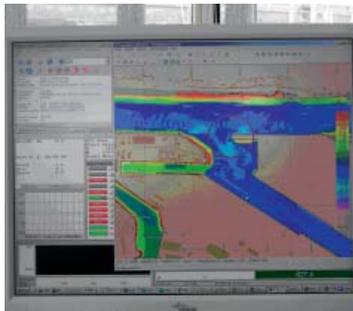


Demonstration Event in Hamburg... ... on Navigation in Ports



Port ECDIS



The Hamburg Port Authority (HPA) developed a new standard for the presentation of port features and for minimum accuracy levels for Electronic Navigation Charts for ports, and, together with their partner SevenCs, a software tool to show this new ENC as a PortECDIS (Port Electronic Display and Information System). New chart symbols, very accurate depth contours and colour shading were added to the chart.



Tug Simulator



A new tug simulator that behaves like a real, sophisticated, fully equipped modern harbour tug has been developed by FORCE Technology in order to conduct much more realistic training for tug masters and pilots. For the realistic representation of the simulation environment, wave effects, ship-ship interactions and fender forces were accurately modelled. Also, the PortECDIS was integrated for precise navigation.



Portable Pilot Unit



The Portable Pilot Unit (PPU) developed in this project by MARIMATECH is a precise navigation device that displays, independent from the instruments of the piloted vessel, position, speed and turning rate information in one display and makes this information available to the pilot, the tug masters and port traffic control. The unit improves safety and efficiency by lowering verbal communication and providing high precision information.



**Scientific-
Technical
Guidance**



Sophisticated and comprehensive projects like the ones in this work package benefit greatly from independent scientific technical advice and professionally guided cross fertilisation. The highly competent coordination team of ISSUS assisted the other teams by providing basic research, by identifying interfaces and collaboration potentials and by providing a help desk for any technical and scientific issues arising.

Navigation in Ports Demonstration Event in Hamburg 15 September 2009

Herewith, we very cordially invite all EFFORTS consortium members, collaborators, participants, sympathizers and all others interested in the EFFORTS activities to attend the Demonstration Event in Hamburg.

After many months of thinking, conceptualising, repudiating, planning, investigating, testing, formulating, discussing, persuading, doubting and finally succeeding; after the roller coaster rides of enthusiasm and failure, of success and rejection, of quick advances and long plateaus of slow progress, of time pressure and missed deadlines, all EFFORTS Team Members are now eager to present their work and their successes to their fellow collaborators, to industry experts and users. Please join us all for the Demonstration Event

Please spread the word to the industry, to the scientific community, to the wider public, to friends and to the press. Let's get a great turnout!

Welcome to Hamburg - Willkommen in Hamburg

See page 6 for details

EFFORTS NEWSLETTER

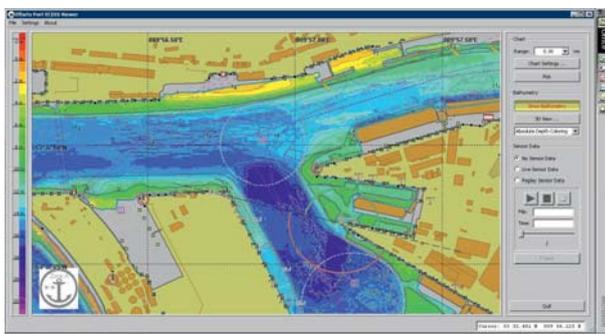
A new Electronic Navigation Chart for ports... ...the PortECDIS



At first sight, the PortECDIS looks like the known Sea ECDIS, but a closer look reveals quite a lot of additional, port-related symbols and information. By combining the symbol sets of the maritime ECDIS and of the InlandECDIS and by developing quite a few new port-related symbols, a true PortECDIS was created.

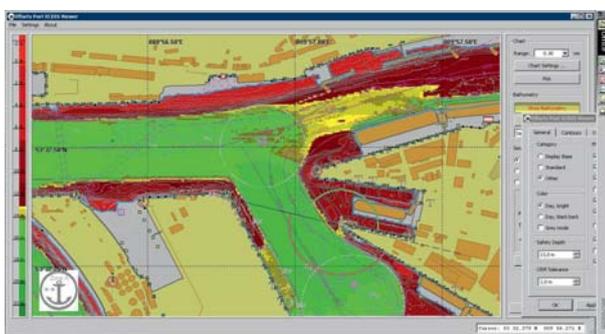


While the traditional ECDIS gives depths information only broadly between stepped depth contours lines, the PortECDIS displays very accurate depths contours and some single depths over the entire water area.

