1System 4 IWT learning: upskilling pathways

- Skills gaps research and gaps in legislation implementation -

INVENTORY OF COMPETENCES NEEDED IN THE IWT SECTOR, INCLUDING NEW ONES DUE TO INNOVATIVE TECHNOLOGIES AND UPDATED/ NEWLY DEVELOPED STANDARDS FOR COMPETENCES FOR NEW JOBS ON BOARD IWT VESSELS

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PROJECT: 1System 4 IWT learning
PROJECT NO: 2022-1-NL01-KA220-VET-000088164

AUTHOR: CERONAV

DATE: July 3, 2025

Document ID:	WP 2 - Skills gaps research and gaps in legislation implementation	
Activity/Deliverable:	Deliverable D 2.2 Inventory of competences needed in the IWT sector, including new ones due to innovative technologies and updated/ newly developed standards for competences for new jobs on board IWT vessels	
Author (s)/Project Partner:	Date:	Version:
Doina MUNTEANU/CER Liliana Martes/CER Dragos Filimon/CER Mihaela Vintila/CER	15.02.2023	Ver.0 (Structure)
Doina MUNTEANU/CER Liliana Martes/CER Dragos Filimon/CER Mihaela Vintila/CER	14.04.2023	Ver.1
CER, STC, FHOO, MAH, UoC	01/08/2023	Ver.2
Doina MUNTEANU/CER Liliana Martes/CER Dragos Filimon/CER Mihaela Vintila/CER	28/08/2023	Ver.3
CER, STC, FHOO, MAH, SBKR, UoC, UoZ	20/04/2024	Ver.4 (final)

This project has received funding from the ERASMUS + programme under grant agreement 2022-1-NL01-KA220-VET-000088164. The opinions expressed in this document reflect only the author's view and in no way reflect the European Commission's opinions. The European Commission is not responsible for any use that may be made of the information it contains.

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EXECUTIVE SUMMARY

The ERASMUS+ project **"1System 4 IWT learning: upskilling pathways"**- 1S4IWT, aims to build a learning system that will act as a solution for ensuring and sustaining continuity of education & training for IWT students and workers and generate a „personalized learning experience". Furthermore, the project will focus on developing common resources, which meet the needs of nowadays trends and challenges for (incoming) staff in the IWT sector.

WP 2 - Skills gaps research and gaps in legislation implementation, deals with the creation of a resilient, easily accessible and future-proof education & training system for the IWT sector.

The present deliverable 2.2. "**Inventory of competences needed in the IWT sector, including new ones due to innovative technologies and updated/ newly developed standards for competences for new jobs on board IWT vessels**" presents the results of ***Task 2.2 "Revision of standards for competences and corresponding knowledge and skills (ES-QIN)",*** i.e. an updated inventory of current standards for competences, adopted by the ***Directive (EU) 2017/2397 of the European Parliament and of the Council of 12 December 2017 on the recognition of professional qualifications in inland navigation*** and ***Commission delegated Directive (EU) 2020/12 of 2 August 2019 supplementing Directive (EU) 2017/2397 of the European Parliament and of the Council as regards the standards for competences and corresponding knowledge and skills, for the practical examinations, for the approval of simulators and for medical fitness*** as well as the new ones collected in Task T2.1 in order to support the work of CESNI, committed to regularly revise existing standards and to adopt new standards while following closely technical evolutions and supporting innovation, as a permanent priority according to its Work Program.

For every job on board the IWT vessels, including the newly identified ones, updated/ newly developed standards for competences and corresponding knowledge and skills for alternative fuels operations and for environment-friendly and efficient vessel operation (eco navigation) according to communication from the Commission regarding NAIADES III, PLATINA 3, CESNI have been included.

LIST OF ABBREVIATIONS

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
AIS	Automatic identification system
AR	Augmented reality
CCNR	Central Commission for the Navigation on the Rhine
CESNI	European Committee for drawing up standards in the field of inland navigation
CESNI/QP/Crew	Working group on crew-related requirements
CESNI/QP/QM	Working group on quality management
DC	Danube Commission
DG- MOVE	Department for Mobility and Transport
EC	European Commission
EDINNA	Education in Inland Navigation, the educational network of inland waterway navigation schools and training institutes
EHDB	European Hull Database
eIVU	e-information vessel unit
e-LBK	Electronic logbook
e-SRB	Electronic Service Record Book
ERDMS	European reference data management system
ERI	Electronic Reporting
ES-QIN	European Standards-Qualification in Inland Navigation
EU	European Union
EUSDR	EU Strategy for the Danube Region
E & T	Education & Training
FP 7	Framework Programme for Research
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IWT	Inland Waterway Transport
LNG	Liquefied Natural Gas
ML	Management level
OL	Operational level
PA	Priority area
PLATINA	Platform for the implementation of a future inland navigation action programme
RIS	River Information Services
RNP	Rhine Navigation Personnel
RPIS	Upper Rhine traffic management platform
SIGNI	Signalisation des voies de navigation intérieure
TENtec	Trans-European Transport Network
VR	Virtual Reality
WP	Work package

1. INTRODUCTION

1.1. EU Directives laying down the requirements for professional qualifications of inland navigation personnel and mandatory standards for competences

1System 4IWT aims to build a learning system that will act as a solution for ensuring and enduring continuity of education & training for IWT students and workers and generate a „personalized learning experience". Furthermore, the project focuses on developing common resources that meet the needs of nowadays trends and challenges for (incoming) staff in the IWT sector.

Since 2008 key stakeholders in the IWT sector are cooperating towards the harmonization and modernization of professional qualifications in inland navigation. A formal network of IWT education & training (E&T) institutes has been founded in February 2009 under the name "EDINNA" (www.edinna.eu).

Since the start, EDINNA has pledged for "one language" and "one standard" in the IWT sector. EDINNA and FP7 project PLATINA proposed to develop so called "Standards of Training and Certification in Inland Navigation" in order to develop a level playing field in the IWT E&T system.

Directive (EU) 2017/2397 of the European Parliament and of the Council of 12 December 2017 on the recognition of professional qualifications in inland navigation and repealing Council Directives 91/672/EEC and 96/50/EC, which came into force in January 2022, does mean implementation of "one standard" as promoted by EDINNA since the MoU of 2009.

With a view to contributing to the mobility of persons involved in the operation of craft across the Union, and considering that all certificates of qualification, service record books and logbooks issued in accordance with this Directive should comply with required minimum standards in accordance with harmonised criteria, Member States should recognise the professional qualifications certified in accordance with this Directive. Consequently, the holders of such qualifications should be able to exercise their profession on all Union inland waterways.

This Directive lays down the conditions and procedures for the certification of the qualifications of persons involved in the operation of a craft navigating on Union inland waterways, as well as for the recognition of such qualifications in the Member States.

