THE CUSTOMER IS KING

Web-based custom design in residential developments

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Abstract. Two residential development projects are described and discussed in which the Web provides a communication link for designers to probe the preferences of their customers and for potential clients to portray their wishes to the designers.

1. Introduction

At the core of an effective architectural design process is a dialogue between designer and client to ensure that the resulting artifact conforms to the client’s needs. When the building client, whether a single person, a family, or a company, is also the future user of this building, then it is possible to accommodate the needs and preferences of the prospective users in the design. In the case of property developers as clients to the design process, such customization with respect to the future users may not be possible. In the office market, reasonable assumptions can be made based on technological needs and the types of organizational structures accounted for.

In the residential market, such assumptions are harder to make and can prove ineffective. The Netherlands has a long history of government-initiated residential developments, and a clear evolution of the planning and building types can be seen. The 1960’s are marked by high-rise apartment buildings, in an attempt to make effective use of the available land and create a feeling of buildings in the middle of green areas. Changing perceptions led to low-rise apartment buildings instead, and an attempt was made at offering most or all of the apartments a private ground level entrance, in order to alleviate a sense of insecurity that can be found in anonymous building circulation areas. As a result of demands for private outdoor spaces instead of public greenery, apartment buildings subsequently made place for row housing, with an increasing variety among neighboring dwellings. In recent developments, this urge for one’s own house has resulted in disconnected bungalow-type housing, in a mixture with other forms of row housing and low-rise apartment buildings.
These changes have happened partially because of concerns of monotony, variation, identity, and more practical construction issues such as prefabrication. Designers need to initiate and face constant progress, and work closely together with social scientists.

The Dutch government has recently urged designers and developers to offer (potential) customers more of a say in the final outcome. Without substantially increasing the costs of such a development, the Web is offering designers and developers the means to reach out to their future or potential customers and recreate the dialogue between designer and clients. This method does not require synchronous contact, and clients can be empowered to create schematic designs of their future home at different scales. In some cases users can be invited to exchange ideas and follow up on someone else’s idea. These data and relationships can subsequently be analyzed and the result used to influence the design in general ways.

This paper will describe two such projects in which the Web provides a communication link for designers to probe the preferences of their customers and for potential clients to portray their wishes to the designers. The first offers the potential customer a parametric housing design and allows her to “design” her future home within the constraints of this parametric system. The second attempts to get the future customers involved in the design process from the site planning phase on, by offering them a sequence of design “games”. The resulting data is analyzed and provided to the design team, and consequent design decisions find their way into subsequent games. The authors were involved in both projects for database design and integration into the Web site.

2. Variomatic.nl

A first approach to increase a customer’s choice is in offering her a larger variety in executions on the same design. In its simplest form, this may be a catalogue of instances a customer may choose from. At the other end of the spectrum, the customer may be allowed the freedom to design her own home, though within a set of rules or constraints governing such aspects as type, size, color, materials or construction techniques. Such rules may reflect regulations, a strive for quality, or cost management. An alternative way of offering constrained freedom is through a parametric framework of design. The architect provides a single design with a possibly infinite variation as embodied in parameters that may take either a discrete or infinite number of values and govern such aspects as size, shape, color, materials, etc.

Variomatic is a parametric design by Dutch architectural office Oosterhuis.nl that is fully flexible in shape, size, and interior organization. Each potential customer can design her own instance of the Variomatic design, over the Web (www.variomatic.nl), and because of the extended and fluid
flexibility it can be considered impossible that any two designs will be identical (Figure 1). The design is initially presented to the client in two variations, a Variomatic Sculpture with smooth pitched roof and a Variomatic Landscape as a bungalow with “convertible” rooftop. The shape is flexible in height, depth, and width, and the curvatures of the roof and façade surfaces can all be altered.

Variomatic is a demonstration project of the Industrial, Flexible, and Demountable (IFD) Building Program, an initiative of the Dutch ministries of Housing, Spatial Planning, and Environment, and of Economic Affairs. The Variomatic project has as its main goal the development of a direct line from the consumer through the parametric design to the final assembly. The interface with the future residents through the interactive Web site is one main aspect of this direct line. Other main aspects are the connection of this interface to a database in order to provide immediate feedback to the customer on changes in living surface, volume, and cost, and the direct translation of the three-dimensional model to production drawings for the suppliers of the unique construction and roof elements.
The Variomatic development will result in a total of 8 houses forming part of a larger residential development in the town of Zoetermeer, near The Hague (Figure 2).

![Figure 2. Artist impression of the Variomatic development location. Image courtesy of Oosterhuis.nl.](image)

3. WoonWerf.nl

A totally different approach to increasing customer involvement in the design process is to identify a body of potential future residents and to determine both their collective and individual needs and preferences with respect to the overall development and the individual dwellings. The Web offers an outstanding medium to build up such a community of potential customers and to start a dialogue between the members of this community and the design team concerning all aspects of the planning and design process. Such a dialogue can be strengthened by enabling at the same time a discussion within the community on these same aspects.

