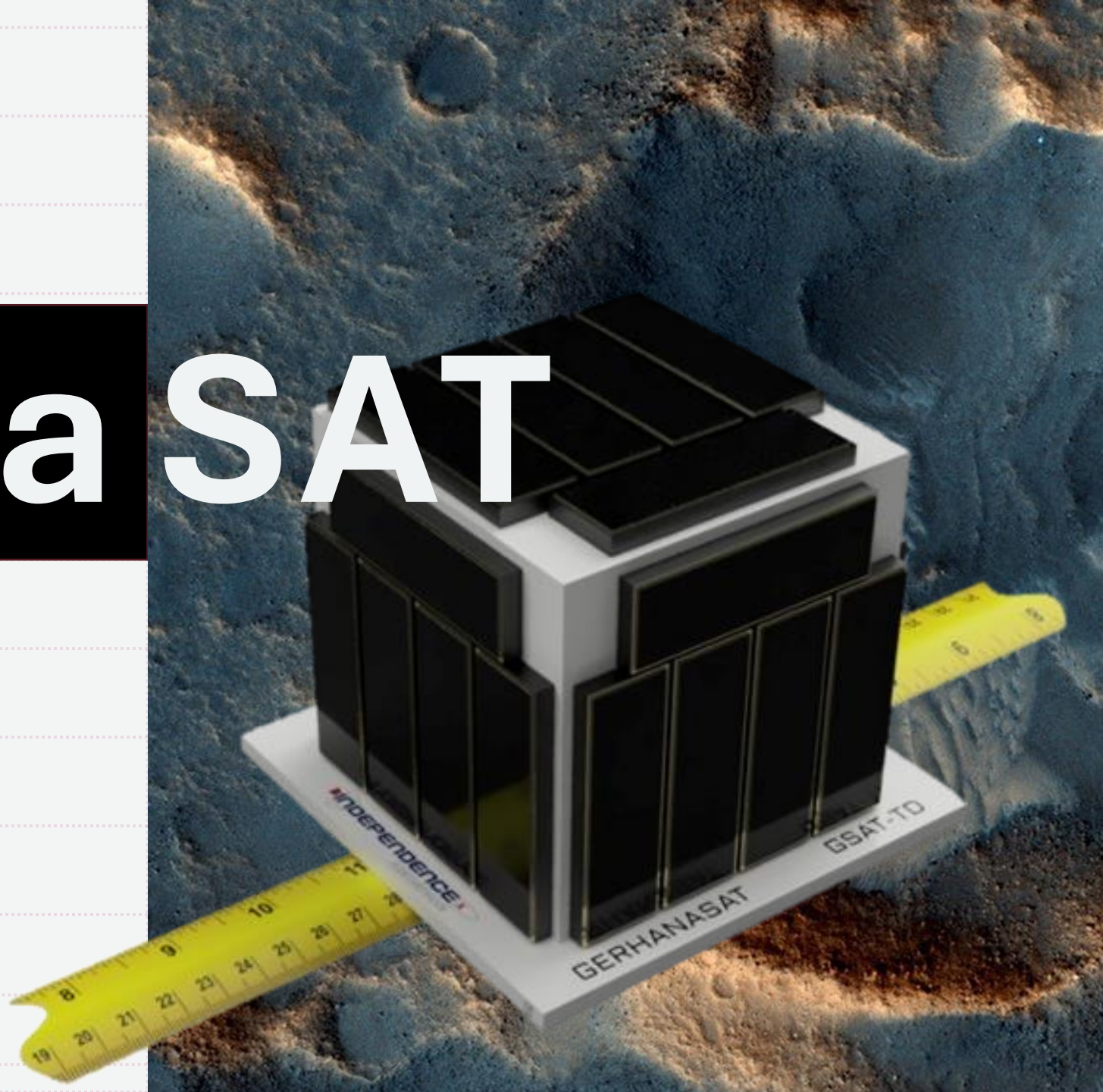


# Gerhana SAT

Presentation by Izmir Yamin  
CEO Independence-X Aerospace  
October 29, 2024




# OUR TEAM



# Our Strength in Rocket Propulsion Tech

- Indigenous Local Technology
- Proudly Designed and Made in Malaysia

  
 US 20180283321A1

**States**  
**Application Publication** (10) **Pub. No.: US 2018/0283321 A1**  
 IN (43) **Pub. Date: Oct. 4, 2018**

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**OR FEEDING LIQUID PROPELLANTS TO COMBUSTION CHAMBER OF AN ENGINE** (52) **U.S. CL.**  
 CPC ..... **F02K 9/46 (2013.01); F02K 9/563 (2013.01)**

**INDEPENDENCE-X AEROSPACE SDN BHD, Seri Kembangan (MY)** (57) **ABSTRACT**

**Mohtamad Izmir BIN YAMIN, Seri Kembangan (MY)**

**INDEPENDENCE-X AEROSPACE SDN BHD, Seri Kembangan (MY)**

**5/934,901**

**Mar. 23, 2018**

**Priority Application Priority Data**  
 (MY) ..... PI 2017701026

**Classification Classification**  
 (2006.01)  
 (2006.01)

A system for feeding a liquid fuel and a liquid oxidiser to combustion chamber of an engine, includes two containers kept under a low temperature, one for holding liquid hydrogen, and the other for holding liquid oxygen. Each of two expansion valves is connected to one separate container of said two containers, for transforming liquid hydrogen and liquid oxygen which pass through said valves, into gaseous forms. A fuel cell is connected to the valves for receiving the gaseous hydrogen and gaseous oxygen, and generating electric power. The system includes two other containers, one for holding the fuel, and the other for holding the oxidizer. Two electric pumps are connected to the two other containers, such that one of the pumps is capable of feeding the fuel, and the other is capable of feeding the oxidizer to the chamber, using the power generated by the fuel cell.

