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Session Eight – Simulation Australia Smartship and HR Wallingford

Welcome Mike Hooley
and Giuseppe Ferrete
de Luca from
Smartship Australia



Smartship Australia Maritime Safety Queensland Department of Transport and Main Roads

Building Non-Technical and Technical Skills in Port Resource Management

ISPO Conference, Melbourne, 10 October 2024

Introducing Smartship Australia

- Smartship Australia is a business unit within Maritime Safety Queensland (MSQ), Department of Transport and Main Roads (TMR).
- Smartship Australia has a core business focus on pilotage professional training and development, advanced ship handling and port development.
- Smartship Australia has forged an enviable reputation of providing high quality and relevant services that meet customers' needs.
- Smartship Australia delivers its services to customers from Queensland and other states in Australia as well as a range of international customers.



What we offer

- **Bespoke ship handling** – *including use of different propulsion systems, different ship types and sizes, operational parameters, etc.*
- **Port Development and Optimisation** – *providing the ability to test and design ports and associated port procedures to meet exacting safety standards and minimising environmental impacts (eg dredging).*
- **Specialised training courses** – *Smartship Australia delivers a range of professional training courses designed to deliver high-quality, professional learning for maritime professionals.*
- **Tug Master training** - *a range of tug-related services covering tug master core skills development, competency assessment and contingency skills.*
- **Integrated training (all Port Resources)** – *a combination of in-house and remote options involving all port resource entities.*
- **Emergency and Contingency Training** - *providing the ability to test and design contingency plans.*



