NEWS

NON-STOP 1

Ports and digital transformation

NON-STOP is a €4,7m project, 50 % co-funded by European Regional Development Funds (ERDF) under the North Sea Region Programme 2014 – 2020; Eco-innovation priority. **J-No.: 38-2-5-19**

NON-STOP celebrates 2 years of digital transformation of sustainable ports

What does Non-Stop stand for ?

NON-STOP stands for "New smart digital Operations Needed for a Sustainable Transition of Ports". NON-STOP is an Interreg V B North Sea project, with an overall budget of 4,7mEuro. The project is lead by the port of Zwolle and involves 10 partners, of which 7 port authorities.

The NON-STOP project aims to implement a green and smart digital transition within small and medium-sized ports within the North Sea Region. This is achieved by testing and monitoring intelligent technologies in the use of data, related to marine, maritime and logistic conditions and operations within these ports.

The following areas of port management will be considered:

- Safety and security
- Environment and water quality
- Financial management
- Marine research
- Energy and OPS (onshore power supply)
- Port procurement

By building on collaborative expertise and joint practices, the ultimate goal of all these pilot projects within the project is to

- reduce the time of pre-defined logistical/maintenance port operations by 10 %
- lower the port energy consumption and environmental pollution by 10%

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NON-STOP meeting at the port of Helsingør – 4&5.10.2021

After a long period of Mickey Mouse Meetings, the Non-Stop partners have come together at the port of Helsingør (https://www.portofhelsingor.com/), the home of Hamlet.

After the traditional management meeting and updates on the different pilot projects, the partnership has invited 3 keynote speakers in order to explore the impact of digitalisation on the daily port management.

The first topic concerned the energy issue within the small and medium-sized ports: an overview was given of the implementation of smart onshore power supply systems in the ports in Denmark and Norway, whereby different systems have been installed in function of the port operations. It has become clear that port managers can not longer deny the necessity to think about flexible and smart solutions that match the energy needs of the ports. Different systems are installed in function of the concrete operational conditions within the ports.

The second presentation related to the growing use of artificial intelligence in the maritime sector. This was illustrated by the concrete example of the port of Skagen, whereby Jesper Rulffs showed the participants the link between digitalisation, sustainability and innovation.

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The next day was a working-visit to the port of Helsingør. Highlight of this visit was the crossing between the ports of Helsingør and Helsingborg with the electric ferries of the ForSea shipping-line (https://www.forseaferries.com/), offering a 24/24 and 7/7 service. The visits to the battery storage containers on board of the ships and the bridge have been an eye-operer for many participants. The ferry operator and the port director did not hide the long struggle to find an efficient solution to charge the batteries of the ferries in less than 7 minutes…. Nevertheless, solutions have been found and all electric ferries are up and running. Considering the fact that the ForSea Ferries are still handling more than 7 millions of passengers per year, these investments have been of major importance for the sustainability of the line. This stands in sharp contrast with the enormuous CO2 production that is related to the traffic on the Øresund-bridge between Malmö and Kobnhavn, a project that has been heavily subsidised by the governments….

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WHY NON-STOP digitalisation in small&medium-sized ports: permanent challenges and opportunities

Just like in many industrial sectors, the maritime and port sector is inevitably confronted with the digitalisation of the operations, maintenance and management.

Within a port environment, several functions are facing the impact of digitalisation, a.o. :

- Logistics and warehousing (landside/seaside/waterside)
- Energy production, storage and distribution
- Fisheries and fish trading
- Circular economy and port development
- Port management and maintenance
- Marine industry and research

Moreover, a lot of data are connected to the daily operations of seaports and inland ports, and the digital transformation covers several steps in order to come to a cost effective digital performance. There is, o.a. :

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- The collection of data
- The transfer of data
- The storage of date
- The property of data and data-sharing.

Large ports are investing intensively in the set-up of efficient data managements systems in order to realise a sustainable port expansion. On the other hand, small and medium-sized ports have no or limited knowledge about the impact or the advantages of digitalisation as to create the right conditions for a smart port development.