Member States had the obligation to bring into force, regulations and administrative provisions necessary to comply with this Directive by 17 January 2022, and to immediately inform the Commission thereof.

The harmonisation of legislation in the field of professional qualifications in inland navigation in Europe is facilitated by close cooperation between the Union and the CCNR, and by the development of CESNI standards. The CESNI, which is open to experts from all Member States, draws up standards in the field of inland navigation, including standards for professional qualifications. European River Commissions, relevant international organisations, social partners and professional associations should be fully involved in the design and drawing up of CESNI standards. Where the conditions laid down in this Directive are met, the Commission should refer to CESNI standards when adopting and implementing delegated acts in accordance with this Directive.

CESNI Standards - ES-QIN- were published by Commission **Delegated Directive (EU) 2020/12** of 2 August 2019 supplementing Directive (EU) 2017/2397 of the European Parliament and of the Council as regards the standards for competences and corresponding knowledge and skills, for the practical examinations, for the approval of simulators and for medical fitness.

In order to provide minimum harmonised standards for the certification of qualifications, the Commission has been empowered to adopt detailed rules laying down standards for competences and corresponding knowledge and skills, standards for practical examinations, standards for the approval of simulators and standards for medical fitness.

The standards for competences establish the minimum competences required for the safe operation of the craft, for the crew members at operational and management levels, for the Boatmasters authorised to sail with the aid of radar and those authorised to sail on waterways with a maritime character, for the passenger navigation experts and for the liquefied natural gas (LNG) experts. Each required competence was defined with its corresponding required knowledge and skills.

In order for the competent authorities to carry out in a similar way the practical examinations required by Article 17(3) of Directive (EU) 2017/2397, **standards for the practical examinations** were established. To this end, these standards define, for each practical examination, the specific competences and the assessment situations, including a specific scoring system and technical requirements for craft and onshore installations. For the candidates to the qualification of Boatmaster who have not previously completed an assessment at operational level, an additional module should be provided, so that the ability to perform the related supervised tasks can also be verified.

The standards for the approval of simulators were established to ensure that the simulators used for an assessment of competence are designed in such a way as to allow for the verification of the competences as prescribed under the standards for practical examinations. These standards cover the technical and functional requirements for vessel-handling and radar simulators as well as the procedure for the administrative approval of those simulators.

In order to reduce national differences in medical requirements and examination procedures and to ensure that medical certificates which are issued to deck crew members in inland navigation are a valid indicator of their medical fitness for the work they will perform, **standards for medical fitness** were established. These standards specify the tests that medical practitioners are to carry out and the criteria they are to apply to determine the fitness for work of deck crew members. They cover eyesight, hearing and physical and psychological conditions which may lead to temporary or permanent unfitness for work, as well as possible mitigation measures and restrictions. For

coherence, the standards are based on the guidelines on the medical examinations of seafarers published by the International Labour Organisation and the International Maritime Organisation, in particular on the criteria applied to coastal services.

The date of transposition of this delegated Directive was aligned with the dates of transposition of Directive (EU) 2017/2397, namely in January 2022 for reasons of coherence and efficiency.
With reference to professional qualifications, within work programme 2022-2024, CESNI has prepared and adopted **standards in the field of professional qualifications**, actively promoting:

- the regular revision of ES-QIN to maintain and guarantee the high level of safety in inland navigation and to follow the technical evolution,
- the development of competence-based standards for:
  - entrepreneurs, in particular for digitalisation and greening,
  - working with new and innovative technologies including the use of relevant alternative fuels, batteries and electric propulsion systems,
  - working with increasingly digitalised vessels, included automated vessels,
  - eco-navigation,
  - modern training tools, including remote learning,
- the establishment of modern manning requirements,
- electronic tools for recording and exchanging information on crew

CESNI supports proper implementation of standards in the field of professional qualifications, including:

- maintenance of quality standards and guidelines,
- preparation of explanatory notices for the major standards or amendments,
- deliberation on the uniform interpretation and application of the standards.

2. EU PROJECTS ON DEVELOPMENT OF NEW COMPETENCE-BASED STANDARDS TO MAINTAIN AND GUARANTEE THE HIGH LEVEL OF SAFETY IN INLAND NAVIGATION AND TO FOLLOW THE TECHNICAL EVOLUTION

2.1 PROMINENT PROJECT

PROMINENT - *Promoting Innovation in the Inland Waterways Transport Sector* is a project funded from the Horizon 2020 programme, which addressed the key needs for technological development, as well as the barriers to innovation and greening in the European inland navigation sector, in line with the objectives of the European action programme NAIADES-II. It aimed at providing solutions which make inland navigation as competitive as road transport in terms of air pollutant emissions by 2020 and beyond. In parallel PROMINENT aimed to further decrease the energy consumption and carbon footprint of IWT, an area where IWT has already a strong advantage compared to road transport.

PROMINENT focused on:

- Massive transition towards efficient and clean vessels;
- Certification and monitoring of emission performance and development of innovative regimes;
- ***Harmonisation and modernisation of professional qualifications*** and the stimulation of the further integration of IWT into sustainable transport chains which supports the ongoing process of harmonisation and modernisation of professional qualifications in inland navigation on a (pan-) European level as well as the ongoing process of integration of IWT knowledge into general logistics education.

More information of the activities in the framework of PROMINENT are available via the following website: www.prominent-iwt.eu or/and https://cordis.europa.eu/project/id/633929

In work package four (WP4) new/ innovative competences were identified and included in **D 4.3 - Digital tools to support the further integration of IWT knowledge to general logistics education and training,** and **D 4.4 - Prototype of digital education and training tools.** Digital education tools on green logistics, energy efficient navigation, handling of dangerous goods and vessel stability were developed to facilitate the process of harmonization and modernization of professional qualifications by means of simulators and digital tools.

2.1.1. Proposed standards of competence for all crew members of inland navigation vessels and trainers

1. Innovative transport concepts and green logistics

1.1. Crew members of inland navigation vessels as well as trainers shall be able to support the further integration of IWT knowledge to general (green) logistics education and training

Crew members of inland navigation vessels as well as trainers shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. Integrate IWT knowledge to green logistics education and training	1. Develop and use a web-based Community of Practice including learning materials and modules 2. Provide adaptable and up-to-date learning material in form of learning modules and a module for lecturers to support the handling of the CoP
2. Develop digital knowledge and skills in using e-learning modules that can be used for both conventional learning environments in a school as for online training either on board or at home.	1. Develop E-learning module for energy-efficient navigation 2. Develop E-learning module for handling of dangerous goods

	3. Develop E-learning module for vessel stability

2.2. INNOVATIVE SKILLS PROJECT

Education and training are the backbone of the transport sector: they attract youngsters to the profession, educate and train them to achieve the knowledge, skills and proficiency required to be able to execute their future job in a safe, secure and sustainable way and also offer lifelong learning programmes to improve competences and skills of current employees or inactive workforce and ultimate employability opportunities thereof.