What it looks like



Full Mission Bridge Simulators



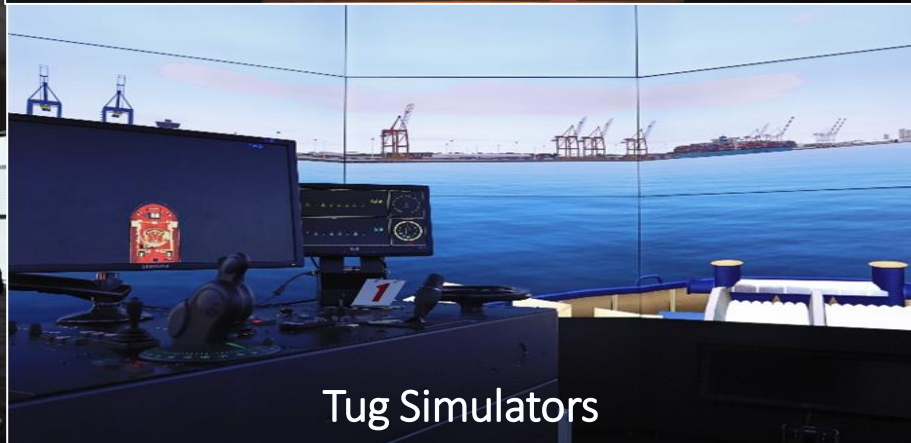
Part Task Simulators



Full Mission Bridge Simulators



Remote Broadcasting/Conning



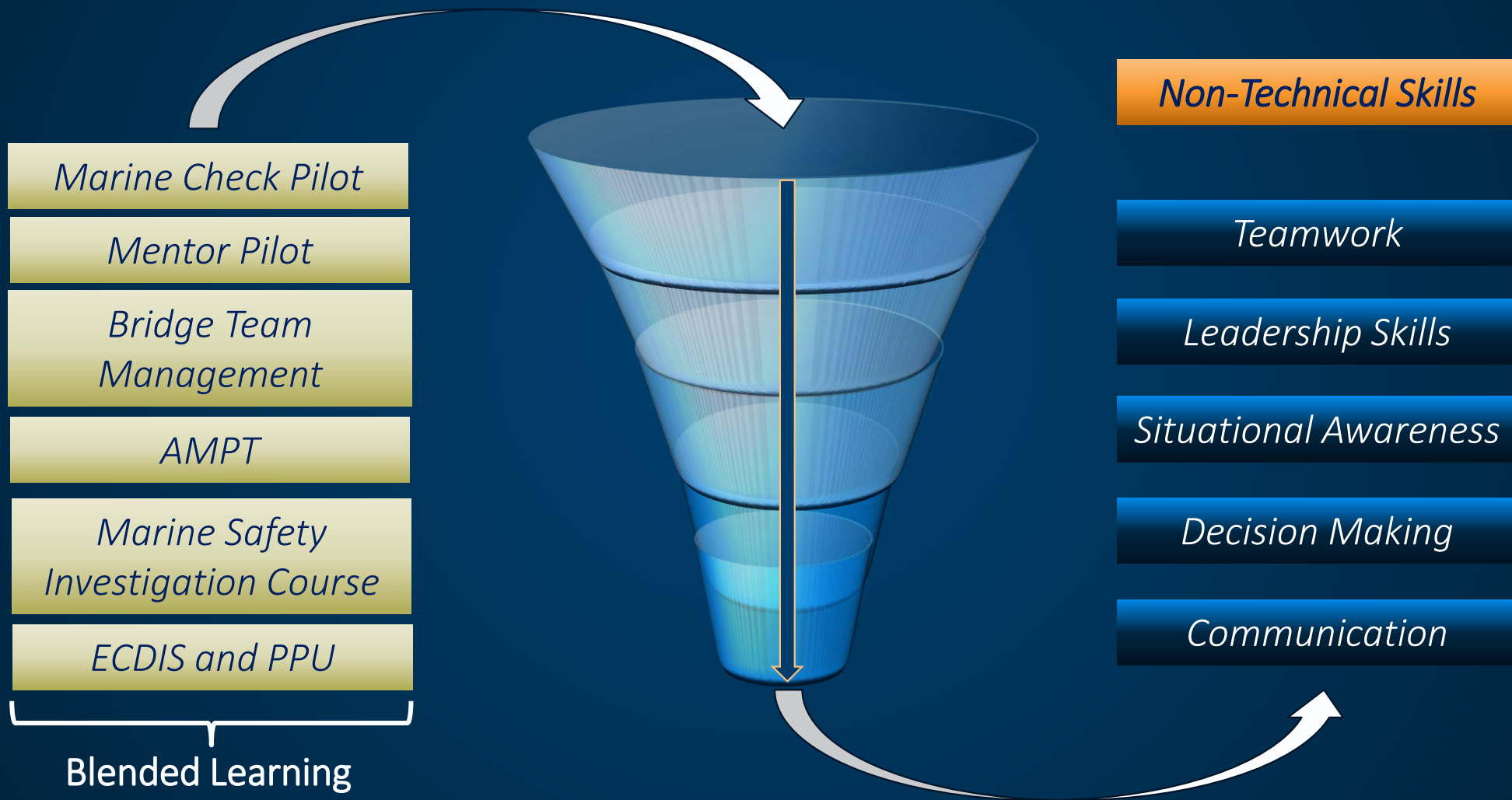
Tug Simulators



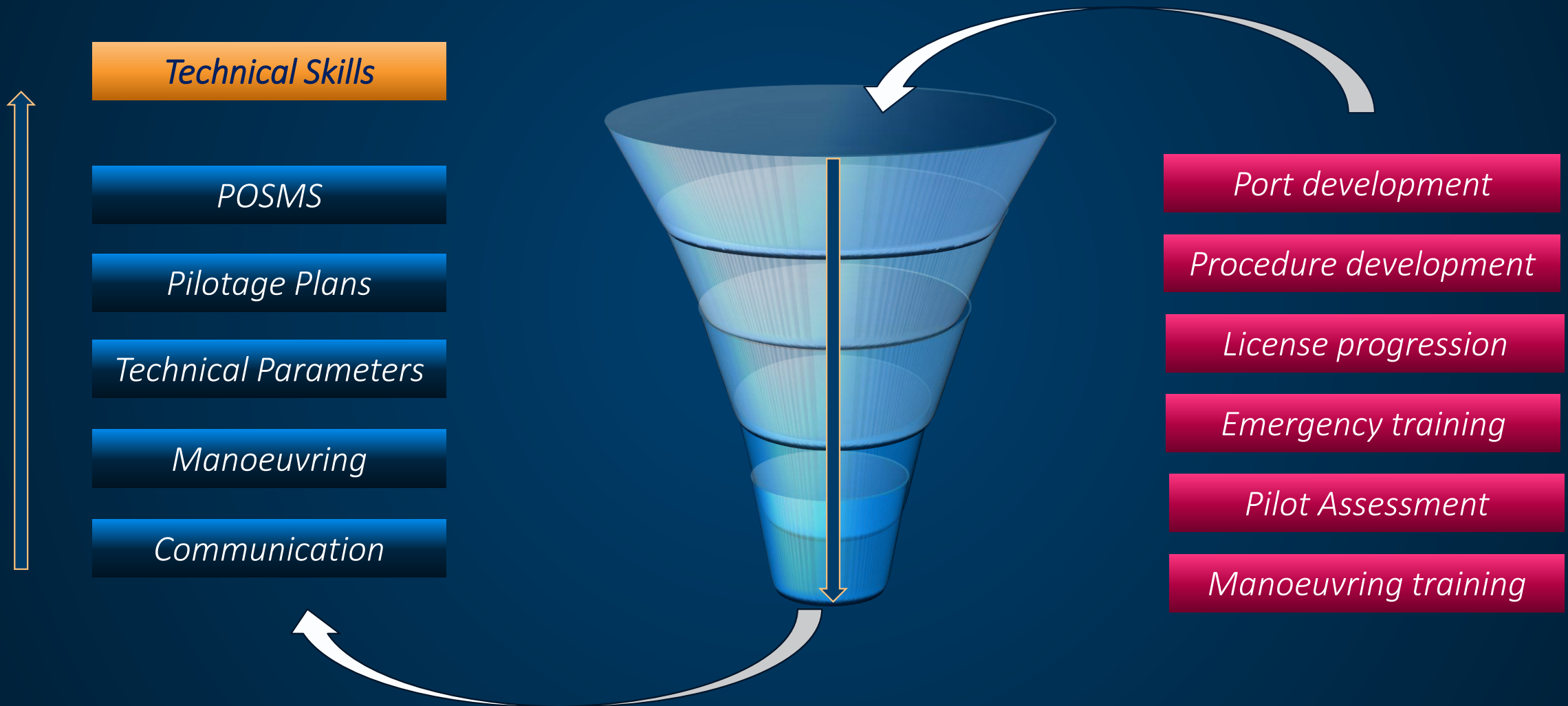
Augmented Reality Simulator

Delivered by multi-disciplined and highly experienced maritime professionals with over 100 years industry experience

Development of Non-Technical Skills



Development of Technical Skills



Enabling Resource Management



Pilotage and Port Resource Management

Bridge Resource Management

	Competence	Habit	KUP
What and Why	Knowledge	Knowledge	Knowledge
How	Skills	Skills	Understanding
Want	Behaviour	Desire	Proficiency

Building Synergy

- Allocation, assignment and prioritisation of resources
- Effective communication
- Assertiveness and leadership
- Obtaining and maintaining situational awareness
- Consideration of team experience

Inspire →

→ Building Trust

Pilotage and Port Resource Management

Bridge Resource Management

Competence	Habit	KUP
Knowledge	Knowledge	Knowledge
Skills	Skills	Understanding
Behaviour	Desire	Proficiency

Measuring Success → Improvement → Engagement

Competency Based Training and Assessment Systems

Pilotage and Port Resource Management

Bridge Resource Management

Competency Based Training and Assessment Systems

Providing all Port Resources with the systems to self-assess

*Initial/Diagnostic
Assessment*

*Formative
Assessment*

*Summative
Assessment*

Overview of the port resources (amongst others)