WoonWerf.nl is a residential project of Dutch development company TRS Ontwikkelingsgroep at the location of a former shipyard near the city of Dordrecht. A Web site (www.woonwerf.nl) allows the developer and the design team to communicate with interested clients on the development of the
WoonWerf area. Through a series of games and questionnaires on a variety of different themes, interested clients can create their own master plan design and elaborate on various aspects of this design in order to portray their preferences to the design team. Based on all information gathered this way, the design team proceeds with the design of an urban plan for the site and presents the result to the community. Each participant receives individual feedback on which of her choices were retained in the final plan and on the reasons why the other choices could not be considered. The various themes are layout, public spaces, facilities, safety, sustainable development, and services (Figure 3).

![Figure 3. Snapshot of the WoonWerf.nl game website.](image)

The user starts by making a selection from three residential ambiances: active, relaxed, and cared-for. The ambiance defines the number of housing and work units to be included in the design. The fulfillment of these and other aspects that should be taken into account in the layout design are portrayed through four feedback sliders at the bottom-right of the game interface (Figure 3). Next to the number of housing and work units, these offer feedback on the financial possibility of realizing the design and on the general satisfaction among the expected community. Financial realization and satisfaction both depend on the variety of housing types and natural elements, and should be balanced for best results. Figure 4 shows a partial layout design for an active ambiance: the number of units are obviously insufficient which translates into a negative financial result, but the addition of some greenery has maximized community satisfaction.
The urban plan (Figure 5a) resulting from the developer’s design team does not uphold a single ambiance, but instead offers a mixture of all three ambiances. This reflects a general desire as became obvious from the community’s input. The result is an emphasis on low-rise housing with separate areas for cared-for as well as work accommodations. Traffic is organized accordingly with on-site traffic kept to a minimum and including underground parking areas (Figure 5b). On the slopes of the former shipyard, a combination of different functions will find space in a high-rise construction. This choice also reflects the opinion of a majority of the community (Figure 6).

Upon the presentation of this urban plan and its choices, and the individual feedback to the community members, these are invited to think about the look of the building exteriors. The interior organization will be up to the future owner, with assistance from an interior architect.
4. Discussion

The former examples are representative of current attempts in the Netherlands to use the Web in an effort to shorten the distance of communication between the future owner and the architect or design team, and to offer the customer more input into the design process. Their approaches to the user differ dramatically: the former takes a purely individual approach, whereas the latter adopts a collective approach with respect to the design but also considers the individual in its communication. At the same time, both approaches impose common requirements on the development of the Web site: each user must be known and recognized and her actions and selections recorded and stored. Authentication, database storage, and dynamic web pages form the least common denominator in terms of requirements.

In contrast to many other countries, the Netherlands does not allow an even controlled anarchy to reign in the housing market (Ibelings, 2000). Both examples fit within the consensus model that dominates Dutch architecture. In the WoonWerf.nl example, the consensus is established among the community of interested clients, the developer and the design team, and other powers of influence, such as the municipality. In the Variomatic example, the parametric design is created by the architect in cooperation with the developer and constructor. The role this Variomatic initiative plays in the larger residential development it forms a part of reflects another aspect of the culture of consensus: large projects are often reduced and split up, such that none of the parties involved is allowed to dominate (Ibelings, 2000). The role of the customer as king in the design process can only be considered in this context of consensus. Rather than having full control or being contented on every wish, the customer is offered a much wider choice, possibly infinite, within the rules as laid out by the parties involved. The Web is particularly useful in reaching out to potential customers and in initiating and maintaining a communicative relationship with this customer. Not only is the user given the feeling that her...
input does matter, she can also keep up to date on the latest activities and changes with respect to design and design process.

We believe that the role of the Web can be further extended to increase the active role of the client in the design process, in particular with respect to her own house. Some development projects already offer their clients additional freedom in the design of their own apartment or house, for example in the form of DIY apartments. However, in order to specify their wishes and develop the design, they are required to cooperate with an architect or interior architect assigned and employed by the developer. Though efficient, it does not enable the client to take center stage in the design process. Instead, a Web-based environment could broker a cooperation between client and architect to such extent that the efficiency is maintained while the client is offered a choice from among any number of interested architects.

The developer, or another organization, designs the master plan and develops rules and specifications each dwelling has to adhere to, e.g., with respect to size, materials, or construction techniques. Interested architects can freely sign up, provided they are willing to work within the rules and specifications set out by the organizer. They present themselves, possibly with an exemplar design, on the Web site to potential clients. Each client chooses an architect from those presented, based on the presented information and on personal communication brokered through the Web site. Upon establishing a contract between both parties, architect and client create the design conform the rules and specifications provided on the Web site. Depending on the type of rules, these may be presented in various forms and (electronic) formats in order to enable an effective integration into the design process. The resulting design is submitted to the organizer in a specific format that enables the integration of all designs such that similar components from different designs can be bid upon by a single supplier or contractor. The bidding process can also be organized through the Web site.

Such a procedure permits the client to choose her own architect from a pool of interested architects, allows her to develop a personal design in cooperation with the architect that conforms to the rules set out by the organizer, and offers an efficient handling of the designs in order to allow for centralized bidding. The Web forms an indispensable link in this process.

References