

# Next Generation Vessel Traffic Management System

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# Scope of Presentation

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**Singapore's Vessel Traffic Information System**

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**Challenges Ahead**

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**Next Generation Vessel Traffic Management System (NGVTMS)**

**4**

**NGVTMS Innovation Programme**

**5**

**Timeline**

# Objectives of VTIS



**Enhance safety and efficiency of navigation in the Singapore Strait and Port Waters**

**Enhance Port Security**

**Protect the marine environment**

**Facilitate commercial efficiency**

# Overview of the Vessel Traffic Information System (VTIS)

## Sensors / Communications

## Vessel Traffic Information System

## Linkages

### Internal

### External

#### Radar



#### AIS-A/B



#### VHF/4G



#### CCTV



#### Metro/Hydro Sensors



Port Traffic Management System

Channel Guidance System

Anchorage View System

Height Check System

Backend Processes

Multi-Sensor Track Fusion  
Voice, Video, and Data Recording  
Batch Reports/Statistics

Clearance of Vessel



Licensing of Craft



Marinet



Port Dues



PAN



PSAM



PCG



RSN



CAAS



ICA

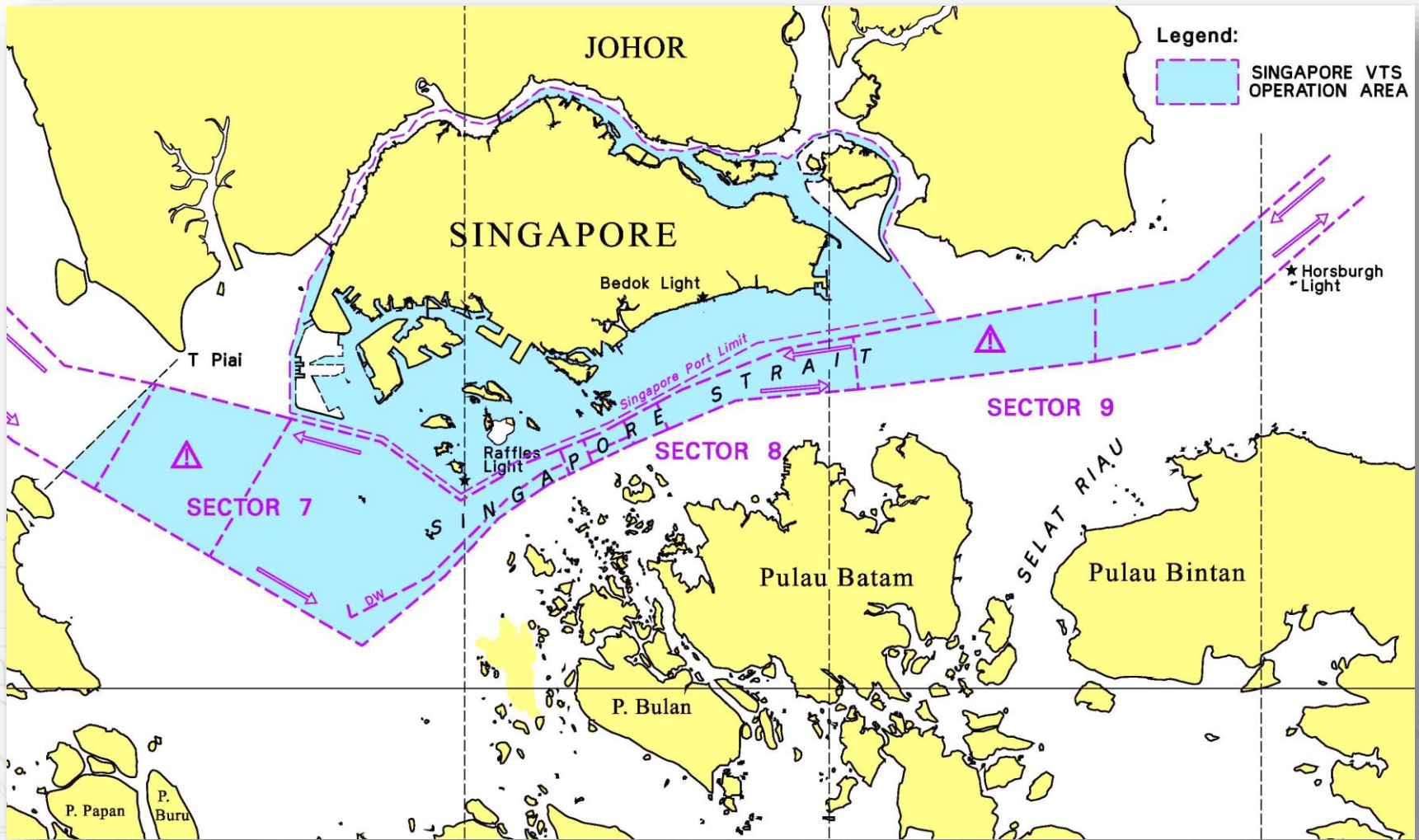


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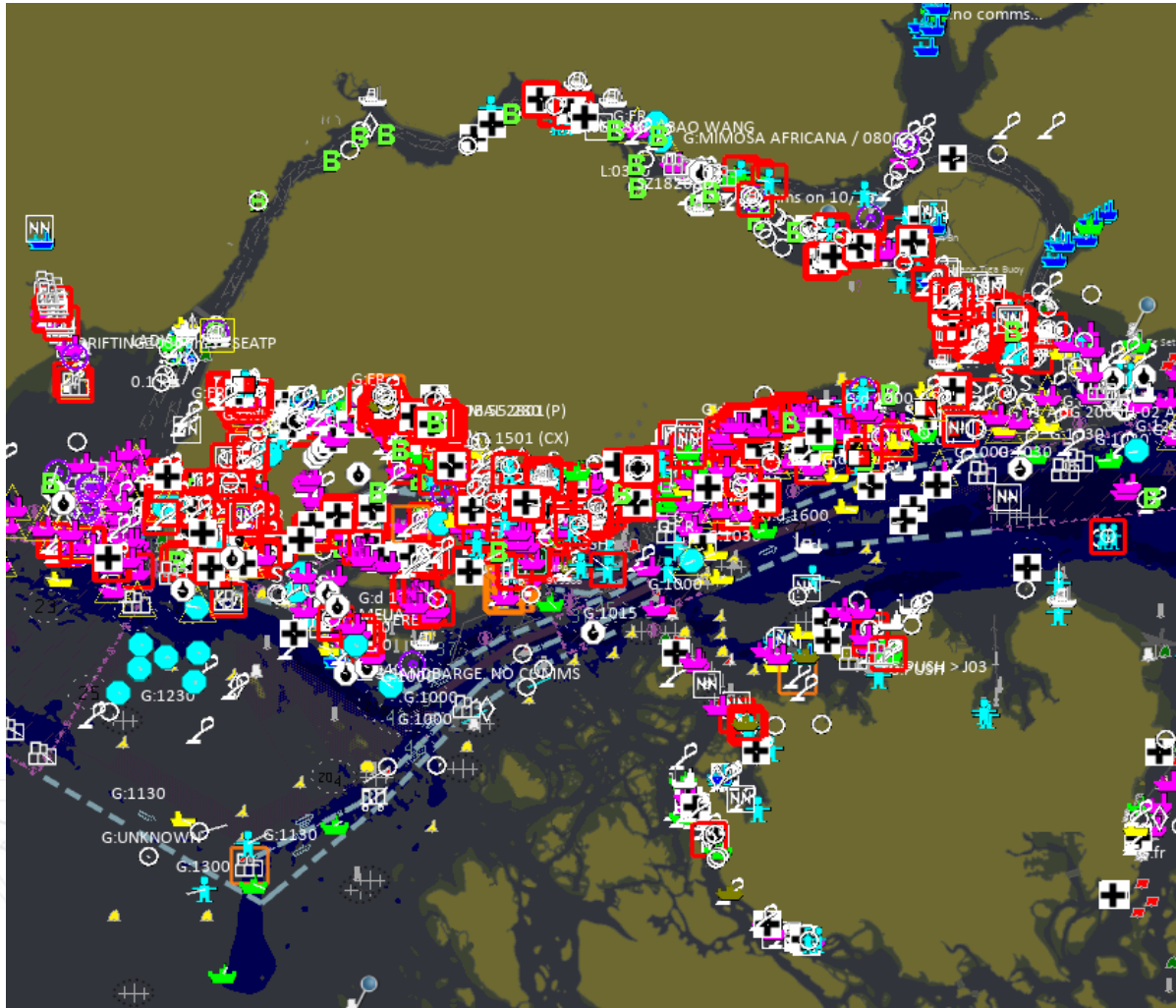




