Port of Rotterdam

5G COMMUNICATION

DIGITAL PORT

The port of Rotterdam and its industrial cluster are globally renowned for their excellent physical infrastructure and accessibility. In order to maintain this strong competitive position going forward and boost its impact still further, the Port of Rotterdam Authority is introducing a digital component. Alongside the familiar visible panorama of colossal vessels, constantly moving cranes and foaming sea spray, we are seeing the rise of a new digital version of the port: a virtual twin running on data, sensors, computers and mobile devices. A port that consists of apps containing smart algorithms that permanently track not only the movements of sea-going and inland vessels, containers but also those of autonomous and driver-operated trains and trucks. It's a port where everything is interconnected and entities communicate independently with one another.
It is making the port of Rotterdam of the future more efficient and sustainable than ever before.
The realisation of innovations such as these demands a robust mobile communications network.
The port of Rotterdam is leveraging the power of 5G connectivity to lay a firm foundation for an innovation ecosystem, making the port area an enduringly attractive location for businesses.

WHAT IS 5G?

5G is the successor to 4G and therefore the fifth generation of mobile internet. 5G introduces businesses to new and innovative opportunities, resulting in a transformative shift in how they work and think. Consequently, this new mobile communication network is helping to make existing business processes more efficient, sustainable, secure, and cost-effective.

Here are the benefits of 5G over 4G:

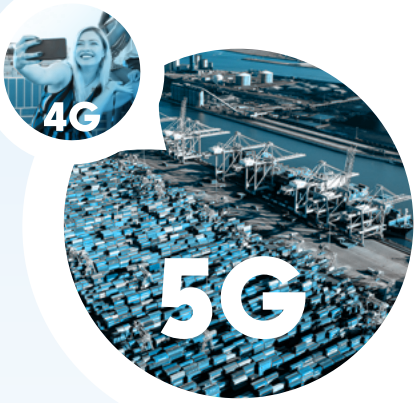
- ☑ Connects a large number of different devices, such as sensors
- ☑ Uses high quality video footage for monitoring and inspection
- ☑ Processes, including critical ones, can be remotely executed
- ☑ Real-time control over business processes
- ☑ Automation of transport (autonomous vessels, autonomous trucks, drones)

Driverless cranes and vehicles
Remote-controlled cranes and self-driving vehicles can use real-time communications to boost productivity and increase safety, while also tackling future personnel shortages.

Drones
Like sensors, drones in the port can be used in a range of applications. For example, the arrival of 5G allows drones to operate Beyond Visual Line of Sight (BVLOS). They can also be used for inspection tasks, surveillance, monitoring during emergencies or transporting spare parts.
In the future, all drones will communicate in real-time with the port's air traffic control service.

Predictive maintenance
The use of sensors for life cycle management makes it possible to cut downtime of assets or specific components. Moreover, risk-based maintenance that uses sensor data and predictive models can also bring down maintenance costs.

Security
The use of cameras with facial recognition and AI supports the security video analysis process by helping in the detection of unauthorised individuals in restricted areas.



- Faster response time and data transfer
- More stable and reliable connections
- More users on the network at the same time
- Higher capacity
- Lower energy consumption when transmitting and receiving
- Lower costs and greater operational flexibility than optical fibre connections

WHAT CAN YOU DO WITH 5G?

5G mobile connectivity offers fresh opportunities for a wide variety of innovative applications and technological developments in the port of Rotterdam. Consider advancements in the Internet of Things (IoT), artificial intelligence (AI), data analytics, and the automation or robotisation of industrial production processes (for example, the fully automatic container terminals). In addition, predictive maintenance, autonomous vehicles and vessels, the use of drones, asset tracking & tracing, as well as innovations in security processes (for example, smart cameras), all benefit from 5G connectivity. Each of these solutions go towards the realisation of a smart port that will allow us to use digital tools to make operations safer, more efficient, more sustainable and more profitable.

Data Analytics
Smart ports generate a tremendous amount of data, which can be harnessed using advanced analytics to optimise processes, reduce costs, enhance operational safety, and increase productivity. Consequently, data-driven decisions are becoming increasingly commonplace.

