PLATINA3
IWT policy platform
- JOBS & SKILLS -

D3.6 Report on preparation for update of CESNI standards with a view to automation

Grant Agreement No.	101006364
Start date of Project	01-01-2021
Duration of the Project	30 months
Deliverable Leader	CCNR
Dissemination level	Public
Status	V0.4
Submission Date	09-03-2023
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This deliverable has not yet been approved by CINEA

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101006364. 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.

Funded by the Horizon H2020 Programme of the European Union under grant agreement No 101006364

Version

Version #	Date	Author	Organisation
V0.1	01-02-2023	J. Rusche, C. Daloze	CCNR
V0.2	03-02-2023	J. Smallegange, R. van Liere	STC
V0.3	13-02-2023	J. Rusche, C. Daloze	CCNR
V0.4	08-03-2023	J. Rusche, C. Daloze	CCNR

Release Approval

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Executive Summary

This deliverable is providing follow-up of the PLATINA3 deliverable on competences to operate on board systems allowing for automation of inland vessels and of the PLATINA3 deliverable on refresher classes for automated vessel operation, respectively the PLATINA3 deliverables D3.3 and D 3.4.

Within the consortium, experts from international organisations in charge of safety of transport on inland waterways, social partners and education institutes tried to propose what could be the best way to deal with future competences of the personnel related to the remote-controlled craft: both on board these craft and in the remote control centres.

This report shows how the PLATINA3 deliverables for new / future competences can be **concretely** integrated into the CESNI standards.

This report recalls the dialogue between the scientific research carried out within PLATINA3 and the transformation of this research into European-wide usable technical standards.

This report provides:

- **the methodology used in CESNI/QP to use the PLATINA3 input and make it an applicable standard;**
- **a collection of the first feedbacks and questions of principle that remain to be discussed;**
- **a possible approach for the future, including draft standards for practical examination for relevant qualifications identified by CESNI experts (to be submitted to CESNI).**

This report shows that the first stage of receipt of PLATINA3 deliverables by CESNI/QP is **positive and conclusive**.

Initial very cursory reviews (and in English) and more in-depth analysis by Member State experts from CCNR and EU Member States carried out after receipt of a German, French and Dutch version of the standards for Remote Control Center Operator (RCCO) and for personnel on board a remotely controlled craft have raised **important questions of principle** that the CESNI/QP working group will have to deal with. These questions will need to be considered as a whole, as there is a very strong cross-cutting issue. Feedback from other bodies will be required.

These draft standards have already fed the reflections for the working group that is working on the manning standards and that will also have to integrate these new roles in the manning tables.

In general, it can be said that **results and findings from PLATINA3 give both a very concrete approach** with the proposal of competence tables but also **paves the way for future reflections** that will have to be done to consolidate the new competences. They contributed to a certain **awareness** of the global challenges that CESNI/QP will work on in the coming years. A next element for examination in CESNI/QP context, which however should only be carried out once general questions on the tasks of the RCCO and personnel on board the remotely controlled craft have been examined and clarified in more depth, is the draft standard for practical examination for RCCO and personnel on board the remotely controlled craft, which is attached to this report as annex 2.

List of abbreviations

CCNR	Central Commission for Navigation of the Rhine
CESNI	European Committee for the Elaboration of Standards In the field of Inland Navigation (French acronym: Comité européen pour l'élaboration de standards dans le domaine de la navigation intérieure)
CESNI/PT	Working group on technical requirements
CESNI/QP	Working group on professional qualifications
CESNI/QP/Crew	Working group on crew-related requirements
CESNI/QP/QM	Working group on quality management
CESNI/TI	Working group on information technologies
ETF	European Transport Workers' Federation
ES-QIN	European Standard for Qualifications in Inland Navigation
IWT	Inland Waterway Transport
KBN	Koninklijke Binnenvaart Nederland
LNG	Liquefied Natural Gas
ML	Management Level
OL	Operational Level
RCC	Remote Control Center
RPN	Regulations for Rhine Navigation Personnel
TGAIN	Track Guidance Assistant systems for Inland Navigation

1. Introduction

Inland Waterway Transport (IWT) is recognised as an environmentally friendly and safe mode of transport, and one of the most appropriate means of transportation in the pursuit of a sustainable development strategy. But like every other mode of transport, technological change forces inland navigation personnel to adapt their competences (knowledge and skills) throughout their career.

In the age of time, inland navigation and its crews are currently undergoing in-depth changes: both in terms of greening (i.e. new modes of propulsion, eco-driving) and of modernising vessels in terms of steering (increasingly automated vessels).

a. How ES-QIN provides a solid basis for introducing new harmonised competences at European level

In 2022 a new European system for education and training has been introduced. The "historical" system was based on an experience-oriented approach. Now, a competence-based system entered into force which materialises within the ES-QIN (European Standard for Qualifications in Inland Navigation). Directive (EU) 2017/2397[1] and the new CCNR Regulations for Rhine Navigation Personnel (RPN)[2] both refer to the CESNI standards of ES-QIN 2019.

CESNI standards are elaborated and adopted by the CESNI Committee (European Committee for drawing up standards in the field of inland navigation – French acronym - Comité européen pour l'élaboration de standards dans le domaine de la navigation intérieure). The purpose of the committee is to bring together experts from the Member States of the European Union and the CCNR and representatives of international organisations with an interest in inland navigation[3].

The CESNI fulfils the following missions:

- *adopt **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,*
- ***deliberate 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;*
- *deliberate on derogations and equivalences of technical requirements for a specific craft;*
- *deliberate on priority topics regarding safety of navigation, protection of the environment, and other areas of inland navigation.*

The ES-QIN is based on a well-established system for the competencies:

1) **Standards for competences (Part I of ES-QIN)**
   They address two categories of the crew: the management level – ML (boatmaster) and the operational level – OL (other deck crew members i.e. boatman, able boatman and helmsman).
   The competences are divided into several chapters
   - navigation
   - operation of the craft
   - cargo handling, stowage and passenger transport
   - marine engineering and electrical, electronic and control engineering
   - maintenance and repair

[1] 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, OJ L 345 27.12.2017

[2] CCNR, Regulations for Rhine Navigation Personnel (RPN), as revised by CCNR resolution in the autumn plenary meeting 2022, see https//ccr-zkr.org

[3] See also "About CESNI", https://www.cesni.eu/en/about-cesni/

- communication
- health safety and environmental protection and
- supervision (for ML, if no certificate of qualification has been obtained on OL prior to ML exam).

For each competence, the corresponding knowledges and skills are listed.

Figure 1: Example of a table of competences for the management level

1. Navigation

1.1. The boatman shall be able to assist the management of the craft in situations of manoeuvring and handling a craft on inland waterways. The boatman shall be able to do so, on all types of waterways and all types of ports.

In particular, the boatman shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
1. **assist with mooring, unmooring and hauling (towage) operations;**	1. Knowledge of equipment, material and procedures used on board for mooring, unmooring and hauling (towage) operations. 2. Ability to use required equipment on board e.g. bollards and winches for mooring and unmooring and hauling manoeuvres. 3. Ability to use materials available on board such as ropes and wires considering relevant safety measures including the use of personal protective and rescue equipment. 4. Ability to communicate with the wheelhouse using intercom communication systems and hand signals. 5. Knowledge of the effects of water movement around craft and local effects on sailing circumstances including the effects of trim, shallow water relating to craft's draught. 6. Knowledge of the water movement affecting the craft during manoeuvring, including the interaction effects when two craft pass or overtake each other in narrow fairways, and the interaction effects on a craft moored alongside when another craft proceeds in the fairway and passes at a short distance.

