

RDM Campus: An innovative learning and working environment in the Port of Rotterdam

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Summary

RDM Campus is a location for research, education, business and events on the former shipyard from the Rotterdamsche Droogdok Maatschappij (Rotterdam Dry Dock Company) situated in the port area of Rotterdam. The abbreviation of RDM has been given a new meaning: Research, Design and Manufacturing. On the RDM Campus, educational institutions and companies work together to achieve innovative and sustainable solutions in building, moving and powering. RDM Campus is a co-operation between Rotterdam University, Albeda College and the Port Authority Rotterdam. RDM Campus aims to be a concrete stimulus for new economic development by creating a knowledge-based match between creative manufacturing industry and technical research and education on the one hand, and offering physical room for innovation and experiments on the other. To facilitate the knowledge transfer between educational institutions and companies, the educational concept of innovation teams is being developed.

Short history of RDM

The RDM Campus is located in the port of Rotterdam. The shipyard RDM experienced its heyday in the 1950s, when it provided employment to more than 5,000 people. By the Second World War the area had grown to 40 ha. RDM was one of the largest shipyards in Europe. One example of a ship built here is the ocean liner 'Rotterdam' of the Holland-America Line. Highly-skilled workers were recruited from outside the Rotterdam area, and were stationed in Heijplaat, the village directly connected to the shipyard.

By the end of the 1950s, the shipbuilding industry was doing poorly. RDM started doing work for the defence industry, but also had assignments from the offshore and energy sectors. After various mergers, the company was taken over by the RSV Company, which went bankrupt in 1983, rendering 1,370 people, many of them residents from the village of Heijplaat, unemployed, which was a heavy blow for the village. From 1983 to 2002 there were still some ongoing technical/industrial activities at the wharf and the area was used for port activities such as container transport. After 2002, the wharf increasingly became an avoided area.

The redevelopment of the RDM-area and the start of RDM Campus

The initial ideas for the development of the RDM Campus emerged in 2004 when Albeda College, Rotterdam University (Hogeschool Rotterdam) and CityPorts Rotterdam Development Company (Ontwikkelingsmaatschappij Stadshavens) met at the RDM shipyard. The shipyard's vocational school in the machinery hall, which Albeda College had taken over from the bankrupt RDM in 2002, was in urgent need of renovation. At the time, Rotterdam

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University was short of space and Stadshavens had just started redeveloping the wharf. Together with representatives from Heijplaat and the housing corporation Woonbron, they were looking for opportunities to improve the economic environment of the city and port by creating high-value living and working spaces. The parties involved did not need much time to reach an agreement on what they wanted. They were all fascinated by the history of the shipyard and the buildings as well as the fact that this century-old manufacturing industry was incredibly innovative for its day. After all, renowned ships had been built at this location and the underlying vision was future-oriented.

According to Stadshavens Rotterdam, establishing these schools here would act as an important stimulus for further development of the area. But how this would happen didn't become clear until the conference 'Creativity meets business' in 2005. Then both institutions and Stadshavens started to see how co-operation between education and business should be approached. Four months later an initial agreement was signed. In 2006, progress in executing this innovative plan was delayed due to discussions on the responsibility involved in dealing with this area and the necessary investments. In 2007 the role of Stadshavens in the project changed and responsibilities were taken over by the Port of Rotterdam Authority and the City of Rotterdam. The Port of Rotterdam Authority became not only the owner of the buildings at the RDM area but took also the responsibility for development of the site.

In addition to the efforts made by directors of the involved parties, a developmental team was involved in the RDM Campus plan. The development team acted on a strategic level and developed the educational concept and supported the preparatory works of all different kinds. In addition to investments made by the three founding fathers themselves, subsidies were acquired for renovation and for the development of a new educational plan aimed at long-term co-operation between business and educational partners. The renovation of the buildings started in 2007. RDM Campus was officially opened by His Royal Highness the Prince of Orange in October 2009.