# Singapore's VTS Area of Operations



# A Typical Day of the VTIS Operators



**More than 130,000 ship calls at Singapore annually**



**About 1,000 ships in port at any one time**



**A ship arrives or departs the port every 2 to 3 minutes**

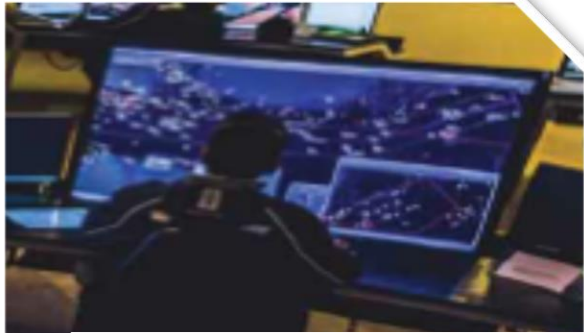


**VTIS operators assist these ships to navigate safely by:**

- Providing traffic information
- Alerting vessels that navigate too close to each other
- Issuing navigation warning"



# Challenges Ahead



**Increasing Vessel  
Traffic & Size**



**Limited Sea Space**



**Disruptive Tech  
& Business Model**



**Manpower Constraint**



**Expectation of Higher Safety  
Standards and Efficiency**



**Sustainability**

# Planning for the Next Generation Vessel Traffic Management System (Next Gen VTMS)



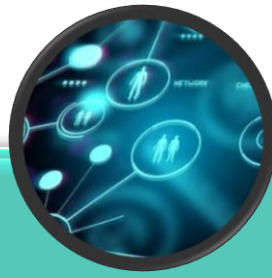


# New Capabilities And Innovative Solutions



- Intelligent algorithm to detect potential collision
- Traffic Hotspot Prediction / Data Analytic
- Maritime Cloud Service
- Marine Resource Planning
- System to support JIT service

## Management of Traffic and Port Resources



### E-Navigation

- Digital Maritime Services based on harmonization and standardisation of data format
- Maritime Single Window
- VHF Data Exchange System (VDES)
- Automatic reporting and capturing of ship movement information
- Automated Workflow System for vessel movement and operation