Source: ES-QIN 2019/1

This structure allows training institutes to have a **readable overview of the competences**, **knowledges and skills** they have to train learners for. This allows clear curricula to be established. And it allows future crew members to know exactly what they are expected to learn and acquire.

In addition to these core standards for competence, Part I of ES-QIN contains standards of competence for the following specific authorisations:

- competence for sailing on inland waterways with a maritime character
- competence for sailing with the aid of radar
- competence for passenger navigation experts
- competence for liquefied natural gas (LNG) experts.

2) **Standards for practical examination (Part II of ES-QIN)**

These standards list the **abilities** (from the competence standards) and determine the priority items to be examined. They also introduce a rating methodology. They are a major tool for examiners. The Part II of ES-QIN contains standards for practical examination for:

- obtaining a specific authorisation for sailing with the aid of radar
- obtaining a certificate of qualification as a passenger navigation expert
- obtaining a certificate of qualification as a LNG expert
- obtaining a certificate of qualification as a boatmaster
- the additional module on supervision in the context of the practical examination for obtaining a certificate of qualification as a boatmaster.

The standards for the practical examination for obtaining a certificate of qualification for the operational level (OL) is not part of ES-QIN (because not required by the Directive), but it is published on CESNI's website as "other standards"[4].

3) **Standards for the approval of a simulators (Part III of ES-QIN)**

Simulators are increasingly used to test candidates for qualifications during practical examinations. Ample experience has been built up with reference to radar exams, not only as specific authorisation but also as refresher class. They must be (technically and functionally) able to test the abilities listed in the standards for practical examinations. For this reason, the ES-QIN contains the technical and functional requirements necessary for simulators to be approved. For this reason, the addition of any new competence must also lead to a review of the need to adapt Part III of the ES-QIN; both are necessarily linked.

Additional requirements for professional qualifications outside ES-QIN

Apart from simulator standards and other CESNI standards, legislators like EU and CCNR may want to consider if minimum requirements for age, administrative compliance, competence (in terms of essential competence requirements as the essence of CESNI standards) and navigation time may have to be drafted to address e.g. experience of RCC operators. During exchanges with RCC operation providers[5], the question has been raised if "navigation time" in an RCC would be an additional prerequisite adding to the specific authorisation and what a new definition of such "navigation time" can then be.

In summary it can be said that the ES-QIN mechanism provides flexibility. Thanks to its holistic approach, ES-QIN makes it possible to consider the **addition of new competences as a whole:** from the training to the issuance of the certificate. As ES-QIN is the core reference for the EU and the CCNR, it has a **European vocation** and allows a pan-European level-playing field. Harmonisation of rules also allows for a **centralised quality management**, for which CESNI/QP is tasked.

b. Input for competences needed to operate on board systems allowing for automation of inland navigations vessels (D3.3)

PLATINA3 Work Package 3, Jobs & Skills, addresses new developments in the IWT sector faced by the IWT workforce, which are aligned with targets that are supported by waterway managers and European IWT associations for a fit-for-future waterway system. The overwhelming support received for the Mannheim Declaration of Transport Ministers of the CCNR and for the Communication of the European Commission on NAIADES III outlines developments paths and initiatives focus at:

[4] Standards for the practical examination for obtaining a certificate of qualification for the operational level (OL) https://www.cesni.eu/wp-content/uploads/2022/05/practical-exam-OL_EN.pdf

[5] Exchange between CCNR and Seafar on 31 January 2023 during presentation of new RPN to EBU and ESO

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

It is within this framework that a very concrete deliverable[6] was developed to identify the competences, declined in knowledges and skills, required to operate on board systems allowing for automation of inland navigation craft. The deliverable of task 3.3 deals with identifying competences, knowledge and skills, related to the operation of systems of automation in IWT. The report and competence framework should be seen as a first step towards establishing standards in this field.

The report D3.3 also refers to Track Guidance Assistant systems for Inland Navigation (TGAIN) as a first path (i) of the transition (ii would be remotely operated or remotely supported vessels, (iii) would be the developments towards fully autonomous inland vessels concepts).

The proposed draft standards have been the result of broad consultations: IWT sector consultation round and literature reviews, feedback from both the PLATINA3 advisory board, from Work Package 3 partners[7] and from specific external stakeholders were used to finalise these draft standards. They were also introduced in the 5th Stage Event in Budapest on 19th and 20th October 2022[8].

Main key takeaways from the Report D3.3

Main input: **Advanced draft standards** for additional competences on management and operational level with a **paradigm shift**

1) More emphasis is put on the phase before disembarking ("familiarisation"): RCC checklist, check communication systems, navigational equipment and accuracy
2) Emphasis on communication: between RCC, craft and VTS
3) Higher complexity during navigation: perception, interpretation of interaction, analysis, assessment of reliability
4) Awareness needed of potential bias, redundancy, latency: therefore, there is a higher dependency on navigational aids, strong ability needed of compensatory measures, if necessary, knowledge of fallback options
5) Precondition: adequate navigation and communication skills

Existing ES-QIN framework is sufficient for TGAIN. An important finding is that because of TGAIN and higher levels of automation, a trend is observed and it appears that less navigation time is spent by nautical personnel. Less navigation time for nautical personnel means less numbers of standard settings and incidents dealt with: therefore, how can responsiveness be maintained? The introduction of refresher classes may be an option.

Distinction to be made between:

1) **more or fully autonomous craft :** For craft that are operated with a **CCNR level of automation of 3 or higher**, the development of a full set of rules is less urgent because concepts are still in R&D: recommendation to strengthen "soft skills" (communication and awareness) for crew members on board, to allow them to have a better knowledge of the characteristics of autonomous support systems; need to better analyse the impact on the composition of the crew that may affect the qualifications of the crew members. More focus is needed on situational awareness and in general, training to reduce the risk of accidents by anticipation and reaction.

[6] Report on competences needed to operate on board systems allowing for automation of inland navigation vessels D3.3, PLATINA3 project, 31 August 2022.
[7] Consisting of Maritieme Academie Harlingen, BLN-Schuttevaer (now KBN), STC-Group and CCNR
[8] Report D5.8 Platina 5th Stage Event, 17 November 2022 (see Minutes, session 6)

2) **remotely operated or remotely supported vessels**: For craft that receive support or can be operated from a Remote-Control Center (RCC) the development of a full set of rules is more urgent: it is necessary to develop an appropriate framework for competences for persons on board remotely operated/supported vessels and persons working in RCC. It should be noted that such craft are not necessarily more or fully automated. In fact, they do not have to be automated in the definition of the CCNR levels of automation at all.

