

Latest developments in IWT & Education



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Content

- Regulatory framework
- Education and training SoC operational and management level
- Practical learning facilities
- Fit-for-Future waterways
- Roadmap future IWT education and training

Regulatory framework

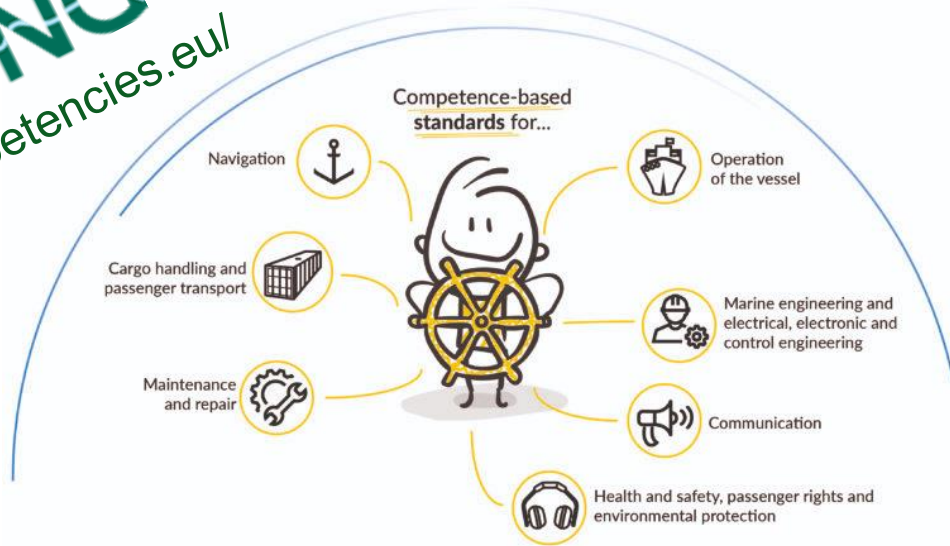
- Directive 2017/2397: EU harmonization of professional qualification in inland navigation
- EU Standards for competency based training

ESQIN

Recognition of professional qualification in inland navigation
Harmonised rules on professional qualifications will foster labour mobility
in European inland navigation



COMPETING
<https://www.iwt-competencies.eu/>



Education and training for operational level (deck crew)

- Training programs operational level - Directive 2017/2397 and ESQIN provide framework
- VET training program dual learning system
 - 2 years
 - 1600 hrs per year of which limited approx. 15%-20% time at school
 - Apprenticeship contract
- Dual learning system for side entrants
 - 9 months of which 90 days sailing time

Education and training for operational level (deck crew)

- Training programs operational level - Directive 2017/2397 and ESQIN provide framework
- Standards of Competence Boatmaster, through:
 - 180 days navigation time as certified Helmsman
 - Career change from sea to inland navigation with assessment (min. navigational time)
 - Following a 3-year VET program for management level
 - Training program for side entrants of 18 months
- Captain/Vessel owner after additional 4th year

Overview of training facilities

- Simulators
- Practice factory
- Workshops
- Logistics Lab
- Training vessels
- Simulators / AR / VR
- Skills Lab Maintenance / Repair practicum
- Tanker practicum / Dangerous goods / Bunkering / LNG
- Fire & Safety Training Centre (FSTC)



Full Mission inland shipping simulator



360-degree Tugboat simulator



LNG simulator – Terminal



Cargo simulators



Cutter Suction Dredger (CSD) simulator



Offshore crane simulator



ECDIS simulator



Full Mission Bridge simulators



Vessel Traffic Service simulators (VTS)



