

# 互宇向量股份有限公司 Aegiverse

Aegiverse  
Dr. Hung-Pin Chung  
CEO

廣島 嚴島神社  
攝影日 2024.03.28



## SPACE

private-sector funding in space-related companies topped \$10 billion in 2021

Mckinsey & Company, 2022

# Space: Investment shifts from GEO to LEO and now beyond

January 27, 2022 | Article

We need Sensors.



# Eyes 、 Ears 、 Nose 、 Tongue 、 Body 、 Mind

LiDAR

GPS

Radar

Temp.

Gyros

AI

Camera

Audio

mm-Wave

Bio

Accel.

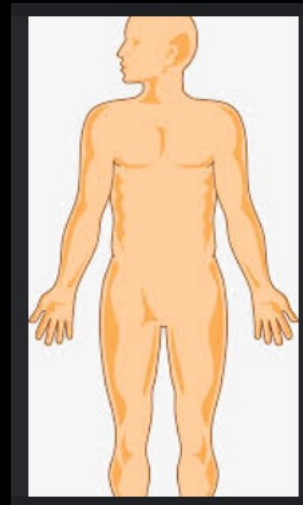
AI

AI

AI....



IMU





Camera

Odometer

IR Radar

LiDAR

**IMU**

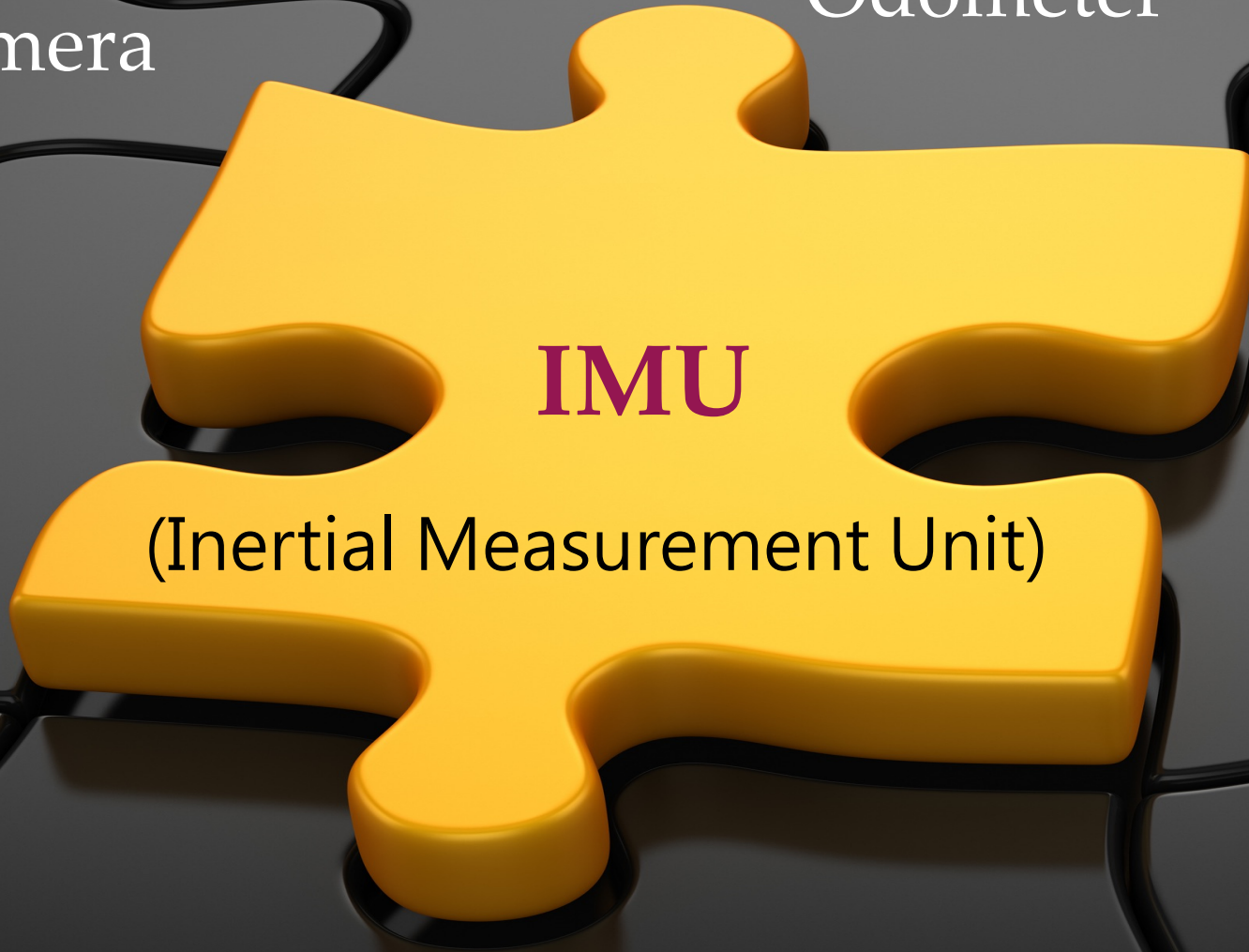
(Inertial Measurement Unit)

