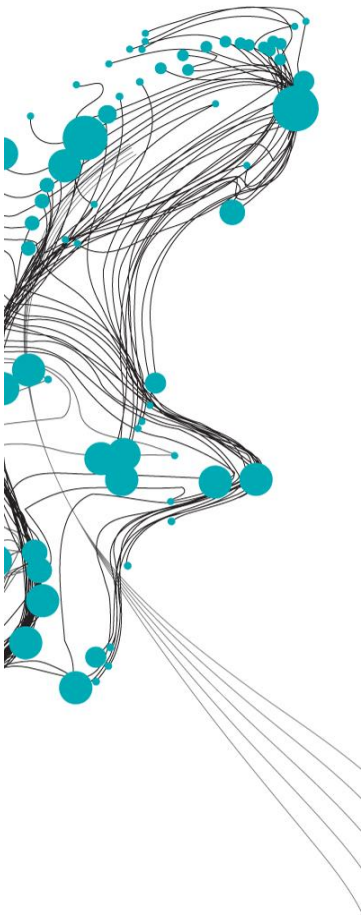
THE INTRODUCTION OF INTERACTIVE MODELLING BY 3Di IN FLOOD RESILIENT URBAN SPATIAL PLANNING



Due to changing climate change predictions resulting in more intense rain in combination with larger urban areas, municipalities, water boards and provinces are not only focusing on their sewage systems but also on flood measures in spatial planning. This has resulted in a flood resilient urban spatial planning sector (FRUSP), which cares about minimizing the consequences of floods, but at the same time allowing some flooding.

In order to support the decision-making process in FRUSP, computer simulation models are available which could assess the effectiveness of spatial measures. These models could be used during meetings in an interactive manner, which makes it possible to make adjustments in the area during a calculation and gives direct feedback during the calculation. An example of such a model is 3Di, an interactive flood simulation model which is capable of visualizing the effectiveness of measures in 3D. However, in current work processes such interactive models are hard to implement. The goal of this research was to find out what aspects of current decision making processes could be changed in order to evaluate how these processes could be shaped to use an interactive water management model.

Results of literature review and questionnaires generate an overview of the possibility of change of 9 aspects of the decision making process:

- experience and knowledge levels of actors
- roles of actors
- willingness to innovate
- initiators for innovation implementation
- kind of information received from each actor
- knowledge sharing
- trust in model results
- structure decision-making network
- extent of shared goals and beliefs

Regarding the possibilities of 3Di, workshops and interviews showed that especially the interactive character, realistic and detailed visualizations and cloud-based operating of 3Di are of importance in the decision-making process in FRUSP. The realistic and detailed visualizations (e.g. representing the flooded area from a plane view in 3D) make it possible to involve non-technical stakeholders in the model process. Operating 3Di 'in the cloud' removes the limitation of processing power of a normal computer and makes the model approachable from every device with an internet connection. To test the practical application of these results a case study of the formation process of a Basis Sewage Plan (in Dutch; 'Basisrioleringsplan' [BRP]) is conducted.

Results of the research showed that the implementation of 3Di in the decision-making process has good potential to improve the process and its outcomes and in making the process more accessible for its stakeholders. In order to implement and get advantage of 3Di some important changes in the traditional way of decision-making need to be taken (like the use of an interactive model during meetings) and a 3Di model should be operational at the start of a decision-making process. A transition process from the current situation to the new situation is needed in order to support a successful implementation of 3Di.

Figure 1: Flooded area in 3Di plane view

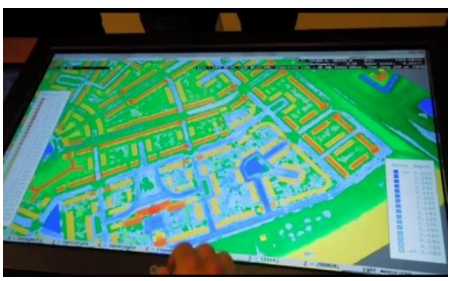


Figure 2: A 3Di model scenario of the 'Betondorp' quarter in Amsterdam, showed on a touch table

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