



ROTTERDAM PORT:

PORTMAPS LET THE OUTSIDE IN



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PortMaps is the Port of Rotterdam's GIS-based system for sharing port-related information. The home page of this system displays itself as a map of Rotterdam and all port data can be accessed from here. We believe that a spatial approach like this – à la Google – is definitely the way forward.

More or less everyone understands a geographical map. In hindsight from our digital age, the geographical map is a very logical choice in mapping out one's terrain. But before you take that step you have actually spent quite a bit of time thinking the coordinates through. PortMaps solves this as it is a combination of a spatial geo system, SAP software and a SharePoint document management system that brings together all the documents in one, thereby drastically upgrading the traditional map.

Rather than search through folder directories with all sorts of different files, users can now review, share and analyse information via a map of the Rotterdam port area. Further, due to the port's large surface area and all the industrial and transport activities that take place here, the Port of Rotterdam deals with a huge

number of stakeholders. Maps play an important role in this context, providing insights into themes such as environmental issues, noise pollution, safety and accessibility. In addition, they offer a clearer overview of the port's complex infrastructure.

THREE CLICKS

Our point of view is that the users – the managers of a quay wall, for example – need to be able to access the required information in no more than three mouse clicks. Whether it concerns a maintenance report, the design specifications or a cross-section, the local depths of the port basin or the location of pipelines or power cables. In terms of user-friendliness, the system can be compared with the intuitive interface of an iPhone. Internally, it has led to time savings of over 25% when it comes to collecting this kind of information.

CROWD QUALITY

Rotterdam has earned a unique position for itself in the international port community with an approach on total information

access via a Geographic Information System (GIS). Another advantage is that everyone consults the same data and works with the same document versions. This promotes efficiency and prevents misunderstandings. In addition, it contributes to the quality of the data itself. Since the information is reviewed by a large number of people, small errors or out-of-date information are identified and corrected far quicker. This results in a kind of crowd quality assurance.

SEXY AND STUFFY

Development on PortMaps started in 2013 and was initiated in response to concrete needs. The base system was completed within the space of 18 months. However, the technology in itself is not the main challenge. Entering and maintaining data are far more complicated tasks to continually practice. To start, you have to deal with definition issues, which serve as the foundation for a uniform, centralised information service. Next there's the hurdle of convincing all the different users that they need to abandon their own little local systems and Excel sheets. Finally,

there's the issue that while conceiving and developing the system, we have to ensure all is 'sexy' enough internally, as subsequent stages – drawing up revision procedures for data, for example – are a lot 'stuffer'.

You can see people's enthusiasm and workflow waning as a result of stuffy operational models, yet data maintainability is what actually makes or breaks a system, and you need agreements and procedures for that kind of thing. Therefore, we need to ask; 'who will be managing the information?' Settling organisational aspects like that can occasionally be tough.

GAME WORLD

But while everything is presently up and running, the job is not finished yet. We are putting a lot of thought into the further development of the GIS. In this undertaking, we try to learn from the example of Google Maps, but also other companies that base their revenue models on 3D geo information – TomTom and Here, for example, as well as engineering firms and the gaming industry.

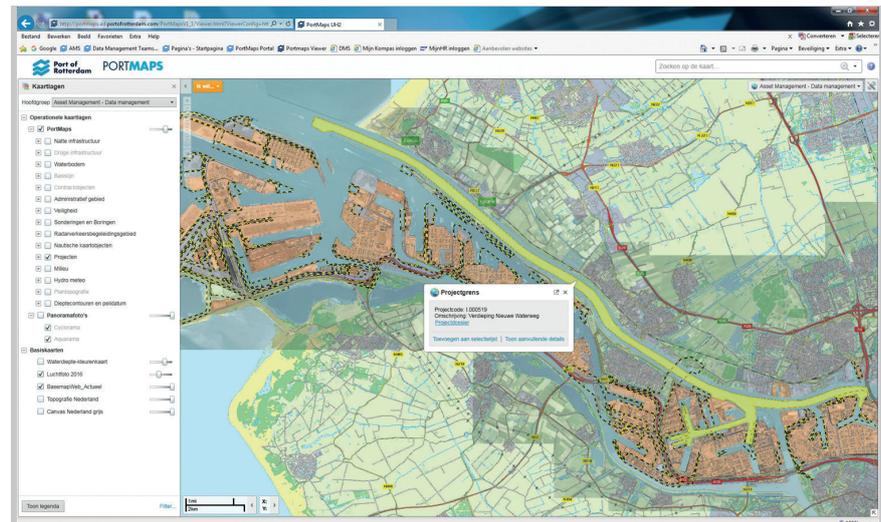
The system has to take the step from 2D to 3D. Our ambition is to bring the outside in. This means that, effectively, a model should include everything found in the physical world. 3D is indispensable for that kind of thing. It provides you with information below and above the surface. You can not only distinguish boundaries concerning pipeline connections, for example – but you can also offer the user insights into noise and environmental buffer zones.

