Digital Services

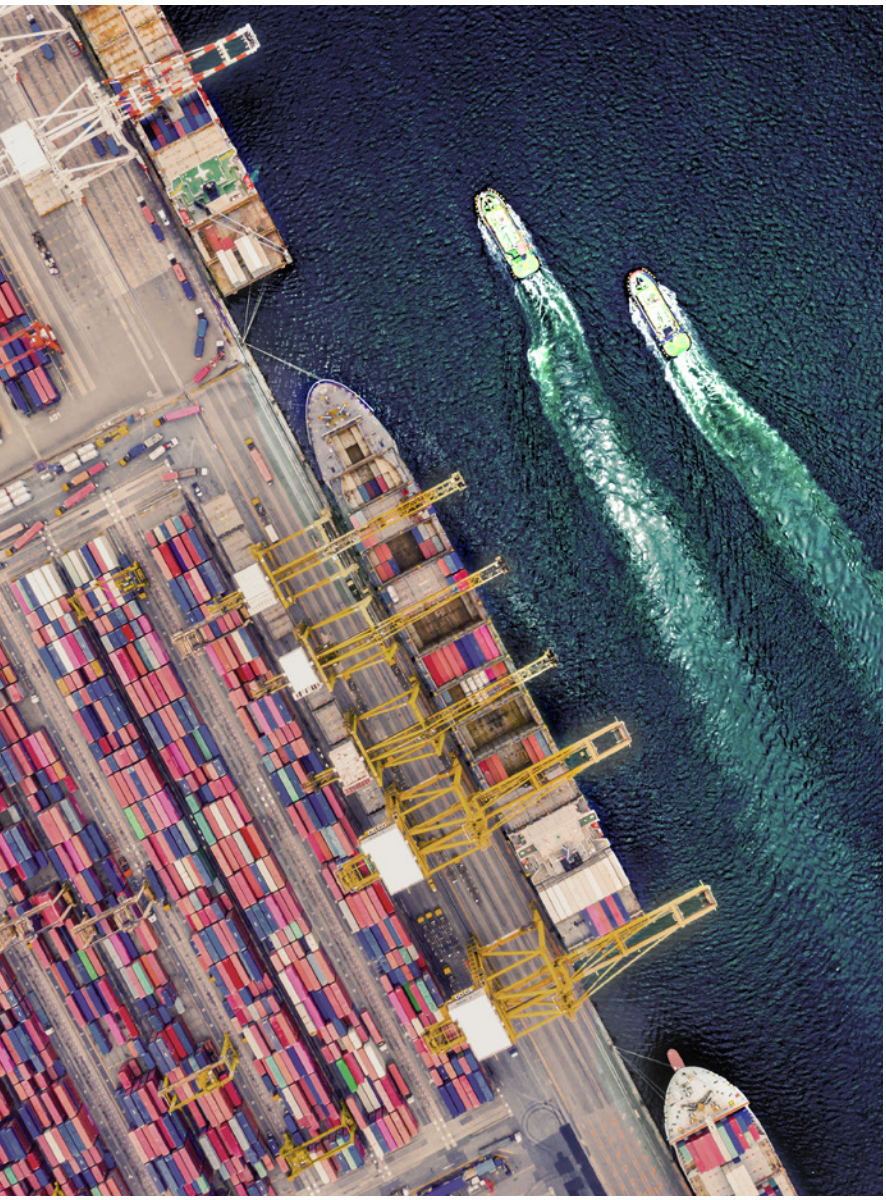
How data analysis contributes to safe and efficient shipping

Data analysis in The Port of Antwerp

orange™ Business

Facilitating role of technology

Through the requirement for the automatic identification system in shipping, the Port of Antwerp IT department realised that data analysis would uncover many opportunities for optimisation. To set a fast course for analytics they turned to Orange Business.



For the fast and effective use of their enormous volume of data for analyses purposes, the Port of Antwerp can count on Orange Business

The Port of Antwerp is responsible for the infrastructure and organisation of the second largest port in Europe, and the port with the largest lock in the world. Every year its staff successfully oversee the voyages and visits of up to 15 000 sea-going ships and 60 000 inland vessels. Technology has long played an important facilitating role, both for optimising infrastructure and for supporting nautical operations and logistics. Because of growing traffic and complexity, and the rising demand for just-in-time planning, its potential is gradually increasing.

New insights

The realisation that a targeted use of the various data sources offered all kinds of untapped possibilities also struck Amaris, the Port of Antwerp's dedicated IT sourcing partner. "Speed, efficiency and cost savings are our main motivations", explains Jan Goossens, Project Manager at Amaris. "We came to the conclusion that we didn't have a plan for using and coordinating this huge volume of data so as to create new insights." A major factor in this realisation was the require-

ment for the automatic identification system (AIS transponders) standard practice for years in aviation in shipping since 2012. The AIS data was used for real-time visualisation of shipping traffic, but was stored for no longer than three months because of its huge volume. So it was never exploited to gather detailed, historical knowledge of botilenecks, peak times, delays or risks.