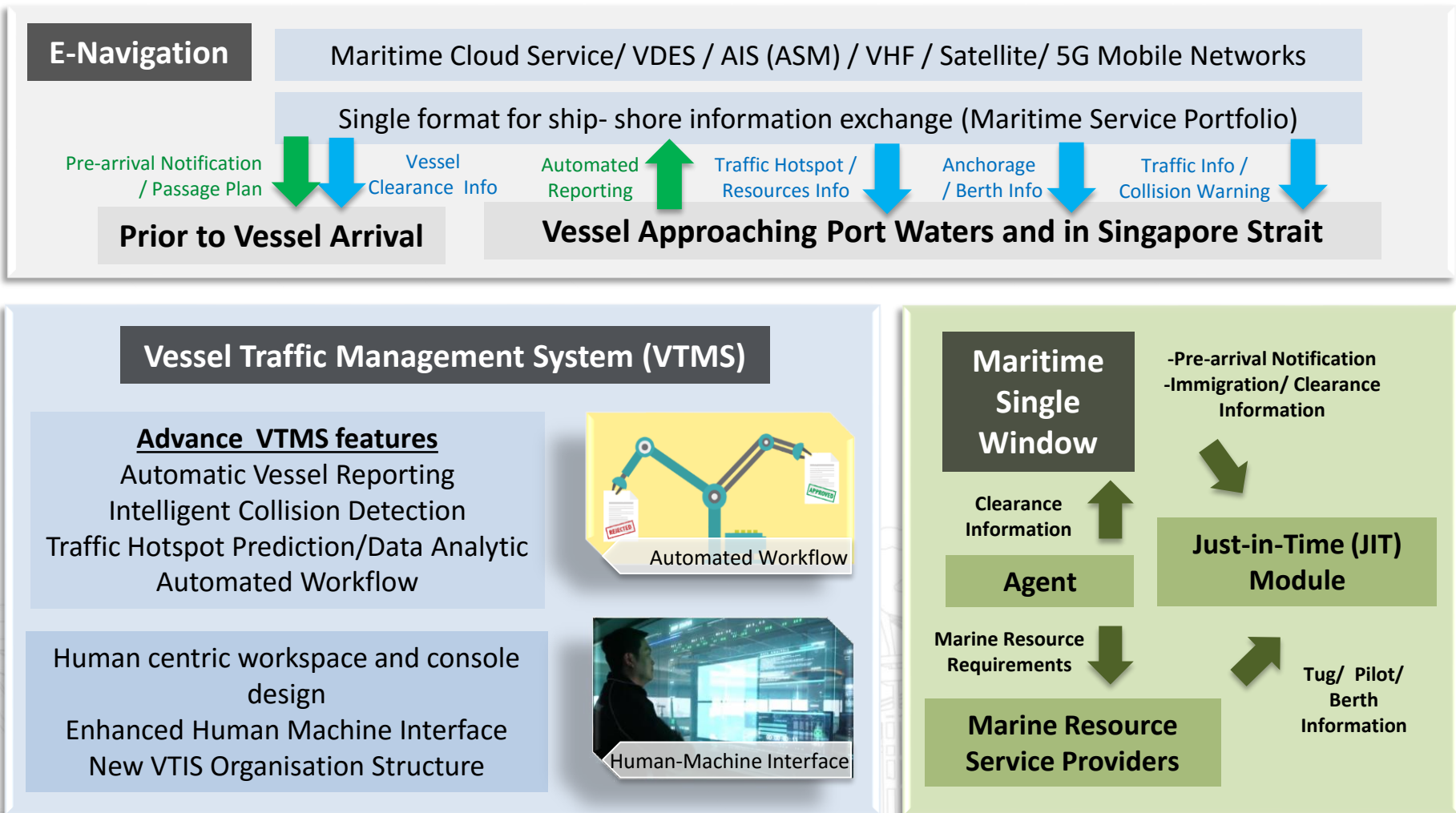
## Processes & Data Management



- Re-organisation of VTIS operation
- Enhancement of ergonomics and human machine interface