  
**MALAYSIA**  
**CERTIFICATE OF GRANT OF A PATENT**

In accordance with Section 31 (2) of the Patents Act 1983 a patent for an invention having grant number MY-198702-A has been granted in respect of an invention having the following particulars:

**TITLE** : SYSTEM FOR FEEDING LIQUID PROPELLANTS TO COMBUSTION CHAMBER OF AN ENGINE


**FILING DATE** : 24 MARCH 2017




**PRIORITY DATE** : NONE

**PATENT OWNER** : INDEPENDENCE-X AEROSPACE SDN BHD  
 52, JALAN PUJ 8/9, BANDAR PUTRA PERMAI,  
 43300 SERI KEMBANGAN SELANGOR  
 MALAYSIA


**NAME OF INVENTOR** : MOHD IZMIR BIN YAMIN


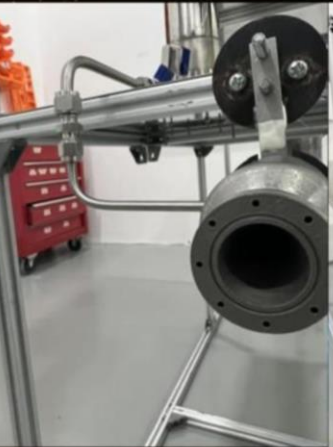

**DATE OF GRANT** : 18 SEPTEMBER 2023

  
 story of Independence-X Aerospace Rocket

Worlds First Electric Based Liquid Propellant Rocket Engine (2006)  
 & Solid Propellant Rocket (2004)

  
 SE 1

# CREDENTIAL BUILDING

The screenshot shows the website for The World Technology Network (WTN). At the top, there is a navigation menu with links for HOME, ABOUT, WORLD TECHNOLOGY SUMMIT & AWARDS, WTN ARCHIVES, VIDEO, MEMBERS, and CONTACT. Below the navigation is a banner for the 2014 World Technology Summit & Awards, held on November 13/14, 2014, at The Time & Life Building in NYC, USA, in association with Fortune Time. The main content area is titled "2014 WORLD TECHNOLOGY AWARD NOMINEES" and features a circular logo for "THE WTN THE WORLD TECHNOLOGY NETWORK NOMINEE WORLD TECHNOLOGY AWARD 2014". The nominees are listed under the heading "INDIVIDUAL" and "SPACE". The list includes Stjepan Bedic, Alex Dobrianski, Maria Catalina, Sergio Cavalcanti, Elon Musk, Mohd Izmir Yamin, and Maria Catalina. A red arrow points to the name "Elon Musk", which is also highlighted with a red rectangular box.

THE WTN  
THE WORLD TECHNOLOGY NETWORK

HOME ABOUT WORLD TECHNOLOGY SUMMIT & AWARDS WTN ARCHIVES VIDEO MEMBERS CONTACT

THE 2014 WORLD TECHNOLOGY SUMMIT & AWARDS

NOVEMBER 13/14, 2014  
THE TIME & LIFE BUILDING  
NYC, USA

IN ASSOCIATION WITH  
FORTUNE TIME

2014 WORLD TECHNOLOGY AWARD NOMINEES

THE WTN  
THE WORLD TECHNOLOGY NETWORK  
NOMINEE  
WORLD TECHNOLOGY AWARD  
2014

INDIVIDUAL

SPACE

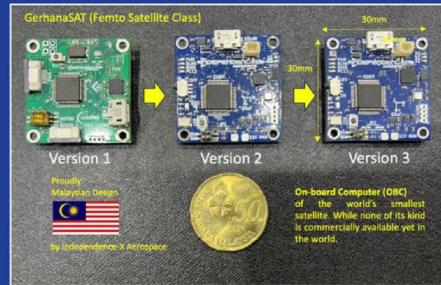
- Stjepan Bedic
- Alex Dobrianski
- Maria Catalina
- Sergio Cavalcanti
- Elon Musk
- Mohd Izmir Yamin
- Maria Catalina

# PROBLEM STATEMENT

- The rapid growth **Internet of Things (IoT)** and the **demand for connectivity everywhere** requires a cost-effective and low-latency satellite.
- Existing systems suffer from **high cost, high latency with limited accessibility**, especially in remote regions.
- A new type of satellite is needed to address these issues and enable a wider of communication and IoT

FEATURED PRODUCT

# World's Smallest Satellite

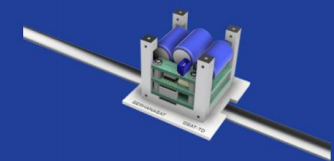
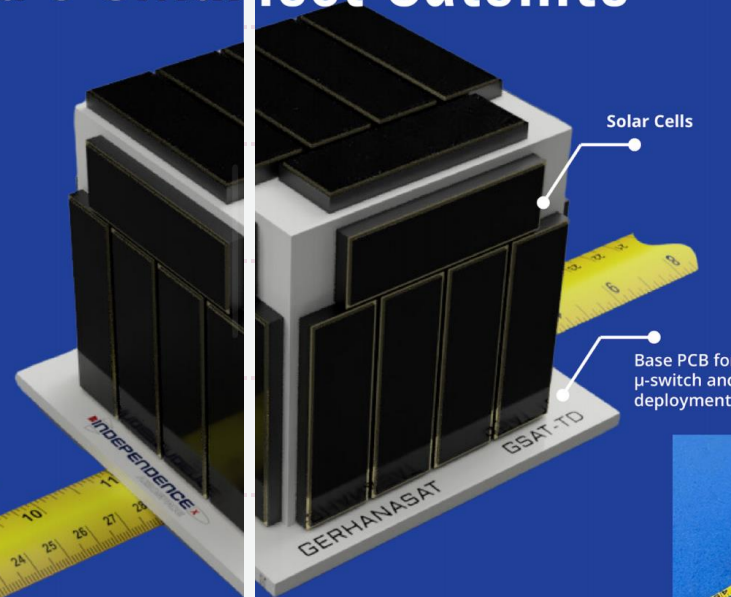


Product development of On-board Computer

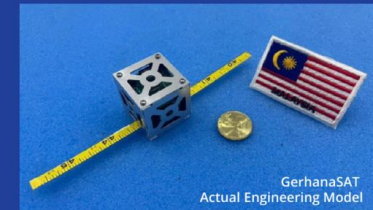


Key features

- Femto-Class Satellite (< 100g)
- Low-Bandwidth Communication
- Cost-Effective
- Less susceptible to collision
- Less susceptible to radiation



The inner workings of the satellite has a chassis ( T6-6061 Aluminium), Battery, On-Board Computer and Comms Module

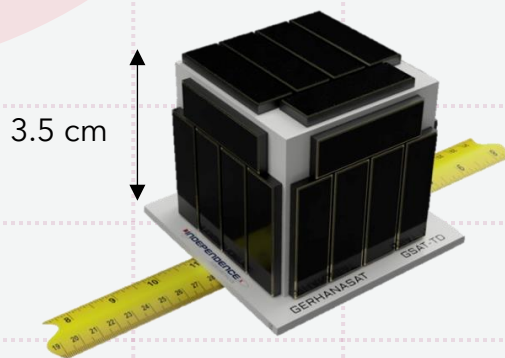


GerhanaSAT Actual Engineering Model

Satellite Properties :

