

# The DUBES Game: Combining DSS and Interaction

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### Abstract

The DUBES game aimed to support decision-making for sustainable urban development by the combined application of two techniques, a decision-support tool MEDIA and a simulation game. DUBES is an acronym for *Sustainable Decision-Making* (in Dutch: *Duurzaam Beslissen*). This paper describes the promises and challenges of this combined approach and is based on our publication in *Environment and Planning* (Mayer et al., 2005).

### Key-words

Gaming, Decision-Support, Decision-Making, Urban Renewal

### Introduction

Differences in stakeholders' perceptions, lack of commitment, unused knowledge, and interfering, ineffective, measures are just some of the problems encountered in sustainable urban development projects. Collaborative decision-making approaches tackle these problems by creating a shared understanding of the problems faced and of ways to address them. The authors explore how the combined application of two techniques, a decision-support tool and a simulation game, can support decision-making for sustainable urban development. The techniques are applied in decision-making for real and in fictional sustainable urban renewal projects.

The approach relies on two assumptions. First, the initial and programming phases of sustainable urban renewal projects are particularly significant for realizing sustainability. Second, an integrated and collaborative approach is needed for making sustainable decisions in urban renewal projects.

### Description of the model

MEDIA is based on Analysis of Interconnected Decision Areas (AIDA), which was developed in the 1970s at the Tavistock Institute of Human Relations. MEDIA aims to structure and enrich collaboration and interaction. It therefore involves significant adaptations and extensions of AIDA.

Design challenges in MEDIA are described as a set of decision areas: each with two or more alternative decision options. MEDIA currently includes some 200 decision areas for urban renewal projects, which were identified and validated through case studies and expert meetings. Furthermore, debriefings with participants in gaming sessions have continuously been used to improve the set of decision areas. With certain limitations, new decision areas and options can be inserted relatively easily while working with MEDIA in collaborative sessions.

Figure 1 shows the windows for manipulating the decision areas, options, and effects. Decision areas are grouped according to spatial level: region, city, quarter, block, building, and room. They are also grouped by decision-process stage (for example, design, construction, maintenance, and demolition) and by theme (for example, water, energy, mobility, and safety). The three ways of grouping decision areas are independent of each other; each may be applied separately or in combination whenever this is opportune in the process. Users can selectively reduce the design complexity by focusing on decisions related to a single spatial level, a single process stage, and/or a single theme; they can also experiment with different options in the focal decision areas and analyze the consequences of partial changes to the design.

