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#### TAIWAN: GEOGRAPHICAL AND INDUSTRIAL BACKGROUND

#### located in Eastern Asia

- 120 km off the coast of China, 355 km north of the Philippines, 595 km southwest of Japan
- about the same size as Switzerland or Belgium
- 2 of the top 10 liner shipping companies to date are from Taiwan

💓 EVERGREEN 🛛 🕅 YANG MING

- 5<sup>th</sup> largest (by total length) yacht builder country in 2019
- shipbuilding industry is composed mainly of medium/small size companies; CSBC Corporation Taiwan is the only large shipbuilding company
- SOIC is a R&D institution established by government in 1976.



# **GOVERNMENT POLICY BACKGROUND**

- Taiwan has announced the Unmanned Vehicles Technology Innovative Experimentation Act in December 2018, the first of its kind in the world covering autonomous vehicles on land, at sea, and in the air.
- It has established a regulatory sandbox mechanism that applicants can apply for open field innovative experiment, any penalties that would ordinarily apply under specific laws, regulations and administrative rules will be suspended during the experimentation period.

Those who apply to conduct innovative testing with self-driving vehicles must present documentation such as insurance plans and a mechanism for managing risk, as well as display a testing notice either at the testbed or on the vehicle itself. Should a safety incident occur, the applicant must temporarily halt the experimentation and notify the regulator promptly of the cause of failure and the corrective actions to be taken.



# **PROJECT 107A FACTS**



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### **PARTICIPANTS OF PROJECT 107A**



# **INTEGRATION TEST STRUCTURE**

\*Long distance TDMA communication tech. >180Mb/s up to 5kM



### PROJECT 107A FINAL TRIAL TRIP



## **PROJECT 108A : NEW CHALLENGES**





## **SHIP/VESSEL SIMULATION SYSTEM**



#### THE USE OF SIMULATION IN PROJECT 107A



## **VIRTUAL TEST FIELD**



#### ESTABLISHMENT OF THE SMART OBJECT RECOGNITION SYSTEM IN PROJECT 107A

#### **Training / Inference**

person:24





#### INTEGRATION OF SENSOR SYSTEM WITH OBJECT DETECTION SYSTEM IN PROJECT 108A



Test of Lidar from inside the office

To decode the images transmitted to the server without too much delay



# **COLLISION AVOIDANCE IN PROJECT 108A**



#### **PROJECT 108A TRIAL TRIP**

#### SUMMARY

	107A	108A	
test ship	5m long monohull outboard with pod drives	<b>13m long</b> (2 propellers) bow thrusters	
test ship seating capacity	up to 4 (for experimentation use only)	up to 44 (cruise boat in use)	
test field	Tamsui River near estuary fast flow, strong wind	Love River bridges crossing/GPS signal loss	
long distance communication	up to 5 km	up to 10 km	
object dection	Build up of image recognition	Sensor fusion (camera + Lidar)	
simulation	w/o collision avoidance	w/ collision avoidance	
path-tracking	w/o collision avoidance	w/ collision avoidance	



Thank you for your attention.