- Class = Femto-Satellite Class
- Controller = STM32F103 ARM Cortex M1
- Build Volume = 42.03 cm<sup>3</sup> (W 3.5cm x H 3.5cm x L 3.5cm)
- Mass = 100 grams
- Battery Class = 10180 Lithium ion (Li-ion)
- Battery Capacity = 80 mAh Li-ion battery x 3 (210 mAh)

# COMPARISON



## GerhanaSAT 1F:

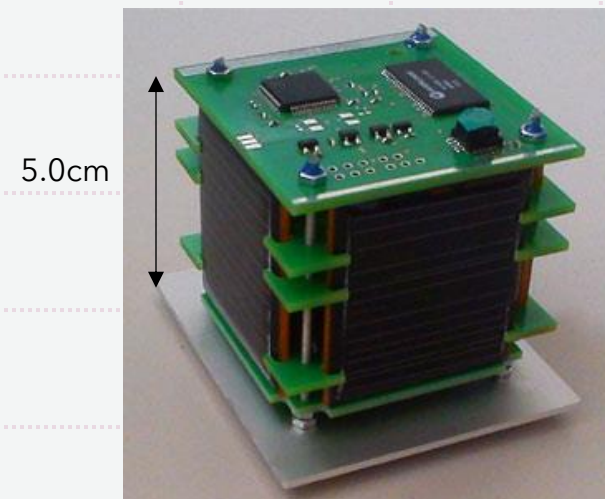
Femto class

Price: RM 50,000

Mass: 100 grams

Volume 1F :  $0.0000429 \text{ m}^3$

Volume 2F :  $0.0000858 \text{ m}^3$



## WREN 1P:

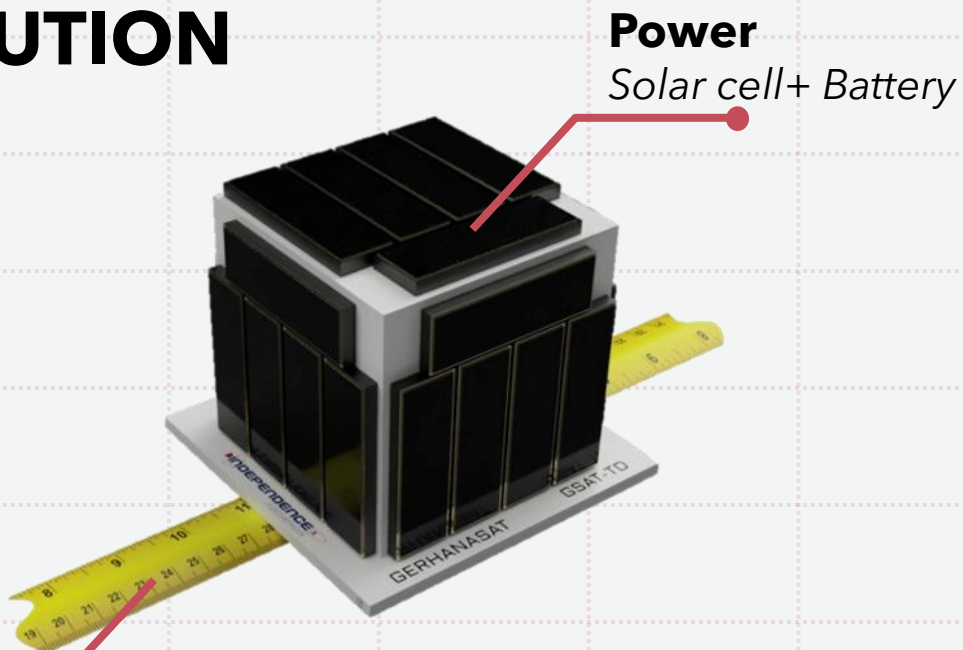
PocketCube class

Price: RM 215,000

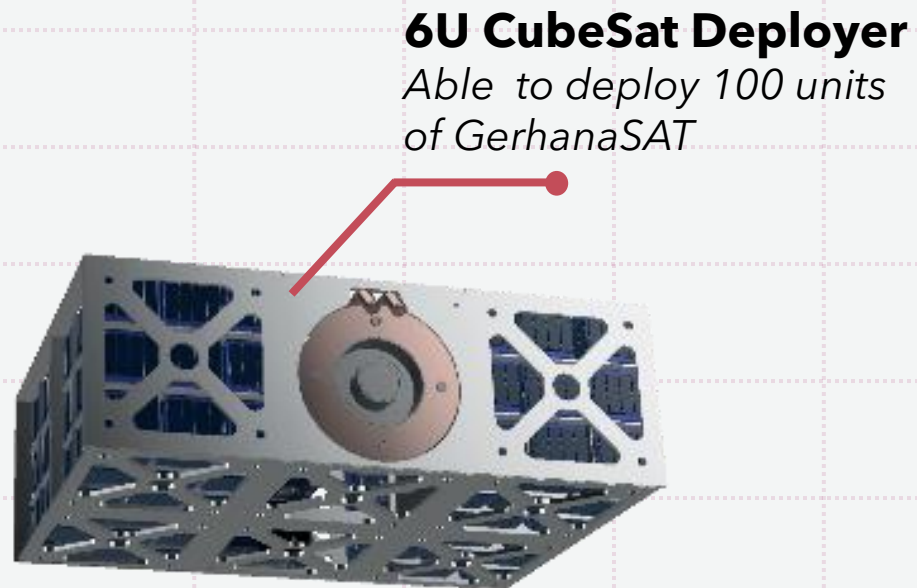
Mass: 250 grams

Volume 1P :  $0.000125 \text{ m}^3$

# OUR SOLUTION



**Power**  
*Solar cell+ Battery*



**6U CubeSat Deployer**  
*Able to deploy 100 units of GerhanaSAT*

**Telemetry Enabled**  
*Lora Communications*

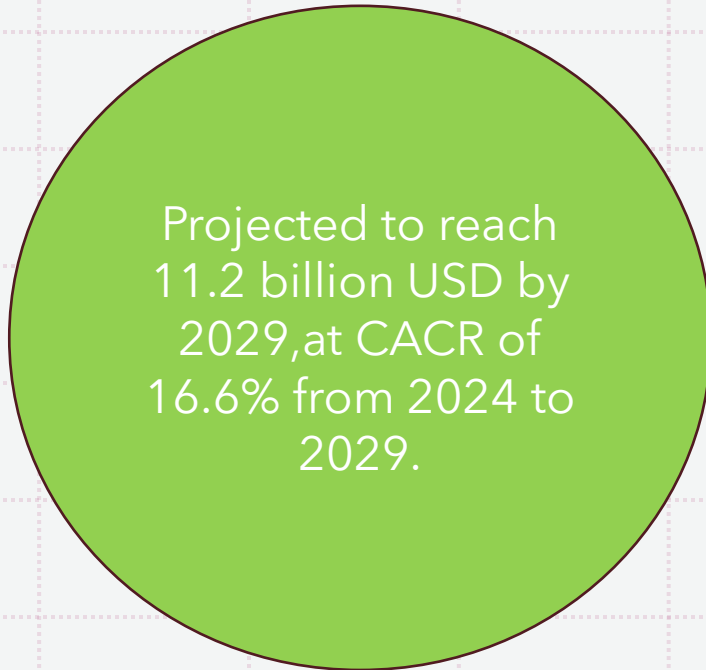
Telemetry & Telecommand enabled  
at Realtime downlink and uplink

