



**Asia-Pacific
Economic Cooperation**

2024/TPTWG/MEG/TM1/006

Agenda Item: 3.4

Towards the Next Generation of Vessel Traffic Management Information System

Purpose: Information
Submitted by: Wärtsilä



**Thematic Session on Supporting the
Identification and Integration of New
and Emerging Smart and Sustainable
Maritime Technologies and Services
4 April 2024**



Asia-Pacific
Economic Cooperation

Antoine Gatinaud, Wartsila Voyage

Towards the Next Generation of Vessel Traffic Management Information System (VTMIS)

April 04th 2024

Current Challenges in the VTS world

HUMAN FACTORS

- Challenging environment, not all VTSOs have sailing experience, proper training
- Work-Life balance, long shift, lean teams
- Gen Z appetite for latest technologies

OPERATIONAL LANDSCAPE

- Increased global and local traffic
- Change in vessel types (unmanned vessel, alternative fuels)
- IMO / IALA and regulatory compliance (decarbonisation etc...)
- Weather and environmental conditions
- Geopolitical tensions and security threats

TECHNOLOGIES TRENDS

- Digital infrastructure more prone to external attack
- Integration with Port ecosystems (terminals, marine services, etc...)
- Integration with emerging technologies and innovation (e.g. drones)
- Connectivity Ship-Shore



... how to address them

with technologies

HUMAN FACTORS

- Challenging environment, not all VTSOs have sailing experience, proper training
 - Work-Life balance, long shift, lean teams
 - Gen Z appetite for latest technology
- Advanced Decision support tools
 - Automation
 - Ergonomics, intuitive design, ubiquity

OPERATIONAL LANDSCAPE

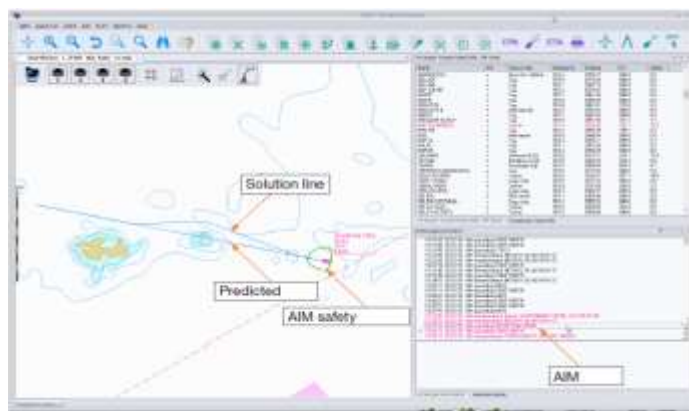
- Increased global and local traffic
 - Change in vessel types (unmanned vessel, alternative fuels)
 - IMO / IALA and regulatory compliance (decarbonisation etc...)
 - Weather and environmental conditions
 - Geopolitical tensions and security threats
- Hotspots prediction. Optimizing VTSOs shifts
 - New Standard Operating Procedures (SOP)
 - Data collection and reporting
 - Data-driven decision to early re-route
 - Data sharing, Open Platform and API

TECHNOLOGIES TRENDS

- Digital infrastructure more prone to external attack
 - Integration with Port ecosystems (terminals, marine services, etc...)
 - Integration with emerging technologies and innovation (e.g. drones)
 - Connectivity Ship-Shore
- Cyber-security, Disaster Recovery (DR) plan
 - Intelligence, Data-sharing, Open Platform and API
 - Mutually beneficial partnerships
 - 5G, VDES

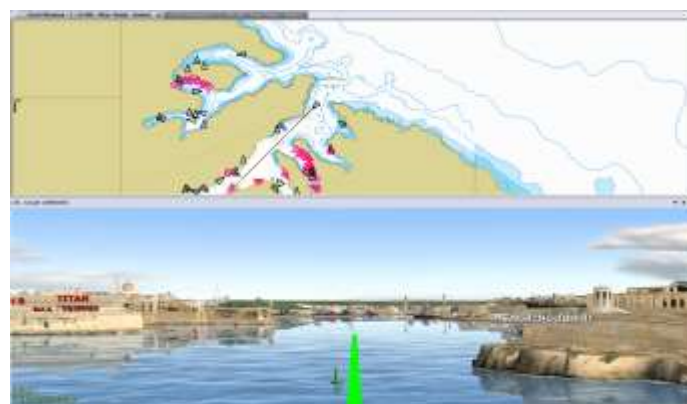
Example: Advanced Decision Support Tools

Augmenting human capabilities with artificial intelligence, data, and modern technologies



Hotspot / collision detection

- Predict collisions and groundings 20 min ahead
- Alternative routes using COLREG
- Delivery of recommendation to Vessel



3D Digital Twin

- Enhance situational awareness
- More effective assistance during pilotage operations
- Overlay VTS information in the 3D view

The screenshot shows a Bridge crossing interface. It features a table with columns for 'Priority', 'Vessel', 'Services', 'Estimated', 'Requested', 'Bridge Crossing', and 'Phase'. The table lists vessels like 'BFL Sabine', 'Pride', and 'RIDGEBURY ACACIA'.

Priority	Vessel	Services	Estimated	Requested	Bridge Crossing	Phase
Priority	BFL Sabine	ESTIMATED	18:00 18:00	18:00 18:00	18:00 18:00	18:00
Priority	Pride	ESTIMATED	18:00 18:00	18:00 18:00	18:00 18:00	18:00
Priority	RIDGEBURY ACACIA	ESTIMATED	18:00 18:00	18:00 18:00	18:00 18:00	18:00

Movements Planner

- Manage priority and deconflict inbound, outbound, inner movements
- Data-driven model based on traffic congestion, tides, marine events etc...

Example: VTMIS Open for Integration

Interoperability with API, Openly transparent and fostering Innovation



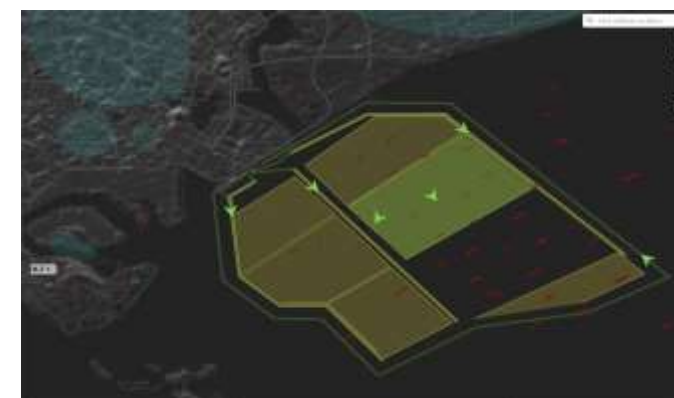
Data exchange with Terminals, Port Community

- Automatic ingestion of vessel visits information
- Real-time update of RTA/ETA and services on the vessel to all actors



Shared situational awareness with Pilots

- Common traffic picture between VTSO and Pilots
- Enhanced Navigation in busy waters



Drone system Integration

- Two-way exchange between VTMIS and Drone Management system
- Coordinated management of incident

Thank you !

Antoine Gatinaud, Wartsila Voyage

antoine.gatinaud@wartsila.com

+65 8224 1359



**Asia-Pacific
Economic Cooperation**