“The possibilities are legion but combining all the data calls for the appropriate technological architecture”

Proven know-how and expertise

“The possibilities are legion”, says Jan Goossens. “But combining all the data calls for the appropriate technological architecture. There were just too many choices for us to grasp. We soon realised that we needed an external partner with proven know-how and expertise to speed up the project. We opted for Orange Business because they gave us a high-quality, well-argued quotation and because we’ve had good experience working with them in the past.” In the field of big data, things change very fast. It’s almost impossible to keep up as a company, but for the forty-strong Orange Business department its their key task. What’s more, they use Agile methodology, and they’re fully vendor-neutral. So there’s nobody better placed to find the right architecture match for every individual business. For the Port of Antwerp that lead to multi-component soluvon in a mix of mainly Microsoft Azure solutions with an open source environment and the application of R, Python and Spark.

Sound decisions

Using an in-depth data lab, Orange Business went to work using a teaser and test case in order to visualise berth occupation. In the wake of this a first use case was developed in order to monitor traffic intensity. In the event of complaints or any questions about waiting times at locks or berths, the Port of Antwerp can count the ships manually, but this is always prone to subjectivity. “Thanks to this greater objectivity and the wider accessibility of our data, we can more easily identify and anticipate bottlenecks,” says Jan Goossens. “We can take sound decisions and we’re immediately in a strong position in any discussion.”

Accurate predictions

The second use case was developed with a view to optimising the operations chain of the Port of Antwerp. To make the most efficient use possible of the limited loading and unloading facilities with variable availability, accurate predictions of the estimated time of arrival (ETA) of every ship in the port is necessary, right up to docking in its berth”, explains Jan Goossens. “In some areas the ETA predictions do not always seem as accurate as they should be. With this use case we want to determine the causative parameters using statistical data. Next we can compare methods to figure out how we can support the processes.”

Valuable information sources

Now that the architecture has been determined, we can build on it step by step, as new use cases are developed and identified. Shortly the first data, the AIS live tracks, will be opened up for the users of the geographical information system (GIS). In the first instance they will offer added value to marine operations departments, but this is also a valuable additional information source for infrastructure managers. Bit by bit, ever more detailed and accurate big data is finding it’s way into all the applications of the Antwerp Port Information Control System (APICS). “All the Port of Antwerp’s users and partners stand to benefit”, thinks Jan Goossens. “The present use cases focus on safe, efficient shipping, but there are lots of other applications and possible combinations. An extension to the Internet of Things (IOT), for example, or automatic inspection of the quays by cameras on board your own fleet.”

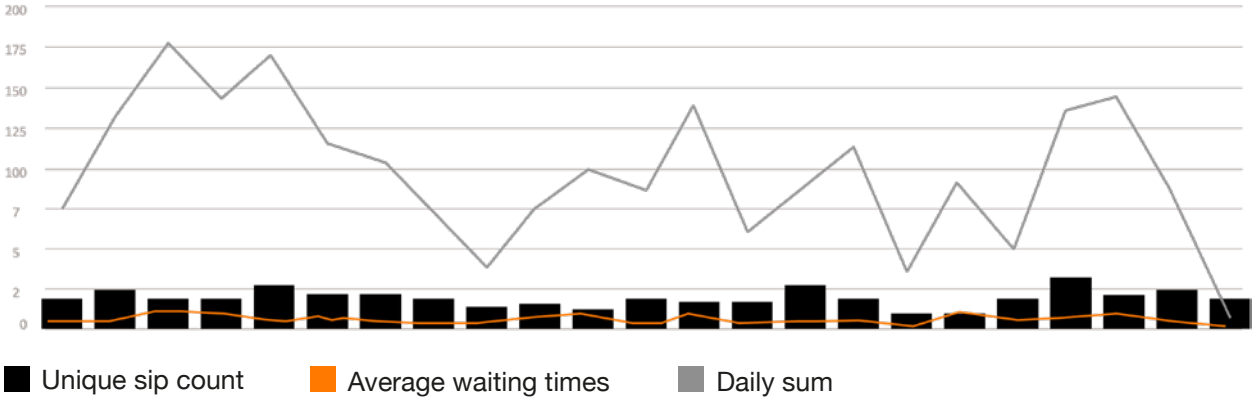
“The especially iterative and cooperative approach that Orange Business takes is invaluable.”

Finding the right path quickly

“We had every confidence in the experience of Orange Business with big data and analytics and throughout the project we had the feeling that their people knew what they were talking about.

We appreciated a lot the iteractive and cooperative approach that Orange Business took. Thanks to Orange Business we’ve quickly found the right Path to our ‘port of analytics’” concludes Jan Goossens.