Addressing the major barrier remaining in the Danube riparian countries after adoption of a common European legal framework governing skills and qualifications in IWT sector, **Innovative SKILLS** project attempted to solve the shortage of qualified personnel, one of EUSDR Priority Area 1a targets, by aligning skills and competences with current and future labour market requirements and promoting entrepreneurship for Danube navigation businesses among youth and adults.

Entrepreneurial and digital skills were developed for the boatmaster and the port facility operator to match latest innovations and digital technologies, based on appropriate education and training and lifelong learning programmes responding to tomorrow's needs of the transport labour market, addressing PA 1a Topic 2 and aiming at raising the operational efficiency of vessels by improving competences of IWT staff and thus enhancing competitiveness of the sector.

2.2.1 Proposed standards of competence for the management level

1. Digitalization in IWT

1.1. **The <u>boatmaster</u> shall be able to ensure compliance with the new development of electronic technology to improve navigation and management of traffic and ensure a safe voyage planning.**

The boatmaster shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. ensure compliance with the new development of electronic technology to improve navigation and management of traffic and ensure a safe voyage planning	1. Be familiar with the specific IWT e-legislation and understand the concept of transport network digitalization by use of software services 2. be familiar with e-maritime services and understand the concept "safe e-voyage planning" 3. Be familiar with/master multilingual online tools 4. Have good knowledge of electronic Technologies & systems (e-information vessel unit - eIVU, RIS telematic

	system, AIS, ERI, stowage and crewing software, European Hull Database- EHDB, the European reference data management system -ERDMS, TENtec information system, e-tables for the location data, e-LBK, e-SRB, Single window access, web-based “RPIS’- Upper Rhine traffic management platform, ‘digital back office’) for ensuring a safe e-voyage planning and information exchange between transport modes of the multimodal transport service 5. understand and interpret correctly the signalled potential and actual deficiencies that may appear when using e-technology and correct them

1.2. The port facility operator shall be able to ensure compliance with the new development of electronic technology to integrate information from IWT in the multimodal logistic chain and reduce the administrative burden

The port facility operator shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
2. Ensure compliance with the new development of electronic technology to integrate information from IWT in the multimodal logistic chain and reduce the administrative burden.	1. Understand the concept of trans-European transport network digitalization by use of software services 2. read and understand specific IWT legislation on digital platforms to simplify and reduce administrative burden 3. be familiar with/master multilingual online tools 4. have good knowledge of electronic Technologies & systems (Market Information System, stowage and crewing software, the European reference data management system - ERDMS, Digital Single Market, RIS telematic system, AIS, Intelligent Transport Systems and (semi-) autonomous vehicles, ‘digital back office’) 5. be familiar with the content of e-freight transport documents and delivery of digital public services across borders (electronic seals or time stamps, electronic delivery services and website authentication, e-ID, eSignature, e-Delivery, e-Invoice and e-Translation); 6. Be familiar how to use booking and transport management platforms of shippers and logistics service providers to integrate IWT in the multimodal logistics chain 7. Understand and interpret correctly the signalled potential and actual deficiencies that may appear when using e-

	technology and correct them.

2.3. PLATINA 3 PROJECT

With the introduction of new energy carriers on inlands vessels, along with more advanced levels of automation and digital tools for navigational assistance, the need for existing and future IWT personnel to anticipate to new innovations has become reality.

The Horizon 2020 project PLATINA3 provides a platform for the implementation of the NAIADES III action programme. PLATINA3 is structured around four fields (Market, Fleet, Jobs & Skills and Infrastructure) of which Work Package 3 (WP 3) deals with various aspects of the IWT training and careers topics, in particular:

- Providing input for competence standards related to the use of zero or low emission propulsion systems;
- Identifying knowledge and skills needed for greener vessel operation in refresher classes;
- Preparing input for competence standards related to on board systems allowing automation of IWT vessels;
- Supporting the use of modern techniques such as simulators, virtual reality (VR) and augmented reality (AR) in training schemes for greener and highly automated vessel operation, and
- Providing input to a roadmap on standards for examination of new competences in the EU regulatory framework.

More information of the activities in the framework of PLATINA 3 are available via the website of the project: https://platina3.eu/

The following innovative standards of competence for both operational and management level were identified in *D 3.1-Report on required competence for operation of vessels with zero or low emission*:

2.3.1. Proposed Standards of Competence for the Management level - Expert -

1. Operation of vessels with zero or low emission

1.1. **The <u>expert</u> shall be able to operate IWW vessels with zero or low emission**

The expert shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. Operate electrical propulsion and auxiliary systems on board IWW vessels	1. Ensure compliance with relevant legislation, standards and safety and maintenance instructions applicable to craft using high voltage and high current electrical propulsion and

	auxiliary systems. 2. Obey safety standards when interacting with high voltage and high current electrical propulsion and auxiliary systems. 3. Take necessary measures to avoid or mitigate safety hazards linked to high voltage and high current electrical propulsion and auxiliary systems. 4. Operate craft using high voltage and high current electrical propulsion and auxiliary systems
2. Operate high-capacity accumulator systems used for propulsion and auxiliary systems on board IWW vessels	**General competences:** 1. Ensure compliance with relevant legislation, standards as well as safety and maintenance instructions applicable to craft using accumulator electric systems. 2. Obey safety standards when interacting with accumulators. 3. Handle fire and explosion hazards. **Competences for charging/ exchange procedure (bunkering)** 1. Operate the systems specific to high-capacity accumulator systems to on board systems in a safe way. **Competences to perform regular checks and maintenance** 1. Perform and monitor regular checks and maintenance of the accumulator system.
3. Use, operate and perform daily maintenance of fuel cell systems on board IWW vessels	**General competences** 1. Ensure compliance with relevant legislation, standards and manufacturer's instructions applicable to craft using a fuel cell. 2. Ensure compliance with other relevant health and safety regulations when sailing and moored. **Operation of the fuel cell system** 1. Operate the systems specific to fuel cell systems on-board systems in a safe way. **Daily maintenance of the fuel cell system** 1. Recognise specific points of attention related to the specific characteristics of the fuel cell. 2. Recognise risks and manage them.
4. Use and storage of fuels for own propulsion or vessel operation other than diesel and	**Use of cryogenic gaseous fuels** 1. Ensure compliance with relevant legislation, standards and manufacturer's instructions applicable to craft using

