NWE574 Smart Tracking Data Network for Shipment by Inland Waterway (Smart Track 4 Waterway)

Study Visit Perex 4.0
Belgium

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Author:
Contributors:
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1. Executive summary

1.1. General Information

A visit of the PEREX centre was organised in Namur, Belgium on October 19th, 2021 by some partners of the Interreg North West project “Smart Track 4 Waterway (ST4W)”, namely Multitel and Logistics in Wallonia.

The PEREX centre aims at managing from the same place and in real time, all the infrastructure of the road and waterway networks in order to provide better information to users, to improve traffic and make these networks safer.
ST4W project aims at promoting modal shift from road to waterway thanks to a collaborative, secure, standardized and interoperable digital tool for tracking goods and synchronizing stakeholders.

The aim of the gathering was to present certain aspects of the PEREX 4.0 project; the remote management of infrastructure and locks, and the evolution towards River Information Services applications. It was also an opportunity to remind the audience of the objectives of the “Smart Track 4 Waterway” project (including within the context of the Call for Capitalisation extending the reach of the project to the inner cities) and to present the challenges and opportunities of hierarchical tracking in a multimodal environment.

1.2. List of attendees

Name	Organisation
Cédric Peeters	Port de Bruxelles
Anne-Stéphanie Adibime	Logistics in Wallonia
Vincent Dernier	Le Forem
Jean-Pierre Huvenne	Le Forem
Mike Lagrenet	Le Forem
Karine Gressens	SPW Mobilité & Infrastructures
Stéphanie Plancq	Voies navigables de France
Cathy Hennion	Voies navigables de France
Philippe Herman	Port de Bruxelles
Valérie Tanghe	Port de Bruxelles
Muriel Andurand	CIRCOE
Paul Bonga Bonga Gailly	Le Forem
Brice Leblud	Deschieter
Vincent Brassinne	Novandi
Yves de Blic	Multitel
Christophe Blerot	SPW Mobilité & Infrastructures
Loïc Pecher	Logistics in Wallonia

1.3. Programme of the day

- **9.45**: Welcome reception / coffee at PEREX centre, rue Del’Grète 22, 5020 Namur
- **10.00**: Presentation of the remote management of the infrastructure and locks (operations) and evolution towards AIS ad RIS applications- *by Christophe Blerot, SPW Mobilité et Infrastructures*.
- **10.45**: Presentation of Smart Track for Waterway and its extension in urban areas; modal shift to waterways fostered by hierarchical tracking- *by Loïc Pecher, Logistics in Wallonia*.
- **11.00**. Presentation of the challenges of hierarchical tracking in a multimodal environment- *by Yves de Blic, Multitel*.
- **11.15**. visit of the PEREX centre: Management of road and waterway networks and hydraulic infrastructures- *by Christophe Blerot, SPW Mobilité et Infrastructures*.

2. Part 1. Presentation of the remote management of structures and locks (operations) and perspective of evolution towards AIS and RIS applications

The PEREX (PERmanence d'EXploitation) centre was presented by Christophe Blerot from SPW Mobility and Infrastructure in order to show its evolution towards a more modern operation of waterways, its concerns and objectives for the future. Between 1999 and 2019, PEREX centre has evolved from a road operation network centre only to a river network centre as well. It also includes RTBF Mobilinfo radio station and the CRT, the Police regional centre for traffic violations.

2.1. Review of current activities (assessment)

2.1.1. Challenges

Because of the saturation of the overall road network and the general growing climate imbalance, PEREX has put in place a strategic scheme 2020-2050. It aims at:

- widening waterways,
- improving and modernizing the global infrastructure in order to make it more attractive,
- integrating all users.

Indeed, the hydraulic network benefits the shipping industry, industries, agriculture, it is responsible for the quality of water- especially drinkable water- and strives to respect biodiversity.

2.1.2. Objectives

It is a European goal in general and a Belgium one in particular to reduce greenhouse gas by 55 % by 2030 (compared to 1990) and to increase the modal shift by more or less 10% by 2030 (as opposed to 7% in 2016). The improvement and modernization of the neighbouring countries' infrastructures (VNF (FR), Maasbracht…) has been a major incentive for Wallonia to follow their footsteps and level up.
The main objectives are:

- to improve waterway infrastructures,
- to optimise water resources,
- to modernise the telecommunication systems of road and waterway networks by installing fibre optic,
- to develop a 200m2 data centre to gather the data and services information,
- to implement the remote control of the infrastructures and locks, as the lock keeper's trade is on the wane
- to build 31 lock crossing infrastructures remotely controlled from PEREX centre between 2019 and 2035.

