

Next Generation Port Master Planning

For many ports, master plans are drafted with a detailed architectural vision on the possible future layout of the port. StigΔ believes that port master planning can excel fully when a master plan focuses on future market demands and the potential of the area.

Traditional master planning

In many cases, traditional port master planning starts with an assessment of the area and its infrastructure. Usually, port authorities have great ambitions which are influenced by developments in major ports, such as Hong Kong, Singapore and Rotterdam. An approach like this often leads to multi-million-dollar infrastructure related master plans, with spectacular numbers of hectares and quay lengths, and is complemented by an exciting artist impression.

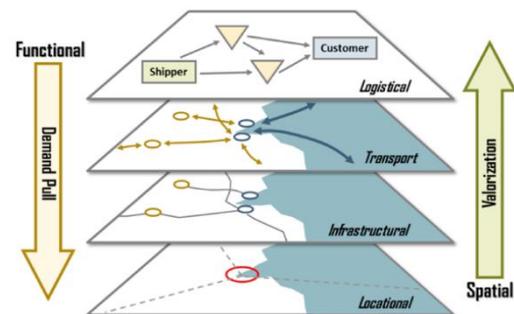
These ambitious impressions with possible future layouts can be useful, because they can stimulate its audience's imagination and help shift mind-sets when it comes to the decision-making process. However, these impressions alone will not be enough to start construction; in fact, the many uncertainties that come with these large developments can lead to reluctance to move forward. In addition, a master plan with too many details can lead to inflexibility should it need to be adapted to a changing market or when potential users change their requirements. When these changes occur, the master plan becomes obsolete.

By creating a development approach that focuses more on the market, the level of certainty of the development of the port can be increased. For example, the Port of

Rotterdam used a different approach during the development of Maasvlakte II, a project that included 2000 hectares of new land. First of all, the development was executed in phases. Secondly, the development did not start until 60 percent of the land of the first phase had already been leased. So far, only the first phase has been completed. The development of the second phase will only start when market demand is sufficient.

Demand driven master planning

Stig believes that demand driven master planning is an intelligent approach for developing ports. The basics of this approach are provided by the four-layers-model about dynamics in spatial economics:



Source: adapted from Notteboom, T. and Rodrigue, J-P (2007)

As shown in the image above, the bottom up approach starts with a focus on the area, location and infrastructure. In other words, this is the traditional way to develop a master plan. In contrast, the top down approach shows a demand of space and functions. Economic development is a result from market demand such as trade, which can heavily influence the risks involved in developing an area. A unique combination of selling points is crucial in order to successfully position an area. In turn, the positioning is crucial to create demand for space, and the acquisition of companies and economical activities. Ideally, the natural characteristics of an

area are aligned with the economic development in an iterative process that combines both approaches.

Additionally, a master plan should be flexible enough to accommodate multiple land use scenarios, since the market situation and thereby the requirements of future customers are subject to change. A detailed practical realisation of an area will be more difficult to execute. To ensure successful area development, outlining a framework of an area will provide the right amount of flexibility and detail at this stage of development.



The Panama Canal project site. Source: StigΔ

Developing ports in Panama

A good example of a development approach that focuses on market demand is the development of the West Bank of the Panama Canal by the Panama Canal Authority (Autoridad del Canal de Panamá). StigΔ is currently a key contributor in the development plan of the West Bank of the Panama Canal on behalf of the ACP.

Next to a strategic land use framework, focusing on the area, location and infrastructure, the ACP also wanted a market analysis. This analysis included the market potential given global and regional developments, as well as the current strengths and weaknesses of the Panamanian economy, for example the investment climate, laws and regulations and available workforce. In effect, the analysis identified unique selling points of the area as well as promising commercial and industrial activities. The land use

framework identified natural strengths of the area and suitable development areas.

Organisation

By changing the development approach, the team that carries out the strategy also needs change. The Panama West Bank project required a reinvigorated, multi-disciplinary development team. The 'traditional' team of an engineering and urban planning company was extended with economic and financial port development experts to carry out the market analysis and the overall development strategy. The ACP provided economic and market experts in the workshops.

Combining these elements into a master plan provided the positioning for the acquisition of economical activities that delivered the best outcomes. As a result, the chances for successful port development were increased.



The Miraflores Locks with the Panama Canal project site in the background. Source: StigΔ

A combined approach

In short, next generation port master planning requires a combined approach, with a focus on market demand to ensure successful port development. Apart from the area itself and its infrastructure, there should be a focus on trade, economics and market demand. Before any future activities can be planned in the area, market research can determine which activities could be most enriching for the proposed region. Additionally, whether or not an area is suitable for these activities should be investigated. Furthermore, the

type of stakeholders should be identified, as well as the requirements from potential users of this area. All of these factors could highly influence the future layout of an area.

In our view, to achieve sustainable port development, the primary focus of realising infrastructure as used in the traditional approach to master planning should shift to a more demand driven approach. This shift requires the involvement of a development team with a fresh multidisciplinary approach, and should include economic and financial port development experts. We believe that this approach increases the chances of successful port development.

About the author

Jan-Willem Westenbrink holds a MSc. in Systems Engineering, Policy Analysis and Management and is development manager at StigΔ.

Contact: jan-willem@stigidelta.com

Co-authors: Arènso Bakker and Onno Roelofs, partners at StigΔ.

Contact: arenso@stigidelta.com & onr@stigidelta.com

About StigΔ

StigΔ (Delta) is a Dutch based firm that develops ports, port cities and corridors. Our development activities include master planning, positioning and development strategies, as well as financial activities such as business modelling, land lease operations and asset valuation. StigΔ is currently involved in multiple projects, such as the development of the Suez Canal and the development of multiple sea and inland ports in the Netherlands.

Contact StigΔ

T +31 (0) 88 1222 111
M info@stigidelta.com
W www.stigidelta.com

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