LNG on board	propulsion systems using cryogenic gaseous fuels. 2. Obey safety standards when interacting with cryogenic gaseous fuels. 3. Ensure compliance with other relevant health and safety regulations when sailing and moored 4. Operate the systems specific to cryogenic gaseous fuels on board and connected to on board systems in a safe way. **Use of non-cryogenic gaseous fuels** 1. Ensure compliance with relevant legislation and standards applicable to craft using propulsion systems using non-cryogenic gaseous fuels; 2. Obey safety standards when interacting with non-cryogenic gaseous fuels; 3. Ensure compliance with other relevant health and safety regulations when sailing and moored; 4. Operate the systems specific to gaseous fuels on board and connected to on board systems in a safe way. **Use of liquid fuels** 1. Ensure compliance with relevant legislation and standards applicable to craft using propulsion systems using liquid fuels; 2. Obey safety standards when interacting with liquid fuels; 3. Ensure compliance with other relevant health and safety regulations when sailing and moored; 4. Operate the systems specific to liquid fuels on-board and connected to on board systems in a safe way. **Reaction product / depleted energy carrier medium** 1. Ensure compliance with relevant legislation and standards applicable to craft using propulsion systems producing reaction products and or depleted energy carrier medium; 2. Obey safety standards when interacting with reaction products of solid or liquid fuels; 3. Ensure compliance with other relevant health and safety regulations when sailing and moored; 4. Operate the systems specific to reaction products and or depleted energy carrier mediums and connected to on board systems in a safe way.

The following innovative standards of competence for both mamagement (ML) (Remote control operator and Remote-control supervisor) and operational (OL) level (Able Boatman on a remote-controlled craft, Able boatman on a remote-controlled craft sailing on inland waterways with a maritime character and Able boatman on a remote-controlled craft sailing with the aid of radar) were identified in *D 3.3 - Report on competences needed to operate on board systems allowing for automation of inland navigation vessels*:

2.3.2. Proposed Standards of Competence for the Management level - Remote control operator -

1. Navigation (ES-QIN update)

1.1. The Remote control operator shall be able to operate on board systems allowing for automation of inland navigation vessels

The remote control operator shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. assess the situation of the remotely operated or remotely supported vessel before casting off.	1. start-up and check status of vessel systems; 2. assess weather and environmental conditions; 3. assess traffic situation; 4. determine vessel ready for departure
2. sail and manoeuvre ensuring the safe operation of the remotely operated or remotely supported vessel	1. understand and interpret perception of remote-control systems; 2. understand and interpret human and remote-control system interaction correctly. 3. situational awareness in a remote environment; 4. analyse information supplied, assess reliability and take appropriate actions in case of doubt; 5. use modern electronic navigation aids; 6. moor and unmoor the vessel.
3. set up emergency and damage control plans and handle emergency situations of the remotely operated or remotely supported vessel	1. apply legislation and procedures 2. take appropriate actions in case of degradation of communication between the RCC and the remotely operated

	or remotely supported vessel's systems; 3. organize emergency response actions on the autonomous, remotely operated or remotely supported vessel; 4. take appropriate actions in case of a remotely operated or remotely supported vessel not under command; 5. organize emergency anchoring; 6. take appropriate actions in case of collision and grounding; 7. take appropriate actions in case of distressed sailors; 8. take appropriate actions in case of a cyber-attack.
4. respond to navigational emergencies of the remotely operated or remotely supported vessel	1. take appropriate actions if collision is imminent

3. Cargo handling, stowage (and passenger transport) (ES-QIN update)

3.1. The remote-control operator shall be able to plan and ensure the stability of the craft, safe loading, stowage, securing and care of cargoes of the remotely operated or remotely supported vessel.

The remote control operator shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. plan and ensure safe loading, stowage, securing and care of cargoes of the remotely operated or remotely supported vessel	1. understand regulations concerning port operation of transporting cargoes; 2. compose stowage plans including knowledge of loading cargoes and ballast systems; 3. control loading and unloading procedures with regard to safe transport
2. plan and ensure the stability of the craft of the remotely operated or remotely supported vessel	1. respect the effect on trim and stability of cargoes and cargo operations

4. Marine engineering and electrical, electronic and control engineering (ES-QIN update)

4.1. The remote-control operator shall be able to monitor the main engines of the remotely operated or remotely supported vessel.

The remote control operator shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. monitor the main engines of the remotely operated or remotely supported vessel	1. maintain overall supervision of propulsion and machinery systems

5. Maintenance and repair (ES-QIN update)

5.1 The remote-control operator shall be able to organise safe maintenance and repair of the craft and its equipment

The remote control operator shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. organise safe maintenance and repair of the craft and its equipment	1. organize maintenance and repairs

6. Communication (ES-QIN update)

6.1 The remote-control operator shall be able to perform human resource management of the remotely operated or remotely supported vessel

The remote control operator shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. perform human resource management of the remotely operated or remotely supported vessel	1. instruct crew in case of distress

7. Health and safety, passenger rights and environmental protection (ES-QIN update)

7.1 The remote-control operator shall be able to monitor legal requirements and take measures to ensure the safety of life aboard of the remotely operated or remotely supported vessel

The remote control operator shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. monitor legal requirements and take measures to ensure the safety of life aboard of the remotely operated or remotely supported vessel	1. assess risk factors; 2. take appropriate actions in terms of contingency; 3. take appropriate actions in order to maintain safety and security

2.3.3. Proposed Standards of Competence for the Management level
- Remote control supervisor -

1. Safety and efficiency of ship movements (ES-QIN update)

1.1. The remote-control supervisor shall monitor and manage vessels under control from the Remote-Control Centre to ensure the safety and efficiency of ship movements and respond to developing unsafe situations to assist the Remote-Control Operators' decision-making process

The remote control supervisor shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. monitor and manage vessels under control from the Remote-Control Centre to ensure the safety and efficiency of ship movements and respond to developing unsafe situations to assist the Remote-Control Operators' decision-making process	1. understand and use VTS equipment; 2. monitor available data sources to comprehend the current operational situation and anticipate for future events; 3. maintain overall supervision and awareness of the traffic situation and provide directions

2. Communication (ES-QIN update)

2.1. The remote-control supervisor shall provide concise, accurate and unambiguous information to the Remote-Control Operator, other fairway users and authorities to ensure safe and efficient navigation

The remote control supervisor shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. provide concise, accurate and unambiguous information to the Remote-Control Operator, other fairway users and authorities to ensure safe and efficient navigation	1. communicate effectively in all operational situations; 2. ensure RCCO's communicate with the VTS and other vessels in accordance with established procedures; 3. manage coordination between personnel in operational positions in the RCC and with external stakeholders

3. Managing the Remote-Control Centre and staff (ES-QIN update)

3.1. The remote-control supervisor shall manage the Remote-Control Centre and staff

The remote control supervisor shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. maintain available resources and workload capacity and exercise decisive leadership when required	1. maintain available resources and workload capacity; 2. exercise decisive leadership when required

2.3.4. Proposed Standards of Competence for the Operational level - Able Boatman on a remote-controlled craft -

1. Navigation (ES QIN update)

1.1. The Able Boatman on a remote-controlled craft shall be able to navigate in all conditions on inland waterways in a safe manner, taking into account the applicable traffic regulations and agreed set of rules applicable in inland navigation and respond to navigational emergencies.