Port Pilotage Risks

Safe to Schedule

Safe for Pilot transfer

Safe to commence movement

Safe for critical manoeuvre

Safe to complete movement



Holistic Port Resource Management training



Flexible Remote Services

Pilot Office



VTS Centre

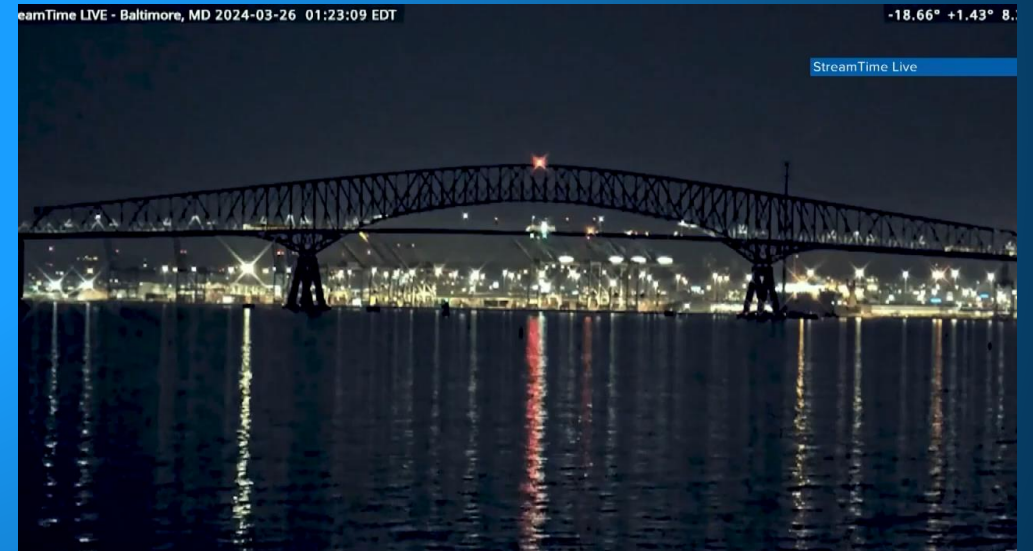
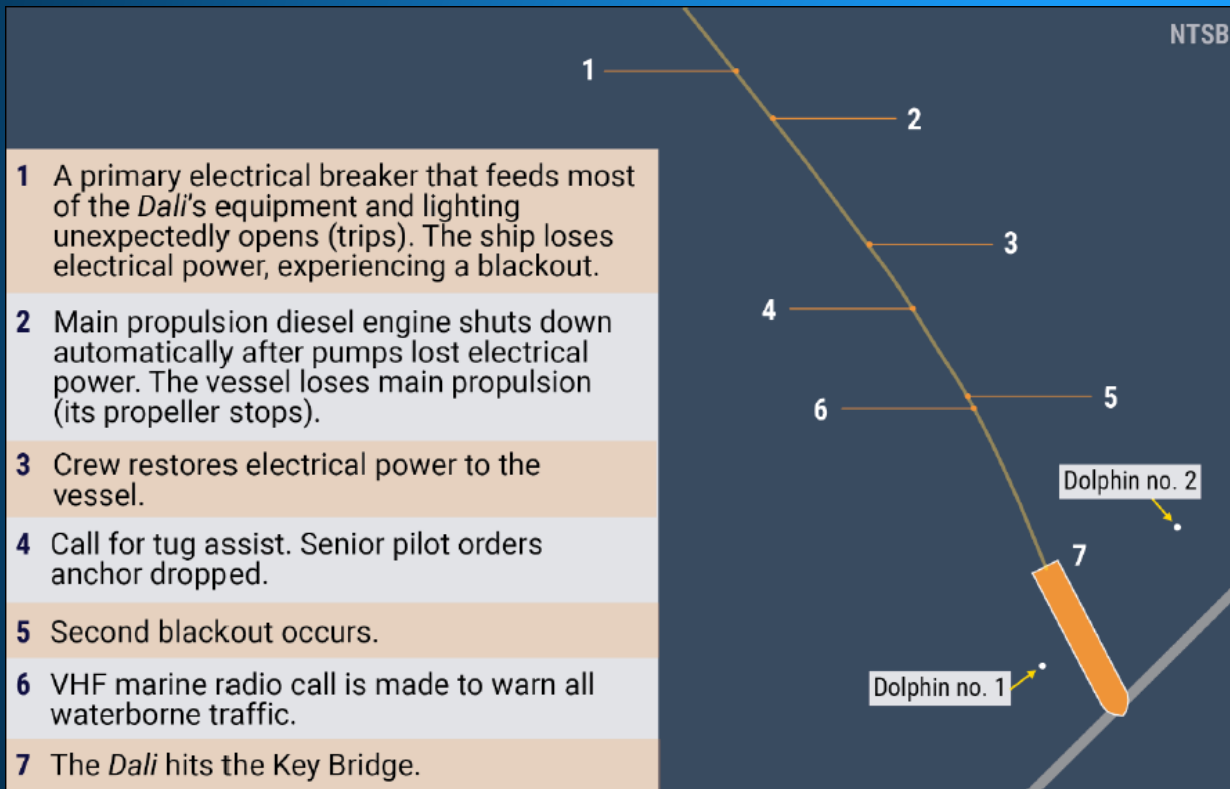


Remote Streaming PPU



Putting it into Practice

Dali – 26 March 2024 – Could this happen in a port near you?



Gateway Bridge Simulations

Emergencies and Contingencies



5 ship models, different configurations of tugs (1 manned), arrivals and departures