Azipod simulators



Ice Navigation simulator



Inland shipping radar simulator

Training vessels

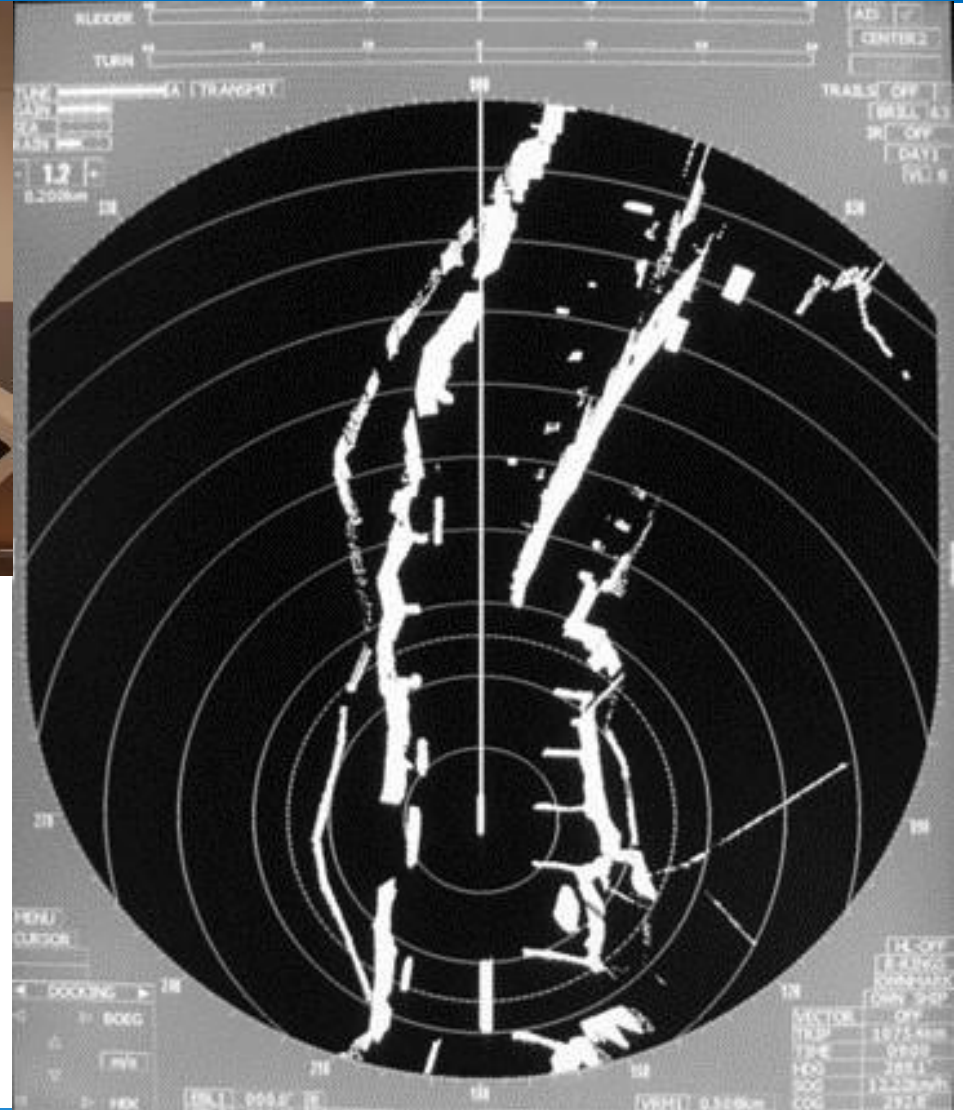
The use of a training vessel:

Practice of.....

- Mooring and unmooring
- Deck maintenance
- Knowledge and maintenance Engine room
- Navigation with the ship
- Safety on board



Inland Navigation Simulators



VTS and Inland ECDIS Simulator



Skills lab



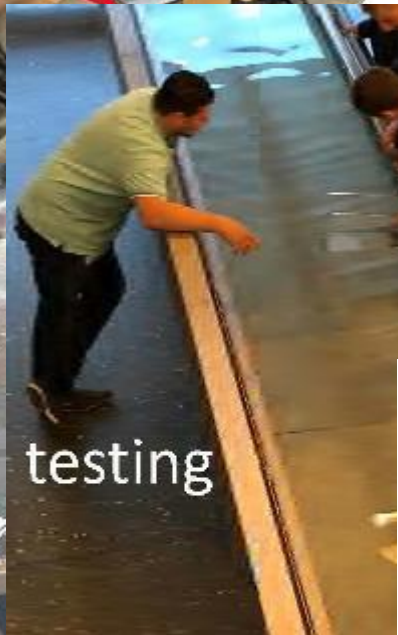
idea



translation



prototype



testing



feedback

Maintenance & Repair practicum



Tanker practicum / Dangerous goods / Bunkering



Fit-for-future waterways

Vision jointly developed by



Physical network

- Infrastructure remains backbone for IWT
- Multiple functions of waterways
- Waterways as link to industries
- Adaptation to climate change