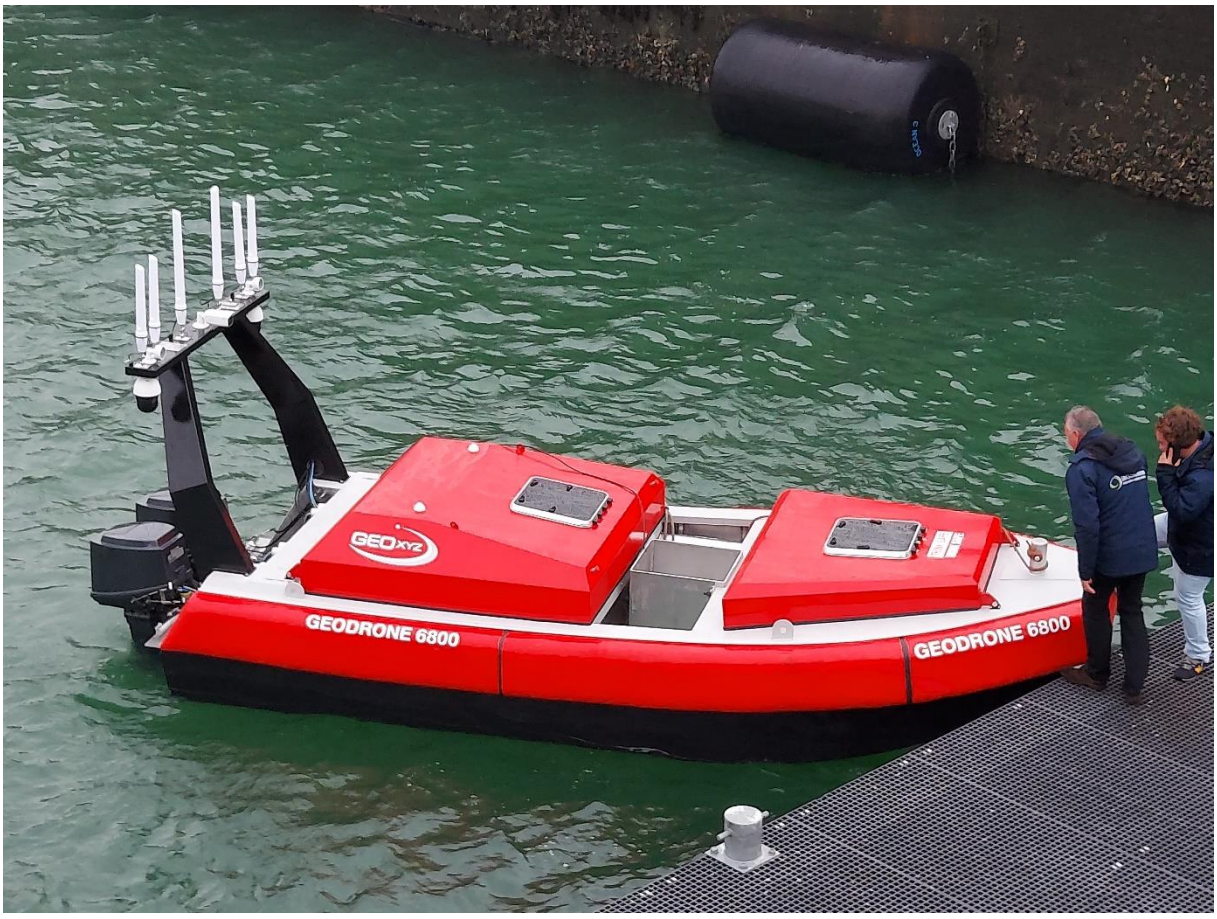
The knowlegde and experience gap is linked to different factors, that influence largely the readiness of the concerned port to integrate the different aspects of digitalisation:

- The readiness of the port management : is digitalisation seen as a permanent exponential cost, or as a tool to realise new income
- The readiness of the port infrastructure: how is the connectivity organised within the port and between the port authority and the different operators
- The readiness of the port clients and operators : is there a possibility to create a data community
- The readiness of the staff at the port : are data-platforms used in order to make the daily port management decisions
- The readiness of the port IT services: is ITsupport more than server-management
- The level of financial sources : what are the earning models that can be implemented in order to build data exchange platforms

- The level of sectoral approach or an integrated approach: are the data, collected by the research institutions in the port, shared with the offshore sector or the fisheries
- The maritime and meteorological conditions: what is the impact of the direct environment of the data operations, especially data transfer
- The presence and knowledge of technologies : have the first investments in IOT been made
- The level of access of information and exchange of experiences, especially related to sustainable business cases.

Considering the different functions of the ports today, and the different factors that might influence the uptake of the digital transformation within the small-and medium sized ports, it is clear that this process of digitalisation is only at the beginning and will ask for major financial and technological impulses in order to bring these ports as a higher level.

Innovation will not be any longer the privilege of the major ports, but considering their flexibility, small and medium-sized can become frontrunners in many sectors of port business and port operations. And this will bring new business opportunities.



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NON-STOP PILOT projects

Port of Zwolle chooses the software company Parkline Aqua to digitalise the collection of port dues.