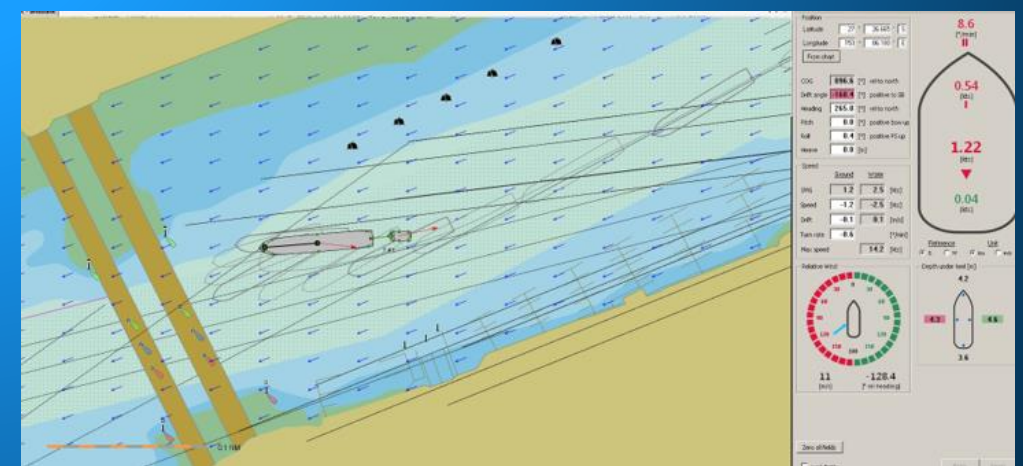
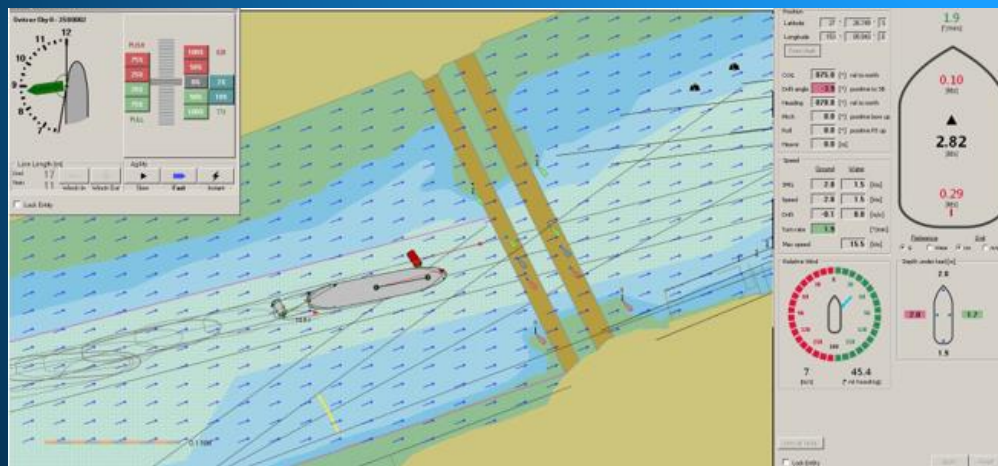
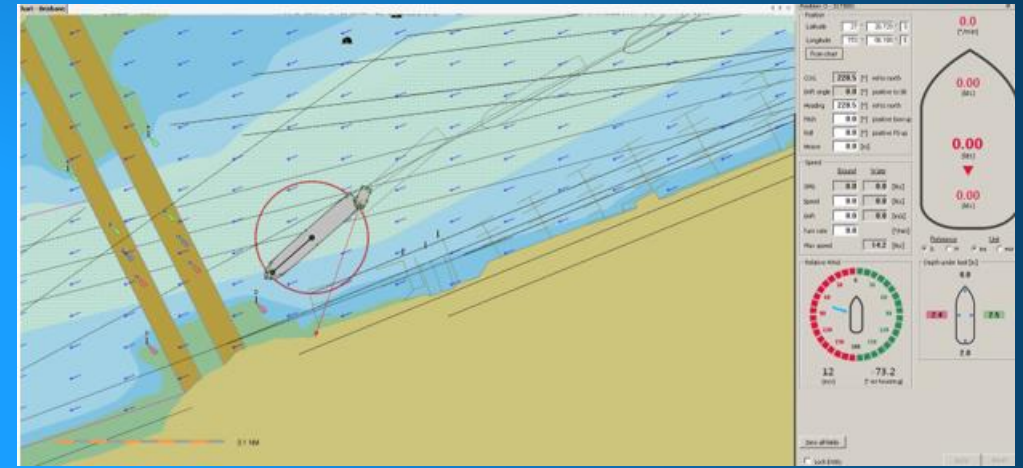
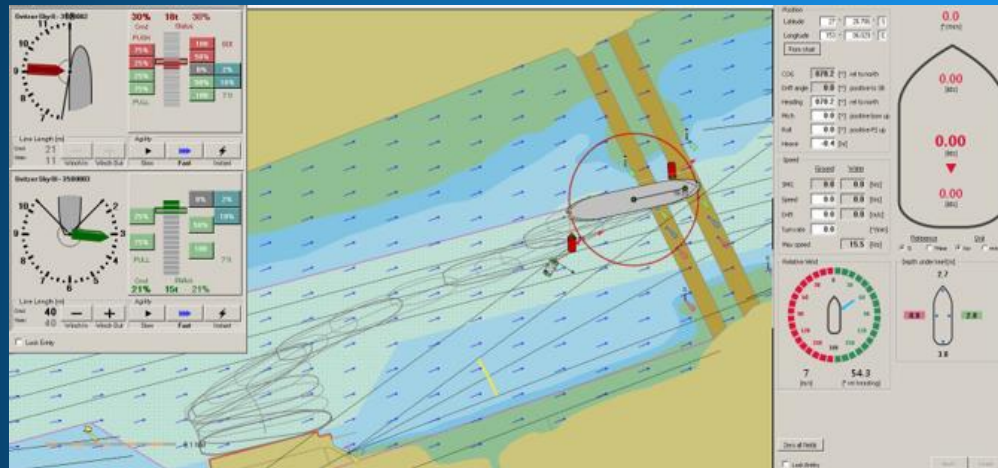


Gateway Bridge Simulations

Emergencies and Contingencies



Gateway Bridge Simulations Emergencies and Contingencies



**Thank you and stay
connected**

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Session Eight – Simulation Australia Smartship and HR Wallingford

Welcome Ben
Spalding from HR
Wallingford

The logo for hr wallingford features a stylized, dark blue wave-like graphic above the text 'hr wallingford' in a bold, dark blue sans-serif font.

hr wallingford





Advancements in simulation to enhance pilot training

ISPO Conference – Melbourne
9 and 10 October 2024



Pilotage training at HR Wallingford

- Introduction to HR Wallingford
- Navigation simulation at HR Wallingford
- How simulation can enhance pilot training
- ISPO Maritime Pilot Competency



Introduction to HR Wallingford

International research and consultancy organisation in civil engineering and environmental hydraulics



Ships and navigation simulation

- Long history of working in ship navigation simulation (over 35 years) and ship mooring (over 45 years)
- Navigation assessments and simulation
- Berth design and mooring analysis
- Port / terminal operations simulation
- Risk assessments