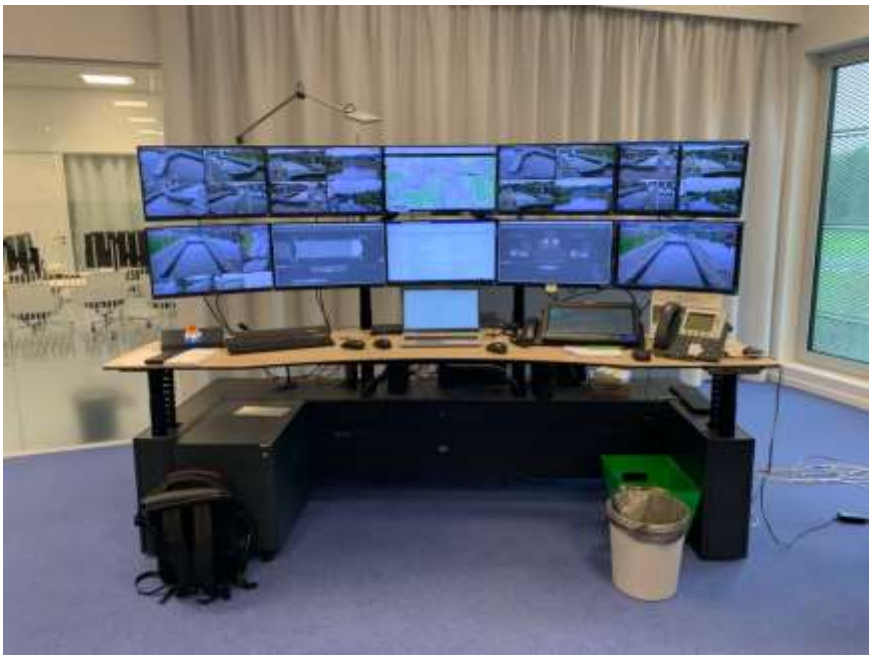
Some locks will remain as they are as they cannot be remotely controlled because they are:

- "large size" networks such as Strépy-Thieu's cable car lift, the inclined plane of Ronquières and the three large sites in the Liege area operated around the clock which are very busy and include waterfalls. However, as the Dutch already remotely control these large size networks, it is not out of the question that this process be extended to the neighbouring countries.
- "small size" networks such as the locks that are too old or used by recreational boats, or considered as UNESCO World heritage.
- Some networks' remote control is relocated next to Liege (Ittre's lock from Ronquières and Monsin's lock from Lanaye)

2.2. Operations control room

So far, PEREX only has one lock which is remotely controlled. One remote control desk can remotely control two locks. It is built as follows:

Cam HD	Cam HD	AIS	Cam HD	Cam HD
Cam HD	SCADA	PC	SCADA	Cam HD
Stop button			Mariphone	Stop button



2.2.1. Advantages of remote controlling

In order to be fully staffed, the operations room would need 43 full-time jobs, hence 150 employees for 31 locks. It holds:

- 12 remote control desks: 2 locks/ desk, 2 desks/ position, therefore 6 “traffic assistant” positions.
- 3 “traffic management” desks: one room coordinator, one person on call 24h and one surveillance position.

Remote control allows:

- more flexibility in the infrastructure’s management, but it depends on the density of traffic. There are two conditions for that flexibility; being able to capitalise field experience (“lock keeper 4.0”) and putting in place an accreditation of prior experimental learning in order to optimise their skills and their training. The lock keepers will be called “traffic assistants”.
- a consolidation of infrastructures: some lock keepers will fill the new remote control positions in the operations control room and will take part in increasing preventive maintenance.

It goes without saying that in order to automate the locks, there is an upstream work of modernisation to be put in place, as some infrastructure are ageing and funds are necessary to install high-speed fibre optic in the whole network.

2.2.2. Operations Apps

- One application (Notice to Skippers) is used to give information such as the speed to be respected, an upcoming construction work…
- An app called “Webtracking” which allows to visualise/ give an overview of the waterway traffic in real time; it receives data from the boats via the AIS system. This should soon be compulsory.
- Gina 3: it is a navigation software which records Electronic Ship Reporting (destination, what sort of load…) and allows to gather statistics

In the future, the aim is to modernise even further by creating, for instance, an app supervising the construction works along the waterway and infrastructures, report feedback or information (e.g. a tree to cut down…), share information with the skippers on the waterways.
Ideally, it would be best to find a unique solution such as VisuRIS.

2.2.3. VisuRIS

VisuRIS app (Visualisation of River Information Services) is used in Belgium and 12 European countries are using the EU version. It allows the visualisation of RIS by means of an advance web portal for inland navigation.
RIS offers a package of diverse services aimed at optimising the shipping and navigation process on Flemish inland waterways. RIS streamlines the exchange of information between waterway managers and users, thus enhancing safety and increasing efficiency.

It offers a wide range of GIS applications such as:

- a back-end GIS for data management,
- multi-screen visualisation applications for control rooms,
- a routing application for inland navigation,
- an alert system for the notification of dangerous situations,
- an interactive portal site
- and mobile apps providing quick and easy access to vital information.

The software calculates the itineraries, taking into consideration the water levels, tides, operating hours and calamities. The current traffic situation as visualised in VisuRIS helps make shipping traffic much more fluent and safer.

3. Part 2 : Presentation of « Smart Track for Waterway » and its extension in urban areas; modal shift to waterways fostered by hierarchical tracking.

Cfr. Document “ST4W 211019 - PEREX - v5.PDF”

4. Part 3. Presentation of the challenges and opportunities of hierarchical tracking in a multimodal environment

Cfr. Document “ST4W 211019 - PEREX - v5.PDF”

5. PEREX centre visit

At the end of the presentations, the attendees were taken up to the third floor of the PEREX centre, for a tour. There was the operations room for road traffic in Walloon, a crisis unit room, the RTBF radio station, one operations room and two duty rooms (soon to be operational) dedicated to remote control and operation of waterways. Hydraulic management involves water level management devices, a decision support tool for electricity production, water level, encoding and maintenance.


6. Follow-up

The question was raised by VNF as to how to trigger French shippers to initiate modal shift from road to waterway? In Walloon Region, they get financial incentives to encourage them in that direction. The question could pave the way for another workshop in the future.