



Ports & airports

Digital Twins, AI
and predictive
technologies

Port Digital Twin for efficient operations tracking of CO₂ emissions



Funded by the
European Union

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101037564

Developed by :

 **univers**

 **imec**

 **Port of
Antwerp
Bruges**

Project by :

PI **NEERS**
Portable Innovation Open Network for
Efficiency and Emissions Reduction Solutions

Operational fields

Technologies

Solutions



PORT DIGITAL TWIN FOR EFFICIENT OPERATIONS TRACKING OF CO2 EMISSIONS

Ports & airports

Digital Twins, AI
and predictive
technologies

PIONEERS
Portable Innovation Open Network for
Efficiency and Emissions Reduction Solutions



Solution description

The Port Digital Twin solution integrates diverse data sources into a unified digital platform to enhance visibility and management of port operations, focusing particularly on CO₂ emissions. It includes three practical functionalities: predicting vessel movements to reduce congestion and waiting times, mapping CO₂ emissions to evaluate the effectiveness of emission reduction strategies and optimizing train operations by providing end-to-end visibility of train movements. Additionally, the platform employs AI-based scenario simulations, enabling stakeholders to evaluate the impact of various operational strategies before their actual implementation.



Benefits

- Real-time prediction and avoidance of vessel traffic conflicts.
- Comprehensive tracking and mapping of CO₂ emissions for informed environmental strategies.
- Optimized train scheduling, reducing delays and increasing efficiency.
- Enhanced decision-making through realistic scenario simulations.
- Transferable and scalable solution applicable to other port environments.

SME truck transport companies
Port terminal managers



Technology readiness level : 9
Implementation stage : *Pilot*

Operational fields

Technologies

Solutions



PORT DIGITAL TWIN FOR EFFICIENT OPERATIONS TRACKING OF CO2 EMISSIONS

Ports & airports

Digital Twins, AI
and predictive
technologies



Fill our short
survey if you're
interested



Would you like to know more?
Take contact :



Ramona-Angela Florea, Account Manager
Tomasz Dowgielewicz



Avenue Jacques Brel 38/0 – 1200 Brussels



ramona.florea@univers.com
tomasz.dowgielewicz@etp-alice.eu



+31649737867
+48 601 415 321

<https://pioneers-ports.eu/>

Operational fields

Technologies

Solutions