Solar cell as Power Supply to ensure  
sufficient power demand

IoT Communications

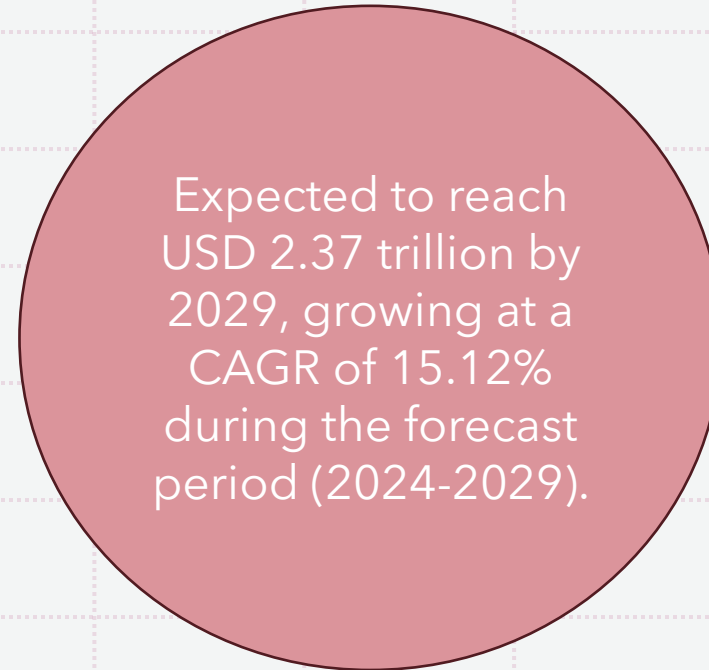
# MARKET OPPORTUNITY

## Small Satellite

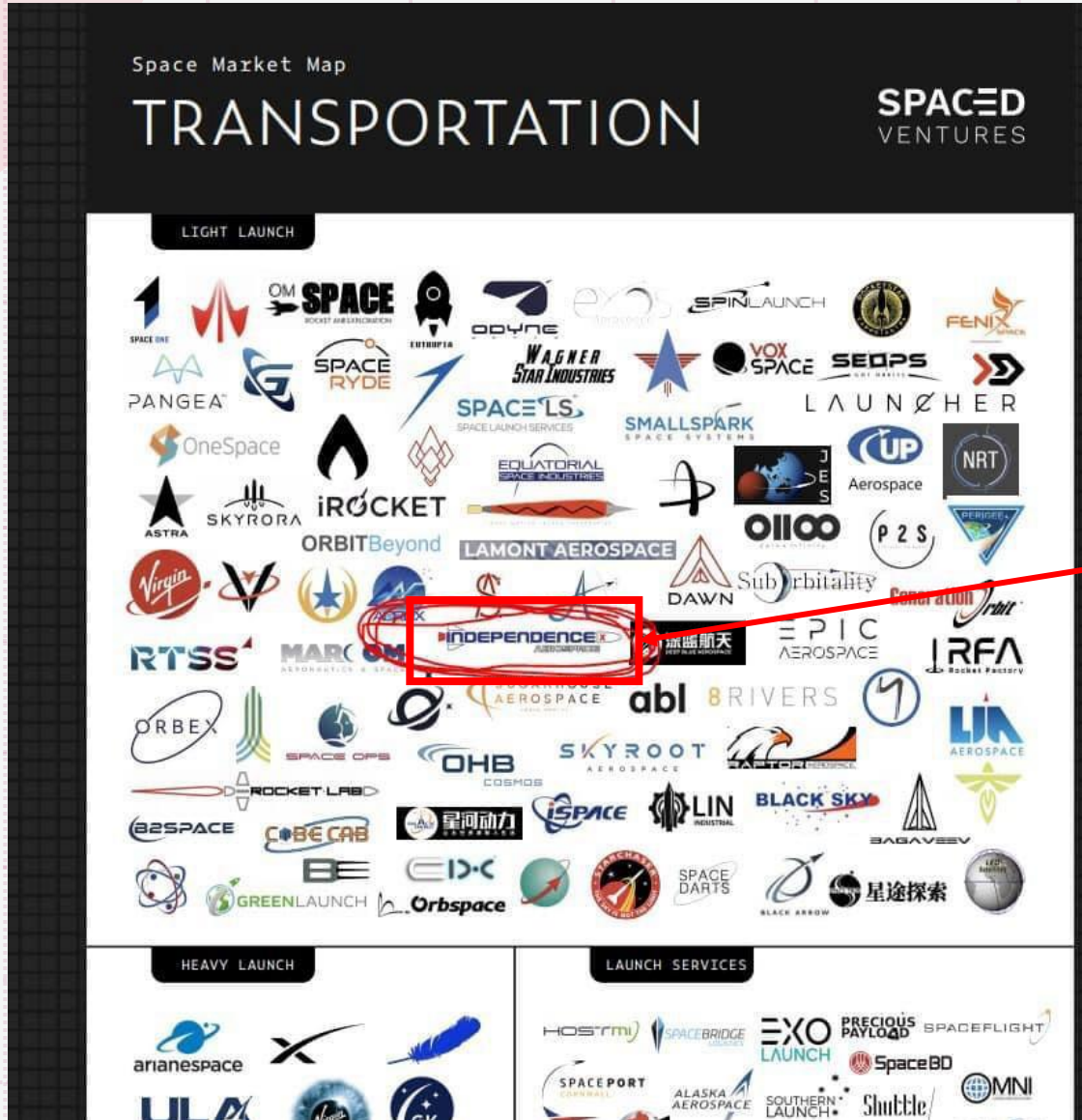


Small Satellite Market Size -MarketsandMarkets

## IoT



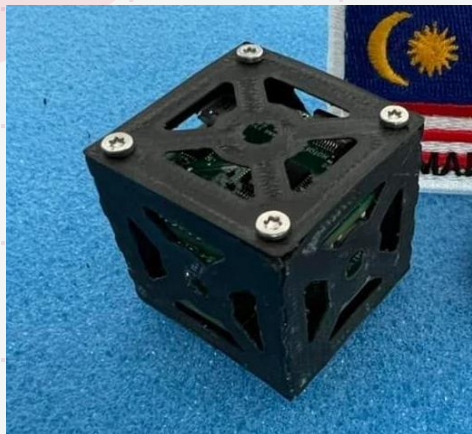
Internet Of Things (IoT) Market Size 2024 - Mordor Intelligence



