The development of the Port ECDIS concept and the Port ENC (PENC) dataset is based on common standards of the maritime ECDIS and the Inland ECDIS and use these standards as base for improvements. So the Port ECDIS could be designated as an upgraded standard including the possibility during a downgrading process to reproduce an Inland ENC, but not a real complete maritime ENC.

The Port ECDIS / Port ENC fulfils also the requirements that are requested by the EU RIS-Directive (DIRECTIVE 2005/44/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL) on harmonised river information services (RIS) on inland waterways in the Community.

**Components of the Port ENC**

- **Port ENC chart**
- **Precise ENC Base Chart**
- **Bathymetric ENC**
- **Bathymetric Model**
- **Channel Model**

- **Standard ENC Objects**
- **Inland ENC Objects**
- **Port ENC Objects**

As part of the EFFORTS project, there are a number of new port specific objects, as well as requirements for the accuracy of these objects. These new requirements will ensure that the Port ENC makes the most accurate data available to the port users.

The use of gridded bathymetry, channel outlines and channel depth model data will allow the users of the Port ENC to have an accurate and up to date 3D view of the depth situation within the port. This will improve both, safety of navigation as well as port maintenance.

Effective Operations in Ports EFFORTS Port ECDIS – information for different user groups

Port ECDIS is not only about producing better electronic charts to be shown in the navigation displays of various applications. Port ECDIS addresses user groups of other domains as well (maintenance, dredging, planning, river engineering, water police, fire brigade et cetera). Often they have the need to look at and use the data not only as a chart but also in 3D.
Who is who in WP 1.3

Development Team

(WP Leader) HPA
HAMBURG PORT AUTHORITY
ISSUS / TUHH
Caris BV. (NL)
SevenCs (subcontractor)

Link to other WP:
WP 1.2, „Precise Navigation and Manoeuvring in Ports“ Marimatech (DK)
WP 1.1, „Tug Assistance“ Force (DK)
WP 3.1 „Port Processes“ Marintek (N)

We informed about the project:
• IHO - International Hydrographic Organisation
• IMO - International Maritime Organization
• Open ECDIS Organisation
• Inland ENC Harmonization Group
• EC - European Commission - Directorate-General Energy and Transport
• UN/ECE - Economic Commission for Europe of the United Nations
• CCNR - Central Commission for Navigation on the Rhine
• DC - Danube Commission IAPH - Head Office (Tokyo)
• IAPH - Europe Office (Rotterdam)
• IHMA - International Harbour Masters’ Association
• EHMC - European Harbour Masters’ Committee
• PIANC - International Navigation Association
• BMVBS - Federal Ministry of Transport, Building and Urban Affairs, Germany
• IALA - International Association of Marine Aids to Navigation and Lighthouse Authorities
• IMPA - International Maritime Pilots Association
• EMPA - European Maritime Pilot’s Association
• EMSA - European Maritime Safety Agency

EFFORTS Port ECDIS scale and accuracy
Large scale information from 1:5000 up to 1:250, accuracy / resolution better than +/- 0,20 m

Onboard ENC
Precise Port ENC

EFFORTS Port ECDIS
A modern ENC as developed in the Port ECDIS work package has to be produced from the related source data to ensure the maximum accuracy for the specified level of detail and up to dateness! The very special port related requirements must be fulfilled if an ENC can be called Port ENC! The Port ENC (PENC) stands for up to date and precise information so that the abbreviation PENC stands also for Precise ENC!! A Port ENC can avoid the misinterpretation that’s possible under the current situation. If a PENC (Port ENC or Precise ENC) is used and a vessel sails on land, not the chart is imprecise, only the navigational information onboard must be checked. (see pictures above!)

PENC + Gridded Bathymetry

PENC + Gridded Bathym. versus Channel Model

PENC + bENC + Channel Model

PENC + Gridded Bathym. for precise berthing

PENC + bENC for precise berthing

Precise turning manoeuvre of a cruise liner in a complex port area. Without a precise Port ENC is such a kind of manoeuvre impossible!

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