GNSS/RTK

HD map

MEMS

mm-Wave Radar



## About Aegiverse

- **Aegiverse** was founded in 2022 with \$6.85M USD, Employees : **22**.
- Key Numbers : **1** (Taiwan chief), **22** (employee), **29** (Patents), **33** (Avg. age).
- Location : Taoyuan, Taiwan. (20 mins by Taiwan international airport)

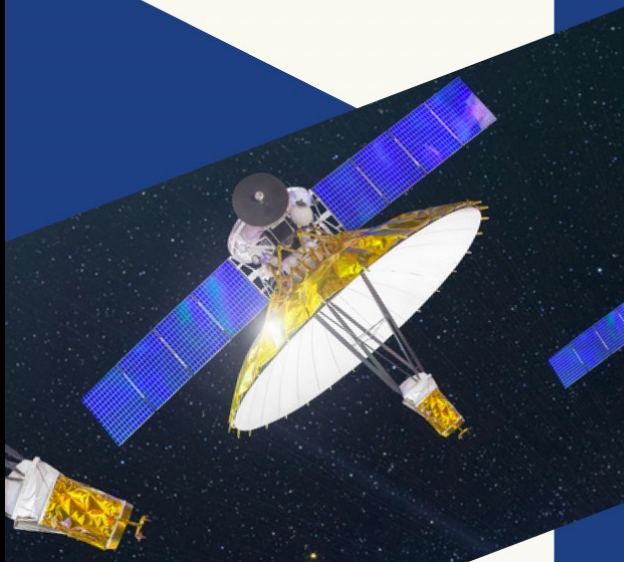
## Aegiverse's Model

- **FOG/IMU One-Step Service**
- **Made-In-Taiwan** : From Concepts 、 Suppliers chain to Mass production.
- Target revenue : From USD **1M** (2024) to **USD 55M** (2028).

## Business Plan

- 2022-2024 : Establish the leading position in the Taiwan market
- 2025-2026 : International market expansion  
(India, USA, Indonesia, the Middle East & Japan)
- 2027+ : Stable operation in international markets  
(Indo-Pacific, USA, the Middle East & Japan)

## TIMELINE OF AEGIVERSE



### Development of MIOC

- 2010-2014 MIOC POC 70 mm, 50 mm to 35 mm
- 2014.03.26 Successfully verify sounding rocket No.9 (MIOC-FOG)
- 2014.12.31 Receive the earth rotates signal by Trial - FOG
- 2016.01.15 Polaris Photonics, Inc. Founded.
- 2018 MP in Polaris Photonics MIOC 3-inches wafer (21 mm)
- 2018 Joined CAPE (NCU)
- 2018-2019 Redesigned Compact-MIOC (19, 18, 16, 13 mm)

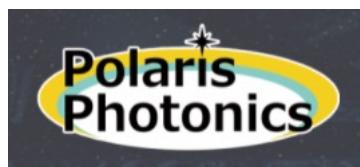
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### Development of FOG

- 2018-2020 Constructed the first generation FOG: Sparrow.
- 2019 Completed dynamic display at TADTE (TAIWAN)
- 2021 Contracted the Taiwan Germination Program
- 2022.08.09 AEGIVERSE Co., Ltd. Founded.
- 2022.10.24 HQ in Taoyuan Qingpu opened.
- 2023.01.13 Contracted TASA MIOC/FOG development project