Space Market Map

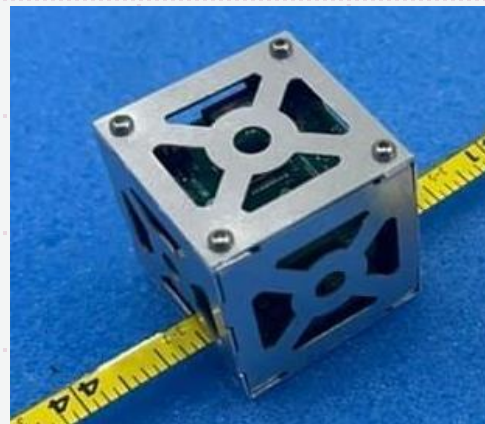
Light Launch

2021



EARLY PROTOTYPE  
ENGINEERING MODEL

2022



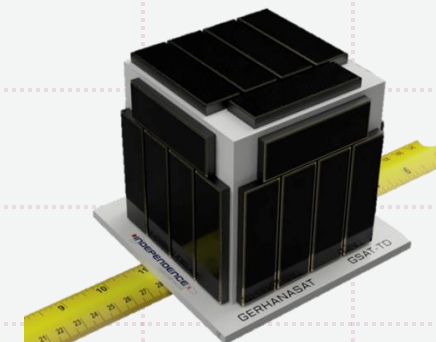
ENHANCED PROTOTYPE  
ENGINEERING MODEL

2023



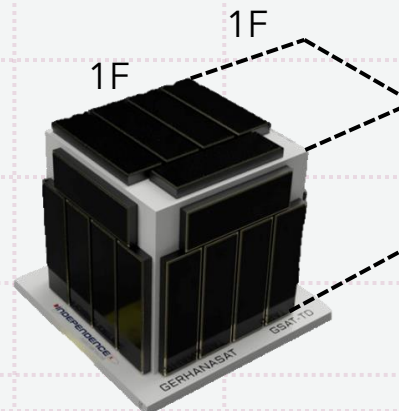