   In this respect, table of competences (aligned with the familiar ES-QIN structure) have been developed for 3 specific roles:

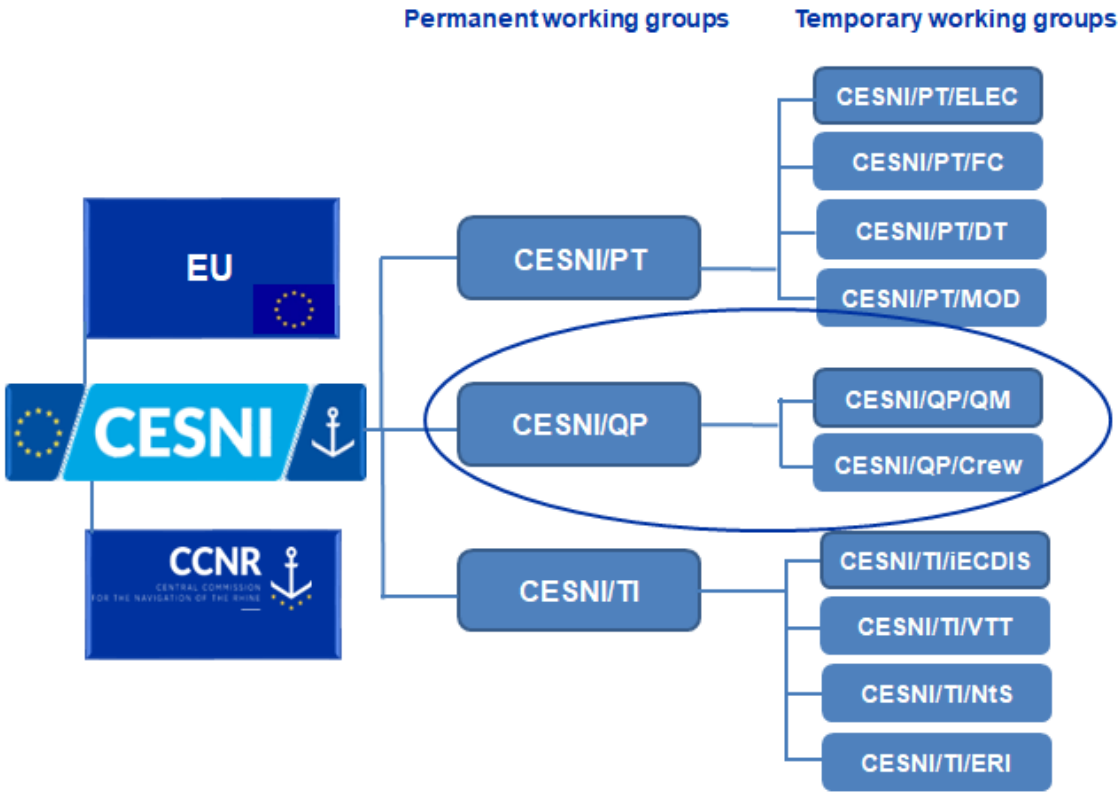
   - Remote control center operator (RCCO)
   - Remote control center supervisor on Management Level (experienced RCCO)
   - Able boatman on a remotely controlled craft (or another person on OL).

CESNI has decided to focus on the RCCO and the OL personnel on board remotely controlled craft first, as the role of the supervisor in a RCC still needs further clarification, which can only be carried out, if pilot projects proof that the supervisor is needed and if there is a clear legal definition of the status, the task and the responsibility of a supervisor.

2. Preliminary examination of the draft standards by CESNI/QP

Before the preliminary examination of the draft standards by CESNI/QP, it is important to understand the organisation of CESNI. Figure 2 below provides that concise overview.

Figure ~~2~~: CESNI's organisation in March 2023



Source: CCNR Secretariat

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[9]
- CESNI/QP/QM: the working group on quality management[10].

The content is worked on by the experts in the temporary working groups, who have a particular interest and expertise. CESNI/QP provides guidance and decides when the deliverables and inputs (draft standards, roadmaps, organisation of a specific workshop) are mature enough to be submitted to the Committee. The permanent and temporary working groups meet 4 times per year, in week-session (usually: February, May, September, November).

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 operators, OL and ML crew members as well as draft standards for simulator approval for automated vessel operation (including e.g. remote*

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

vessel operation)[11]". 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[12]. 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.

Presentations and discussions in CESNI/QP meetings in 2022

10 May 2022 (CESNI/QP/QM, Berlin)[13]: Mr Smallegange from STC gave a presentation on the draft standards of competence for operators in remote control centers. Experts recommended that the question of how many vessels can be operated by one single remote operator should be discussed in CESNI/QP/Crew.

19 September 2022 (CESNI/QP/QM, online): Mr Smallegange introduced the consolidated draft, now taking into account the significant difference between the personal on board and the personal not on board. The draft also distinguishes between the remote-control operator who would be the person controlling the vessel and the remote control supervisor who could take over. It was highlighted that a clear criterium 'who is when in charge' needs to be defined. Experts have been invited to provide any relevant observations that may be relevant for the presentation of the report at the 5th Stage Event.

17 November 2022 (CESNI/QP): CESNI/QP took note of the draft standards for RCCO and OL personnel on board remotely controlled vessel as finalised by PLATINA3 in Deliverable 3.3. Experts invited the Secretariat to translate the tables of competences for the operator of the RCC and the able boatman in French, Dutch and German to allow them to consult their national experts. CESNI/QP/QM decided to exclude at this stage the review of standards for competences for the supervisor (see explanations below).

Preliminary feedback from the CESNI/QP (temporary and permanent) working groups

At a very preliminary stage of reflection, certain questions of principles have already been identified within CESNI/QP.

1) A useful input from PLATINA3 both for competences standards and for manning standards

As it is part of its mandate, CESNI/QP/QM will monitor the review and fine-tuning of these new competences and how best to address them within the ES-QIN.

But CESNI/QP/Crew, which will finalise in 2023 the first draft standards for manning requirements, will be able to use the input to include some findings in its options or as guidelines. It will be indeed necessary to reflect how to integrate the remote-control centre personnel in the manning tables. This will concern first of all the pilot project or craft operated by companies such as Seafar. It can be expected that the draft standards will have to be reviewed in some time (2-3 years) at the light of the experience gained with pilot projects. In the current work (state of play: January 2023), CESNI/QP/Crew has decided to include **columns in the manning tables for remote controlled craft but the tables will remain blank in the first step**. This means that it is considered that they should exist, but that the experts need to collect consolidated feedback on several pilot projects (allowed by the recommendations from the CCNR) to establish reality-proof tables.

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

[12] See the document CESNI/QP (21) 29 for the problem analysis.

[13] See the minutes: CESNI/QP/QM (22)m 26

2) A major principle: Additional competences to the initial competences

This is a major principle that must drive all reflections: these **new competences cannot replace the initial competences**, both at the OL and ML levels. The initial competences included in ES-QIN should be a precondition to achieve these new competences. In other words, the personnel (on board and on shore) of remote-controlled craft should in all cases master the basic competences, skills and knowledges required to operate a 'conventional' vessel. Experts consider that the nautical knowledge of 'conventional' vessels remains the same for remotely operated craft. Experts are careful to ensure that the addition of new skills does not lead to a loss of basic skills.

3) Role of supervisor excluded for now: legal questions

CESNI/QP experts expressed doubts about the role of the supervisor. While CESNI experts understand the function, they are sceptical about the legal definition in terms of responsibility. A legal definition should be given to clarify who is the responsible boatmaster of the vessel during a remoted operation: the RCCO, the boatmaster on board the remotely controlled vessel or the supervisor? Concrete examples were given:

- It is foreseen that both the RCCO and the supervisor may be responsible for communication with other craft, VTS etc. This may result in each relying on the other and no one being responsible and no one taking care of the communication. If it can be clearly clarified who is in charge, this person can of course then instruct someone else to take over a particular communication on a case-by-case basis.
- Who would be the person responsible for radiocommunication for example? According to the police regulations, it is nowadays the boatmaster.

