THE CONVERSATION CONTINUES

CARGO FLOW OPTIMISATION AND PREDICTION

Irene Chausse

mosaicfactor

Mosaic Factor is specialized in Big Data and Artificial Intelligence for mobility and logistics. **Know the context, understand the problem and familiarize with the data to find the right answers and extract real value.**

USERS

- SENTIMENT ANALYSIS
- USERS CLUSTERING
- DEMAND IDENTIFICATION

RESOURCES

- FORECASTING
- SIMULATION
- OPTIMISATION

COREALIS H2020 project

COREALIS is developing an innovative framework for assisting cargo ports in handling their upcoming and future capacity, traffic, efficiency and environmental challenges. It is benefitting from disruptive technologies, including Internet of Things (IoT), data analytics, next generation traffic management and emerging 5G networks.

COREALIS
THE PORT OF THE FUTURE

Duration:
3 years
May 2018 – April 2021

EU funding:
€5.15 million

Consortium:

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Ports of the future challenges

1. Ports operators need to comply with **increasingly stricter environmental regulations** and societal views for sustainability

2. **Sustainable land-use** strategy in and around the port

3. Strategic **transition** to new, **service-based**, **management models** to improve capacity and efficiency

4. **Lack of information of multimodality options** to have access to it, as customers, independently of the total volume to be transported

COREALIS expected impact

- Lower environmental impact of port operations, to achieve significant **reduction of the CO_2 port emissions and noise**

- **Improve** the **terminal operations efficiency**
- **Maximise** the **use of the infrastructure and equipment**
- **Decrease operational and external costs** such as congestion, waiting and idle times
- Embrace **circular economy** models in port **strategy** and operations

- Establish **efficient connections with hinterland transport network** and promote the use of the **most energy-efficient transport modes**

COREALIS Living Labs

The COREALIS innovations, including Internet of Things (**IoT**), data analytics, next generation traffic management and emerging **5G** networks, for cargo ports to handle upcoming and **future capacity**, traffic, efficiency and **environmental challenges** will be implemented and tested in real operating conditions in **5 Living Labs**