PROPOSED DESIGN  
FLIGHT MODEL

2024

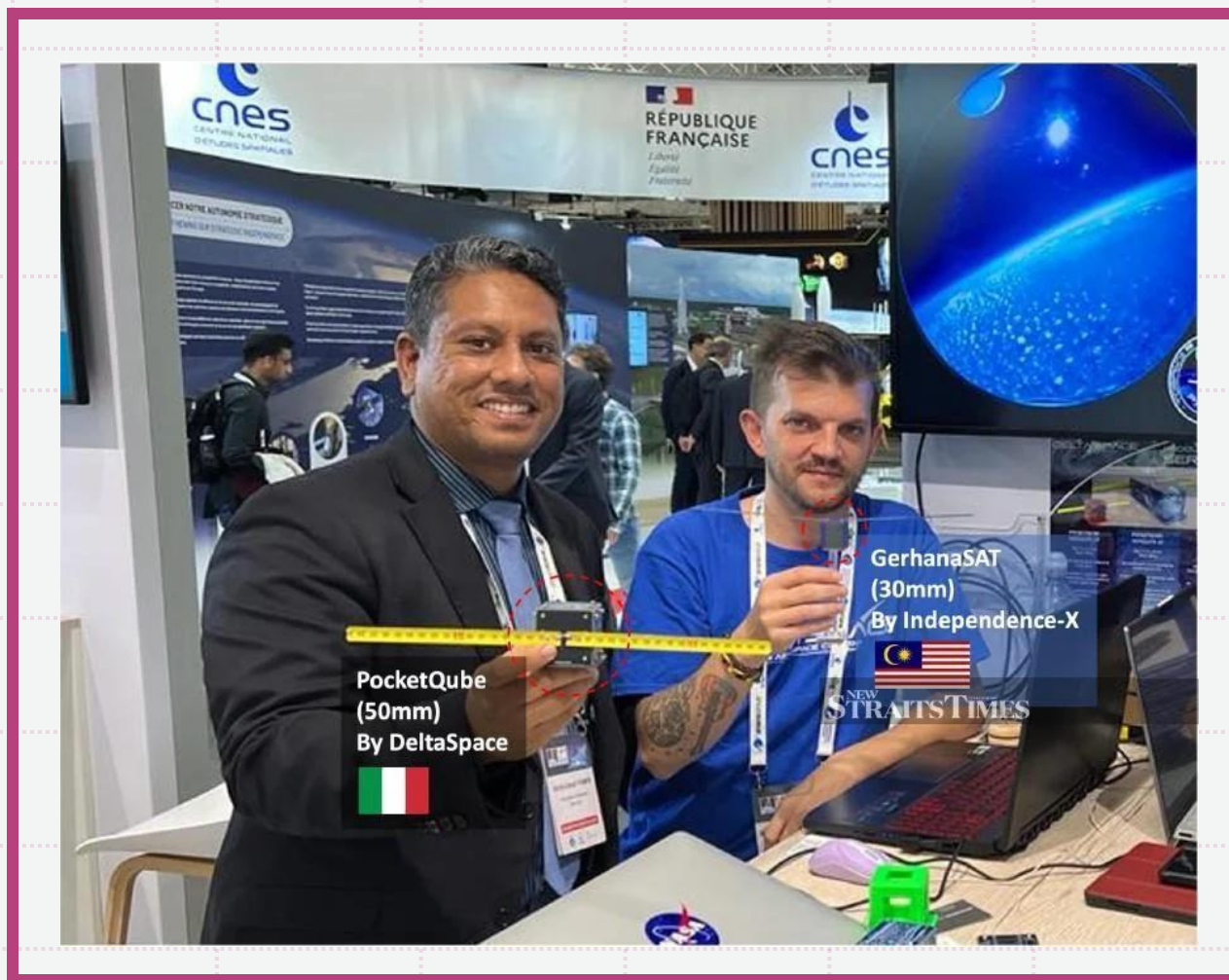


FINAL DESIGN  
FLIGHT MODEL

2F CONFIGURATION



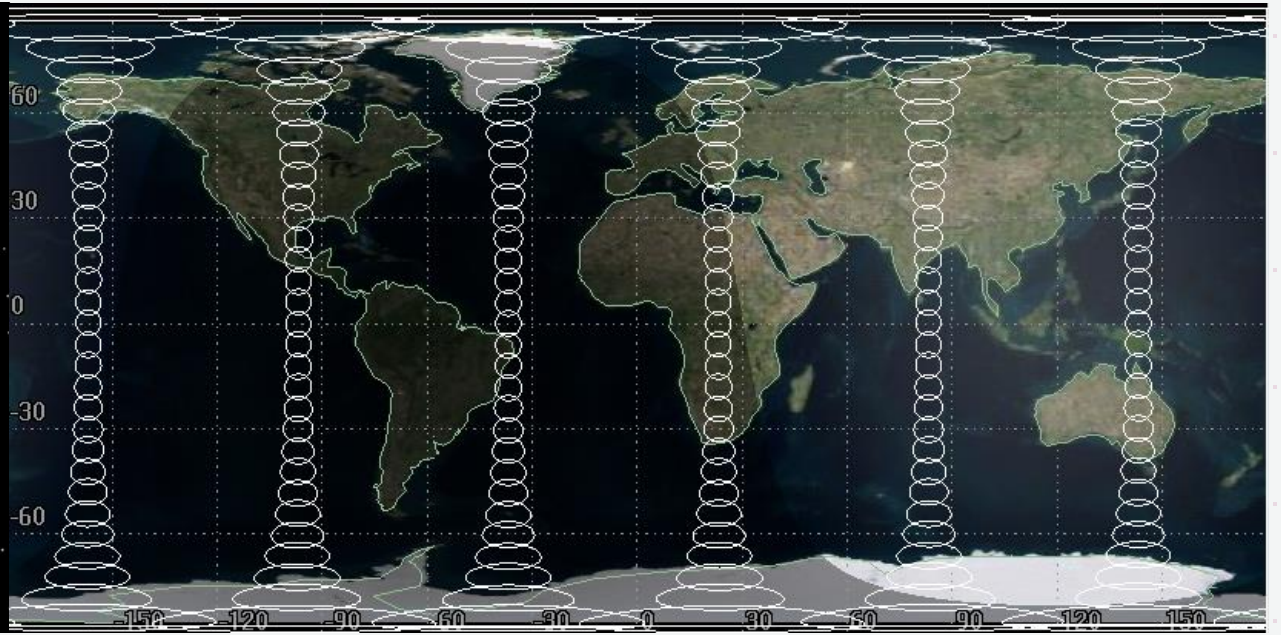
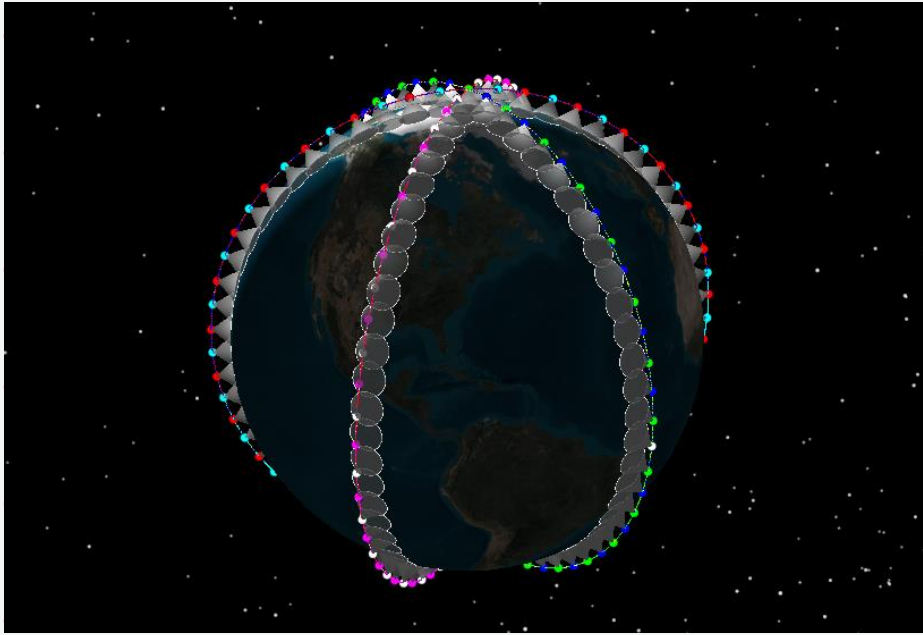
# FRANCE IAC PARIS 2022 EXHIBITION