Deployment of flying and aquatic drones



Drone2go - Rijkswaterstaat



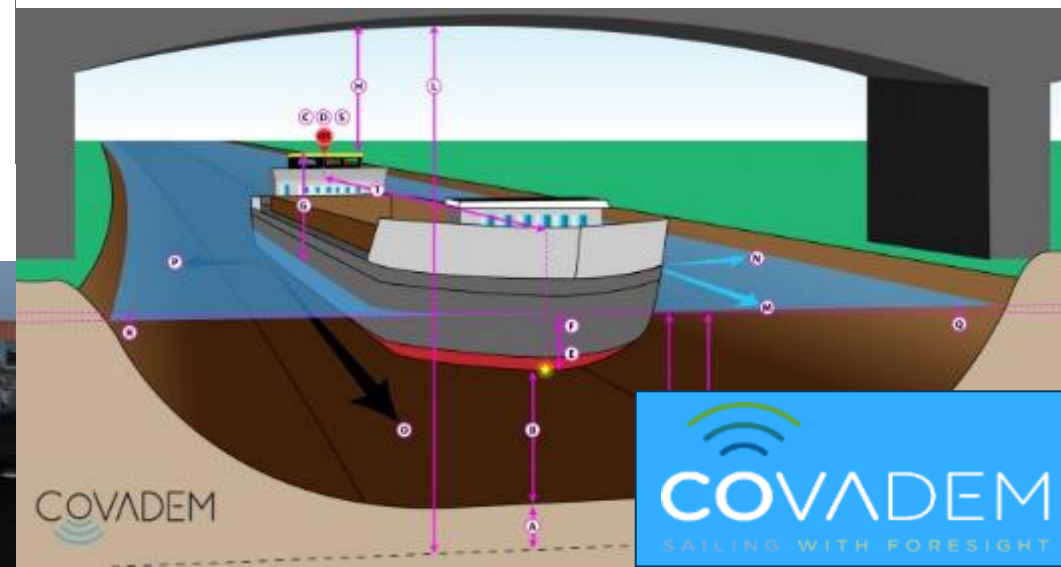
<https://www.aquaticdrones.eu/>

Industrial Strategy



Source: Rhein Neckar Zeiting

Smart maintenance and operation of waterways based on big data



COVADEM

COVADEM
SAILING WITH FORESIGHT

Fit-for-future waterways

Digital Network

- Digitalization to support Greening Strategy
- Data and 5G for connected and automated waterways and services
- Harmonized standards for information systems and cybersecurity



<https://novimar.eu>



<https://seafar.eu>



<https://www.autoship-project.eu>

Smart Shipping



<https://smashnederland.nl/english/>

Fit-for-future waterways

Vision jointly developed by



Green energy network

- Smart energy corridors and hubs
- Multi-fuel (transition) network
- Waterway infrastructure towards climate neutrality

Renewable waterfront



Hydrogen corridor – Rhine Hydrogen Integration Network of Excellence - RH2INE



Examples of new green vessel – anchored in training



**New energy for inland shipping
ZERO EMISSION SERVICES (ZES)**



<https://zeroemissionservices.nl/en/>

How to anticipate to challenge of greening the fleet?