Since its inauguration, the RDM Campus is a place where students and companies collaborate in an open environment and focus on new economic activity and sustainable and innovative solutions in the Building, Moving & Powering markets. The organisational vision articulates the co-operative, inspirational and innovative nature of this unique facility.

The hardware of RDM Campus: locations and harbour

RDM Campus consists of the buildings around the 'Dokhaven' (the Dockharbour), especially Innovation Dock - the former machinery hall - and 'Droogdok', the former head office of RDM.

Innovation Dock is a monumental industrial hall with a surface area of approximately 23,000m² and a minimum height of 12 metres. Innovation Dock consists of two sections, the education hall that houses Albeda College and Rotterdam University, and a business hall, where 12,000m² is available for small, innovative companies that operate in the Building, Moving & Powering markets. They form a 'knowledge alliance' with the educational institutes.

The former head office of RDM 'Droogdok' (Dry Dock) now houses offices, educational facilities, studios, a restaurant and conference rooms. The building consists of a number of buildings built between 1912 and 1952. The main part of the building was built between 1913 and 1916, with the main entrance for employees and the monumental management floor, with its own special entrance and adjoining management offices. 'Droogdok' houses the project offices of RDM Campus, the Rotterdam Academy of Architecture and Urban Design, and expertise and knowledge centres of Rotterdam University.

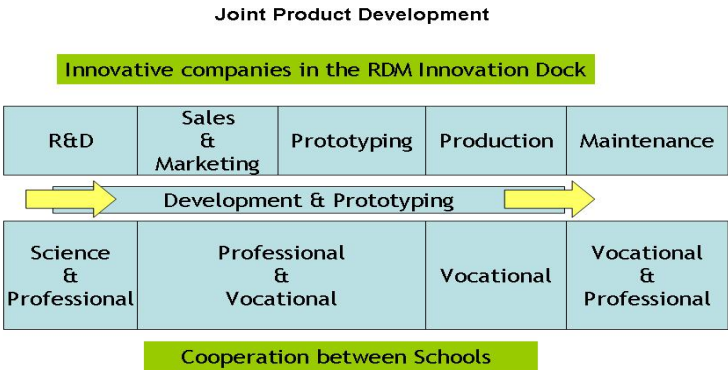
The entrance to RDM Campus by water is via the ‘Dokhaven.’ It has a jetty for the fast ferry Aqualiner, which transports students and residents of Heijplaat to and from the city centre of Rotterdam. Part of the 'Dokhaven' is reserved for inland shipping, while the other part is used for exhibitions and experiments, including prototypes of 'water houses' and in the future possibly a floating island for work and residential purposes and terraces and parking lots on water.

The software of RDM Campus: co-creation of knowledge in innovation teams

As the name Research Design & Manufacturing already suggests the RDM Campus is all about new applied technology and education associated with that. The mission is to make RDM Campus a breeding place or, in other more technological words, a ‘charging station’ for the creative manufacturing industry. This charging station will stimulate and help those companies that are developing new products and by doing so create more added value for the Dutch economy in the industrial sector.

Sustainability is the logical presumption for this new economy. The re-use of the historical buildings was already a good starting point. Additionally, RDM Campus focuses on market segments that have a good strategic fit with Rotterdam. The ‘technical’ market segments Building (Construction), Moving (Mobility) and Powering (Energy) are both representative for the current economy and the future development of the city as well as the port of Rotterdam.

In Innovation Dock, 11,000 m² is available for students and 12,000 m² for businesses, on which they together pursue research on new concepts and search for advanced techniques of maintenance. Once a company is in the prototyping and testing phase of a product, it can rent a lot in the Innovation Dock. A knowledge agreement with the educational institution will clarify the terms of co-operation. In the following period of about 3 years, the company and the students will work on optimizing the product. This is open source development in which dynamics will lead to a better product and mutual learning. When the product is ready for the market and mass production, the company must leave the RDM Campus or start a new innovation. The Innovation Dock has space for about 20 businesses simultaneously. Students work together with research institutions and the companies in so called innovation teams.