*Antwerp port **(BE)***

*HaminaKotka port **(FIN)***

*Livorno port **(IT)***

*Piraeus port **(GR)***

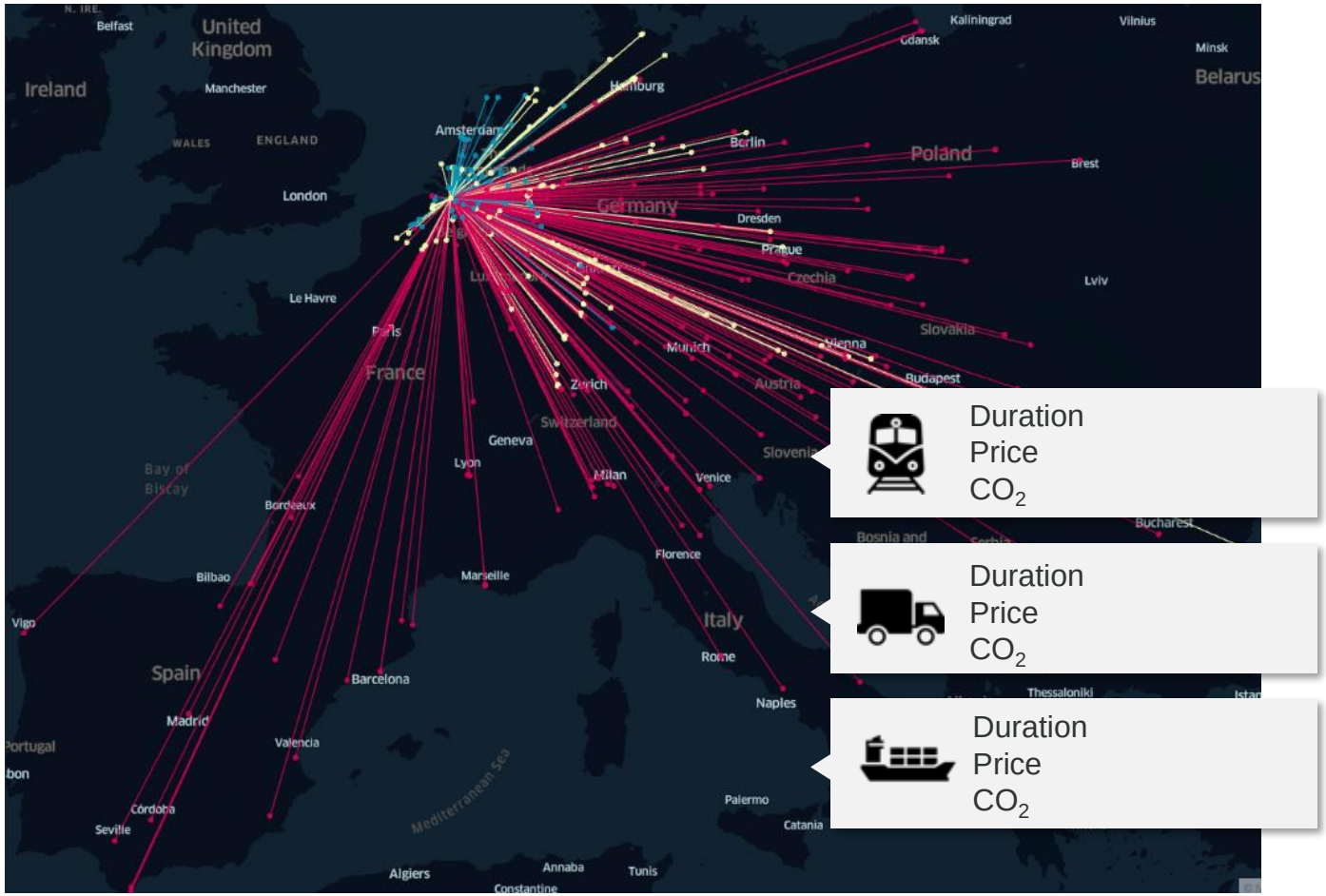
*Valencia port **(ES)***

OPTIMIZATION OF PORT OPERATIONS

→ MULTIMODAL INLAND PLANNER

→ CARGO FLOW PREDICTION

MULTIMODAL INLAND PLANNER

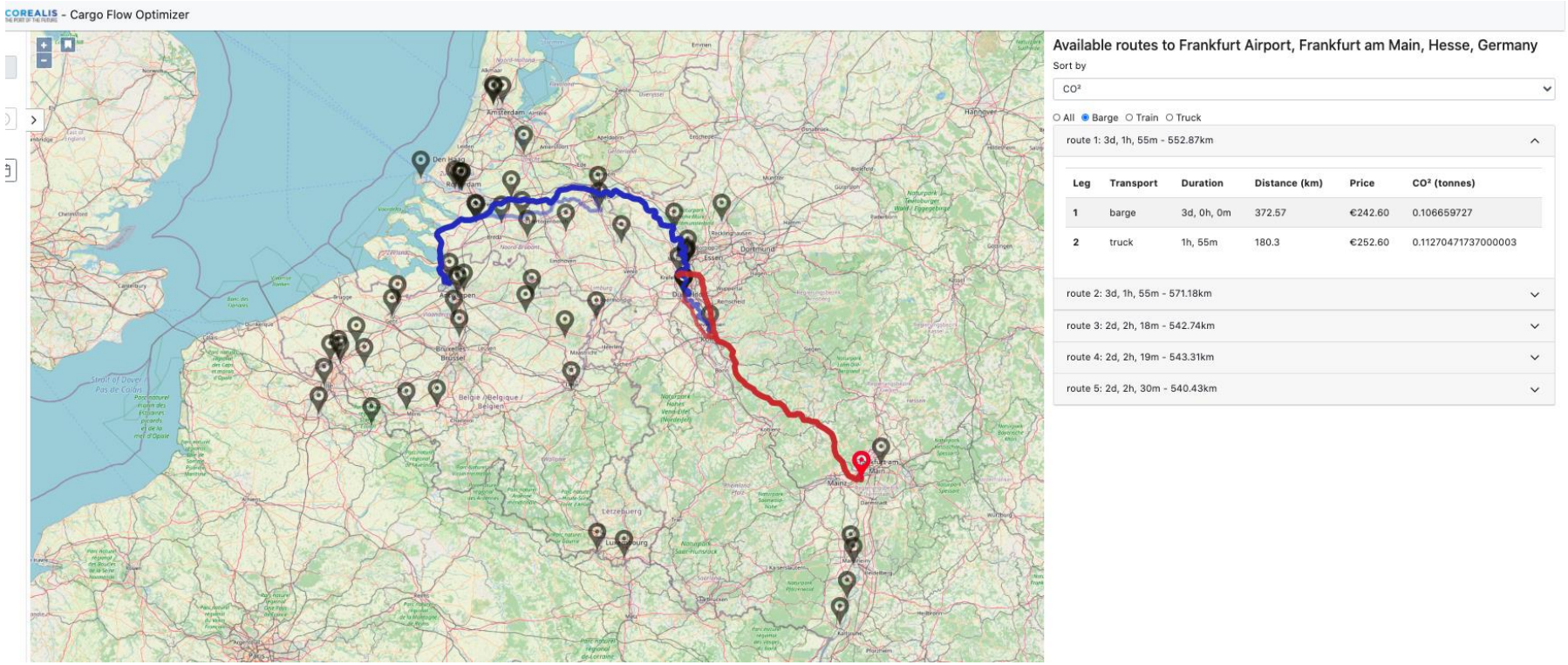


(i) Gives a complete overview of the most efficient connections from Port of Antwerp to its hinterland by rail, barge or truck.