Ship Simulation Centres

- Wallingford, UK and Fremantle, Western Australia
- 10 real time bridge simulators:
 - 3 x 360 ship bridges
 - 7 x 360 tug bridges
 - + 2 x VTS simulation stations
- Planning additional:
 - 1 x 360 degree ship bridge
 - 1 x 360 degree tug bridge

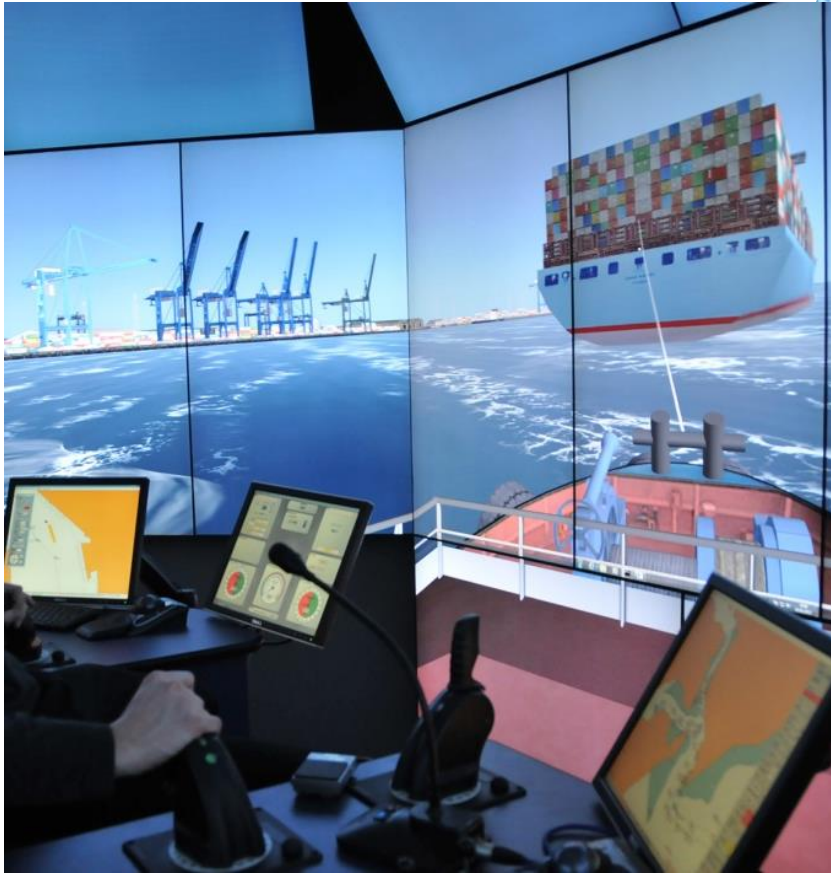


Ship Simulation Centres

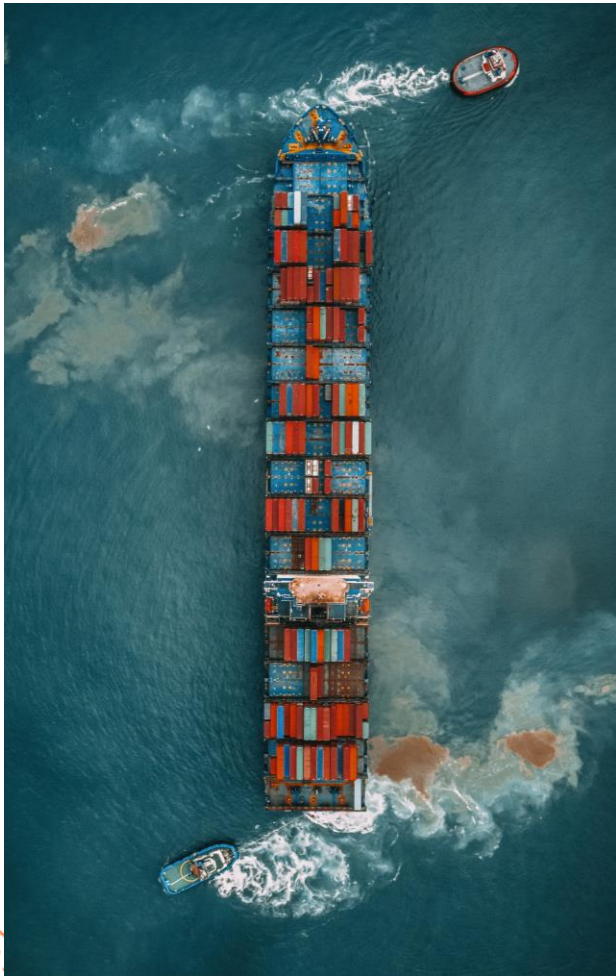
- Expert consultancy – Ensuring key issues and problems are solved
- Accuracy – Use of reliable, accurate, state of the art software
- Reality – High definition visual scene and representative bridge facilities for realism
- Support facilities – Observation, briefing and debriefing rooms, interactive display boards, work stations, and conference facilities



Ship Simulation Centres



How simulation can enhance pilot training



- Simulation is not the only training tool
- To be treated as a tool to facilitate the training
- Simulation must be sufficiently credible and representative
- Poor quality simulation can result in a lack of confidence
- Simulation system must be adaptable, flexible and quick to change when required
- Suitable simulation personnel should be available to discuss and make modifications when needed