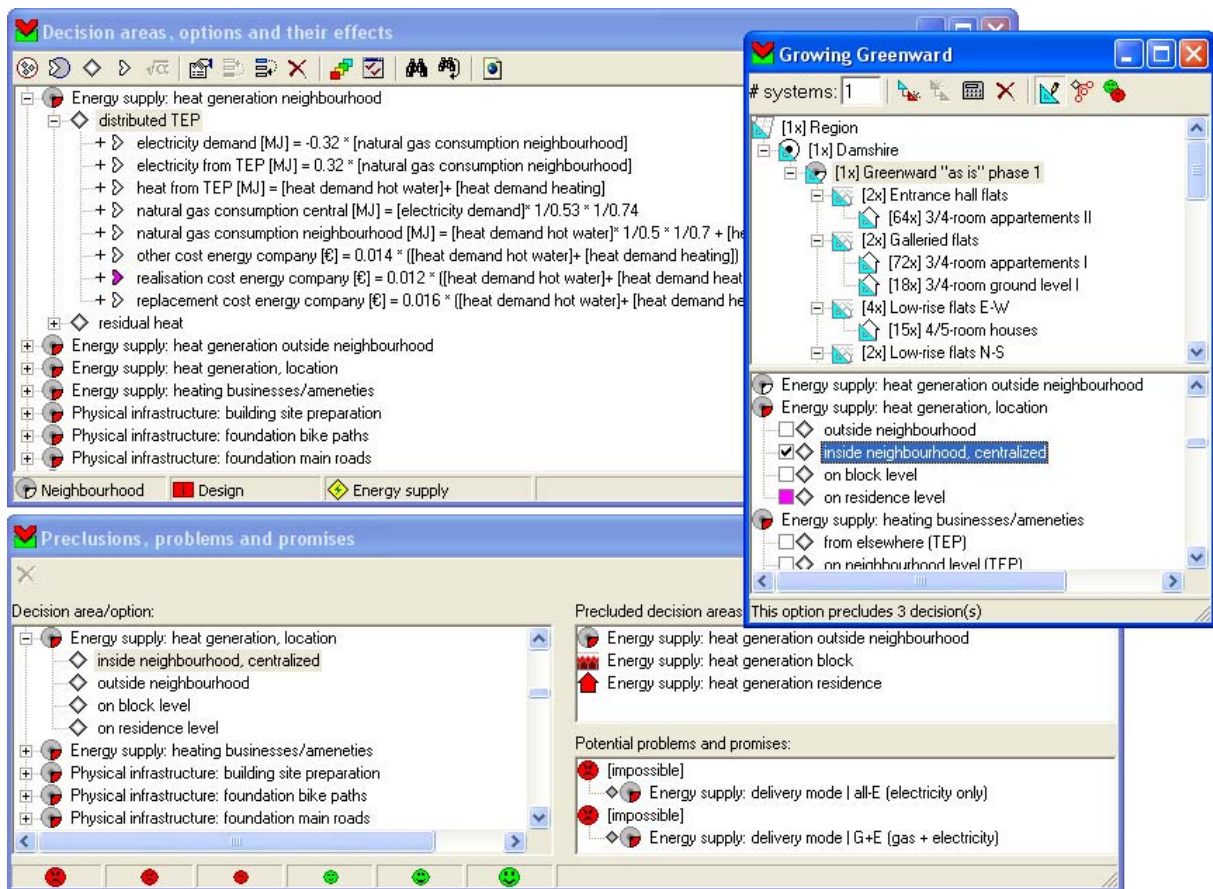


Figure 1 MEDIA windows for manipulating the decision areas, options, and effects

## Description of the game

While MEDIA was being developed, a simulation game was designed in which users could become familiar with the MEDIA tool and the collaborative way of working with it. The gaming sessions also allowed the DSS designers to validate and develop their system further and to explore and test the collaborative procedures.

The DUBES game revolves around the renewal of an existing or fictional post-1945 residential neighborhood. It is a role play in which stakeholders are requested to draw up a program of requirements -a plan- for the sustainable urban renewal of a neighborhood. The stakeholder negotiations are facilitated by game participants designated as process managers and supported by the MEDIA tool. In its present form, the DUBES game can create a simulated fictional neighborhood or reflect a real renewal project.

The game consists of two sessions and can be played in one day. In the first session, the players explore the opportunities for sustainable urban renewal in the neighborhood as well as their own preferences and priorities. They are supported with information from MEDIA that is presented in a simple format on wall-posters. The session ends with an agenda for decision-making: an overview of the themes, and a list of decision areas that should be included in the program. Important is that these topics are not specified in decisions at this point. This is done in the second session, during which the players define the program of requirements for the sustainable urban renewal.

In session 2 the participants are asked to work out strategies for the program of requirements in a number of planning workshops oriented toward different aspects of sustainability, such as the

environment, quality of life, and feasibility. The participants are asked to reason out their choices by devoting attention to the various effects of options, such as on sustainability, and interrelations with other decisions, for example, those relating to other themes and at other scale levels. The chosen options are marked in the table and/or registered in the MEDIA computer program, which provides additional information on, for example, the consequences of decisions, effects, and consistency.



*Figure 2 Impression of a MEDIA supported session*

At the end of the day, the analysis and comparison of the MEDIA results clearly show the points on which the participants agree and those on which they have differences of opinion. On some points, the participants will have to conclude that further research is necessary in order to arrive at the best choice. The MEDIA results, together with the arguments made for the choices during the group discussions and evaluations, form the basis of a sustainable program of requirements for the neighborhood under discussion.

### **Conclusion and discussion**

Benefits and challenges of this combined approach are based on experiences in seven applications. The main finding is that the use of the decision-support tool combined with the simulation-gaming procedure can support agenda setting and help create a shared understanding of problems and potential solutions in the field of sustainable urban renewal. The major findings and insights of the seven sessions of the DUBES game show that the DUBES approach:

- (1) offers a satisfactory way of working;
- (2) creates an overview of interests and opinions;
- (3) provides a clearer picture of sustainability;
- (4) generates cross-disciplinary discussions;
- (5) generates useful outcomes; and
- (6) could make better use of the potentials of MEDIA.

There are two fundamental challenges for systems like DUBES that try to combine political rationality with substantive modeling.

The first challenge is that the embedding of a DSS in a simulated role play environment turns out to be difficult. As in real life, in MEDIA participants tend to get lost in substantive details or in political games unrelated to the formulation of a program for sustainable urban renewal. However valuable it is to experience this in the game, the challenge is not to simulate failure but to get participants acquainted with methods that can make such a process a success. MEDIA and the role play should be designed in such a way that professionals can make maximum use of their expertise, while learning in areas in which they are less experienced and continuing cross-disciplinary debates.

The second challenge concerns the embedding of a simulation game in a real decision-making process. In many cases, confrontation with the substantive and political complexity of restructuring processes creates a direct urgency for actors to seek out support. In its present form, DUBES is not capable of providing this support other than in a gaming- simulation experience in which learning processes are condensed. However, it would be interesting to explore how the approach could be used to support real decision-making processes over a longer period. This could range from playing the game at several stages in a decision-making process to the design of a decision-making process in which the full potential of MEDIA and the underlying methods and tools could be used. This last suggestion would involve the evolution of DUBES from a generally applicable and simulated learning environment into a consultancy trajectory tuned to a specific political and physical environment.

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### **More information about the project and / or project participants:**

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