The Able Boatman on a remote-controlled craft shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. navigate on inland waterways to reach the nearest berth or anchorage in a safe manner taking into account the applicable traffic regulations and agreed set of rules applicable in inland navigation	1. takeover navigational control of the craft in case of an emergency situation; 2. respect and apply traffic regulations applicable to navigation on inland waterways to avoid damage; 3. take account of technical structures and profiles of the waterways, and use precautions; 4. work with up-to-date charts or maps, notices to skippers or mariners and other publications; 5. use relevant traffic supervision tools and be able to apply them
2. sail and manoeuvre ensuring the safe operation of the craft in all conditions on inland waterways, including in situations that involve high traffic density or where other craft carry dangerous goods and require basic knowledge of the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN)	1. navigate and manoeuvre taking into account geographical, hydrological, meteorological and morphological characteristics of the main inland waterways; 2. give order to moor and unmoor craft and to haul towage operations; 3. use modern electronic navigation aids; 4. consider effects of current, waves, wind and water-levels in relation with interactions of crossing, meeting and overtaking craft as well as ship shore (canal effect) in order to navigate the craft to the nearest berth in a safe manner; 5. use of propulsion and manoeuvring systems as well as appropriate communication and alarm systems in order to navigate the craft to the nearest
3. respond to navigational emergencies on inland waterways	1. take precautions in an emergency when intentionally beaching a craft in order to prevent greater damage; 2. take appropriate actions if collision is imminent; 3. take appropriate actions after a collision and assessment of damage

4. Marine engineering and electrical, electronic and control engineering (ES-QIN update)

4.1. The Able Boatman on a remote-controlled craft shall be able to monitor and operate the pump and the pump control system to navigate the craft in a safe manner, to organise the safe use and application, maintenance and repair and to control the safe maintenance and repair of technical devices of the electro-technical devices of the craft

The Able Boatman on a remote-controlled craft shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. monitor and operate the pump and the pump control system to navigate the craft in a safe manner	1. monitor routine pump works, ballast and loading pump systems;
2. organise the safe use and application, maintenance and repair of the electro-technical devices of the craft	1. prevent potential damage to electric and electronic devices on board; 2. test control systems and instruments to recognise faults and at the same time take actions to repair and maintain electric or electronic control equipment; 3. give instructions before and follow-up activities to connect or disconnect technical facilities of remotely operated or remotely supported vessel systems.
3. control the safe maintenance and repair of technical devices	1. ensure appropriate use of tools to maintain and repair technical devices; 2. assess characteristics and limitations of materials as well as necessary procedures used to maintain and repair technical devices; 3. apply technical and internal documentation

6. Communication (ES-QIN update)

6.1. The Able Boatman on a remote-controlled craft shall be able to manage and control the information and communication systems on board the craft, ensuring good communication at all times and fostering a well-balanced and sociable working environment on board

The Able Boatman on a remote-controlled craft shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. manage and control the information and communication systems on board the craft	1. operate information- and communication systems on board; 2. collect, save and manage data.
2. ensure good communication at all times, which includes the use of standardised communication phrases in situations with communication problems	1. describe circumstances by using relevant technical and nautical terminology; 2. retrieve, evaluate and use information with relevance to safety on board as well as nautical-technical issues.
3. foster a well-balanced and sociable working environment on board	1. organise provisioning and preparation of meals on board

7. Health and safety, passenger rights and environmental protection (ES-QIN update)

7.1. The Able Boatman on a remote-controlled craft shall be able to maintain safety and security for persons on board including direct assistance to disabled persons and persons with reduced mobility in accordance with the training requirements and instructions of Annex IV to Regulation (EU) No 1177/2010 and set up emergency and damage control plans, and handle emergency situations

The Able Boatman on a remote-controlled craft shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. maintain safety and security for persons on board including direct assistance to disabled	1. apply procedures for fire prevention, personal protection equipment, methods, firefighting material, respirators and possible application of these devices in emergencies;

persons and persons with reduced mobility in accordance with the training requirements and instructions of Annex IV to Regulation (EU) No 1177/2010	2. monitor effective on-board system to control life-saving appliances and correct application of personal protection equipment.
2. set up emergency and damage control plans, and handle emergency situations	1. describe circumstances by using relevant technical and nautical terminology; 2. retrieve, evaluate and use information with relevance to safety on board as well as nautical-technical issues.
3. foster a well-balanced and sociable working environment on board	1. perform rescue plans of different types of emergencies; 2. train on methods to prevent fire, recognition of origin of fire and firefighting according to the different skills of crew members; 3. train on the use of life saving appliances.

2.3.5. Proposed Standards of Competence for the Operational level
- Able Boatman on a remote-controlled craft sailing on inland waterways -
- <u>with a maritime character</u> -

1. Sailing on inland waterways with a maritime character

1.1. The Able Boatman on a remote-controlled craft sailing on inland waterways with a maritime character shall be able to work with up-to-date charts and maps, notices to skippers and mariners, tidal data and other publications specific to waterways with a maritime character in order to navigate the craft to the nearest berth or anchorage in a safe manner

The Able Boatman on a remote-controlled craft sailing on inland waterways with a maritime character shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. work with up-to-date charts and maps, notices to skippers and mariners and other publications specific to waterways with a maritime character in order to navigate the craft to the nearest berth or anchorage in a safe manner	1. use information supplied from specific nautical information sources and rules applicable for inland waterways with a maritime character.

2. use tidal data, tidal currents, periods and cycles, the time of tidal currents and tides and variations across an estuary	1. respect tides, tidal, weather forecast and conditions in order to navigate the craft to the nearest berth or anchorage in a safe manner.
3. use SIGNI (Signalisation des voies de navigation intérieure) and IALA (International Association of Marine Aids to Navigation and Lighthouse Authorities) for safe navigation on inland waterways with a maritime character	1. use SIGNI (Signalisation des voies de navigation intérieure), IALA (International Association of Marine Aids to Navigation and Lighthouse Authorities) or other local marking and signal systems.