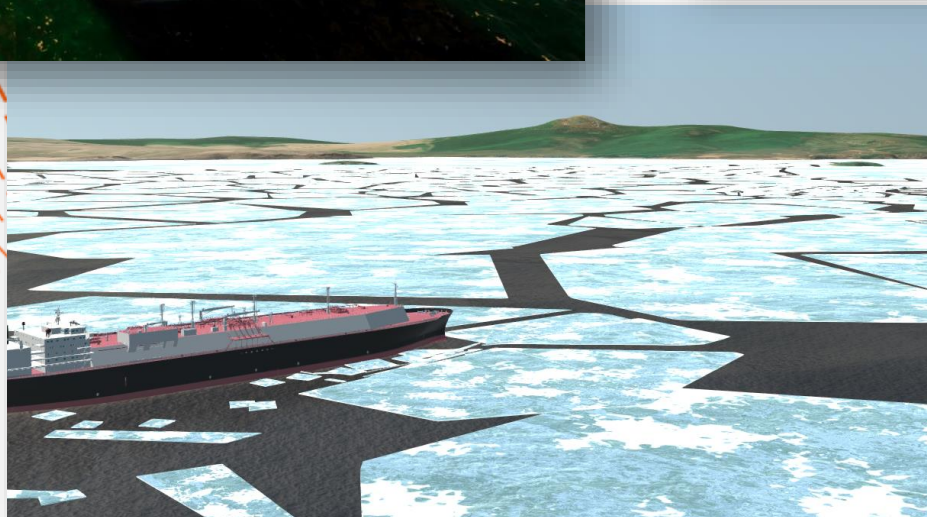
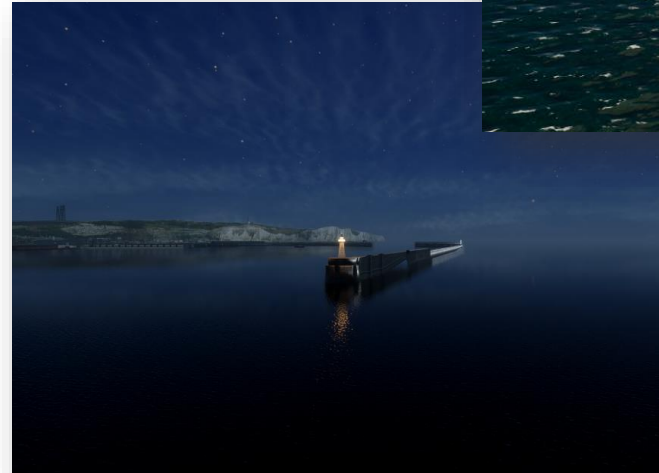
How simulation can enhance pilot training

- Your ship, your port
- Importance of details
- Specific and relevant training
- 400+ port models
- Wide range of vessel models
 - 900+ ship models
 - 150+ tug models
- Your equipment – PPU



