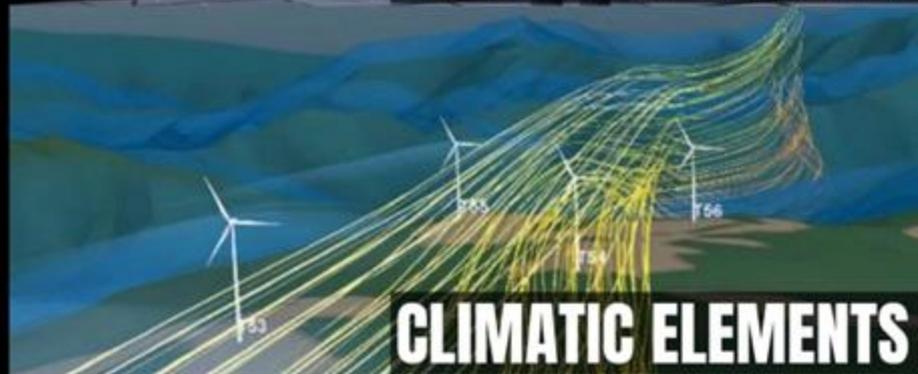
POLICY

130 Countries

- Tripling global renewable energy capacity by 2030
- Doubling the annual rate of energy efficiency improvements by 2030

45 % by 2030

- Aiming to raise renewable electricity share in regional action plans.
- Accelerating the region's clean energy transition and strengthen cooperation.

51 % by 2037

- Thailand targets 51% of total generation by 2037 (up from 20% in 2023)
- Prioritizing Solar, Wind, Biomass, and Waste.

COP 28 UAE

ASEAN 2025 SUMMIT

PDP 2024

TECHNOLOGY

Satellite & AI & Tech

SOLUTION

MULTISPECTRAL SATELLITE IMAGERY

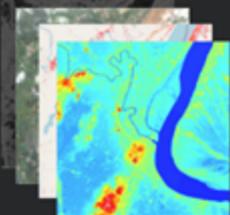- VHR RGB Imagery
- Solar radiation index
- Digital elevation
- Radar-based satellite
- Building data

WEATHER DATA

- Heat Index
- Wind Chill Index
- UV Index (UVI)
- Lifted Index (LI):
- Showalter Index (SI)
- Convective Available Potential Energy (CAPE)
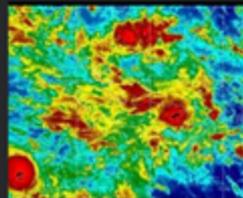
Geometry-to-Yield Conversion

RESULT
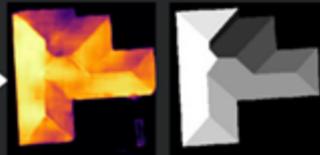
ENERGY PROJECTION

Distributed Energy Potential Estimation

Spatiotemporal Feature Fusion

Remote Sensing Feature Extraction

GLOBAL BUILDING ATLAS MODEL

The Global Building Atlas (GBA)D map of nearly all 2.75 billion buildings on Earth, including their footprints, heights, and simplified 3D models (Level of Detail 1)

Geospatial Prior Injection

SEGMENTATION MODEL

- Semantic Segmentation
- Instance Segmentation

- Fully Convolutional Networks (FCNs)
- Activation Layers

Prediction | Real
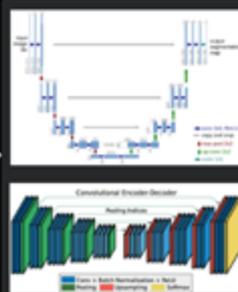
SOLAR FARM SEGMENTATION

Structural Surface Identification

ROOFTOP SEGMENATION

RIFFAI

SATELLITE & AI DEVELOPMENT

Settlement Feature Selection
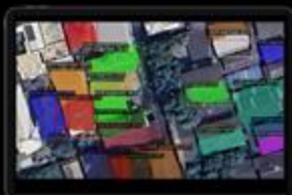
Deep Learning Satellite Image Training

Global Building Atlas Model

Aerial Object Recognition
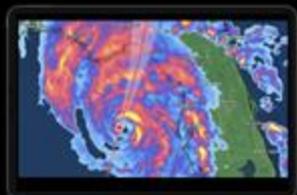
Storm Path Projection

High Resolutions Weather Forecast

FOREVER CHANGE THE WAY WE WORK WITH INFORMATION

100x Faster Intelligence
680x More Cost Effective
No Hardware No Permit
Global Coverage

RENWABLE ENERGY ON WIND & SOLAR

SECURED COMPANIES

TNDT

bcpg

GPSC

bangchak

Type: Renewable Energy
Mission: Site Search & Selection
Report: Qualified Leads & Automation

ON-GOING DISCUSS COMPANIES

Microsoft

PEAK ENERGY

iqony

Fuji Electric

RystadEnergy

onirik

INNOPOWER

VOLT

ENGIE

ITL

egi

AIKO

Automating Search for Area Deployment
For cost efficient & lean on site operations

Wind Turbine Site

Settlement Detect

Area Segmentation

Site Monitoring

Global Wind Model
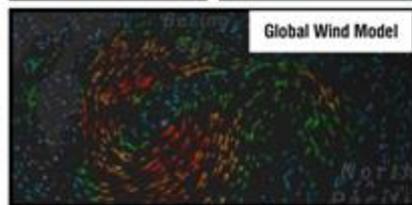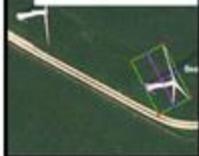
Remote Full Feasibility Support & Insight

Wind projects, due to their **environmental** sensitivity and **regulatory** complexity, may require **several months** to **years** for comprehensive site evaluation, permitting, and community engagement.