2.3.6. Proposed Standards of Competence for the Operational level
- Able Boatman on a remote-controlled craft sailing on inland waterways -
- <u>with the aid of Radar</u> -

1. Sailing on inland waterways with the aid of Radar

1.1. The Able Boatman on a remote-controlled craft sailing with the aid of Radar shall be able to take appropriate action in relation to navigation with the aid of radar in order to navigate the craft taking into account the agreed set of rules applicable to inland navigation in order to navigate the craft to the nearest berth or anchorage in a safe manner

The Able Boatman on a remote-controlled craft sailing on inland waterways with the aid of Radar shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. take appropriate action in relation to navigation with the aid of radar in order to navigate the craft to the nearest berth or anchorage in a safe manner	1. use of navigational radar installations and rate-of-turn indicators for navigation especially in reduced visibility conditions
2. interpret radar display and analyse the information supplied by radar in order to navigate the craft to the nearest berth or anchorage in a safe manner	1. interpret the radar display correctly with respect to own and other craft positions; 2. analyse other information supplied by radar.

3. reduce interference of varying origin	1. Identify and reduce disturbances coming from the own craft; 2. identify and reduce disturbances coming from the environment.
4. navigate by radar taking into account the agreed set of rules applicable to inland navigation in order to navigate the craft to the nearest berth or anchorage in a safe manner	1. apply rules governing the use of radar

2.4. CESNI STANDARDS

The European Committee for drawing up standards in the field of inland navigation have the following missions in particular:

- adopting technical standards in various fields, in particular as regards vessels, information technology and crew to which the respective regulations at the European and international level, including the European Union and the CCNR, will refer with a view to their application,
- deliberating on the uniform interpretation and application of the said standards, on the method for applying and implementing the corresponding procedures, on procedures for exchanging information, and on the supervisory mechanisms among the Member States;
- deliberating on derogations and equivalences of technical requirements for a specific craft;
- deliberating on priority topics regarding safety of navigation, protection of the environment, and other areas of inland navigation.

The permanent working group on professional qualifications (CESNI/QP) is assisted in its mission by two temporary working groups:

- CESNI/QP/Crew: the working group on crew-related requirements[1]

- CESNI/QP/QM: the working group on quality management[2].

The following task is included in the part “Professional qualifications” of the CESNI’s work programme 2022-2024: “*Update of competence standards and draft standards for (practical) examination for*

[1] Mandate: see Resolution CESNI 2021-II-1: https://www.cesni.eu/wp-content/uploads/2022/02/cesni21_37en_final2.pdf

[2] Mandate: see Resolution CESNI 2021-II-1: https://www.cesni.eu/wp-content/uploads/2022/02/cesni21_37en_final2.pdf

operators, OL and ML crew members as well as draft standards for simulator approval for automated vessel operation (including e.g. remote vessel operation)[3]*".* This task was proposed by a joint problem analysis for the 3 permanent working groups, proposing a transversal approach to deal with the requirements and recommendations related to remote control centres and supervision of vessels. The task is planned with a priority III, meaning that no action is foreseen, it has to be evaluated after 2 years (in 2024). The PLATINA3 deliverable therefore fits perfectly into the programme and timetable of the CESNI/QP working group, however regulatory action cannot be expected before questions of police regulation, liability and the above-mentioned tasks and responsibility of RCC personnel and crew members on board have been agreed on.

The following standards of competence for the Managerial level were drafted and included in CESNI/QP (22) 39 rev.1/22 September 2022:

2.4.1. Drafted Standards of Competence for the Managerial level - Expert -

1. New and innovative technologies including the use of relevant alternative fuels, batteries and electric propulsion on board

1.1. The Expert shall be able to use of electrical propulsion and auxiliary systems on board

The Expert shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. Use electrical propulsion and auxiliary systems on board (in general)	1. ensure compliance with relevant legislation, standards and safety and maintenance instructions applicable to craft using high voltage and high current electrical propulsion and auxiliary systems; 2. comply with safety standards when interacting with high voltage and high current electrical propulsion and auxiliary systems; 3. take necessary measures to avoid or mitigate safety hazards linked to high voltage and high current electrical propulsion and auxiliary systems; 4. operate craft using high voltage and high current electrical propulsion and auxiliary systems.

[3] https://www.cesni.eu/wp-content/uploads/2021/12/CESNI_work_prog_22_24_EN.pdf

1.2. The Expert shall be able to use of high-capacity accumulator systems used for propulsion and auxiliary systems on board

The Expert shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. use of high-capacity accumulator systems used for propulsion and auxiliary systems on board	1. ensure compliance with relevant legislation, standards as well as safety and maintenance instructions applicable to craft using accumulator electric systems; 2. comply with safety standards when interacting with accumulators; 3. handle fire and explosion hazards.
2. develop competences for charging/ exchange procedure (bunkering)	1. operate the systems specific to high-capacity accumulator systems to on board systems in a safe way
3. perform regular checks and maintenance	1. perform and monitor regular checks and maintenance of the accumulator system

1.3. The Expert shall be able to use fuel cell systems on board

The Expert shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. use fuel cell systems on board	1. ensure compliance with relevant legislation, standards and manufacturer's instructions applicable to craft using a fuel cell; 2. ensure compliance with other relevant health and safety regulations when sailing and moored.
2. operate the fuel cell system	1. operate the systems specific to fuel cell systems on-board systems in a safe way;

3. Daily maintain the fuel cell system	1. recognise specific points of attention related to the specific characteristics of the fuel cell; 2. recognise risks and manage them

1.4. The Expert shall be able to use and storage fuels for own propulsion or vessel operation other than diesel and LNG on board

The Expert shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. use cryogenic gaseous fuels	1. ensure compliance with relevant legislation, standards and manufacturer's instructions applicable to craft using propulsion systems using cryogenic gaseous fuels; 2. comply with safety standards when interacting with cryogenic gaseous fuels; 3. ensure compliance with other relevant health and safety regulations when sailing and moored; 4. operate the systems specific to cryogenic gaseous fuels on board and connected to on-board systems in a safe way.
2. use non-cryogenic gaseous fuels	1. ensure compliance with relevant legislation and standards applicable to craft using propulsion systems using non-cryogenic gaseous fuels; 2. comply with safety standards when interacting with non-cryogenic gaseous fuels; 3. ensure compliance with other relevant health and safety regulations when sailing and moored; 4. operate the systems specific to gaseous fuels on board and connected to on board systems in a safe way.
3. use liquid fuels	1. ensure compliance with relevant legislation and standards applicable to craft using propulsion systems using liquid fuels; 2. comply with safety standards when interacting with liquid fuels; 3. ensure compliance with other relevant health and safety

	regulations when sailing and moored; 4. operate the systems specific to liquid fuels on-board and connected to on board systems in a safe way.