# Principle of Fiber Optic Gyroscope

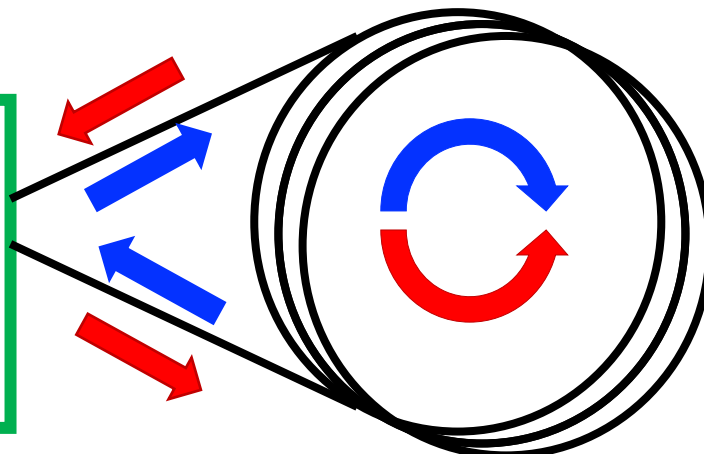


Light Source

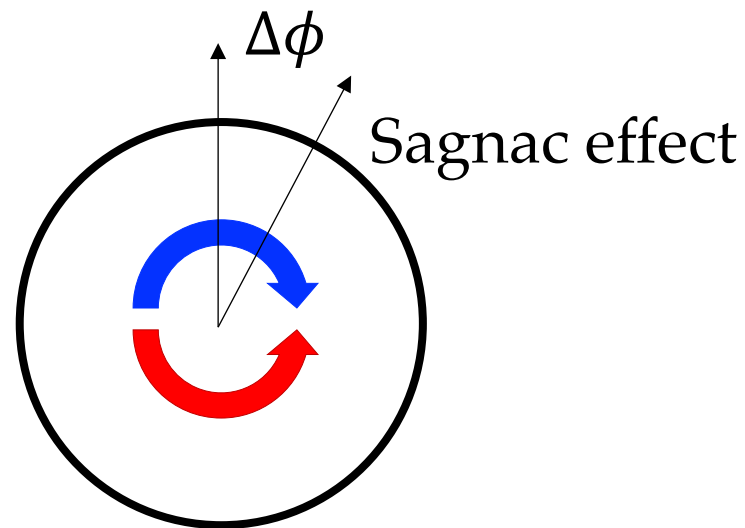
Detector

Multifunction Integrated Optical Circuit  
(MIOC in LiNbO<sub>3</sub>)