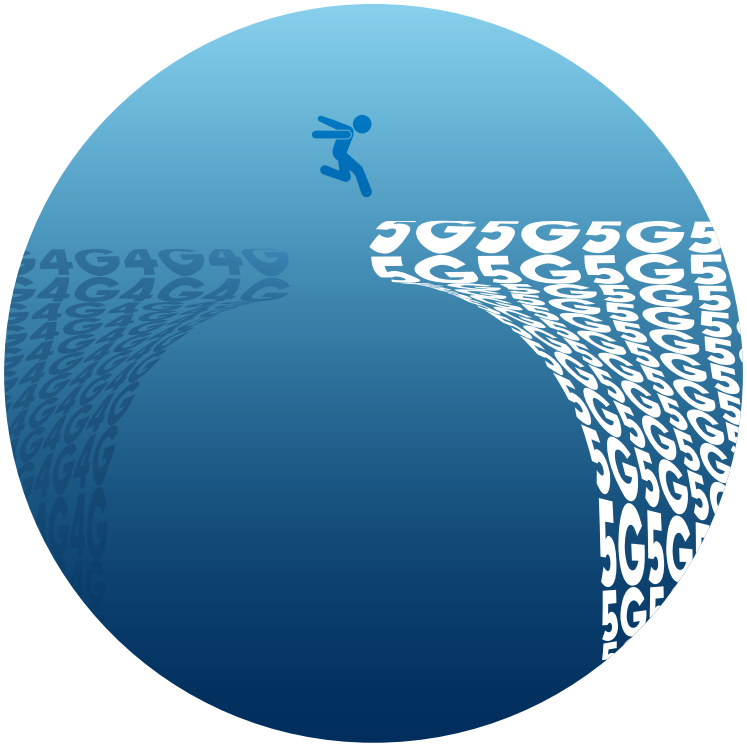
Asset tracking & tracing
Sensors allow precise tracking of valuable assets and equipment, optimising the logistics process of containers, vehicles and vessels. The sharing of data among various partners in the logistics chain is a crucial factor in this.

Sensors
Sensors can be used for a wide range of applications, such as monitoring conditions in the surroundings including pressure, temperature, positions of vehicles or vessels, humidity and so on. The data collected by these sensors is sent in real-time to the control centres, where it can be used for process control.

View the online webinar about 5G and data connectivity on YouTube:

WHAT NEXT?

The Port of Rotterdam Authority has been far from idle since the launch of 5G in the Dutch market.
We are fully engaged in establishing how 5G can contribute to achievingexcellent digital connectivity that benefits users both within the port area and beyond.



At the end of this year, the Ministry of Economic Affairs & Climate (EZK) will start issuing local spectrum licences in the 3.5 GHz frequency band. Although this frequency band enables private 5G connections, its scarcity makes it a significant agenda item for the port of Rotterdam.
The Port of Rotterdam Authority is pushing hard for sufficient allocation of spectrum in this frequency band to set up a robust 5G mobile communications network.

To set out the case for being allocated sufficient spectrum in the frequency band, the Port of Rotterdam Authority is carrying out a survey among various user groups. This will help us gain insight into the needs and interests surrounding 5G. When combined with the 5G offerings available on the market, this will ultimately lead to a suitable and future-proof5G concept for mobile connectivity in de port of Rotterdam.

5G TEST CASE

In addition to the survey, the Port of Rotterdam Authority has launched a 5G pilot zone in collaboration with several partners headed by the National Inspectorate for Digital Infrastructure (RDI).
We are setting up a 5G network in a designated area of the port in order to test and demonstrate its capabilities.

MORE INFORMATION

To keep up to date with the news or to find out more about 5G and its possibilities, check out the website.

Havenbedrijf Rotterdam

The aim of the Port of Rotterdam Authority is to strengthen the competitive position of the port of Rotterdam as a logistics hub and industrial complex at global level. Not only in size, but also in quality. The Port Authority is willing and able to make an impact and therefore focuses on accelerating the sustainability of the port, and it is a partner in the digitalisation of the port and logistics supply chains. The Port Authority's core tasks are the sustainable development, management and operation of the port, maintenance of the smooth and safe handling of shipping, and supporting the future resilience of the port of Rotterdam.

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