Before looking at the competence tables for this role, issues with (transfer of) responsibilities will need to be considered. These questions should be discussed within the RN Committee of the CCNR.

CESNI/QP noted the importance of this role (which is already the practice in Seafar for example). CESNI/QP is aware of the ongoing challenge to find professionally qualified crew in the IWT sector, which is not very likely to change without flexibility in exploitation and new manning rules. CESNI/QP notes the recommendation from PLATINA3 that digitalization and automation (navigational support) could be part of the solution, including new roles like RCCO that could attract new younger people for a profession in the IWT sector. However, CESNI/QP experts felt that RCC personnel may lack experience if it is not sailing any longer on inland waterways. For some experts from the CCNR partners in the Platina3 consortium, this is where the role of a supervisor is complementary, to still meet manning rules and yet provide opportunity for new professionals to build up specific experience under the control and mentorship of a supervisor with the required certificates and the needed practical experience.

4) The boatmaster on board

There are two aspects to the reflection:

- could there be vessels without boatmaster on board or would there always have to be a boatmaster in case of system failure?
- the boatmaster on board a remotely controlled craft should also be expected to have specific competences. When he/she operates the craft, he/she has the final responsibility of operation as boatmaster at this moment, so he/she may be responsible for the tasks taking place in the RCC and must be able to do the transfer of tasks correctly.

Specific case of TGAIN

TGAIN is covered by a separated task of CESNI/QP: "*Update of competence standards, draft standards for (practical) examination and draft standards on simulators for the use of the track guidance assistant for inland navigation (TGAIN)*" (Task QP-7. The task has priority II meaning that it will start in the second half of the 3-year mandate.

An input with minimum requirements for competences will be proposed to CESNI/QP in the first half of 2023, resulting from an ad hoc working group of the CCNR.

The reflection on these competences can be distinguished as follows:

- initial training (for future boatmasters): additional competences could be added to the OL and ML tables of competences (using the flexibility offered by ES-QIN);
- training of qualified boatmasters: several options with different level of flexibilities will be discussed in the CESNI/QP working group: adoption of refresher classes, new specific authorisations or guidelines through the manufacturers. CESNI/QP takes note of the PLATINA3 report to encourage legislators to further work on additional sailing time or mandatory refresher classes. CESNI/QP has reflected on mandatory requirements for TGAINs, but wondered if there was an imperative of safety that would require to introduce new competence requirements (legal basis), as the operation of a craft does not necessarily require the use of TGAINs, even for vessels that are equipped with such a system.

Dissemination video for PLATINA3

Some CESNI/QP experts will also give dynamic feedback by participating in a dissemination video for PLATINA3. They will be invited to explain their expectations of the PLATINA3 deliverables and the added value of these deliverables for CESNI/QP.

Some messages, which testify of the positive receipt of the PLATINA3 deliverables within CESNI/QP will be collected from the Chair of the temporary working group on crew related requirements, representatives of social partners and members of the CESNI Secretariat.

Position from key stakeholders

The ETF's position on the standards of competence for automation is in annex 3 of this report. ETF position already fed into discussions of the PLATINA3 stage event in Budapest in October 2022 and have been renewed with a view to the integration of possible standards of competence for more automated vessel operation in future manning standards as currently discussed in CESNI. The position has been updated with a view to Sectoral Social Dialogue meeting on 10 February 2023.

The KBN's position on the standards for automation is in annex 4. The position on the integration of possible standards of competence for more automated vessel operation in future manning standards was also elaborated with view to the Sectoral Dialogue meeting on 10 February 2023.

3. Possible approach for implementation of PLATINA3 recommendations

A step-by-step approach is foreseen, with a very flexible timetable for CESNI/QP as it is recalled that this is a priority III task (given other high priorities of the work programme and not because of the importance of the topic).

Step-by-step: RCC Operator and personnel on board of remotely controlled vessel as starting point

CESNI/QP will start to examine draft standards for the competences of the operator and the able boatman. It is clear from the outset that these are two key roles in the existing projects. On the other hand, there is a strong **need to (legally) further reflect on the other functions involved in remote controlled vessels** whether on board or on land. For this purpose, competent bodies will have to be asked to produce these analyses.

Laboratory idea

This flexible schedule will give the time to collect feedback from pilot projects. There is also the **need to process experience from national derogations and establish a system for international derogations**. This is for example the case at the CCNR level. From 1st April 2023, with the entry into force of the new Regulation for Rhine Personal (RPN), it will be possible to request individual derogations for crews. A CCNR recommendation will therefore allow a vessel to sail on all waterways subject to the Mannheim Act with a modified crew, provided that sufficient safety conditions are guaranteed. It is through these pilot projects that the new roles on board these new craft will be tested. For example, it will be examined to which extent local/regional projects can meet international requirements (in particular from the safety point of view).

Furthermore, it will be necessary to carry out a study of the impact of the introduction of shore-based functions on the crew members on board, and generally on task shifting (permanent or temporary).

Part of a global roadmap

It is a theme that is necessarily apprehended as a whole. The other permanent CESNI working groups, CESNI/PT (technical requirements) and CESNI/TI (information technologies) are also seized of the subject in the aspects in their scope.

The work is therefore part of a **roadmap outlining the required steps** for integration of proposed competences for on-board systems for automation in the CESNI/QP framework.

For the time being, this task is priority III in the current CESNI/QP work programme (basically: this means that no action is foreseen, it has to be evaluated after 2 years). It is reminded that this work on automation-related skills is included in the strategic guidelines[14] concluded between DG MOVE and the CCNR for 6 years starting from 2022:
"CESNI shall prepare and adopt standards in the field of professional qualifications actively promoting:
(…)
The development of competence-based standards for
(…)
-working with increasingly digitalised vessels, included automated vessels
-(…)"
The strategic guidelines are valid for 6 years but may be revised if needed after 3 years (2024).
At the end of the current work programme (2024), CESNI/QP will conduct an evaluation of current tasks, including automation, and will take into account Platina's recommendations to guide its new priorities. The work programme

[14] The full text of the Strategic Guidelines in reproduced in the CESNI work programme for each of the three fields of activity of CESNI (text in grey); see https://www.cesni.eu/en/overview-of-documents/work-programme/

is the result of a compromise between the Member States, with the strong involvement of approved organisations, including professional organisations representing the sector.

In the context of remotely controlled vessels, CESNI/QP considers that crew members should be considered as a whole: personnel on board and personnel on shore. This interrelationship and their impact on the skills of each has not yet been analysed.

Practical examination

When setting up ES-QIN, CESNI experts first defined standards of competence and proceeded to drafting of standards for practical examination afterwards. In practical exams, examiners can choose between a certain number of category I and II elements. In category I, 7 out of 10 points must be reached to pass the examination element. A poor performance in one of the category I elements cannot be made up for by a better result in a category II element. In category II, applicants may fail to pass a certain examination element, if a total score of 60 per cent of all tested category II is reached.

The attached standards (Annex 2) put a specific focus on communication and attribute category I to almost all examination elements related to communication. In case of lost connection between RCC and remotely controlled craft, CESNI may wish to decide if OL personnel should « merely » a) continue and finish the ongoing navigational task (sailing, manoeuvring including passage of a lock) until the craft is reaching a safe position or b) continue to sail for a somewhat longer period (like reaching the next port of call or final destination of a voyage of a passenger vessel).