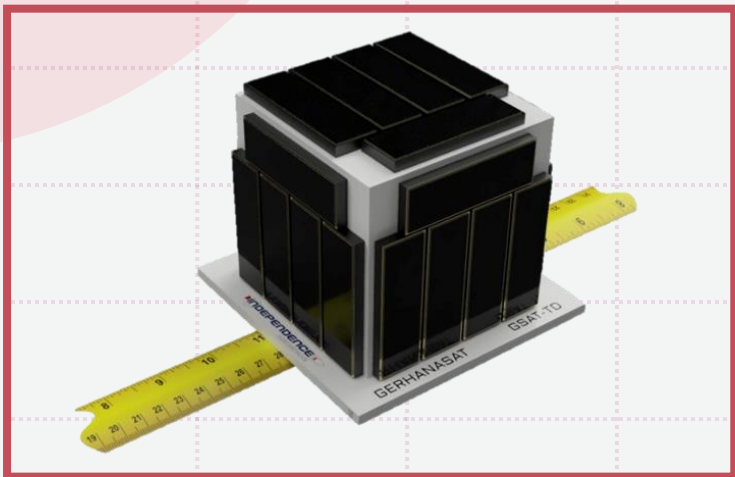
# GERHANASAT CHALLENGE 2022



## Constellation of GerhanaSAT

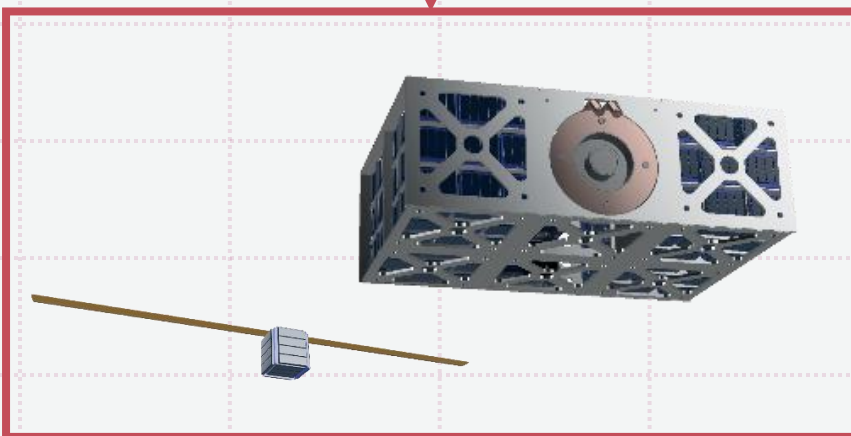


# BUNISNESS MODEL



GerhanaSAT  
Femto Satellite

Launched into space - Via  
6U deployer -  
Orbit for 2 years

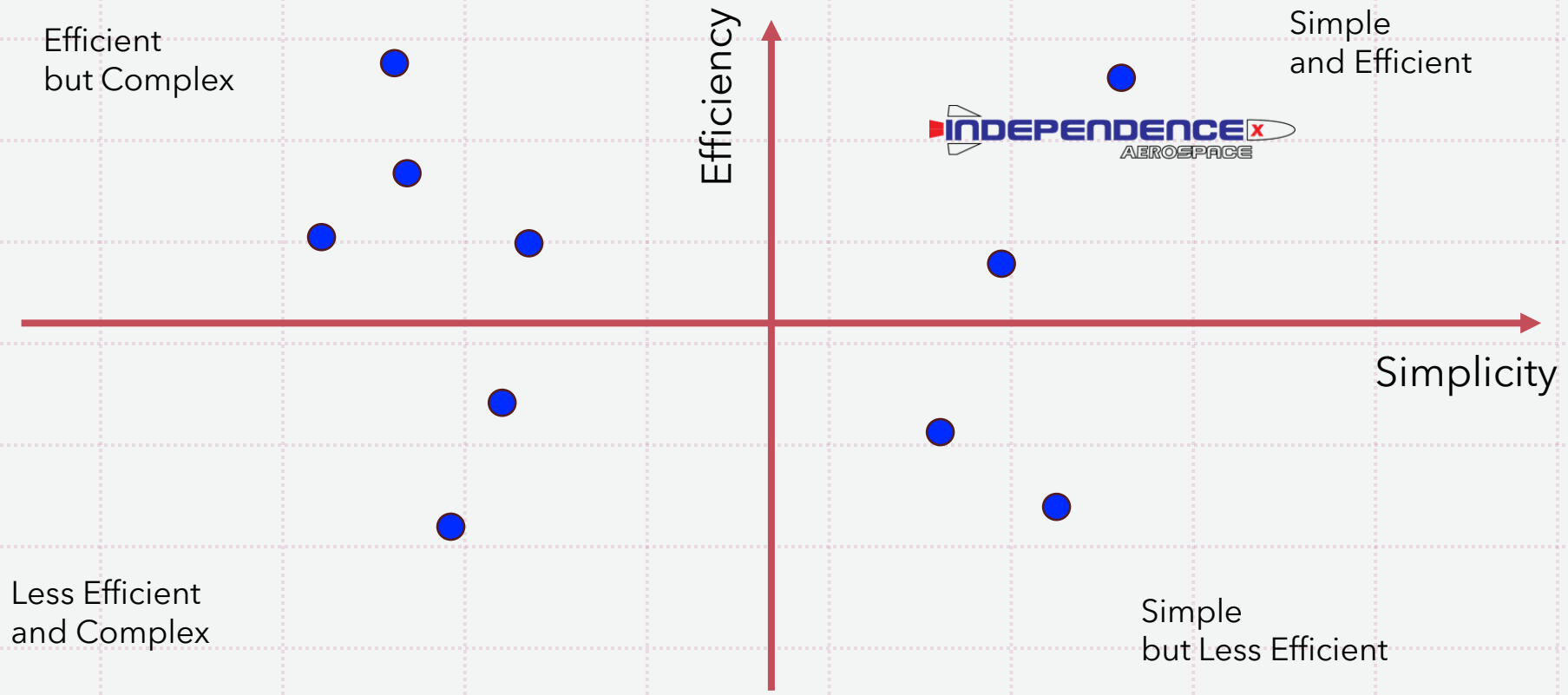


Parameters	Value	Units
Price per GSATs (RM)	50,000.00	-
GSAT Mass	0.2	kg
Number of GSATs	50	unit
Total GSATs Mass in 1 Deployer	10	kg
Deployer Mass	3	kg
Total Mass for 1 Loaded Deployer	13	kg
Number of containers	26	-
Number of GSATs	1300	-
Total price of GSATs (RM)	65,000,000.00	-
Cost Percentage	20	%
Marketing Percentage	10	%
Tax Percentage	24	%
Cost Amount (RM)	38,920,000.00	-
Marketing Amount (RM)	6,500,000.00	-
Total Costs (RM)	45,420,000.00	-
Gross Profit (RM)	19,580,000.00	-
Tax Amount (RM)	4,669,200.00	-
Net Profit (RM)	14,880,800.00	-
Profit Margin	23	%