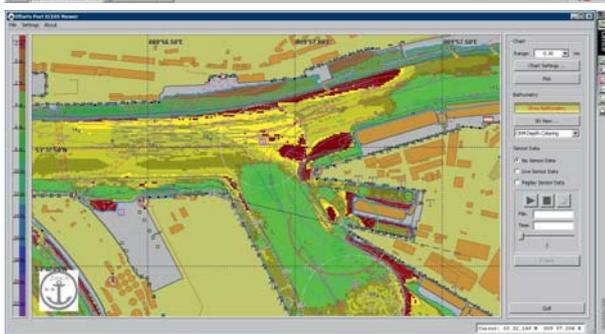


With the gridded bathymetry information loaded, additionally to contours, depths information is displayed on the PortECDIS as colour-shaded areas in a 3-dimensional representation.

Then it is possible to click into any position in the water area and obtain accurate depth information for the particular point!



The PortECDIS can display depths information very selectively, according to the user's requirements. In this screenshot, the areas satisfying the nominal safety depth of 13.0 metres are, for example, shown in green, the areas within the selected depths tolerance of +/- 1.0 m in yellow; all areas outside this selection in red.



The user requested information on safe depths for a vessel with 13.0 m draft, and this screenshot shows the actual depths of 13 m and over in green, of 13 m +/- 1 m tolerance in yellow and all depths outside this requirement in red. By matching user requirements with actual precise depths data, navigational safety margins can be accurately evaluated.

EFFORTS NEWSLETTER

More effective simulator training for tug masters... ...the EFFORTS team developed a more realistic tug handling simulator



Ever increasing ship sizes, new and more powerful and complex tug types, increased traffic in ports and other challenges to the operators with ever less experience when becoming a tug master demand improved realism in the simulation of tug handling for the benefit of training of pilots and tug masters. As even the most sophisticated tug simulators lack certain important features that make them fully resemble modern state-of-the-art sophisticated, fully equipped modern harbour tugs, they will certainly benefit from an increase of realism. The EFFORTS team set out to archive just that.

Because of the lack of depth perception in simulators, it is impossible for the tug master trainee to accurately judge the distance between the tug and the assisted ship. As this perception is critical for the safety of the tug, the ability to judge the distance in the simulator as accurately as in the real situation would be a great asset. Several projection solutions, monitors and head mounted displays were tested and evaluated.

The relatively small tug and the large assisted ship behave very differently in waves. Therefore, the correct simulation and



visualisation of wave motion responses of the involved ships are very important, including the effect of the larger ship's bow wave on the smaller tug. Also, the wave action on the tug's bollard pull, which has a direct effect on the tug's ability to assist the larger ship as well the actions wind, current and waves, influenced by the larger ship, have on the tug, were identified and developed for the use in the simulator.

When a tug is operating close to a large assisted ship, the tug is influenced by the pressure and wave field generated around the large vessel. These hydrodynamic interaction forces may be large and sometimes cause dangerous situations for the tug. Real-time calculations for these forces have been developed and tested for the use in the simulator



When tugs work in waves and push the side of a large assisted ship, large vertical friction forces may be generated, which may destroy the tug's fender. Such forces are not considered in present day's simulators. A fender simulation module was developed, which determines both the push force and the longitudinal and vertical friction forces. A side result of this module is that it may be used to simulate a grounding and a salvage operation.

The Portable Pilot Unit is used more and more by pilots worldwide, so it will be a natural element to include it in the training of pilots. Therefore, the PPU, an improved version jointly with the Port ECDIS also developed by the EFFORTS team, has been integrated into the simulator.

A portable simulator system has been developed by the EFFORTS partner FORCE Technology of Denmark for testing and demonstration of the developments of the EFFORTS project. This simulator system will be demonstrated in Hamburg.

EFFORTS NEWSLETTER

A newly-developed PORTABLE PILOT UNIT gives the whole picture... ..more accurate, more efficient and safer navigation for large vessels in ports



More precise and safer manoeuvring and berthing operations of large vessels in ports has become a reality thanks to a new navigation device that has been developed and enhanced through the EU EFFORTS project.

The device combines highly accurate, real time position information, very detailed nautical information on a Port ECDIS, fast and exact information processing capabilities and a wireless information sharing system, all housed in a light-weight, reliable Portable Pilot Unit that works independently from the equipment of the piloted vessel.