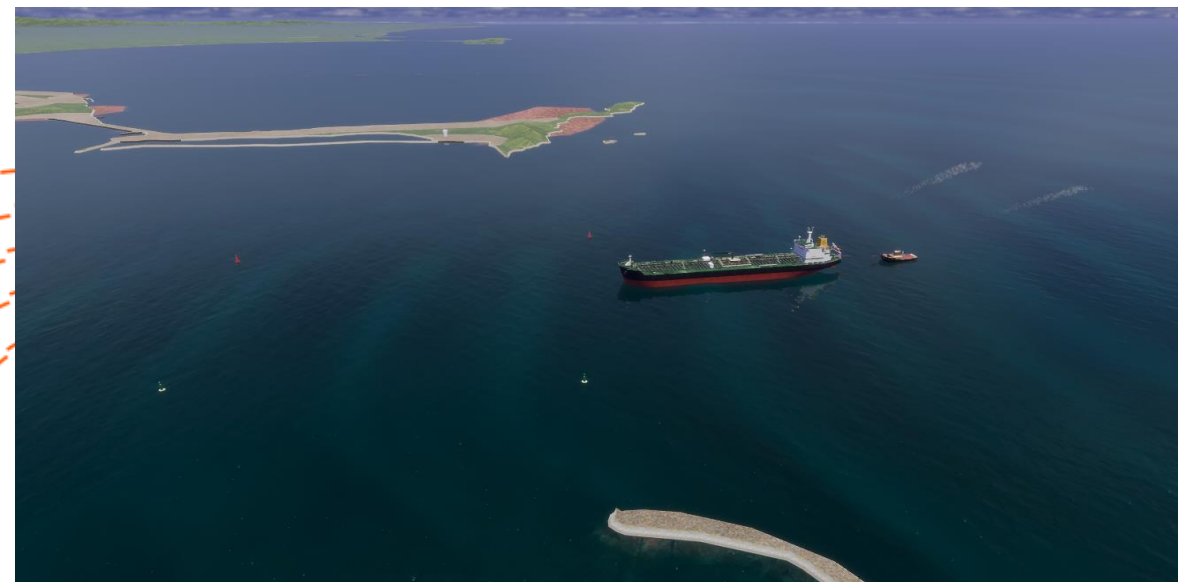
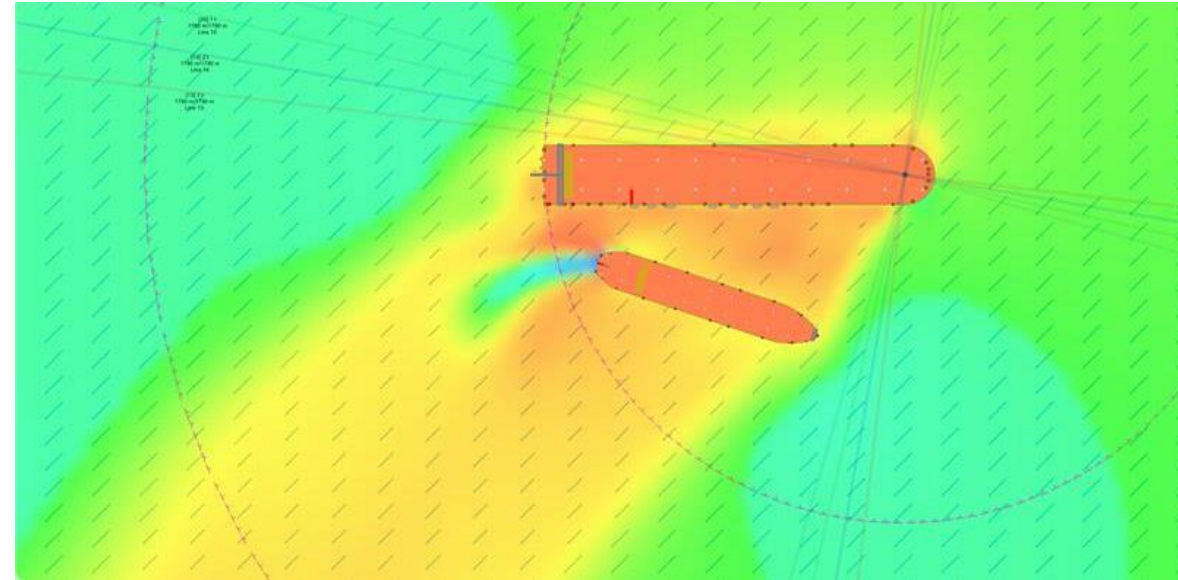
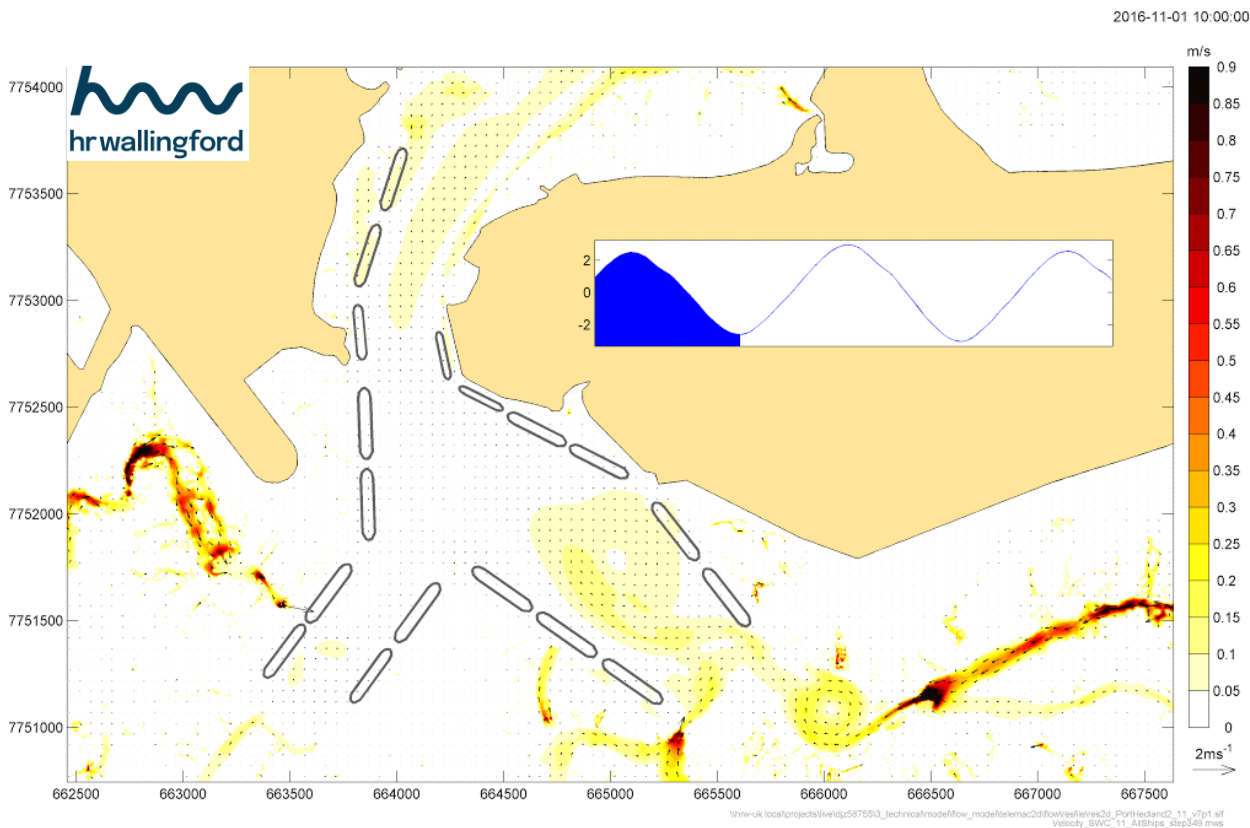
How simulation can enhance pilot training

- Visual scene
- High fidelity graphics
- 4k displays



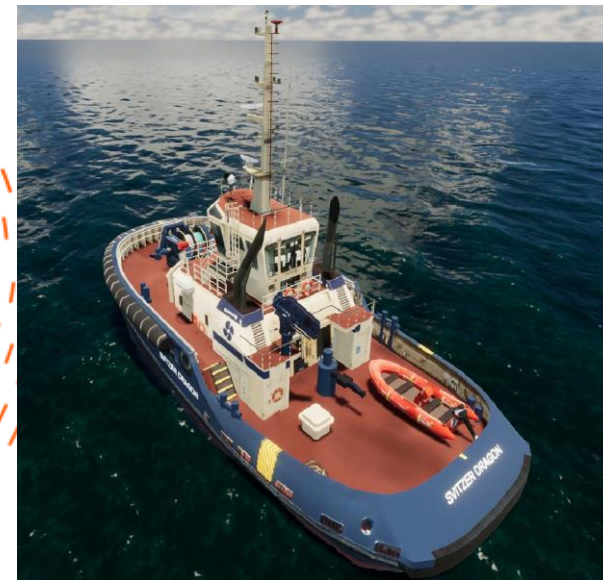
How simulation can enhance pilot training

- In house metocean
- TELEMAC live
- Wave models



How simulation can enhance pilot training

- Integration of tugs and tug masters
- 5 (7) bridges to allow for full port scenarios
- Tailored tug instrumentation



How simulation can enhance pilot training

Indirect towing can be simulated:

- Verified against CFD results and practical experience

Indirect pushing can also be simulated:

- Confirmed against real world vessel response
- No requirement to modify tug models