When the port is spread out over different cities, it is important to keep a good overview on the income that might generated by serving the different vessels. As the port of Zwolle is managing 3 different sites, the management has been investigating how they could make the registration of the vessels and the collection of the port dues more efficient. From 1.09.2021 on, the skippers can by a special app, developed by Parkline AQUA (https://www.parklineaqua.nl/). This is a special app that has been developed for the supply of drinkwater, shore power and for the collection of port dues. The app is also used at the ports of Rotterdam, Amsterdam and Antwerp, North Sea port and the Vlaamse Waterweg (Inland canals Flanders), especially in relation to inland shipping. By using this app, the port authority gets a better view on the number of transactions and its reduces the administrative burden, as well as the number of disputes.

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Port of Korsør prepares the installation of a smart shore power plant

The port of Korsør (http://korsoerhavn.dk/) is an important hub in Sjaelland for the transport of bulk and raw materials for the production centers in the hinterland. As the port is a city port, the port operations have a direct impact on the city environment. Therefore, the port management has dediced to install a system of onshore power supply. Within the framework of the NON-STOP project, a supplier of OPS-systems "Soft og Teknik AS (https://softogteknik.dk/) has been selected. With the onshore power plant, it will be possible to supply electricity to 80% of the vessels that call at the American quay. The power plant has the capacity to supply 2 vessels and 2 electric cranes simultanously. It is therefore the ambition of the port manager to replace the 2 port cranes, that are actually operation on diesel, by electric cranes.The installation of the OPS-plant contributes largely to the reduction of the CO2-emissions in the port area.

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NON-STOP Research: NPorts develops an intelligent water monitoring system for the port of Emden.

While many ports merely have the task to enable berthing of a ship by maintaining sufficient water depths, some other ports such as the port of Emden additionally play an important role in the regional drainage system. Being located between the hinterland and the river Ems, the port functions as a buffer when excessive water from the hinterland needs to be drained away to prevent flooding in the region.

Sufficient water depths in the port of Emden are safeguarded based on a custom-fit dredging system which works with a medium called fluid mud. Since potentially delicate microbiology is expected to play a key role in this system, no detrimental effects must be caused to their habitat.

Considering the fact that climate change may induce more extreme rainfall events in the years to come, NPorts has set out to find answers to multiple questions within its NON-STOP pilot (https://www.nports.de/en/sustainability/projects/non-stop/). For example, this includes a running investigation of the existing microbial community and its resilience against higher freshwater shares from the hinterland. Moreover, a new sensor infrastructure is currently being implemented (incl. a self-sustaining measuring buoy) that allows to detect possible changes in the port's water composition in different depths. A dashboard will eventually bundle all the data gathered in order to provide operators with recommended actions. This intelligent water monitoring system will enable to incorporate previously unavailable information in the future interplay of dredging and water management, thereby preparing the port of Emden for the challenges ahead.

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NON-STOP sharing experiences

Bluebridge organises webinar on port digitalisation and management.

During the lockdown and obligatory social isolation, the incubatorhouse Bluebridge (https://ostendsciencepark.be/bluebridge/bluebridge/) has taken the initiative to define several webinars, related to the digitalisation of ports and ports operations.

The following topics have been covered:

- Port management and digitalisation in small& medium-sized ports and large ports
- Smart digital water quality monitoring in ports
- Ports and autonomous maritime transport.

As the next lockdowns are on their way, incubatorhouse Bluebridge has started to prepare the next series of webinars. More to come !

The next webinar will be on 15.12.2021 and concerns the use of apps in port management.

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NON-STOP Communication

More information about NON-STOP can be found on :

Website : https://northsearegion.eu/non-stop/

Linkedin: https://www.linkedin.com/groups/9092589/

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NON-STOP agenda

- **Connect2smallports – 18.11.2021** - Port digitalisation technologies - online – registration: (https://connect2smallports.eu/event/seminar-on-port-digitalization-technologies/)

- **NON-STOP Webinar – 15.12.2021 – the use of APPs in port management – online – registration : https://ostendsciencepark.be/whats-appening-at-the-ports/**

  Digitalisation can help to control port traffic more efficient and to facilitate communication towards port users. This webinar is focusing on the use of different smartphone applications for port users.

  "Whats Appening at the Ports"

  Date & Time: Wednesday 15 December 2021 - 10h30-12h CET

  10h30: Introduction

  10h35: "Digitalization in the ports", Jeroen Van Den Ende (Port of Zwolle)

  10h55: "A bon port , the port of Saint-Nazaire's application by CITYKOMI® ", Stéphane Lecerf (Citykomi)

  11h15: "Reducing Turnaround time for truckers in ports", Vladimir Pshonyak (Piertrucker)

  11h35: Panel Discussion
  11h55: Closing words

  The webinar will be moderated by Jurgen Adriaen (Project Officer Bluebridge NV).

  For more information: jurgen.adriaen@ostendsciencepark.be

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