2.4.2. Drafted Standards of Competence for the Managerial level
- Boatmaster -

1. Environment-friendly and efficient vessel operation (eco navigation)

1.1. The Boatmaster shall be able to consider economic and ecological aspects of the craft operation in order to use the craft efficiently and respect the environment

The Boatmaster shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. consider economic and ecological aspects of the craft operation in order to use the craft efficiently and respect the environment	1. apply awareness of the ecological stakes related to the operation of a craft on inland waterways; 2. demonstrate knowledge of the various optimisation potentials to improve the environmental performance of the craft involved; 3. apply measures to proactively and significantly reduce polluting emissions by reducing the fuel consumption of the craft; 4. control the various influencing factors on which direct action can be taken (without further intermediary action); 5. master the tools available on board to control and improve the craft's performance in terms of fuel consumption; 6. follow new tools and available technologies; 7. train the use of new tools and available technologies whenever possible.

2.4.3. Drafted Standards of Competence for the Managerial level Entrepreneurs carrying goods and passengers by inland waterway transport -

1. **Green and digital skills** (as input for update of Directive 87/540 after fitness check and evaluation, based on the competence-based approach developed by CESNI/QP) **to consider economic and ecological aspects of the craft operation in order to use the craft efficiently and respect the environment**

1.1. The **Entrepreneurs shall be able to consider legal regulations and responsibility of an entrepreneur**

The Entrepreneurs carrying goods and passengers by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. **take into account relevant legal principles, responsibilities and regulations while exercising the occupation**	1. apply civil law with respect to haulage contracts and other (contractual) engagements of the company including business documentation; 2. perform action to assess and address risks linked to the liability of the carrier; 3. respect labour law, manning requirements, social security, tax and environmental regulations.

1.2. The Entrepreneurs shall be able to consider commercial, financial and environmentally friendly management of an undertaking

The Entrepreneurs carrying goods and passengers by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. assess cost-relevant influencing factors and to prepare profit and loss accounts. This includes the ability to use key figures, to apply calculation procedures and to assess organisational, environmental and personnel measures from a profit and cost perspective	1. apply methods of financing and carry out different methods of payments; 2. calculate cost prices and environmental impact; 3. identify relevant transport prices and transport conditions; 4. do commercial accounting; 5. ensure insurance coverage; 6. set up, send out and follow up invoices;

	7. make use of transport agents if need be

1.3. The Entrepreneurs shall be able to master the access to the market

The Entrepreneurs carrying goods and passengers by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. master the techniques of market access and to manage the business commercially in compliance with the regulatory provisions	1. apply provisions relating to the taking up and pursuit of the occupation; 2. interact with other companies in chartering systems; 3. set up, use and store transport documents.

1.4. The Entrepreneurs shall be able to understand and take into account technical standards and technical aspects of operation

The Entrepreneurs carrying goods and passengers by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. understand and take into account technical requirements for the operation of the vessel and to use on-board resources appropriately and in accordance with the situation.	1. make appropriate use of the technical features of vessels; 2. carry out activities related to vessel registration; 3. calculate lay days and demurrage

1.5. The Entrepreneurs shall be able to create and maintain appropriate safety conditions on board

The Entrepreneurs carrying goods and passengers by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. **create and maintain appropriate safety conditions on board, as well as to assess potential dangers and to counter them in a competent and targeted manner.**	1. respect provisions laid down by law, regulation or administrative action concerning inland waterway transport;

	2. take measures to prevent accident; 3. respond correctly in the event of an accident.

1.6. The Entrepreneurs shall be able to respect provisions applicable to International transport operations

The Entrepreneurs carrying goods and passengers by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. respect provisions applicable to International transport operations	1. respect provisions applicable to inland waterway transport between EU Member States and between the European Union and non-member countries which are derived from national law, Union standards and international regulations, conventions and agreements, particularly with regard to chartering and prices and terms of carriage; 2. observe customs practices and formalities; 3. behave in accordance with principal traffic regulations in European countries

2.4.4. Drafted Standards of Competence for the Managerial level
- Entrepreneurs <u>carrying only goods</u> by inland waterway transport –

1. **Green and digital skills** (as input for update of Directive 87/540 after fitness check and evaluation, based on the competence-based approach developed by CESNI/QP)

1.1. The **Entrepreneurs shall be able to consider legal regulations and responsibility of an entrepreneur**

The Entrepreneurs carrying only goods by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. **take into account relevant legal principles, responsibilities and regulations while exercising the occupation**	1. apply civil law with respect to haulage contracts and other (contractual) engagements of the company including business documentation; 2. perform action to assess and address risks linked to the liability of the carrier; 3. respect labour law, manning requirements, social security,

	tax and environmental regulations.

1.2. The Entrepreneurs shall be able to consider commercial, financial and environmentally friendly management of an undertaking

The Entrepreneurs carrying only goods by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. assess cost-relevant influencing factors and to prepare profit and loss accounts. This includes the ability to use key figures, to apply calculation procedures and to assess organisational, environmental and personnel measures from a profit and cost perspective	1. apply methods of financing and carry out different methods of payments; 2. calculate cost prices and environmental impact; 3. identify relevant transport prices and transport conditions; 4. do commercial accounting; 5. ensure insurance coverage; 6. set up, send out and follow up invoices; 7. make use of transport agents if need be

1.3. The Entrepreneurs shall be able to master the access to the market

The Entrepreneurs carrying only goods by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. master the techniques of market access and to manage the business commercially in compliance with the regulatory provisions	1. apply provisions relating to the taking up and pursuit of the occupation; 2. interact with other companies in chartering systems; 3. set up, use and store transport documents.

1.4. The Entrepreneurs shall be able to understand and take into account technical standards and technical aspects of operation

The Entrepreneurs carrying only goods by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. understand and take into account technical requirements for the operation of the vessel and to use on-board resources appropriately and in accordance with the situation.	1. make appropriate use of the technical features of vessels; 2. carry out activities related to vessel registration; 3. calculate lay days and demurrage

1.5. The Entrepreneurs shall be able to create and maintain appropriate safety conditions on board

The Entrepreneurs carrying only goods by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. **create and maintain appropriate safety conditions on board, as well as to assess potential dangers and to counter them in a competent and targeted manner.**	1. respect provisions laid down by law, regulation or administrative action concerning inland waterway transport; 2. take measures to prevent accident; 3. respond correctly in the event of an accident.