Modulation and logic center



Fiber coil



## 1-axis FOG, GP-1Z0

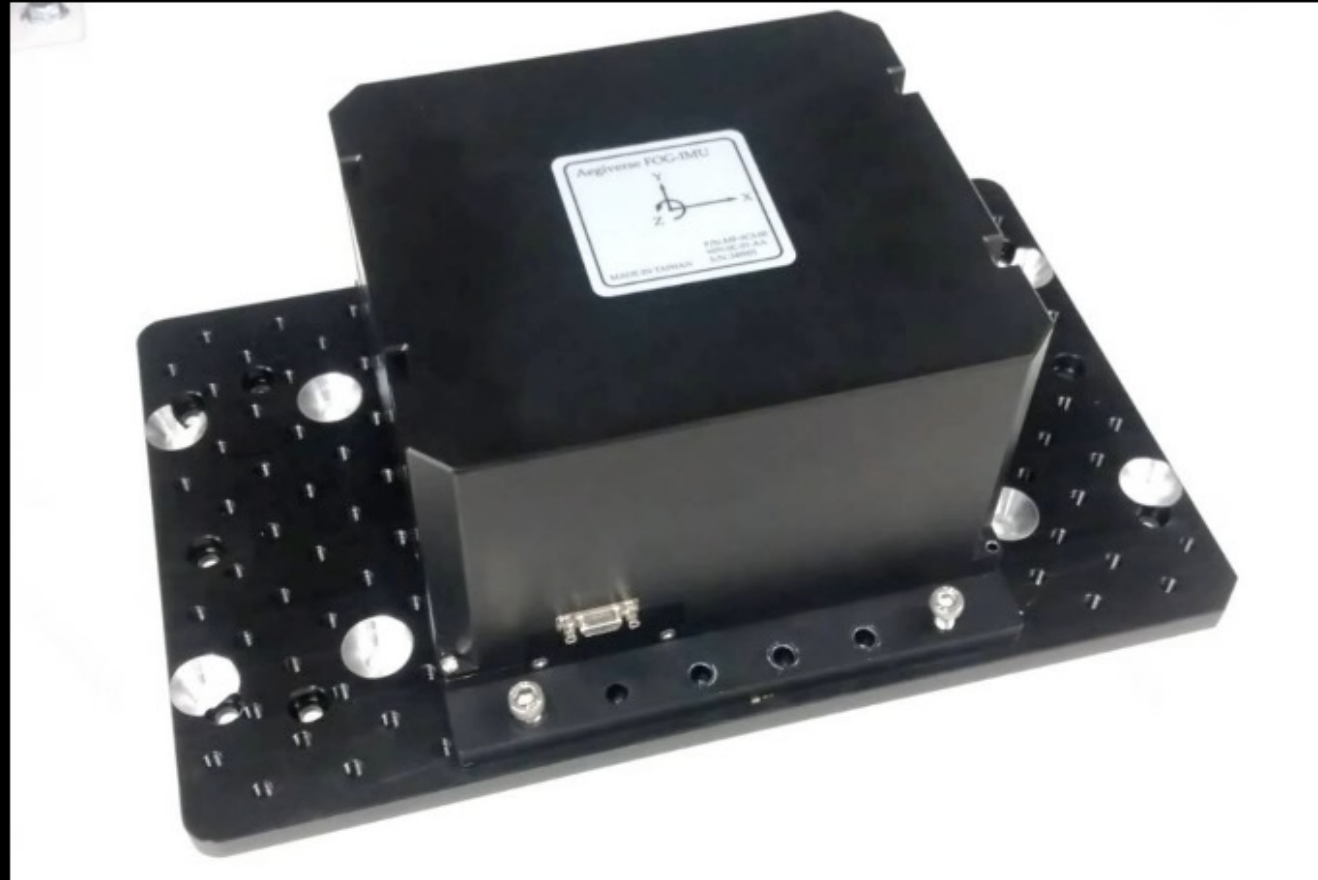
- GP-1Z0 1-axis FOG with bias instability better than 0.5 deg/hr, 6 x 6 x 6.5 cm<sup>3</sup>, 250 grams.



- Applications: CubeSats, LEO, UAV, AGV, ROV.

## 6-axis FOG-IMU, AFI

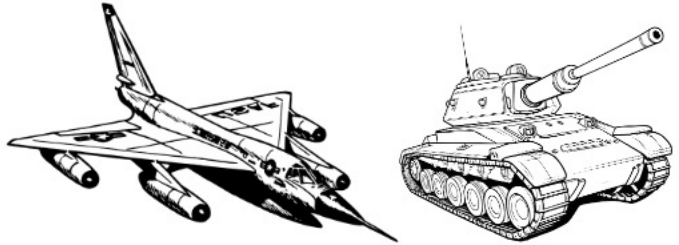
- Aegiverse's 6-axis FOG-IMU (AFI) with bias instability better than 0.02 deg/hr, 15 x 17 x 9.9 cm<sup>3</sup>, 2 kg.