Navigation in restricted areas, during pilotage, under tug assistance or while berthing, demands great care and high professional competence. Unskilful operations lead to time delays, uneconomic utilisation of resources (tug power, propulsion, pilot time, etc) and - in the worst case - to damages and losses.

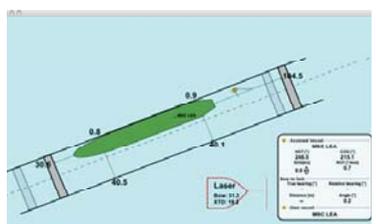
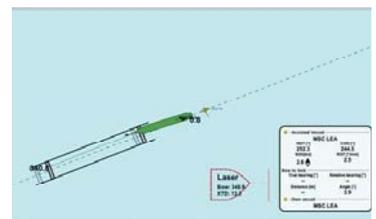
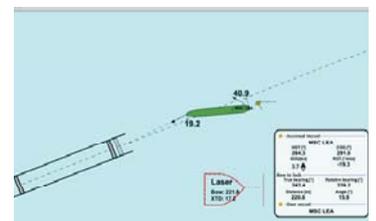
The PPU Portable Pilot Unit provides the pilot with high-precision positioning information like speed, rate-of-turn and tendency and also indicates early any dangerous situations arising, giving ample time and room to react.

Integrating the visualised performance of the involved tug boats into the PPU minimises the need for radio communication and provides all involved parties (pilot, tug masters, port control) with an accurate seamless overall picture of the situation, thus reducing the risk of misunderstandings or lack of information in hectic situations.

The increased sizes and drafts of vessels result in less navigatable area being available for manoeuvring, not only for the vessel in question but also for all other users of the same navigational space. It is not unusual that fairways and port basins are restricted or even closed for any passing traffic, as long as one of these large vessels is underway. By making, through enhanced continuous navigational information, the passage in the fairway safer and the berthing more accurate and less time consuming, other maritime traffic is less hindered and incidents and accidents are less likely. All in all, the efficiency of the port is improved.

The research results of the EFFORTS partners MARIMATECH AS of Denmark, HPA Hamburg Port Authority of Germany, ISSUS Hamburg and, together with the industry partners L&R Lütgens & Reimers (tug operators) and Seven Cs (IT providers for electronic navigational charts), created the most comprehensive and advanced Portable Pilot Unit presently available.

At the Demonstration Event in Hamburg, the experts of MARIMATECH, HPA, ISSUS and L&R and 7Cs will be glad to introduce their work in an operational environment.



EFFORTS NEWSLETTER

ISSUS within EFFORTS

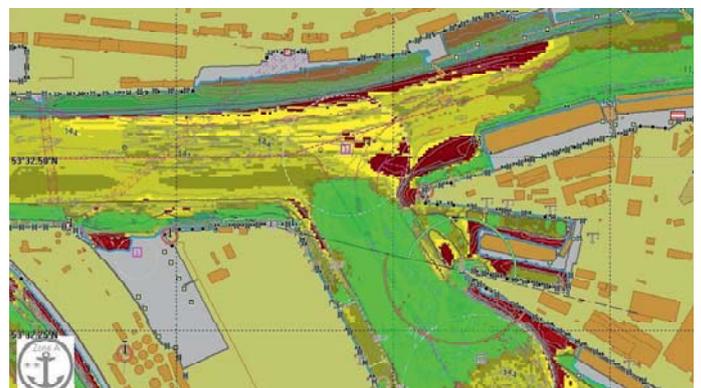
ISSUS was and still is one of the driving forces of the EFFORTS project. Right from the proposal preparation and negotiation phase ISSUS was instrumental in defining the project objectives and forming a consortium. The challenging task was to bring together the right partners that possessed the best competencies to develop solutions for the improvement of port processes and operations, in order to achieve the EFFORTS project's aim: maintaining and strengthening European port competitiveness.

ISSUS became the leader of the scientific/technical coordination team under the scientific and professional guidance of Prof. Jens Froese, managing director of ISSUS. He and his team support and guide the consortium by discussing the content and objectives of the specific work packages and their contribution to the overall project objectives. They identify interfaces and collaboration potentials between work packages and different international and national projects and provide a consortium help desk for technical

and scientific issues. They also serve as interface between the consortium and the European Commission.