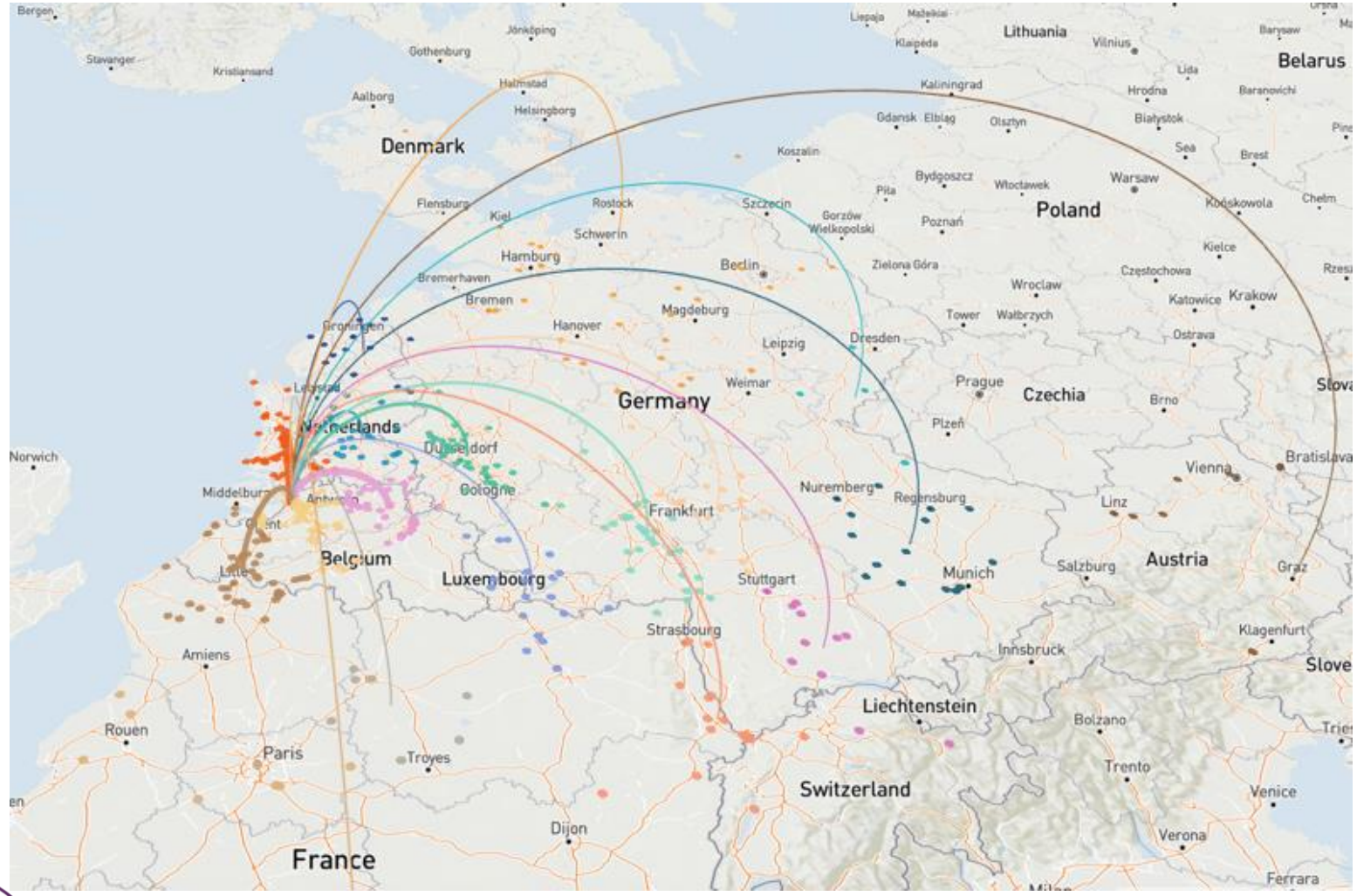
(ii) Calculates the optimal door-to-door container routes comparing the duration, price and CO_2 emissions.

MULTIMODAL INLAND PLANNER

The user defines the shipment needs and enters the requested route with the container characteristics and the desired day of departure, afterwards the tool compares all available routes from transport operators that operate in Port of Antwerp and will present the most relevant ones, optimizing cost, routing and ecological footprint.



CARGO FLOW PREDICTION



Forecast model of the flow of containers departing from the Port of Antwerp.

The accuracy of predicting cargo operations contributes to the planning and control in port terminals and increases reliability and resiliency of port operations in an ecosystem with high uncertainties and a turbulent and ever-shifting demand.

CARGO FLOW PREDICTION

An Artificial Neural Network (ANN) algorithm has been developed that can predict the daily traffic flow of containers, the destination and the mode of transport by means of historical and real-time data .

SOURCES

Cargo data

Traffic data

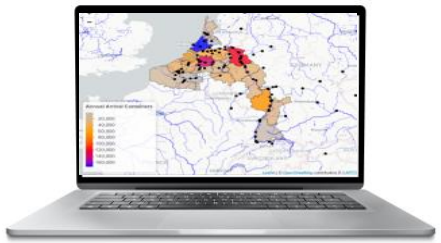
SOLUTION

Exploration data analysis & time-series analysis

Predictive modelling

Results evaluation

OUTPUT



Predicted cargo destination and mode of transport

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