4. Conclusions

The first stage of receipt of PLATINA3 deliverables by CESNI/QP is **very positive and conclusive**.

Initial very cursory reviews (and in English) have raised **important questions of principle** that the CESNI/QP working group will have to deal with. These questions will need to be considered as a whole, as there is a very strong cross-cutting issue. Feedback from other bodies will be required.

These draft standards delivered in Platina3 deliverable D3.3 for RCCO and personnel on board a remotely controlled craft have already fed the reflections for the working group that is working on the manning standards and that will also have to integrate these new roles in the manning tables.

In general, it can be said that **results and findings from PLATINA3 give both a very concrete approach** with the proposal of competence tables but also **paves the way for future reflections** that will have to be done to consolidate the new competences. They contributed to a certain **awareness** of the global challenges that CESNI/QP will work on in the coming years.

Annex 1: source list

Legal sources

CESNI, European Standard for Qualifications in Inland Navigation (ES-QIN), edition 2019 (including ES-QIN 2018), https://www.cesni.eu/wp-content/uploads/2020/03/ES-QIN_2019_en.pdf

CCNR, Regulations for Rhine Navigation Personnel (RPN), January 2022, https://www.ccr-zkr.org/13020500-fr.html

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, OJ L 345 27.12.2017

Studies and reports

CCNR press release, Summary of the CCNR's vision to support the harmonised development of automated navigation 17 November 2021, https://ccr-zkr.org/files/documents/cpresse/cp20211117en.pdf

Annex 2: draft standards for practical examination

1. Standards for practical examination for remote-control operations – Management Level - Remote-control centre operator (RCCO)

The remote-control centre (RCC) operator shall demonstrate the ability to:

Table 1: competences and examination elements RCC operator

No	Competences	Examination elements	Category I-II
1	1.1.1.4	perform all checks in accordance with the RCC's specific check list;	I
2	1.1.1.5	check redundant systems and to communicate status with crew on board of the remotely operated or remotely supported craft;	I
3	1.1.2.3	interpret incoming information on weather and surrounding conditions in the present position of the remotely operated or remotely supported craft in order to start or continue the voyage;	II
4	1.1.3.3	interpret changes in the traffic situation and actively communicate operational changes to the VTS operator from the (inland) port, pilots and/or RIS operators for the remotely operated or remotely supported craft itself and interaction with other craft;	I
5	1.1.3.4	implement instructions regarding the craft's navigation, position, course and speed (given by VTS operator from the (inland) port, pilots and/or RIS operators);	I
6	1.1.3.5	evaluate the reliability of data about the traffic situation received from the remotely operated or remotely supported craft's sensors and other external sources;	I
7	1.1.4.2	determine whether craft is ready for departure;	II
8	1.2.1.8	indicate possibilities and sources of incorrect perceptions;	II
9	1.2.2.3	demonstrate decision making techniques in remote- control situations;	II
10	1.2.2.4	co-ordinate the crew on board;	I
11	1.2.3.2	establish remote situational awareness with the means available in the RCC (while only a few own senses can be used);	II

No	Competences	Examination elements	Category I-II
12	1.2.4.6	evaluate the quality (precision) and reliability (integrity) of data received from remotely operated or remotely supported craft;	I
13	1.2.4.7	verify the data link between the RCC and remotely operated or remotely supported craft;	I
14	1.2.4.8	verify the sufficiency of bandwidth and latency;	I
15	1.2.4.9	demonstrate how to verify that bandwidth and latency are sufficient;	II
16	1.2.4.10	intervene when necessary in remotely operated or remotely supported craft operations in a safe and efficient manner;	I
17	1.2.5.6	operate advanced navigational and safety equipment for the remotely operated or remotely supported craft during all operational conditions (e.g. Doppler log, weather station/wind indicator, Rate of Turn, steering systems, Radar, ECDIS, cameras, VHF, AIS, GPS, engine control units);	I
18	1.2.6.2	prepare a (de-)berthing plan for the remotely operated or remotely supported craft;	II
19	1.2.6.3	monitor the craft position and movement against the (de-)berthing plan;	I
20	1.2.6.4	implement two-way communication with VTS operator from the (inland) port, pilots and/or RIS operators to assure safe and secure mooring operations with the remotely operated or remotely supported craft and follow-up directions when needed;	I
21	1.2.6.5	implement two-way communication with other parts of the remotely operated or remotely supported craft's organisation when required;	I
22	1.2.6.6	communicate with the deck crew during (un)mooring operations;	I
23	1.2.6.7	demonstrate safe mooring and unmooring operations;	I
24	1.3.1.4	explain pre-defined emergency scenarios and protocols;	II
25	1.3.1.5	recognize situations to hand over the control of the remotely operated or remotely supported craft to the crew on board.and perform hand over if necessary;	I

No	Competences	Examination elements	Category I-II
26	1.3.1.6	initiate emergency protocols for remotely operated or remotely supported craft operations;	I
27	1.3.1.7	communicate effectively with other craft and with (relevant) authorities on any safety issue on the remotely operated or remotely supported craft;	I
28	1.3.2.5	evaluate the impact of the degradation of communication systems between the RCC and remotely operated or remotely supported craft - the consequences of latency, coverage and bandwidth degradation;	I
29	1.3.2.6	state which pre-defined actions are taken by the systems in the case of reduced connectivity between the RCC and the remotely operated or remotely supported craft;	I
30	1.3.2.7	explain the procedure to follow in the case of reduced connectivity between the RCC and the remotely operated or remotely supported craft;	II
31	1.3.2.8	explain by which land-based means the RCC can obtain information on the remotely operated or remotely supported craft's movements;	II
32	1.3.2.9	restore communication between the RCC and the remotely supported craft if necessary;	I
33	1.3.3.2	state the sensors and other means available in the RCC to verify and locate emergencies like fire in the remotely operated or remotely supported craft.;	I
34	1.3.3.2	initiate and coordinate firefighting actions with crew on board of the remotely operated or remotely supported craft, the RCC and authorities;	I
35	1.3.4.2	verify and analyse system control failures between the RCC and the remotely operated or remotely supported craft;	I
36	1.3.4.3	decide on mitigating actions in line with RCC company policies, procedures and applicable legislation;	I
37	1.3.4.4	communicate system control failures with waterway authorities or with other fairway users;	I
38	1.3.5.2	coordinate and initiate mitigation measures for emergency anchoring operations with a remotely operated or remotely supported craft with crew on board and relevant authorities;	I

No	Competences	Examination elements	Category I-II
39	1.3.6.3	explain alerts in the RCC that point to a collision or grounding;	I
40	1.3.6.4	state actions that can be taken from the RCC in response to a collision or grounding;	II
41	1.3.6.5	state the available remotely operated or remotely supported craft's systems, sensors, and other sources of information for evaluating damage to the craft and other craft or objects in the case of a collision or grounding;	II
42	1.3.6.6	operate available cameras to support the evaluation of damage to own remotely operated or remotely supported craft and other craft or objects in case of a collision;	II
43	1.3.6.7	state the available sensors and sources of information to evaluate environmental damage in the case of a collision or grounding;	II
44	1.3.6.8	assign tasks to the crew to get information that is not directly available;	I
45	1.3.7.2	apply resources and equipment available in the remotely operated or remotely supported craft that can support search and rescue operations;	I
46	1.3.8.3	explain the abilities and vulnerabilities of the remotely operated or remotely supported craft's systems regarding the prevention of cyber-attacks (built-in protection);	II
47	1.3.8.4	state various ways and connection systems/lines that are used for communication between the RCC and the remotely operated or remotely supported craft;	I
48	1.3.8.5	advice crew and to initiate rescue operations by the crew in case of cyber-attack;	II
49	1.4.1.3	interact with Inland ECDIS, radar, visuals of cameras for interpretation of signs, signals and marking in case of navigational emergencies;	I
50	3.1.1.2	check terminal and port requirements, including moorings and release mechanisms that may affect remotely operated or remotely supported craft;	II
51	3.1.2.2	describe how bunkers shall be entered into the ballast plan for the remotely operated or remotely supported craft;	II
52	3.1.2.3	coordinate a visual inspection of de-ballasting operations to prevent pollution;	II