# GO-TO-MARKET PLAN

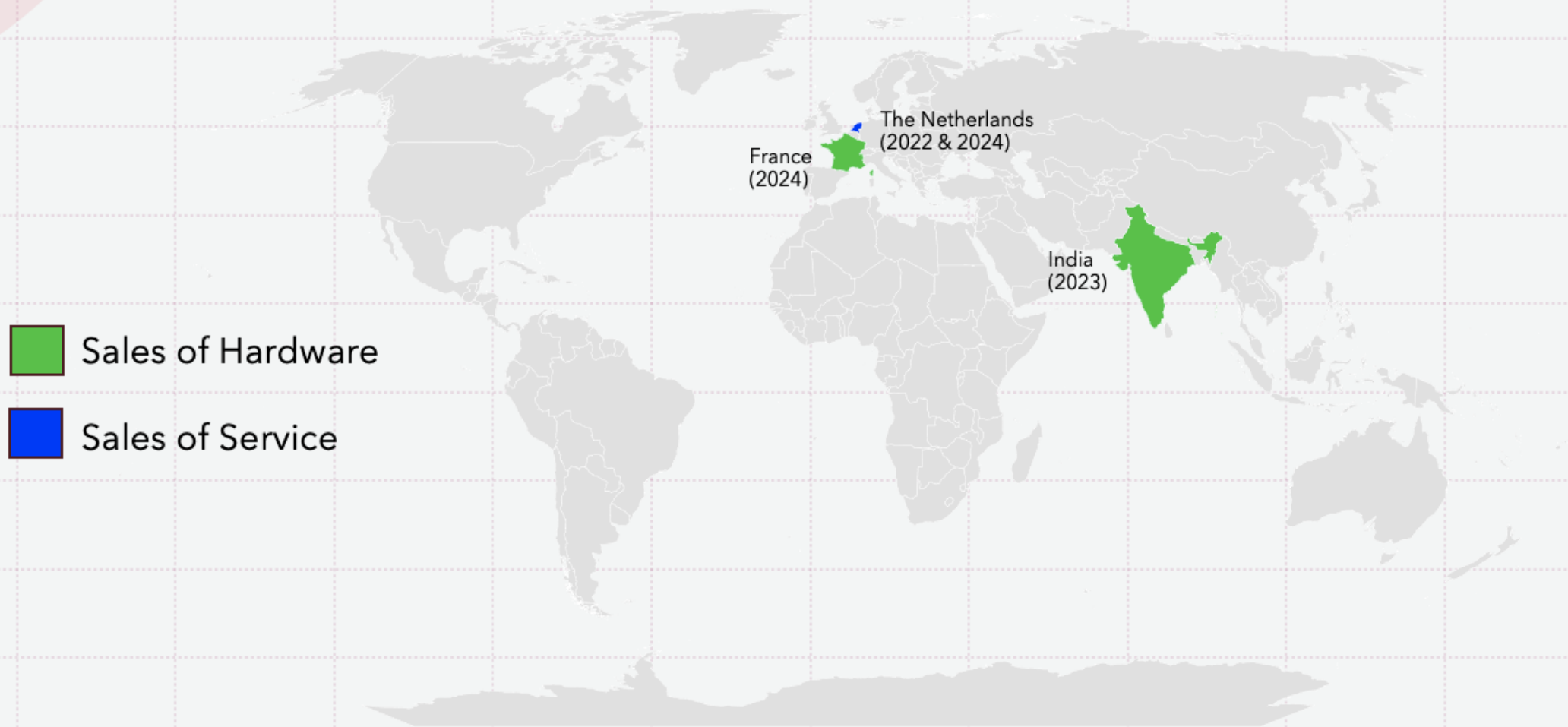


# COMPETITIVE LANDSCAPE



# GROWTH STRATEGY

Sales of Products and Services



Powered by Bing

© Australian Bureau of Statistics, GeoNames, Microsoft, Navinfo, Open Places, OpenStreetMap, TomTom, Zenrin



&



## INDEPENDENCE-X & SPACEBORN UNITED

Komersial dan... ri bio-teknologi angkasa... ui tekn...  
hidro... (state) un... pasaran ke... al.

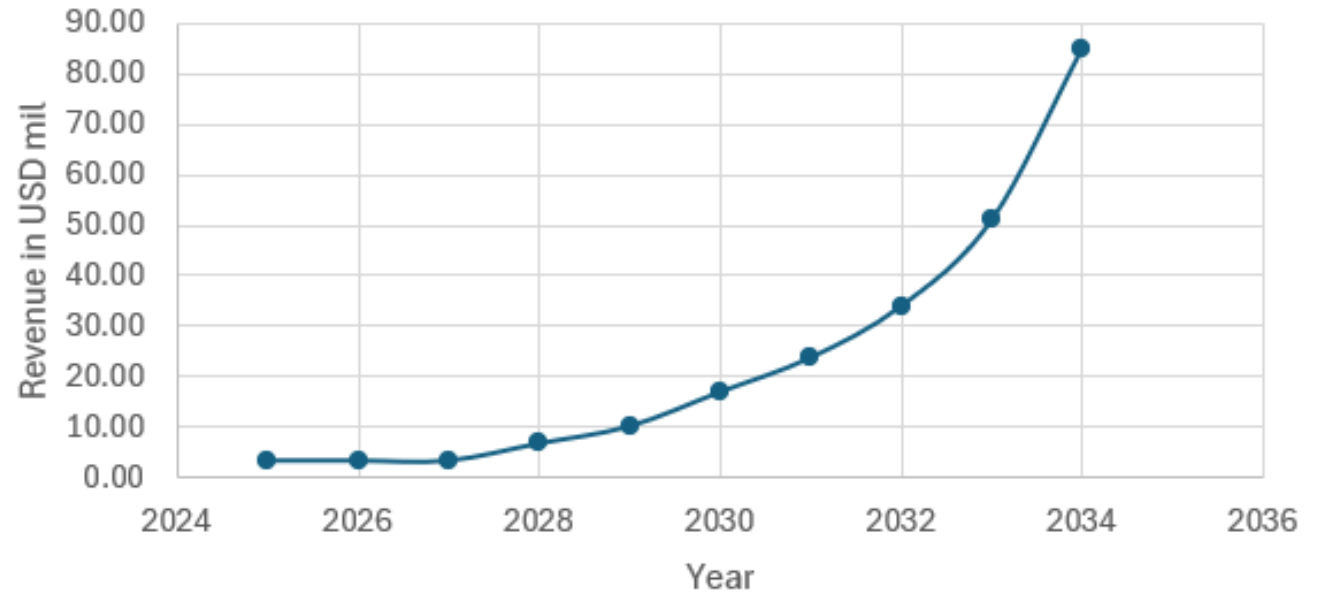


# M... MI 2024

# FINANCIAL PROJECTION

#	Year	USD (mil)	Satellites	Launches
1	2025	3.4	1300	1
2	2026	3.4	1300	1
3	2027	3.4	1300	1
4	2028	6.8	2600	2
5	2029	10.2	3900	3
6	2030	17	6500	5
7	2031	23.8	9100	7
8	2032	34	13000	10
9	2033	51	19500	15
10	2034	85	32500	25

PROJECTED SALES FOR GERHANASAT



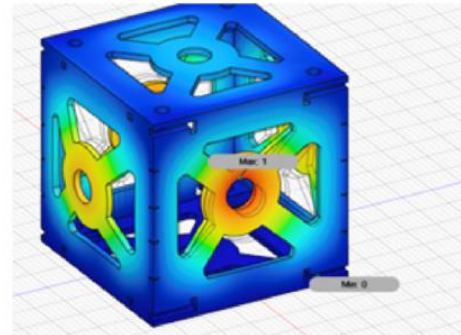
# CALL TO ACTION

- Unlock the potential of **IoT with Femto satellites**—affordable, versatile, and ready to **deliver global connectivity**.
- Join the revolution in IoT communication by integrating Femto satellites into your network and reach even the most remote locations. **Connect globally, act locally.**

# Our in-house capabilities

- Achieve Malaysian Capabilities in Space
- By the year 2030

## CAPABILITIES



IDXA designs and manufactures Femto-class satellite especially designed based on its mission requirements required for agriculture, asset tracking and etc. Our satellite is currently the world's smallest satellite. Our company will be upgrading the satellite in the future to include voice transmission, image and video transmission for future existing customers.



HAPPY 67TH INDEPENDENCE DAY

# Thank You

Independence-X Aerospace  
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