Replacement of trainings vessels



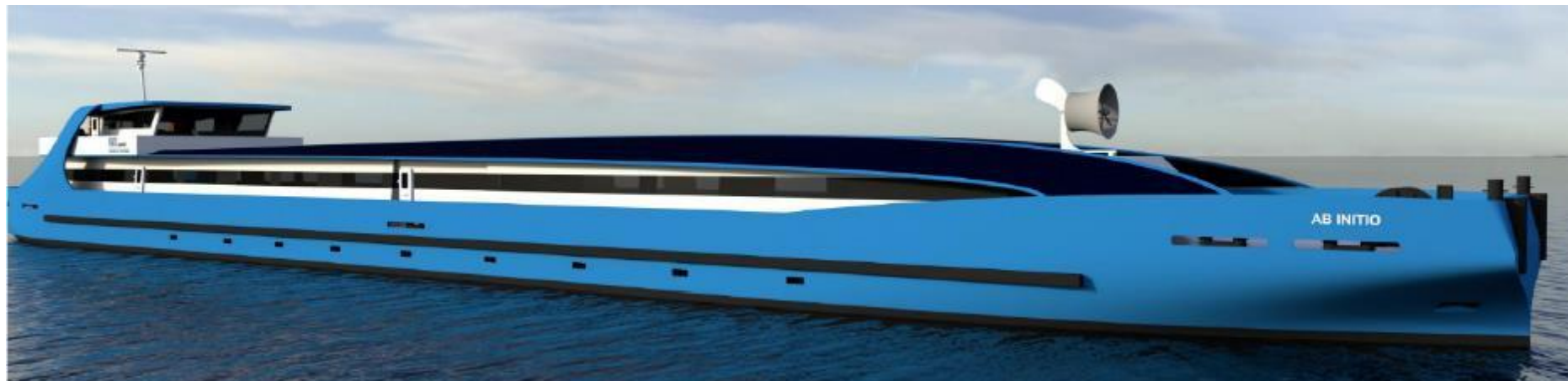
New training vessel

Requirements:

- Comply with technical standards (ES-TRIN)
- Accommodate space for safe environment
- Use 200 days per year: education and promotion
- Recognisable: direct link to STC
- Showcase for inland navigation: Rotterdam, NL and Europa

Future proof:

- Modular concept: replace gensets and batteries
- Digitalisation and smart solutions
- Smart maintenance
- Be prepared for 100% zero-emission



Development of VR training

- VR models for AB Initio
- Walk around, explore the various equipment, safety
- Several AR/VR developers (e.g. WEAR from Kyiv <https://wear-studio.com/>)



Roadmap for future IWT & education and training

EU research program PLATINA 3 to determine future IWT Actions

1. Integration & digitalisation of IWT in view of modal shift & synchronomodality
2. Zero- emission, automated & climate resilient fleet
3. Smart & climate resilient waterway and port infrastructure with clean energy hubs

4. **Skilled workforce anticipating to zero-emission & automation**

- Future developments: AR / VR – combined with simulators
- Facilities for alternative energy / new propulsion techniques

CESNI Radar Compliant



CESNI Radar Compliant+



CESNI Vessel Handling



CESNI Vessel Handling+

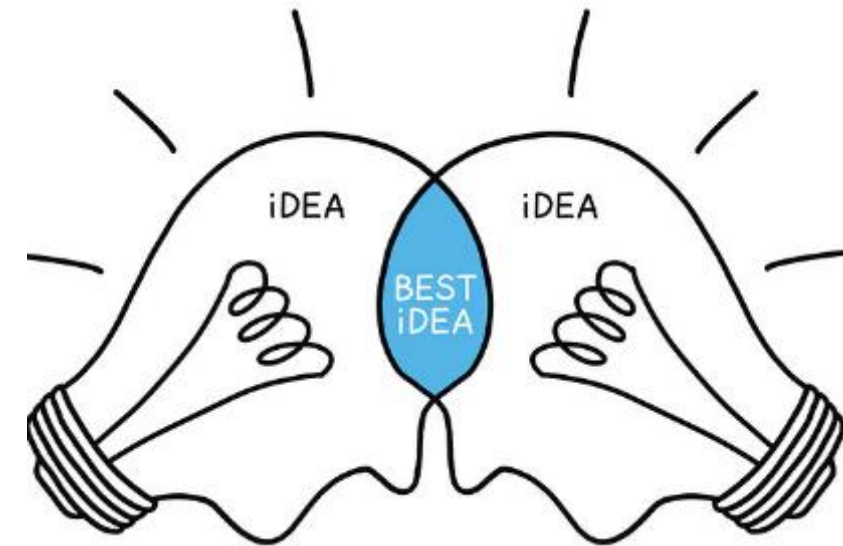


Source: VSTEP



Future IWT & Education and training – Food for thought

- Overview of STC training facilities
- Use of modern facilities
- International (more) harmonized standards
- Exchange of know-how and best practices
- Close relation with industry



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