No	Competences	Examination elements	Category I-II
53	3.1.3.2	review and amend the cargo plan against the specific and legal requirements that (potentially) apply to the remotely operated or remotely supported craft;	II
54	3.1.3.3	assess if (sudden) changes in the loading (or unloading) sequence of the remotely operated or remotely supported craft are safe and acceptable;	I
55	3.1.3.4	coordinate and communicate changes in the cargo plan to all the parties involved;	I
56	3.1.3.5	verify that the remotely operated or remotely supported craft is correctly (un)loaded;	II
57	3.2.1.2	verify the reliability of stability and trim sensor data received from the remotely operated or remotely supported craft;	I
58	3.2.1.3	recognize and evaluate cargo induced changes to the stability and trim and if they are critical to the stability of the remotely operated or remotely supported craft;	I
59	3.2.1.4	demonstrate how to solve stability problems;	II
60	3.2.1.5	process rolling and heaving information of the remotely operated or remotely supported craft to evaluate the craft's stability and launch mitigation measures if required;	II
61	4.1.1.11	recognize system errors and apply mitigation measures to keep or maintain control of the remotely operated or remotely supported craft or commence redundancy protocols in the RCC or on board;	I
62	4.1.1.12	calibrate RCC system sensors used as input to situational awareness (make use of checklist);	I
63	4.1.1.13	operate cameras effectively;	I
64	4.1.1.14	interpret observations via visual and electronic control systems;	I
65	4.1.1.15	operate visual control systems (cameras, infrared systems);	I
66	4.1.1.16	operate electronic lookout systems (radar);	I
67	4.1.1.17	operate the communication systems (ability to communicate with able boatman at critical sections on the voyage);	I

No	Competences	Examination elements	Category I-II
68	4.1.1.18	take measures to restore the functionality of RCC equipment;	I
69	4.1.1.19	carry out root cause analysis on essential remote- control systems in the RCC and on board (by means of instruction to crew on board) for the navigational remote operation of the craft;	I
70	5.1.1.2	ability to verify maintenance and repair;	II
71	5.1.1.3	communicate effectively with crew on board doing maintenance and repairs on the remotely operated or remotely supported craft;	II
72	6.1.1.3	react to specific distress safety and security calls applicable to the remotely operated or remotely supported craft;	I
73	7.1.1.4	identify and discuss risks due to an increased level of autonomy;	II
74	7.1.1.5	identify and discuss risks in remotely operated or remotely supported craft operation that may cause incidents;	II
75	7.1.1.6	distinguish the RCCO's role and responsibilities from the crew on board and responsibilities;	I
76	7.1.1.7	state the legal risks associated with operating a remotely operated or remotely supported craft;	II
77	7.1.1.8	identify the legal liabilities of the remotely operated or remotely supported craft's owner and manager;	II
78	7.1.1.9	record and report both routine and non-routine events in compliance with RCC's internal and external legal requirements;	II
79	7.1.1.10	perform a risk assessment for RCC operations;	I
80	7.1.1.11	adapt existing risk assessment to changing conditions that affect the RCC operation;	I
81	7.1.2.2	describe the defined functionality of the system for normal operation and remote-control mode sequences and timing man-machine interfaces with degraded/limited functionality safe state(s);	II
82	7.1.2.3	take action to avoid identified possible incidents;	I
83	7.1.2.4	differentiate the various RCC specific alerts used in the case of emergencies;	I

No	Competences	Examination elements	Category I-II
84	7.1.2.5	discuss the immediate actions to be taken when an emergency occurs;	I
85	7.1.2.6	discuss and evaluate communication protocols for emergencies in the RCC or for RCC operations;	II
86	7.1.3.3	interpret safety related information received from the remotely operated or remotely supported craft, including video streams to verify the craft's operational safety;	I
87	7.1.3.4	explain ISPS and other applicable regulations regarding the security of the remotely operated or remotely supported craft;	II
88	7.1.3.5	explain cyber security risk mitigating equipment and systems;	II

2. Standards for practical examination for remote-control operations – Operational Level - Helsman or (able) boatman on a remotely operated or remotely supported craft

The personnel onboard a remotely controlled or supported craft shall be able to:

Table 2: competences and examination elements helmsman or (able) boatman

No	Competences	Examination elements	Category I-II
1	1.1.1.2	take manual control and navigate the craft to the nearest berth or anchorage;	I
2	1.1.1.3	communicate with RCC, other (deck) personnel, other craft and authorities, e.g., by means of communication systems and hand signals, in order to receive support to safely navigate the craft;	I
3	1.1.2.2	apply relevant traffic regulations applicable to the waterway which is being sailed;	I
4	1.1.3.2	navigate passing through various types of locks observing the locking procedures, various types of bridges, profiles of canals and rivers and to make use of “safe harbours” and overnight ports;	I
5	1.1.4.2	use navigation aids as applicable e.g. satellite position system;	I
6	1.1.4.3	use nautical charts considering factors relating to accuracy and chart reading such as chart date, symbols, soundings, bottom description, depths and datums (WGS84) and to use international charts standards such as Inland ECDIS;	I
7	1.1.4.4	use nautical publications such as notices to skippers or mariners in order to collect necessary information required for safe navigation,finding height of tide at any time, information on ice, high or low water levels, berths and port directory;	I
8	1.1.5.3	use day and night signs such as lights to guide craft;	I
9	1.1.5.4	use traffic information tools;	II
10	1.2.1.3	apply geographical, hydrological,meteorological and morphological information;	II
11	1.2.2.2	initiate procedures of mooring andunmooring manoeuvre and to ensure that equipment on different types of craft complies with requirements of craft certificate;	I

No	Competences	Examination elements	Category I-II
12	1.2.2.3	communicate with RCC and other (deck) personnel, e.g., to use communication systems and hand signals;	I
13	1.2.3.3	use nautical sensors and indicators providing navigation information, e.g. (D) GPS, position, heading, course, speed, distance, depth, Inland ECDIS, radar;	II
14	1.2.3.4	use River Information Services (RIS) and technologies, e.g. Inland AIS, Inland ECDIS, Electronic Reporting and notices to skipper, FIS (Fairway Information Services), TIS (Traffic Information Services), TMS (Traffic Management Services), CAS (Calamity Abatement Services), ITL (Information for Transport Logistics), ILE (Information for Law Enforcement), ST (Statistics), WCHD (Waterway Charges and Harbour Dues) distance, depth, also in connection with radar;	II
15	1.2.3.5	detect misrepresentation of information and apply methods of correction;	II
16	1.2.4.5	respect interaction effects when sailing, manoeuvring and when stationary in a narrow fairway and to recognise the interaction effects relating to empty or loaded craft;	I
17	1.2.4.6	take into account trim, angle of heel, down flooding, lever principle, points of gravity;	I
18	1.2.5.4	use propulsion, steering and manoeuvring systems;	I
19	1.2.5.5	use anchor in various circumstances;	I
20	1.2.5.6	give instructions if necessary, in the case of an alarm;	I
21	4.1.1.2	ensure monitoring of safe operation of bilge, ballast and cargo pump systems including adequate instructions to the crew, taking into account free surface effects on stability;	I
22	4.2.1.2	apply safe working practices;	I
23	4.2.2.3	operate, test and maintain control systems and take appropriate measures;	II
24	4.2.2.4	perform all checks in accordance with the RCC's specific check list under the direction of the RCCO or RCCO supervisor;	II
25	4.2.2.5	check redundant systems and to communicate status under the direction of the RCCO or RCCO supervisor;	II