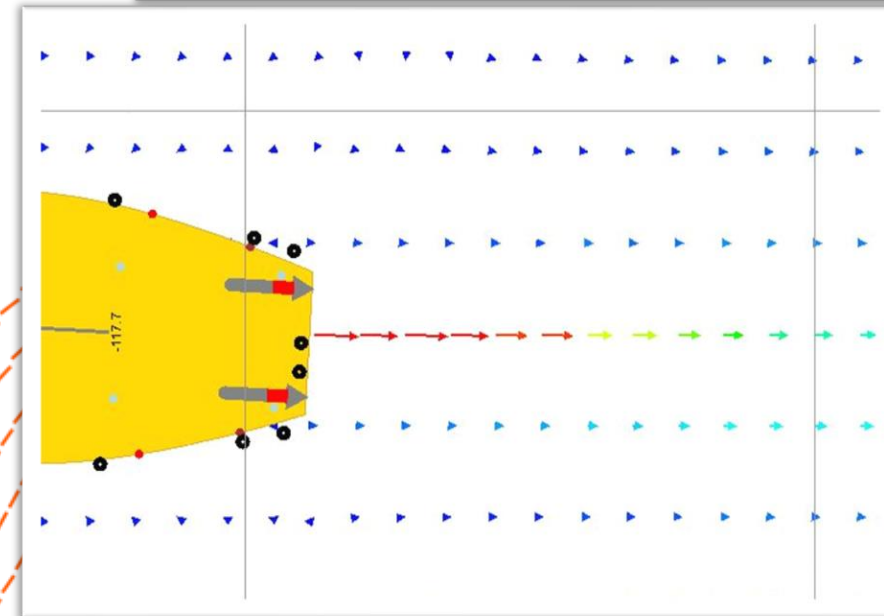
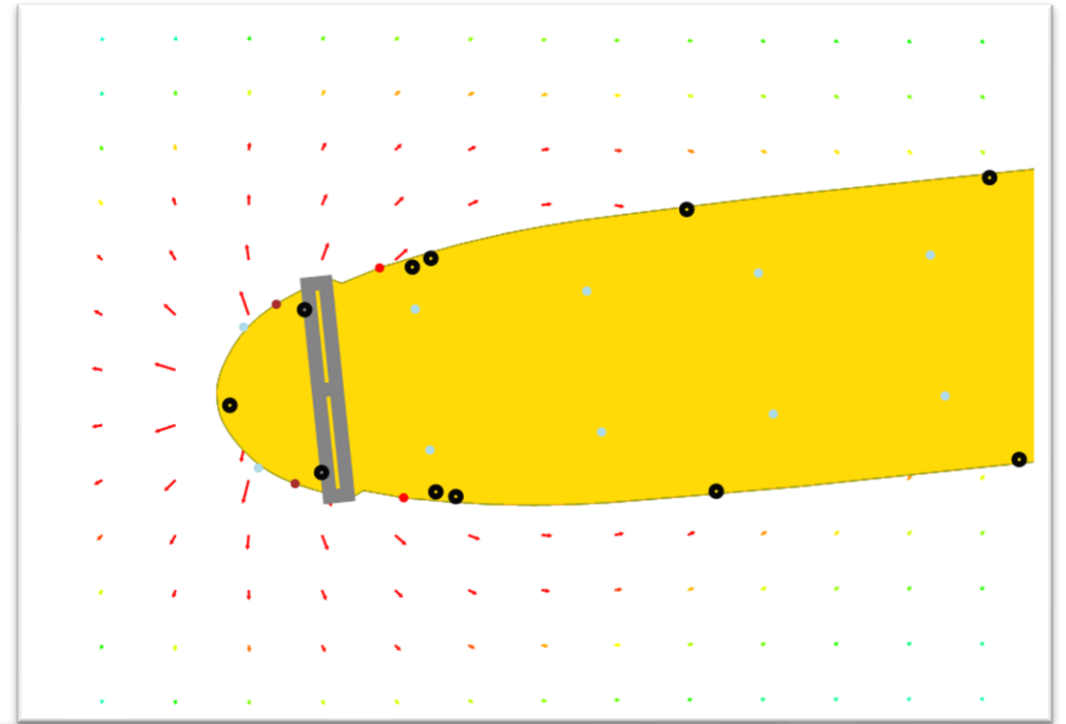


How simulation can enhance pilot training

Ship to tug interactions can be modelled:

- The pressure wave at the bow
- The suction at the side
- Wash from the propellor

Calibrated against real world experience and designed to be used for training purposes



ISPO Maritime Pilot Competency



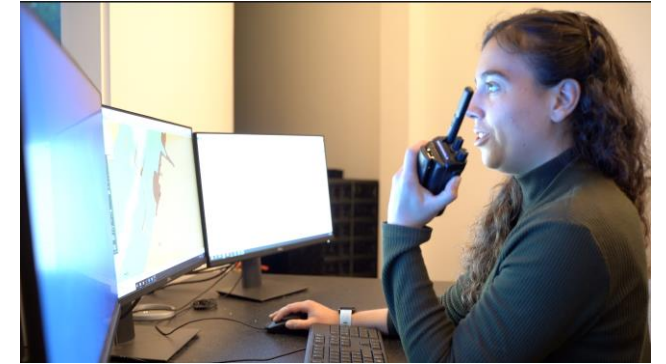
- Competency based training
- Simulation training is not real
- Ability to repeat a run/scenario to build 'muscle memory' of a manoeuvre and demonstrate competency at a skill
- Measurement and recording of improvements in a safe and controlled environment

ISPO Maritime Pilot Competency

Section 6.3

(6.3.19)

- Behaviour
 - Stress
- Language
 - Terminology
- Communication
 - VTS
 - Closed loop
- Nautical knowledge
 - Port Authority
 - Local knowledge
- Position fixing
 - PPU
- Errors
 - Gyro
- Aids to navigation
 - Lights
 - Leads



ISPO Maritime Pilot Competency (cont.)

Section 6.3

(6.3.19)

- Hydro / metocean
 - Tidal flow models
- Passage planning
 - MPX
- Navigation systems
 - PPU
- Communication systems
 - Radios
- Control systems
 - Specific ship equipment
- Manoeuvring
 - Simulation runs
- Legal aspects
- Emergency response
 - Contingency scenarios



Our ISPO Clients

- Auriga (Port Hedland, Cape Preston, Shark Bay, Onslow Salt, Beadon Creek, Port of Ashburton, Port of Dampier)
- Port Hedland Pilots
- Woodside Energy
- Southern Ports
- (Darwin and Gladstone)





Thank you

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Questions & Answers

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