- Applications: LEO, UAV, UUV

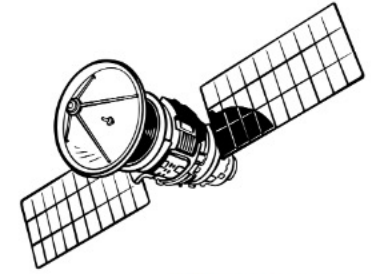


APPLICATION



**Defense**  
Domestic Defense applications  
(UAV, Stabilizer)

**Defense**  
40%

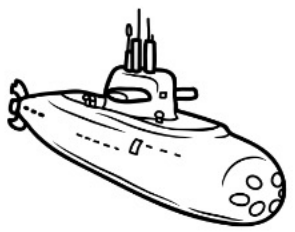


**Aerospace**  
Space applications  
(CubeSat, LEO)

**Aerospace**  
40%



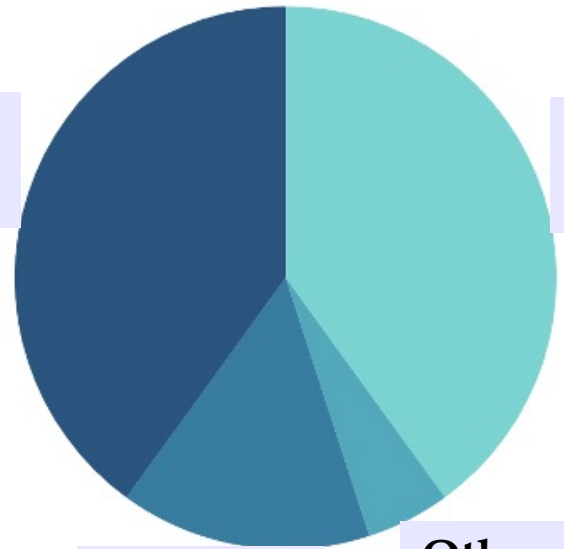
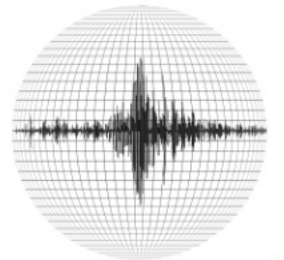
**Maritime affairs**  
Domestic Maritime  
(ROV, UUV)



**Maritime**  
15%

**Others**  
5%

**Others**  
Rotational seismograph  
Bridge Surveillance  
Inertial measurement & navigation



PRODUCT POSITIONING

Market size



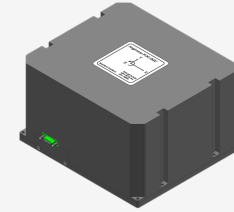
MEMS/ FOG

FOG /RLG

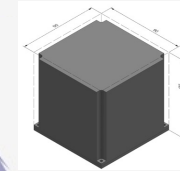
- GP-00/02 (ROV)
- BIS 0.5 deg/hr
- USD \$ 8k-10 k



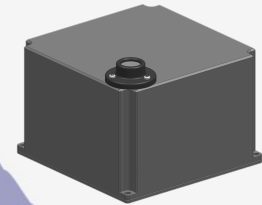
- GP-01 (UUV)
- BIS 0.1 deg/hr
- USD \$ 12k-15k



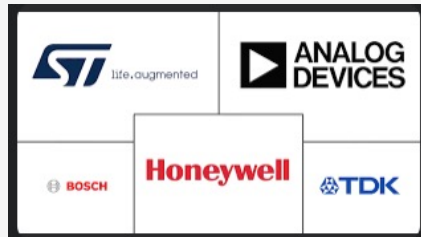
- AFI (UAV grade)
- BIS 0.02 deg/hr
- USD \$ > 80k