No	Competences	Examination elements	Category I-II
26	4.2.2.6	operate, test and maintain communication and control systems on the craft for remote operations;	I
27	4.2.3.3	recognise dangerous situations with regard to systems used for remote operations;	I
28	4.3.1.2	organise and instruct on safe maintenance and repair using appropriate procedures (control), equipment and software;	II
29	4.3.2.2	apply maintenance and repair procedures on devices according to manuals;	II
30	4.3.3.2	apply checklists for maintenance and repair of technical devices;	II
31	6.1.1.2	apply the craft's communication, media and IT systems;	I
32	6.2.1.2	master communication;	I
33	6.2.2.2	use standard communication phrases;	I
34	6.3.1.2	instruct crew members in planning and preparing meals;	II
35	6.3.1.3	instruct and supervise crew members regarding hygienic standards;	II
36	6.3.1.4	instruct crew members in planning purchasing possibilities;	II
37	7.1.1.1	control the monitoring and maintenance of fire detection and extinguishing systems and equipment;	II
38	7.1.2.1	maintain and perform periodic checks of operational condition of life-saving, fire-fighting and other safety equipment and systems;	I
39	7.2.1.2	apply shipboard contingency plans for response to emergencies including monitoring and control;	II
40	7.2.2.3	communicate and coordinate during fire- fighting operations including communication with external organisations and to actively take part in rescue and fire-fighting operations;	I
41	7.2.3.2	ability to launch and recover a ship´s boat.	I

Annex 3: Position ETF

"ETF position on standards for competence for automation

9 February 2023

IWT is by nature a very conservative transport mode; but one with a massive potential. Digitalisation and automation could be the tools to finally unleash the sectors' full potential.

We note the clear call from the sector for more automation – the Flemish Seafar is the best example, where remotely operated vessels are no longer a thing of the past. Automation whether we like it or not, is here to stay. So we better use it to our advantage. We also note the clear call for more flexibility.

However we want to make some reservations on the way Seafar experience is used time and again as the sole basis for future standards on automation. All ongoing pilot projects have been executed either on a pre-set low traffic trajectory or on a very limited distance with dense traffic, and thus cannot generate enough empirical evidence that can be extrapolated to all circumstances at all locations.

Also the Seafar accident that is well-documented but never was reported to the Belgian authorities is to be taken duly into account as not all is well in automated IWT. We should collect more evidence on this accident as the non-reporting in itself constitutes the deliberate will to falsify pilot project outcomes.

As ETF we always understood this thrust for more flexibility but only support it conditionally. The more the sector becomes transparent in its operation; the more we can support more flexible systems.

It is time that IWT in Europe becomes digitally & remotely controllable:

- One system – one database with all relevant information regarding vessel – cargo – certificates/professional qualifications – crew on board – working & resting times;
- Digital/smart tools that not only register sailing time, but also compulsory resting times and working times.
- All data should be accessible remotely in order to install a solid enforcement capacity.
- One watertight enforcement to ensure a real level playing field for all operating in the sector.
- A uniform, unique system that is implemented & enforced in the entire European IWT Sector.

There is already a lot of experience in f.eg Road Transport, whereby uniform – easy to implement - EU regulation ensures minimalistic administrative burden that provides unique data that are controllable wherever the operation takes place.

Digitalisation without control and enforcement is just the digitalisation of everything that goes wrong in the sector today.

ETF firmly believes that we must all jointly take this opportunity to install IWT in Europe with its full potential as a climate friendly transport mode, BUT it has to be socially sustainable as well.

IWT calls for minimalistic red tape – we believe that digitalising into a unique system for everything related to IWT operations together with a watertight enforcement; will ensure a smooth operating transport mode ready to enter the new millennium.

But coming back to automation. Automation is a process and does not materialise overnight- there is a lot of progressive insight based on experience that needs to be assessed almost on a day-to-day- basis.

Thanks to initiatives such as Platina 3, whereby in Work Package 3 new standards are being prepared and developed for competence for on-board systems, for remote operators and refresher classes.

Valuable work is being done in Work Package 3 in this area, but we are touching on the limits of todays' reality when addressing for instance the competence for remote operators. Seafar, at the moment only has a business model whereby only one vessel is digitally navigated – so a kind of one- on-one-system. As a second line assistance they monitor vessels, and for the second line assistance, multiple vessels are under the supervision of one boatmaster. But we all witness the speed with which things change in our little sector, so by the times we produce the new standards for remote operators; they might already be, partially at least, bypassed by reality.

In this process we identified a missing link – a procedure and/or a body – that can serve as intermediary to assess new developments – perhaps even link these to a kind of trial period – after which and upon positive assessment of the new situation – standards could be adapted to the newly established reality. Only of course if solid evidence is given that the 100% safety guarantee that we all seek, remains untouched. We refer to the CCNR who recently established guidelines for authorities issuing the green light for pilot projects that would need a temporary amended manning setting. The process in itself as it is described into different stages and into great detail seems to us a solid basis to address the future challenges of rapidly changing standards & manning settings. As the new manning regulation is in full preparation within CESNI, we dare to suggest that there is a future new task for CESNI in the making which is to permanently assess and update automation and digitalisation related standards.

Of course, the procedure mentioned above should assess multiple elements:

- The evolution of the workload of all crewmembers on board in a very detailed and precise manner in order to justify the continued reduction of the crew setting on board;
- If the new technology installed on board is indeed properly used. As an example: TGAIN (Track guidance Assistant System Inland Navigation) has been identified as being the core determinator of automation level 1. The mere installation of TGAIN itself does not justify a lowering of the manning settings on board if there is no proof given that the new technology is properly and continuously used. The users of TGAIN have to provide solid evidence that they are properly trained in the use of TGAIN in order for the technology to fully exert its positive effect on the workload.
- The continuous use of the technology installed. Installing technology is one thing; using it something completely different. Installing TGAIN could proof to be more cost-efficient for the commercial business operation if it leads to a permanent reduction of the crew on board; even if afterwards the technology would remain unused.

And we would not be the European Transport workers' Federation if we would not take advantage of this momentum to highlight the importance of the human element in this changing IWT setting.

The sector is in full transition towards a more automated/digitalised future. Nobody knows how long or how short this transition period will be, but we all assume it will be longer than initially anticipated.

Staff shortage is already noticeable in all IWT segments and we face huge challenges attracting new and young people to the sector. IWT was the sole mode of transport in which someone could enter at the age of 16 and learn a job by doing. This low threshold to enter the sector always played in our advantage.