Related to the theme of mobility, students and companies are working for example on electrical cars and the Formula Zero Project. The objective of the latter is to build a racing car that runs on a fuel cell. Earlier prototypes have already participated in zero-emission races. Another project is connected to the theme of smart energy. The Ampelmann is a ship-based

self stabilizing platform that provides safe, easy and fast access to a wide variety of offshore structures (i.e. windmills in sea) by actively compensating the wave-induced motions of an offshore vessel. Finally, another group is working on a floating pavilion in the Rotterdam harbour, as part of the local ‘Rotterdam Climate Proof’ program. The futuristic pavilion consists of three half hemispheres and is climate change resilient, sustainable and fully relocatable.

The education of the students from Rotterdam University and Albeda College is based on practical problems occurring from these projects. To organize this multilevel and multidisciplinary education in a flexible way, the concept of innovation teams was created. Innovation teams consist of professors, researchers, students and employees from participating companies. The innovation team can be seen as an open source knowledge network which supports and influences the product development in the RDM Innovation Dock. Firstly, the innovation team is responsible for translating the questions raised by the company into relevant research and education projects. This enables students to integrate the knowledge and practical competences gained by participating in a project, in their portfolios. Secondly, the innovation team ensures that the results from research and education are adapted in the process of product development. And lastly, the innovation team consolidates the results of the projects into documents and publications to ensure dissemination of knowledge. The first innovation teams started in September 2009. Simultaneously a program of monitoring and evaluation was started to organise a feedback loop on this new educational concept.

Benefits for companies and students

The RDM Campus is attractive for business parties that want to shorten their ‘time to market’ phase in the product cycle. The period between acquiring a patent and the actual production and sales of a product usually covers a couple of years. During this phase, the company faces only (increasing) costs and therefore risks bankruptcy of the project. By assisting the company in optimising its product, the ‘time to market’ phase can be shortened. Hence, the product will start generation revenues earlier, making the project more profitable. Furthermore, businesses are directly in contact with students, which can lead to more productive and effective output, as well as provides the company with a pool of talent for potential employment.

Also the students and the knowledge institutions benefit from the co-operation with companies. For students it is an ideal learning environment that directly connects them to practice. They have the opportunity to work on innovative products, get to know relevant companies and develop professional skills. In addition, a very practical advantage of the Innovation Dock is that the building enables more ‘real life’ experiments than a normal school building. Simultaneously, the knowledge institutions are able to provide up to date and state of the art knowledge and projects to their students. Normally, there is an incompatibility between the rapidly changing needs of business parties on the one hand, and the time it takes a school to adjust its programs to what these businesses are looking for. On RDM Campus this gap is bridged by creating an alliance between companies and the schools. At the same time entrepreneurship among students is stimulated by an incubator, that helps starting entrepreneurs to work out innovative ideas into a business concept. The incubator also offers financing possibilities and training facilities.

Conclusion

RDM Campus is an unorthodox environment for learning and working on a former dockyard in the port of Rotterdam. Research, education and entrepreneurship have been brought together in one location. The development of RDM Campus should be seen against the broader background of the redevelopment of the whole city ports area of Rotterdam. The participating educational institutions have developed the campus together with external partners. The Port of Rotterdam Authority is a major investing partner. Various other subsidies and grants, for example from the European Regional Development Fund, have made it possible to redevelop this monumental shipyard. The mutual interest of all these parties is to give the regional economy a boost, by education of highly qualified technical employees for the mainport of Rotterdam, and by stimulating innovation and entrepreneurship. Education is organised around real life problems and questions from companies in so called innovation teams. Entrepreneurs can rent business space in Innovation Dock and for starting entrepreneurs there is an incubation programme with access to training and financing. RDM Campus can be defined as a 'context rich' learning environment for the development of people, products and services. Its ambition is to become a nationally recognised centre of expertise for technical education and entrepreneurship in five years time.