Explanatory notice for the CESNI standards for the approval of simulators

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1.   Introduction

According to Directive (EU) 2017/2397 of the European Parliament and of the Council on the recognition of professional qualifications in inland navigation and repealing Council Directives 91/672/EEC and 96/50/EC[1], simulators can be used for the assessment of competence for:

a)   a certificate of qualification as a boatmaster,

b)   a specific authorisation for sailing with the aid of radar[2].

From 18 January 2022, simulators used to assess competences shall be approved by Member States. The approval is granted if the simulator complies with the standards for simulators established by the Directive[3].

In November 2018, the European Committee for drawing up Standards in the field of Inland Navigation (CESNI) adopted those **standards for the approval of simulators**. These requirements are designed for integration in other international and regional regulatory (e.g. Rhine regulation).

The Committee adopted two resolutions:

-    Standards for technical and functional requirements applicable to vessel-handling simulators and radar simulators (CESNI-2018-II-14) and

-    Standards for the administrative procedure for the approval of vessel-handling simulators and radar simulators (CESNI-2018-II-15).

Uniform requirements for simulators ensure that **all requested elements of examination can be assessed at the minimum set of quality of simulation that is comparable to assessment on board a craft** covered by the scope of Directive (EU) 2017/2397. They ensure that realistic examination on a simulator enables examiners to assess the applicant's competence to pass a practical examination. It is only on the basis of harmonised technical and functional requirements that examiners in one country can rely on the fact that practical examination carried out in another country has been carried out on an appropriate simulator allowing to assess the required competence.

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[1] Directive (EU) 2017/2397 of 12 December 2017, OJ L 345, 27.12.2017, p. 53
[2] Article 17(3)
[3] Article 21(1)

The CESNI Secretariat worked out an explanatory notice to document the methodology used to specify the minimum technical and functional requirements of simulators and the administrative procedures for the approval of simulators in inland navigation and the consequences associated with the definition of such criteria. This notice is for documentary purposes only.

2. Methodology

The **use of simulators in examination allows to demonstrate navigational skills in complex situations** (weather and water conditions, dense traffic, failure of device, etc).

Simulators, like any other tool, have their limitations. It is likely that the costs of acquiring and developing simulators which reproduce the environment and the nautical behaviour of a vessel totally faithfully are much higher than those of a less exact simulator. Also, the simulation of interaction between the boatmaster and other members of the crew does not match the interaction experienced on board a real vessel. Some situations like mooring, coupling or loading and unloading may be tested better on board a craft than on a simulator. However, the **core competence requirements** as laid down in Annex II of Directive 2017/2397 and defined in the standards for practical examination **shall be able to be assessed on a simulator** meeting the CESNI standards as well as on board a vessel covered by the directive.

In order to define the technical requirements needed for such assessment, expert discussion in CESNI started with taking stock of results of the **analysis of simulator requirements laid down in the EU financed Platina 2 report**.[4]. That report includes options regarding the necessary quality level of the technical and functional requirements of vessel-handling inland navigation simulators (VHINS).

A **concrete list of features was discussed** with the help of questionnaires sent out to simulator operators, training institutes planning to purchase a simulator and simulator users. The results of the consultation were discussed in a temporary working group of CESNI (CESNI/QP/Sim) whose task was to structure and examine the technical requirements and ways to test the functions of simulators used in inland navigation.

Experts first identified software and hardware requirements of VHINS, sometimes changing or completing the recommendations from the Platina 2 report in close cooperation with the authors of the study. Sometimes another quality level was chosen than those suggested in the Platina 2 report.

Finally, experts included technical and functional requirements for radar simulators in a table listing requirements for both, full mission vessel-handling simulators and radar simulators. This exercise allowed a concise comparison of simulator requirements, as radar simulators are already used for examination according to Art. 8.04 RPN in the Netherlands, Belgium and Germany and according to national regulation in Romania. Experts found that radar simulators used for examination for the specific authorisation for sailing with the aid of radar do not require the same features of simulation as a VHINS used in practical examination of competence as a boatmaster e.g. concerning the degrees of freedom included in the mathematical model for vessel operation or aids to navigation displayed on the simulator screen. However, radar simulators can be described by the same features for hard and software as VHINS, applying the technical and functional requirements needed for radar examination.

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[4] "Roadmap towards standardisation for ship-handling simulators - Draft technical standards for IWT ship-handling simulators for the purpose of examination to promote career progression for IWT crew members and to reduce barriers to labour mobility" Document can be downloaded from
http://www.naiades.info/repository/public/documents/Downloads/27_D3_4_Roadmap_standardisation_SHS_2016-04-06.pdf