1.6. The Entrepreneurs shall be able to respect provisions applicable to International transport operations

The Entrepreneurs carrying only goods by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. respect provisions applicable to International transport operations	1. respect provisions applicable to inland waterway transport between EU Member States and between the European Union and non-member countries which are derived from national law, Union standards and international regulations, conventions and agreements, particularly with regard to chartering and prices and terms of carriage; 2. observe customs practices and formalities;

	3. behave in accordance with principal traffic regulations in European countries

2.4.5. Drafted Standards of Competence for the Managerial level
- Entrepreneurs <u>carrying only passengers</u> by inland waterway transport –

1. **Green and digital skills** (as input for update of Directive 87/540 after fitness check and evaluation, based on the competence-based approach developed by CESNI/QP)

1.1. The **Entrepreneurs shall be able to consider legal regulations and responsibility of an entrepreneur**

The Entrepreneurs carrying only passengers by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. **take into account relevant legal principles, responsibilities and regulations while exercising the occupation**	1. apply civil law with respect to haulage contracts and other (contractual) engagements of the company including business documentation; 2. perform action to assess and address risks linked to the liability of the carrier; 3. respect labour law, manning requirements, social security, tax and environmental regulations.

1.2. The Entrepreneurs shall be able to consider commercial, financial and environmentally friendly management of an undertaking

The Entrepreneurs carrying only passengers by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. assess cost-relevant influencing factors and to prepare profit and loss accounts. This includes the ability to use key figures, to apply calculation procedures and to assess organisational, environmental and personnel measures from a profit and cost perspective	1. apply methods of financing and carry out different methods of payments; 2. calculate cost prices and environmental impact; 3. identify relevant transport prices and transport conditions; 4. do commercial accounting;

	5. ensure insurance coverage; 6. set up, send out and follow up invoices; 7. make use of transport agents if need be

1.3. The Entrepreneurs shall be able to master the access to the market

The Entrepreneurs carrying only passengers by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. master the techniques of market access and to manage the business commercially in compliance with the regulatory provisions	1. apply provisions relating to the taking up and pursuit of the occupation; 2. interact with other companies in chartering systems; 3. set up, use and store transport documents.

1.4. The Entrepreneurs shall be able to understand and take into account technical standards and technical aspects of operation

The Entrepreneurs carrying only passengers by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. understand and take into account technical requirements for the operation of the vessel and to use on-board resources appropriately and in accordance with the situation.	1. make appropriate use of the technical features of vessels; 2. carry out activities related to vessel registration; 3. calculate lay days and demurrage

1.5. The Entrepreneurs shall be able to create and maintain appropriate safety conditions on board

The Entrepreneurs carrying only passengers by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. **create and maintain appropriate safety conditions on board, as well as to assess potential dangers and to counter them in a competent and targeted manner.**	1. respect provisions laid down by law, regulation or administrative action concerning inland waterway transport; 2. take measures to prevent accident; 3. respond correctly in the event of an accident.

1.6. The Entrepreneurs shall be able to respect provisions applicable to International transport operations

The Entrepreneurs carrying only passengers by inland waterway transport shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. respect provisions applicable to International transport operations	1. respect provisions applicable to inland waterway transport between EU Member States and between the European Union and non-member countries which are derived from national law, Union standards and international regulations, conventions and agreements, particularly with regard to chartering and prices and terms of carriage; 2. observe customs practices and formalities; 3. behave in accordance with principal traffic regulations in European countries

2.5. TASCS

The Inland Waterways Transport (IWT) sector is characterised by specific on-board working and living conditions, which cannot be compared with the other modes of transport. In road and rail transport vehicle operators usually work alone. On the other hand, seagoing vessels have a much larger crew on longer transportation routes. Therefore, knowledge of the workload of these modes of transport cannot be directly applied; navigation of inland vessels under the specific conditions of confined waters also requires specific education and qualification. Further, an appropriate crewing1 regulation

on the one hand has to meet safety criteria (lower limit of crewing) and economic constraints on the other (upper limit).

In addition, frequent and ongoing technical developments and improved educational methods leading to a higher education level may reconfigure the workload. At present, heterogeneous educational as well as crewing standards exist in different European countries and river basins. The EU-wide harmonization of the educational standards is already in progress. A harmonized European crewing framework is also considered desirable in order to contribute to an improved labour mobility and to face general demographic challenges. The leading IWT crewing regulation in force is the Regulation for Rhine Navigation Personnel (RNP) dating back almost 30 years. The last three decades, however, have witnessed considerable changes that impact on the sector – be it technological or non-technological ones.

Against this background, TASCS aims for the development of an in-depth workload assessment that leads to a documented proposal for an easy to use and easy to enforce crewing instrument. Existing regulations need to be updated and a broader perspective incorporated towards a harmonized European crewing framework (which has to allow for modern technical developments, attractiveness of IWT and entrepreneurship, taking operational, cultural, institutional and other differences into account).
More information can be found in the project Final Report available in English, French, German, Dutch following the link: https://www.etf-europe.org/resource/tascs-final-report/

Work, recovery, travel and commuting, respectively and the corresponding tasks were addressed in this project. Thereby, reference is made to **harmonized competences based on ES-QIN** (tasks 1-7) including **additional tasks** that occur in practise (tasks 8-11), which are known to influence workload, level of attention and thus the need for recovery as follows: 1. Navigation; 2. Operation of the craft; 3. Cargo handling, stowage and passenger transport; 4. Periodic inspection of marine engineering equipment; 5. Maintenance & repair; 6. Communication; 7. HSE/emergencies; *8. Entrepreneuring; 9. Other tasks; 10. Recovery/ pause; 11. Travel.*

TASCS - Towards A Sustainable Crewing System			
ETF Inland Waterways project	*"Online crewing tool"* TASCS is a workload assessment, which investigates whether and how workload impacts on crew members	managerial and operational level.	**Additional tasks that occur in practice, which are known to influence workload, level of attention and thus the need for recovery: Entrepreneuring. A**ddresses self-employed boatmasters (owner operators); The entrepreneur shall be able to: Carry out acquisition activities (follow-up cargo) perform commercial accounting Personnel administration Ship accounting. (port duties etc.)

3. CONCLUSIONS

Currently, there is no formal structure and/or culture for permanent education in the inland navigation sector. Equipment and technology used on inland navigation vessels are getting more and more complex and innovative. Therefore, inland navigation companies are looking to hire more specialized and qualified crew members.

Built upon the results of previous projects (i.e. Danube SKILLS project, Prominent, PLATINA 3, etc.), the needed competencies and permanent adaptation of professional competencies of crew members, due to implementation of innovative technologies (zero emission operation, new fuels, new engines, new propulsion systems, semi-automated mooring etc.) and digitalization in the IWT sector, have been taken into account an inventory of competencies needed in the IWT sector, including new ones due to innovative technologies and updated/newly developed standards for competencies for new jobs on board IWT vessels, was made in order to support the work of CESNI, committed to regularly revise existing standards and to adopt new standards while following closely technical evolutions and supporting innovation, as a permanent priority and common objective of safe and sustainable inland navigation.