SENSORS

Another step is integration with dynamic data. Our team are performing a wide range of experiments in this field at the Port of Rotterdam Smart Infra Lab. Things get really interesting when you can incorporate the data provided by sensors in the system via the Internet of Things. Information about the utilisation rate of berths in the port basins, for example, or parking spaces on shore are all great insights for us.

4D

Looking a bit further into the future, the system may even become 4D at some point, and this means you introduce the dimension of time. We use our port map to check a past situation at a specific site, in some cases with the aid of augmented reality and look at what it will look like in the future – if there are project plans. However, it will take a few more years before we get there. Right now PortMaps is mainly intended for internal use, but



the Port of Rotterdam will increasingly be making the GIS available to external partners too. Ultimately, our objective as the Port of Rotterdam is to make processes in the port as efficient as possible for our clients. PortMaps can play a very important role in this context.

PORT OF ROTTERDAM IS DIGITISING

Rotterdam has always been a pioneering port. It has a long history of embracing cutting-edge technologies and processes. Innovation has definitely done Rotterdam well. It is presently the largest port in Europe, with an annual throughput of some 465 million tonnes and just under 30,000 sea-going vessels mooring at its quays every year. This is a result of the port's continuous efforts to arrange matters more efficiently, effectively and sustainably and connect seamlessly with the port authority's mission to create economic and social value by working together with clients and stakeholders to realise sustainable growth in a world-class port.

While Rotterdam absolutely plans to remain Europe's largest port, what may ultimately prove even more important is its ambition to become the smartest port in the world. Smart in the utilisation of natural resources. Smart in maintaining constructive relations with local residents and other stakeholders. And, of course, smart when it comes to thinking along about efficient solutions for its clients.

At a fundamental level, smart innovations also present a solution for the challenges faced by our port. Simply saying that we live in an era of change fails to convey the dynamism of our times. Rather, we are living through a change of eras. Together with the current drive for sustainability, digitisation means that our entire society – but above all the port – is at the cutting-edge of major new developments. For example, processes

are becoming increasingly transparent, thanks to the implementation of information technology and big data processes. This eliminates unnecessary links in the chain and clears away obstacles so that, ultimately, the entire logistics chain can operate more efficiently – and, as a result, more competitively.

Rotterdam has taken the lead in this transformation through projects like PortMaps, but also with the port community system Portbase, the corporate start-ups Rotterdam Logistics Lab and Smart Infra Lab and the port-related accelerator programme PortXL.

ABOUT THE AUTHOR

Herman Meijer earned a Bachelor's degree in computer science. After his career at the Municipality of Rotterdam, he became Manager Water Systems at the Port of Rotterdam Authority. After several other functions Herman currently works as Manager Data Management at the same organization.

ABOUT THE ORGANISATION

The Port of Rotterdam is the largest port in Europe and is located in the Netherlands. From 1962 until 2004 it was the world's busiest port, overtaken first by Singapore and then Shanghai. In 2011, Rotterdam was the world's eleventh-largest container port in terms of twenty-foot equivalent units (TEU) handled (2009: tenth; 2008: ninth, 2006: sixth). In 2012 Rotterdam was the world's sixth-largest port in terms of annual cargo tonnage.

ENQUIRIES

Website: www.portofrotterdam.com/en