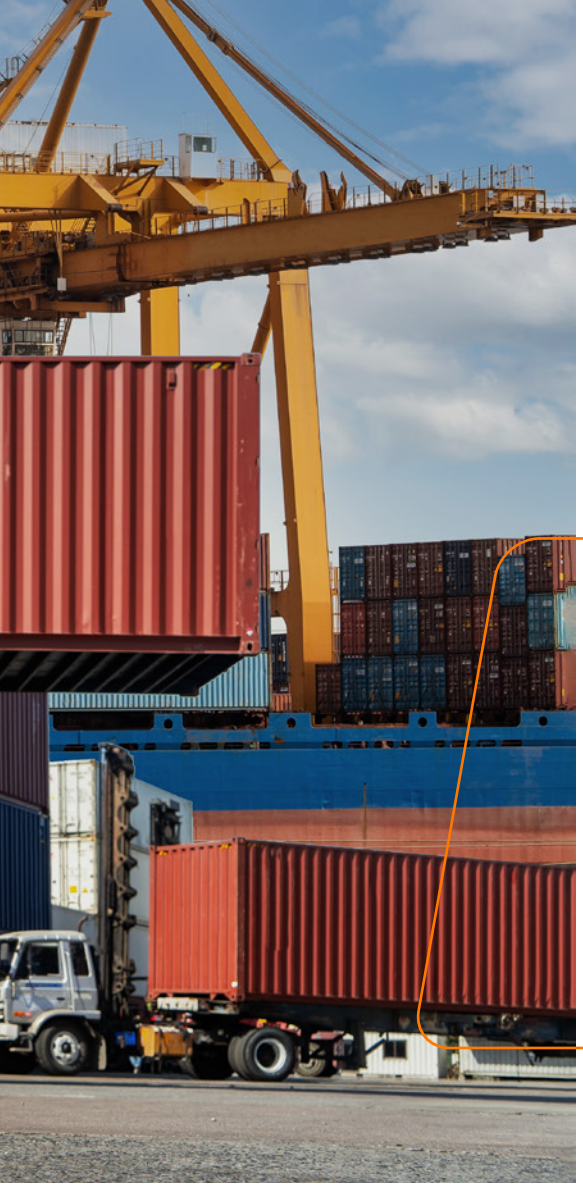
Waiting times at the port docks



For Orange Business, knowledge transfer and co-creation are the keys to finding a robust, future-oriented solution To achieve results delivering practical business value, Orange Business adopts a very methodical, proprietary approach.

Intensive interaction

“Knowledge transfer and co-creation are key aspects of the Orange Business approach”, says Pieterjan Geens, Data Science Domain Manager at Orange Business. “We don’t go about things independently, but rely on intensive interaction, in this instance with the Amaris team. The ultimate objective is to finally hand over the project almost entirely within the deadline.”
“Everything happened in close cooperation”, adds Luc Mertens, Regional Manager at Orange Business. “Starting with a Datalab we tried first and foremost to work out what challenges were posed by the Port, and then to investigate what opportunities were hiding in the existing data. Then we develop the use cases.”



> **“We also work with a very flexible, multi-disciplinary team, that drew on our data architects, data engineers and data scientists at various stages in the project.”**

Industrialisation after proof of concept

The use cases were then prioritised in a way that reflected their feasibility and benefits to the business. An initial use case was developed in the Datalab. This was then used to establish a data roadmap accommodating as wide a range of future big data projects as possible. Orange Business took into account the customer’s existing infrastructure and the use cases that had been identified, and typically carried out a comparison of the different technologies that could be considered. After developing each use case, industrialisation in the complex port environment only followed after proof of concept.

Future-proof platform

To determine the choice of technology Orange Business took a ‘best of breed’ approach, with speed, robustness and scalability as the main requirements. “It’s a customised solution, but that doesn’t mean it’s the most expensive”, emphasises Luc Mertens. “It’s a misunderstanding that ‘big data’ equates to ‘big money’. We also work with a very flexible, multi-disciplinary team, that drew on our data architects, data engineers and data scientists at various stages in the project. So we arrive at solutions that don’t get stuck in the design phase, but remain practically feasible. At the Port of Antwerp that was a forward-looking platform with room for all kinds of analyses.”

Do you have any further questions?

Or if you would like to know more about how to create value from their data, do not hesitate to mail us your query.

Digital Services

Digital Services is a business line within Orange Business, contributing to reliable and successful digital transformation for many organizations. Our joint mission is to help customers innovate and drive their business strategies in key digital domains, including Cloud, Customer Experience, Workspace, and Data & AI.
We assist them on their digital journey by providing advisory, end-to-end solutions, managed services, and professional services to ensure our customers' success.
We are digital natives, with innovation at the core of our business, which makes us a reliable partner close to our customers, leading them in their digital transformation challenges.

We support a wide range of industries in the private sector as well as the public sector. We have built a significant level of experience and understanding over the last 30 years in industries like Finance, Insurance, Life Sciences, Healthcare, Manufacturing, Travel & Transportation, Retail, and the Public Sector.
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Orange Business
Digital Services
Avenue du Bourget 3,
1140 Brussels
Belgium
marketing@bd-orange.com

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