- TeaFox (Space grade)
- BIS 0.1 deg/hr
- USD \$ > 100k



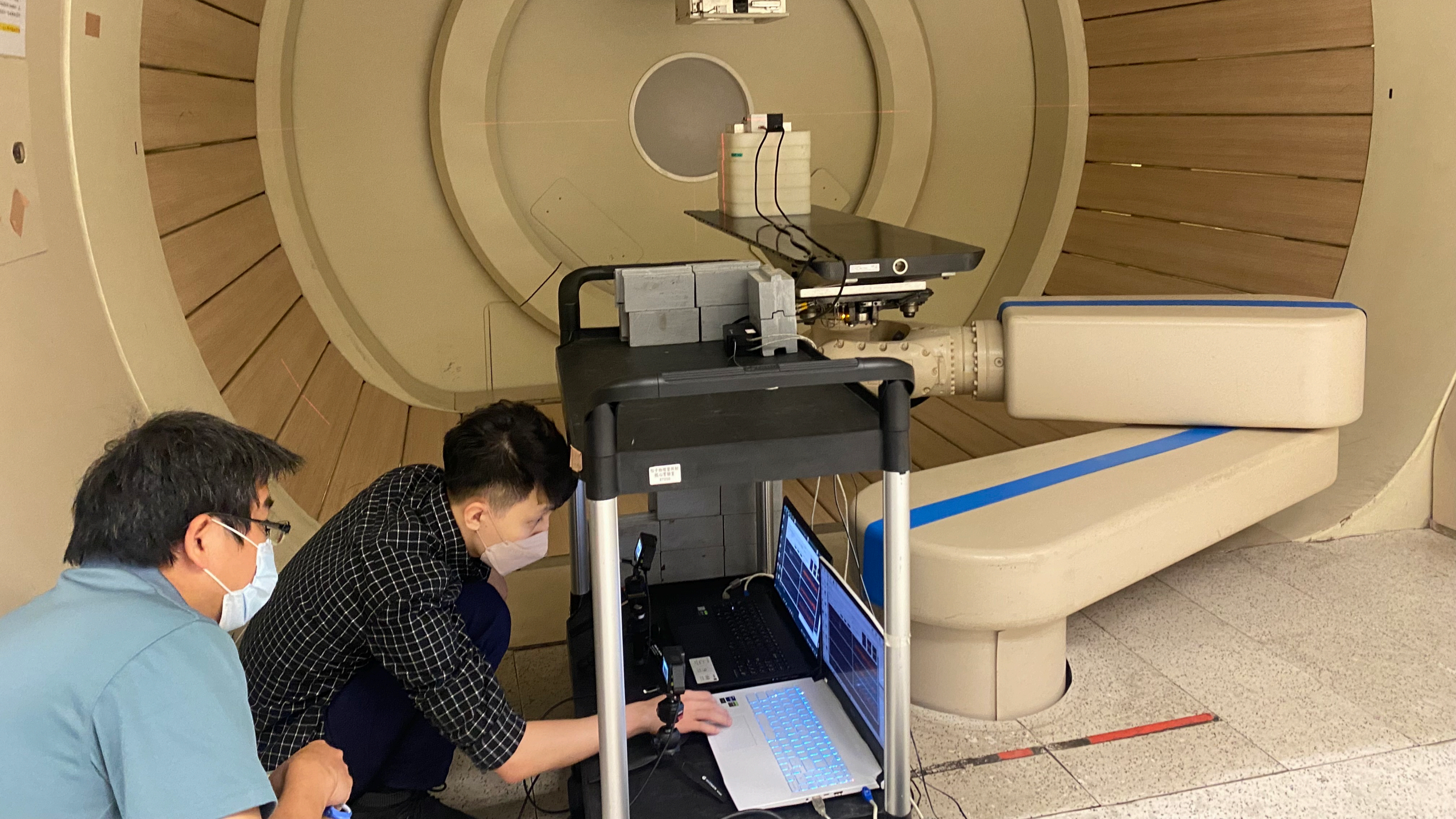
- GS-S (Navi. grade)
- BIS 0.003 deg/hr
- USD \$ >150k



High mass production ability & Unstable gyro

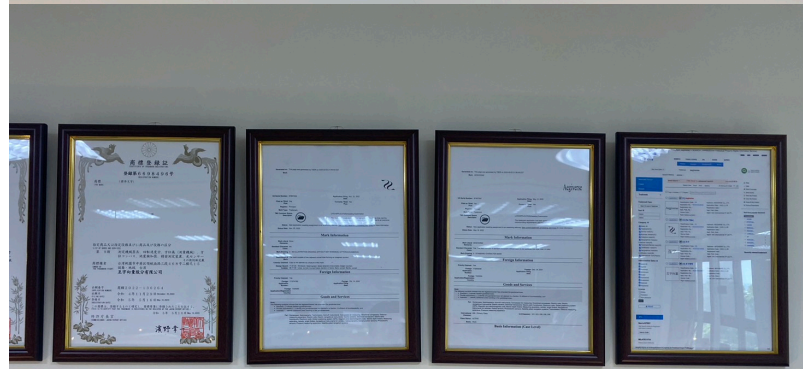
Low mass production ability & Stable gyro