ISSUS' engagement in the project is by no means limited to the above. Their competent contributions have found their way into different work packages. ISSUS' highly motivated and competent team provides basic research as well as operational solutions with focus on port processes, risk assessment, human resources development and navigation in ports. Through its wide international professional network ISSUS was able to successively integrate state-of-the-art industry and academic knowledge and experience into the work packages' deliberations, thus, guaranteeing the practical applicability of the work packages results.

ISSUS is an entity of the Hamburg University of Technology (TUHH). The overall objective of ISSUS is to provide a complete picture of waterborne transport as part of the whole intermodal chain. This is done by investigating its modules, from ships and terminals to pre- and post-sea transport, storage and distribution. Through its extensive research and advisory experience, ISSUS is ideally suited to take on a cross sectional function and blend unusual and even contrasting experiences and knowledge to the benefit of the task at hand.



SevenCs' Role in the EFFORTS project's work package "PortECDIS "

SevenCs was a key contributor to the PortECDIS by leading the development of proposals for international standardization and for encoding rules. While the Hamburg Port Authority produced the datasets for the PortECDIS, SevenCs developed a visualization tool, the EFFORTS VIEWER, that allows displaying all three PortECDIS data components (S-57 chart, gridded bathymetry, and channel reference model) in 2D and 3D.

The EFFORTS VIEWER integrates sophisticated functions to test PortECDIS data under real conditions. Since it comprises an NMEA interface, positioning data can be feed into a dynamic own-ship display or into other shipborne navigational equipment. Moreover, it provides dedicated tools for analyzing bathymetric data in 3D. This EFFORTS VIEWER will be used for the demonstration of the Work Package results in Hamburg.

SevenCs is a software house that develops chart display engines for ECDIS, WECDIS, tactical displays, portable pilot units and other maritime and nautical applications; digital maritime chart production and distribution software applications; and specialist professional maritime and nautical navigation software.

At the end of the 1980s, ISSUS started the development work on an international ECDIS standard and some years later a new company, SevenCs was formed out of ISSUS. SevenCs continued the work and in 1999, the ENC-format it developed received the first international type-approval and became international standard. Thus, its involvement in the development of the PortECDIS was a logical continuation of their previous successful work.

EFFORTS NEWSLETTER

www.efforts-project.org

Agenda Demonstration Event Hamburg on Navigation in Ports

Monday 14 September 2009	
10.00-12:00	Press Conference
17.00-20.00	Boat trip - PPU and Port ECDIS Demonstration on a Vessel in the Port
Tuesday 15 September 2009	
08.30-09:00	Registration
09.00-09:15	Welcome The Hamburg Port Authority – Blending Research and Application in Practical Work, <i>Wolfgang Hurtienne, Hamburg Port Authority</i> Research in Navigation in Ports – Advancement of Efficiency and Safety, <i>Kevin O'Driscoll, Dublin Port Company</i>
09.15-09.35	EFFicient Operations in poRTS – what has been achieved so far in the EFFORTS Project of the EU Research Programme, <i>Professor Jens Froese, ISSUS Maritime Logistics</i>
09.35-10.00	Advanced Training Systems for Tug Masters – a contribution to navigational safety in ports, <i>Aage Damsgard, Force Technology</i>
10.00-10.10	Discussion
10.10-10.40	Coffee Break
10.40-11.05	Novel Information Displays for Port Pilots – a “vessel berthing information system” based on a Portable Pilot Unit PPU, <i>Tommy Mikkelsen, Marimatech</i>
11.05-11.15	Discussion
11.15-11.40	Developing a Port ECDIS – a challenge mastered, <i>Dieter Seefeldt, Hamburg Port Authority</i>
11.40-11.50	Discussion
11.50-12.00	Conclusion/Refreshments
Live Demonstration	
12.00-15.00	The following systems and equipment developed in EFFORTS can be experienced live: • Tug Simulator • Portable Pilot Unit • Port ECDIS

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Advance Notice of EFFORTS events:

In September and October 2009 the following research results will also be presented to port and maritime experts:

Water Quality, Port Air Quality

22 – 23 September 2009, Le Havre, France

Noise Annoyance of Ports

2 October 2009, Dublin, Ireland

Education, Training and Human Development

7-8 October 2009, Dublin, Ireland

The detailed programme with definite times and places and registration details will be published in the next newsletter and on the website of the project:

www.efforts-project.org

EFFORTS Final Conference

28 October 2009, Hamburg, Germany

For detailed programme and registration please go to:

www.seaport-innovation.org