But we will for sure need people to crew the vessels at least for another fairly long transitional period. During this transition we must ensure that we maximise expertise, skills and competencies in the sector. We can only ensure a smooth transition if the sector fully embraces social sustainability as well. Only in this way we can guarantee a future for the sector as well as for all who work in it.

And of course, safety of crew, vessel, cargo and the waterway is of paramount importance. If all systems fail – and they do – recent examples show that remotely operated vessels can collide too and cause serious damages – we need to rely on people. In the light of the above we would like to iterate a couple of issues:

- It seems that everyone already starts addressing crew settings on board starting from the prerequisite that for remote operated vessels the standard would be: boatmaster on shore + upgraded able boatman on board. For ETF the last person standing on board is the boatmaster. We do not believe that an upgraded able boatman with very little, if any, navigation experience, will be able to salvage vessel and freight in case of a calamity. Only solid experienced boatmasters with years' long navigation time are able to pull this off successfully without endangering other waterway users. If such a calamity occurs whereby a major waterway is blocked for long periods, this could have detrimental consequences to the overall image and trustworthiness of the sector.
- Boatmasters working in remote control centers do not only need to possess the basic skills & competencies, but a higher level of skills and competencies as a conventional boatmaster. A RCCO must be able to navigate any kind of vessel in any kind of waters under any kind of condition. This is a level, rarely achieved by any kind of conventional boatmaster. So a solid number of navigation time (minimum 10 to 15 years) is an absolute minimum condition.
- Also communications' skills need to be upgraded and lifted to a complete higher level as with remote operation all relies on communication that has to be absolutely flawless. Even the slightest misunderstanding can have serious consequences.
- Many issues arise also on the legal and liability side of things. Whenever a RCCO takes a break, his seat/work is filled by his supervisor who temporarily takes over the activities. A solid hand-over-procedure is needed to ensure that at all times the liability is also properly and distinctly handed over.
- We also recall our position on simulator training which can be a big asset but can only partially replace real life navigation time experience.

With the new future standards on automation & digitalisation, more highly skilled workers are needed; both on shore as on board. This stands in stark contrast to the past low threshold. This massive shift will worsen the shortage. Therefore we urge all involved to properly take on board the working conditions of all crewmembers; and to improve them as much as possible especially for those who will be working on board. Somehow it is difficult to convince young people to study for a job, that in the end will disappear and will be replaced by automated processes.

End of last year, there was an ETF seminar on Waterborne logistics and we had the opportunity to invite Seafar to this seminar. 8 hours of navigating time, according them was perceived as the absolute maximum. However, whenever we discuss manning settings, 14 hours per day is perceived as the new normal.

Against this background ETF would also like to address the situation of the "apprentices". When the future manning settings will be reduced to a minimalistic setting, there is no way that an apprentice on board still gets the quality training (s)he deserves. With little or no crew left on board, there will be no time left to train and to supervise the apprentice. We heard the call that apprentices should remain part of the minimum crew, but we dare to ask how this will work in practice as in the end (s)he will have to train him/herself – especially in cases where there will be only apprentices working on board besides the boatmaster.

ETF pleads that a proper and structural training accompanying system is elaborated that addresses this gap in practise. If the sector is unable to address and solve this issue, no apprentices will be willing to enter the sector. Solid proof is found by the fact that of the 9 apprentices in Belgium, 2 had a severe accident whilst working on board. We need to provide a safe learning/working environment for the young generation that opts for IWT as a career.

The human element is the only one flexible enough to bridge the gap between today and an automated future of tomorrow. We would invite all to take this into consideration whenever discussing new systems, tools and future standards.

As we already stated before – we support a uniform and unique system – that guarantees full transparency – that is easy to use – easy to control – easy to enforce – but strict.

The main challenge will lay in the simultaneously implementation of the new system in the different Member States in a uniform and unambiguous way. We need one European system, and not 27 different interpretations of the same.“

Annex 4: Position KBN

KBN position on 27 February 2023

“In recent decades we have experienced a lot of changes in our society and many more will follow in the coming years. It is inevitable that this also applies to our inland navigation.

Developments in various areas, mostly IT related, have made vessels more sustainable, made life easier and support the work on board ships and shore organizations. But this development continues and the implications of this are not yet clear.

That doesn't mean we should sit back and wait to see what happens. We will have to actively monitor developments, gain experience and learn from these experiences. These experiences will have to find their way into education and into legislation and regulations. This means learning from current and future projects. What are crew requirements, what is needed on board the ship and what other safety matters will have to be arranged.

More pilot projects will be needed for this and we will have to be able to adjust legislation and regulations to enable projects. If it takes years to incorporate new developments, this will not be beneficial for the sector.

Part of the industry is conservative and thinks automation and 'autonomous sailing' are something for the distant future. Another part can't go fast enough: supporting systems are now on board and they would like to go a step further.

The industry is divided on automation: partly it is seen as facilitating work, another part sees it as the solution to the staff shortage.

A international opinion and supervision is needed to enable projects, adjust legislation, but also to harmonize and standardize the outcomes of the projects to make sure all systems will be able to communicate in a safe mode (both technical and cyber proof).

This means a lot of question marks, discussions, development of vision and solutions in which we need to learn and work together, on various topics:

Investment

Automation often means an investment, in which the owner weighs up: what will it cost and what will it yield. This consideration is different for every owner and means there must be a solid plan. Nobody wants to invest in a system with the risk that the 'standard' will be different in 2 years. This means looking from the start for a standard that can be used on all waterways in Europe.

Education and training

For the short term, the training is still focused on sailing on board. Making sailing time to gain experience and grow in the role on board is not yet a problem. This will change in the future: ships will have fewer staff, roles on board will change and an onboard training program will look different. How much time will someone spend on board in the future and is that sufficient to be able to do the job properly as a 'mate ashore'. What will be the role of the sailor on board, who will secure the ship in a lock?

On the other hand, this may be a reason for the current generation to opt for inland shipping: a connection with their living environment and the possibility to combine work and private life in an 'office job', instead of being away from home for weeks.

Systems

The purchase and installation of systems must remain accessible to everyone and will certainly take place on a voluntary basis in the first few years. Whether this concerns systems that make sailing easier or bring administrative relief: not everyone can and wants to do this. And if there are obligations, uniformity will have to be introduced, so that information exchange is simple. This can be in terms of cargo and crew, but it is even more important in the case of autonomous or semiautonomous sailing: what will other vessels in the area do, will they understand what my plans are? Uniformity in communication of these systems will have to be initiated at EU level.

Accessibility

Which systems are recommended or perhaps will become mandatory. What are the costs for this, who bears these costs? Can this be afforded by the owner, is it profitable and what is the impact on the ship and crew? But also the question who is able to see the data? Do all systems need to be accessible real time? Both semi-autonomous and autonomous sailing systems will have to communicate with each other, and this communication needs to be trustworthy.

Safety

Cybersecurity is important, especially if there are systems on board that can take over the control of a ship. The security of this is complex and too complicated for a ship owner. Support in this uniformity is crucial. The safety of crew and environment is also important: what if systems fail?

We should position the inland shipping sector sustainably and integrally within the digital transition of logistics and mobility. We should standardize and harmonize solutions for cargo, ship, crew and (smart) infrastructure. For this we need a European scope, national solutions within The Netherlands preferably linked to the European processes and agreements."

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101006364. 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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Funded by the Horizon H2020 Programme of the
European Union under grant agreement No 101006364