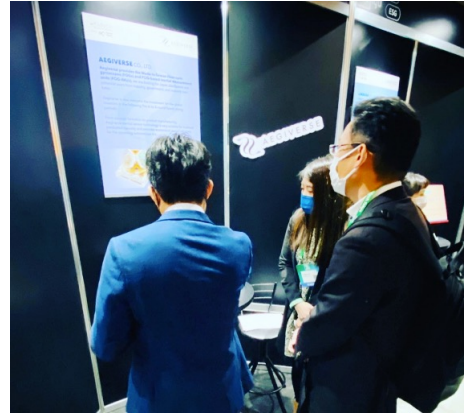


# Patents and Awards





# International



**WE OFFER**

**TO PRODUCT  
MANUFACTURING**

**Main Product**

FOGs & FOG - IMUs

From design, supplier, trial production to mass production, Aegiverse provides a complete solution for inertial measurement based on fiber optic gyroscopes.

**MADE IN  
TAIWAN**

**Production line**

Phase I  
2023 Build the first trial production line, and complete the first Space-FOG trial production by Q2 of 2024.

Phase II  
2024-2025 Build a multi-axis Space-FOG mass production line.

**AEGIVERSE**

Taoyuan City (HQ & Lab)  
Only 20 minutes from the international airport

**AIR ASIA**

Tainan City (Factory)  
Strategic cooperation with Taiwan's 70-year aerospace company

[Aegiverse.com](http://Aegiverse.com)

**LET'S GROW WITH US**

Note: CES, LV, USA (2023.01), City-Tech, Tokyo, Japan (2023.02), Inertial 2023 Hawaii, USA (2023.03), Aegiverse International Day (2023.08)





# NSTA

互宇向量股份有限公司  
AEGIVERSE Co., Ltd.

臺灣希望創新股份有限公司  
Taiwan Dream Innovation Inc.

Digit

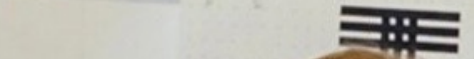
TAIWAN  
TECH  
ARENA

Digit

BASED IN TAIWAN  
AEGIVERSE Co., Ltd.

Photo-Audio Synthesis An Autonomous Technology

TD 100-9000  
HF920



City  
Tech  
Tokyo

MediEng Co.,  
Tokyo, Japan



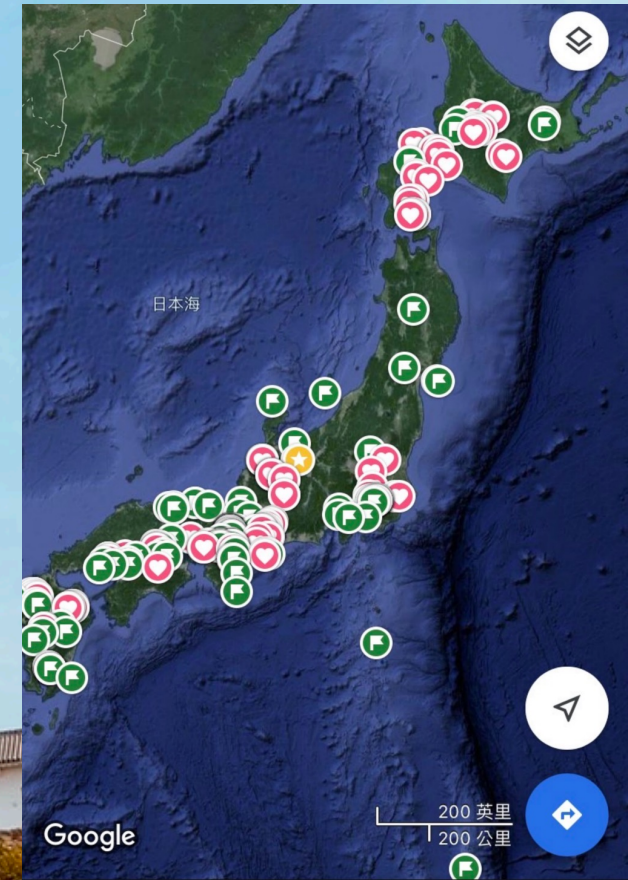






日台友好。

My Japan Trip map since 2020.







撮影日  
2024.03.31  
京都醍醐寺





**A E G I V E R S E**

**Trust · Lasting · Kind · Nature**