DESIGNING AND DECIDING

Development of a decision support system for citizens’ participation in spatial decision making

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1. Introduction

This paper is about an attempt at using information communication technologies to help people design and make decisions about their environment together. We believe that design and decision making are two inseparable processes through whose interaction our physical environment is shaped and formed.

The need to plan the future is part of human nature, however uncertain these plans may be, and they either concern private or social life. People simply need to have some ‘frame of reference’, which will give direction to their actions. In that sense long-term plans are unavoidable and whatever character - rigid or flexible - they may take on, they will remain a permanent human activity. Nevertheless, there is some degree of frustration with contemporary ways of planning and decision making grows in a (Dutch) society, and there is a need to find more flexible ways of planning than those that are deeply rooted in practice since the first Spatial Planning Act (1962). Between the incident and anarchy that characterize market-driven spatial developments, and centralized governmental planning, a new solution has to be found which is flexible but has enough structure and foundation in society to be trusted.

2. A Tool for Designing System: DeltaM

The product of this research is a tool that should enable designers, decision-makers and citizens to shape jointly the physical environments they inhabit, by interaction and communication through electronic networks. In the scope of this research, designing is no longer seen as the competence of an architectural or urban planning office which develops plans on the assignment of authorities or investors. The designing of physical environments has to move to the foundations – to integrate all interested societal actors, including citizens, into
the planning process. We adopt the term ‘designing system’ which Schön and Rein (1994) define as ‘a coalition of actors, individual or institutional’. However, instead of confronting the designing system with a ‘larger environment’ - in Schön’s and Rein’s opinion the larger environment consists of ‘other’ actors who see, interpret and react to the design - we consider the larger environment an inseparable part of the ‘designing system’.

For this ‘designing system’ we have developed a tool – a decision support system (DSS) called DeltaM. For the development of the DeltaM we used the prototyping method as well as projects of graduate students of the “Deltametropolis” design studio to form the database.

3. Who Should Use DeltaM, and When?

DeltaM is in the first instance designed to help individual citizens to orient themselves and chose among many spatial plans that are available in the Netherlands. For this purpose we have developed DeltaM as a working prototype so far. We have realized that the creation of the prototype is extremely important for this research, because we expect to gain much more knowledge through its practical use than through mere speculation about its possible usefulness.

Furthermore, DeltaM is designed to provide citizens with information about the ‘pool’ of opinions other than their own, so that they can compare their own choices with those of other participants in the process. It will also make it possible for the people to submit new plans, to comment on available plans, to come into contact with each other and with their representatives in decision-making institutions through highly interactive electronic networks. This level of the DeltaM is described in the conceptual model of the tool.

4. Methodology

Development of the DeltaM DSS involved several phases: definition of requirements, conceptual system design, prototyping, testing and evaluation.

4.1. DEFINITION OF REQUIREMENTS

The first set of requirements was based on the critique of already existing decision support systems in the field of urban design and planning. After a through examination of current practices of the decision support systems design, we found a number of examples of systems which are either too complex, too specialized, or too expert-oriented and therefore unsuitable for non-professionals. We also found a number of systems which were too simple
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or too general, and therefore unreliable. Thus the first requirement for the
system was to avoid it being frustrating, in other words, to avoid creating a
system which is complicated, user-unfriendly, unreliable and ultimately useless.

The second set of requirements was based upon the theories of pluricentric
decision-making (Teisman), neorepublican citizenship (van Gunsteren) and
public sphere (Habermas), which form the theoretical framework of this
research.

The third part of the system requirements was formulated on the basis of
the experiences gained through four case studies: ‘Masterplan Zuidas’ in
Amsterdam, ‘The Metropolitan Debate’, ‘Deltametropolis atelier’ web
site/database and ‘Open Plek- Niemandslad?’ Internet discussion.

4.2. CONCEPTUAL MODEL OF THE DELTAM DSS

There were three sets of requirements used for the development of the
conceptual model of the ‘DeltaM’ DSS. The conceptual model can be seen at:
www.bk.tudelft.nl/users/tisma/internet/de_de.html

4.3 THE PROTOTYPE OF THE DELTAM SYSTEM

During the last year of the research a part of the conceptual model was
developed as a working prototype. The prototype is available on the Internet at:
http://www.bk.tudelft.nl/ai/deltametropool/DeltaM.htm

The prototype of the DeltaM DSS was tested and evaluated according to the
methodology which was specially developed for this case:

- At the first level, DeltaM passed technical evaluation, which assumed
  validity, reliability, effectiveness, efficiency and robustness testing.
- At the second level, the system’s usability was be tested in order to
  establish its general ease of use, consistency, attractiveness, control,
  efficiency, and learnability.
- The third level of evaluation gave an insight into process quality, product
  quality and overall confidence in the system.

Usability testing and empirical evaluation of the prototype DeltaM was
conducted among randomly chosen population of virtual space – the people we
could access via e-mail. We contacted about 500 persons – professionals,
friends, students and members of Plannet and PSS discussion lists, mostly
from the Netherlands, Europe and the United States. Response consisted of 26
persons evaluating the tool within two months of available time.

Of the 36 responses we received, 13 were sent by men and 13 by women,
22 were experienced internet users and 4 used internet occasionally. Most of
the people who responded were between 30 and 50 years old.
The results of the technical testing showed that the system was good enough to be implemented. The experience during a yearlong experimental use have confirmed that it was technically very reliable, valid, effective efficient and robust.

The results of usability testing showed that the general ease of use, consistency, control and learnability of the system are good. Most of the criticism of the system concerned some aspects of the efficiency criteria. Those are related to the amount of information about the projects, and the quality and the variety of projects.

Similar conclusions can be drawn for the part of the empirical evaluation concerning product quality. Many respondents had doubts about the usefulness of the output results (the list of projects in this case). The evaluation of the process quality confirmed the fears we had when setting up the questions about user preferences and the criteria for the classification of projects. Conceptually, these are the most difficult, but at the same time the very important parts of the whole system. The evaluation has shown that further exploration should be pursued. Luckily, DeltaM is technically built on a very flexible way, so that the questions and criteria can be easily modified. In all, considering users' opinion about overall confidence in the system, we are very satisfied with the results. Generally, people reacted positively on the DeltaM prototype.

5. Conclusions

As it is now, the DeltaM prototype needs several adjustments before it can be directly implemented. The first step should be to enlarge the database with the new projects and to make the information about all projects complete. The next step should be adjusting the questions on user preferences and criteria for classification of projects so that the process quality is improved.

It is utopian to believe that all the problems which arise from the social and political side of spatial decision making could be solved by a technical tool such as DeltaM DSS. But there are many technical problems, which limit the possibilities of citizens’ involvement in spatial decision making, and these certainly can be helped by implementation of the DeltaM DSS.

But, there are some conditions related to human values, which we have to emphasise as preconditions for the implementation of the DeltaM DSS in practice and prevent its misuse. Those we take over from what Habermas calls ‘lifeworld’: The communication for reaching an understanding should be uncoerced, egalitarian, sincere and truthful.

According to van Gunsteren (1998) there cannot be citizenship if there is no access to it. And we strongly believe that the technologies such as DeltaM can enable access to citizenship, and stimulate the positive values in people.
References