## Human Element

# Next Gen VTMS Architecture



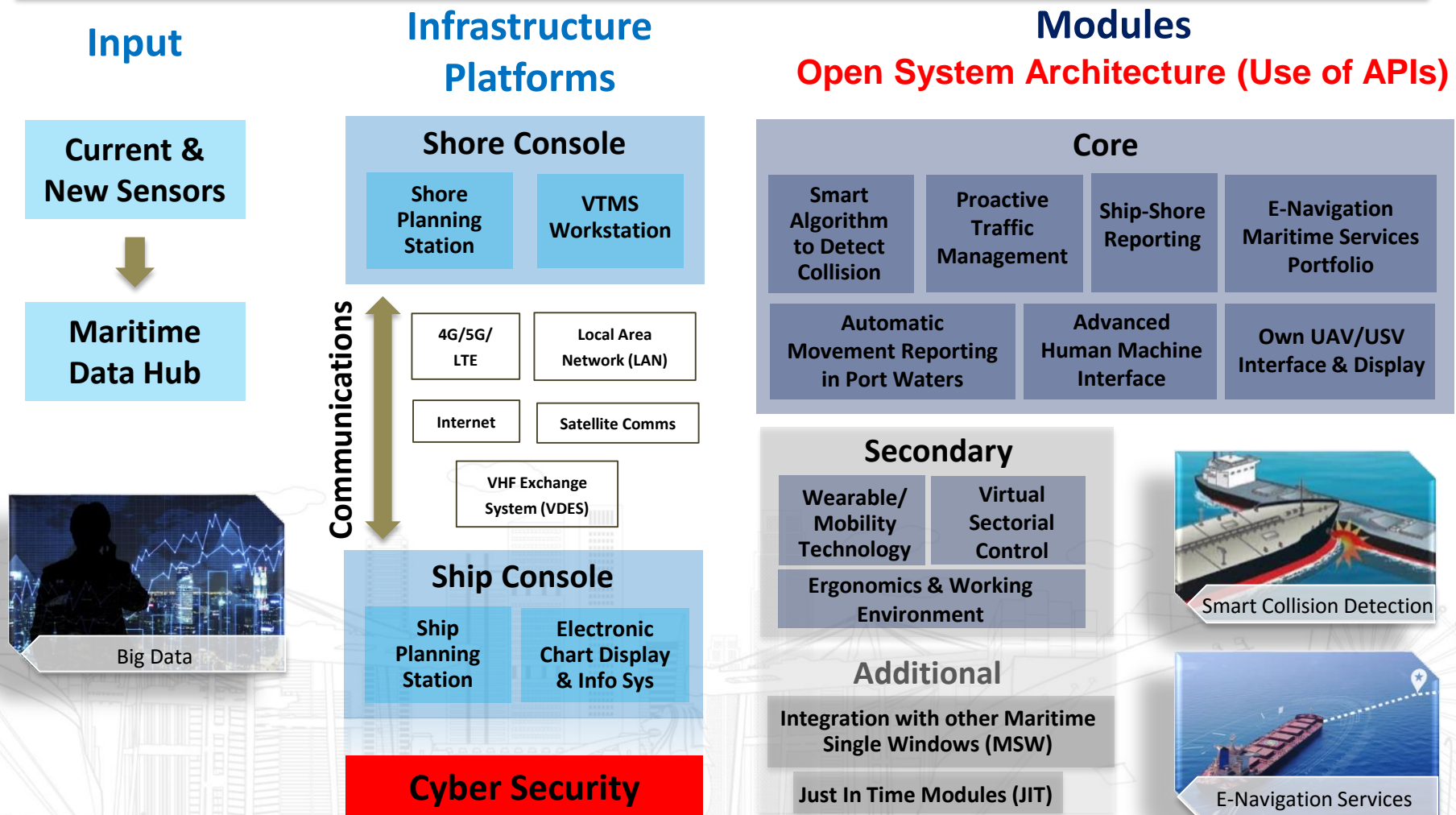
# Next Gen VTMS Innovation Programme

- To research, develop and test-bed new operational concepts and emerging technologies in the area of vessel traffic management innovative solutions at the MPA Living Lab.





# Components of Next Gen VTMS Innovation Programme for Collaboration



# Development Of Next Gen VTMS – Timeline

Setup of Next Gen VTMS Innovation Programme

Test-bedding of new operational concepts & technologies in Next Gen VTMS Innovation Programme

Develop operational and technical specifications for Next Gen VTMS

Finalise the technical specifications for the Next Gen VTMS



**Implement Next Gen VTMS in Tuas**



2020

2021

2025

Now





Thank You