Automating Search for Solar Installation
For faster leads and sales cycle in energy

Commercial Solar

Images Extraction
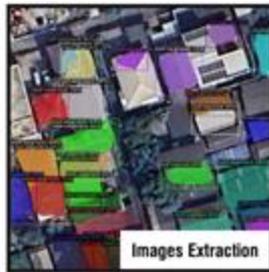
Solar Panel Detection

Area Quantification

Automate Polynomial

Saving time and cost in Site Searching

The initial **site search and information gathering phase** can take about **25-30 hours** on average in residential projects and more in commercial projects from **40 - 80 hours** with even limited options.

END-TO-END VALUE CHAIN

Components and Technology Partnership with Satellite Manufacturing + Data

Data Acquisition — Data Collection & Downlink

RIFFAI (Ground Station Network, Tasking) & Data Acquisiton Partners

Raw Satellite Telemetry & Imagery Data

Data Ingestion & Processing

RIFFAI (Platform development, API integration)

RIFFAI (AI/ML Models, Sector-Specific Analysis)

Launch & Operating

RIFFAI coordinate with in-house satellite development and launcher company / agency

Analyzing and Insights

Sector-Specific Models, Custom Algorithms

Satellite Manufacturing

RIFFAI Partners (Expertise in high-tech component manufacturing)

Clean, Calibrated, Geo-referenced Data

Deployment & Intergration

RIFFAI Leading Deployment into Client Operations

End-Customer

- Adaptation Planning
- Agriculture
- Disaster
- Risk & Insurance
- Transportation
- Logistics
- Energy & Infrastructure

AWARDS & FUTURE AHEAD

Recognitions & Outreaches

RECOGNITIONS x MEDIA MENTIONS

RIFFAI

TECHNOLOGY PIPELINE

RIFFAI

RIFFAI's Initial Development

Stationless Accurate Remote Sensing

We started from developing flood-based AI model

Project Acquisition Internationally

Data source — Data layers
- Street data
- Buildings data
- Vegetation data
- Integrated data

RIFFAI's proprietary technology in vertical agnostic industry
- Adaptation Planning
- Agriculture
- Disaster
- Risk & Insurance
- Transportation
- Logistics
- Energy & Infrastructure

Extension of AI Capacity
Faster, Accurate, Diverse Data Sets

Expanded Satellites Access
More Satellites in network to expand coverage and time

Profit-Data-Sharing Satellite Partnership
Business Model for Launching More Satellite at Lower Cost by Sharing Data in Constellation

H1 2024	H2 2024	H1 2025	H2 2025	H1 2026	H2 2026	H1 2027	H2 2027	H1 2028

AI Research & Model Training

Google Colaboratory · sentinelhub · learn · NASA EARTHDATA · CONDA · Google Earth Engine

Accumulating data from AI Dev. and satellite research that are highly integrative

NA & APAC Expansion for SAT Dev.

Stanford University

RIFFAI is Channeling teams to positioned our technology in the USA and Japan market

Panasonic

Tech transfer of US patent by Panasonic

Expected Global Deployment

Expanding Customer Based across industry

Engage in Satellite Constellation

Permanent Global or Near Global Coverage

AREA OF COLLABORATION

How we can win this together

RIFFAI リファイ

RIFFAI is AI and satellite technology monitoring the infrastructure by using spectral-image processing and time series analysis solutions.

X

COLLABORATION

- **Commercial / Enterprise:**
  - *Commercial scale*
  - *Market access*
  - *Turnkey Solutions*
  - *Data or APIs*
- **Research / University**
  - *Scientific validation*
  - *Joint research*
  - *Cross-licensing*
  - *IPs co-development*

AREA OF COLLABORATION

Components and Technology Partnership with Satellite Manufacturing + Data

SATELLITE DATA X AI

Orbital Tracking

High Resolution Weather

Constant Monitoring

Utility Line + Grid Map
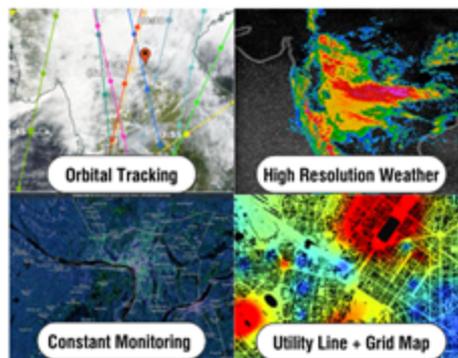
Satellite x AI Intelligence

RIFFAI is developing advanced AI models that processed on satellite data and imagery

- Energy (Renewable + Exploration)
- Environment (Agriculture + Carbon)
- National Security (Disaster + Defence)

ENERGY + SATELLITE + AI

Planetary Feasibility off-Site

RIFFAI

Data + AI + Satellite Manufacturing Solutions

Processing Model in Images and Data

International Cooperation

Certified Satellite Componenets

RIFFAI is trusted and already working with
Industry & Space Conglomerate in SEA & JAPAN

CUBE-SAT MANUFACTURING

CubeSat Prototype

CubeSat Development

External Partnership

High Altitude Optical

Satellite Manufacturing

RIFFAI is expanding its capabilities for satellites in Earth Observation for missions

- Low-Earth Orbit (1 in Development)
- High-Altitude (1 in Development)
- 10 Partnerships Secured

BRING SPACE DOWN TO EARTH™

RIFFAI

Working to bridge the gap between
space and everyday life here on Earth
on a planetary scale.

BRING SPACE DOWN TO EARTH   riffai.org

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