

Identifying Product Opportunity Based on Interactivity

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Abstract. In the process of developing innovative product concepts, user's needs and technology has been generally regarded as a major driver of innovation [2,9]. And although interaction, being the contact point of the actual user and products or services, has a very high significance, they have been overlooked because they were considered to be dependent factors of products and technologies. The reason for this was because interactions were hard to manipulate and also because they weren't tangible [3]. Being aware of these limitations, there are ongoing researches and studies on the properties of interactivity found in interaction between UX and products [4]. Importance of interactivity and the possibility of interactivity being a driving factor of a new product development attracted attention in this study. Also, a method for extracting functional needs and new product domain was developed based on interactivity, and the effectiveness of this method was checked by using in the process of designing an organic user interface concept.

Keywords: Interactivity, Design Method, Product Concept Development.

1 Background

In the area of the design of interactions in the user interface, interactivity is known to be subordinate to technology or product from Command Line UI to GUI-based WIMP Interface. Interactivity is known to be subordinate because it is difficult to manipulate and not tangible [3]. However, as interface becomes tangible due to the development of technology, interactivity is gaining greater importance in the area of interaction design. In addition, studies have been made to find out qualities of interactivities between UX and products getting out from the subordination of interactivity [4].

As interactivity secures an independent area, not being subordinate to technology, has brought a few important changes. Interactivity, which was addressed only in the area of interaction design that played a bridging role between developed products and users, after the concept of product was developed, became a factor which determines the product concept itself, and now is finding the possibility of a motivating factor to product innovation. The innovative products such as iPod and iPad, which have appeared recently, can hardly be viewed as being technology or user-driven. Looking in detail into the areas, interactivity is the main in the concept of products. Innovative products with interactivity as the major concept of products have been developed since later 2000's.

2 Definition of Interactivity

It was possible to understand the basic structure of interactions by referring to the Interaction Framework [1]. And based on this understanding, connections were expressed as follows.

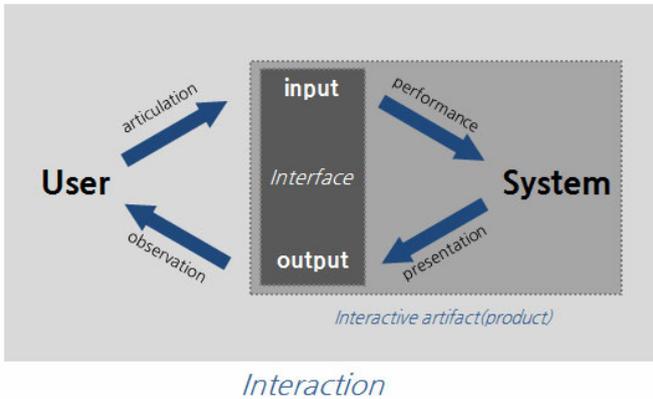


Fig. 1. Structure of an interaction

Interaction carries various factors such as system, user, input, and output. Out of these factors, factors in charge of input and output can be defined as interface, and interactivity can be defined as products' interactive aspect of an artifact [8]. Reason for paying attention to interactivity in interaction is because interactivity seen in the range of interaction or interface can become dependent on product or technology. Therefore, there were attempts in seeing interactivity as an independent factor by separating the properties of products' interactive aspect, attracting interest. Because there aren't any existing product or technology in case of OUI, a domain of this study, actions in which users articulate was defined as interactivity and transformation, a key concept of an organic user interface, was defined as a property of interactivity.

3 User Research Design

The design methods, used in the identification of the concept of innovative products which are not existing, use the present environment such as designers' insight, existing products, consumers and competing markets, context-based information. The value of users or design direction produced based on the present situation is superficial or too general so that it is not appropriate as a method to seek new changes of design [5,7]. Therefore, it is necessary to find design opportunities in the area of linear future studies, not improvement of products in the area of design, and to find an appropriate approach to develop it. Apart from efforts to produce results of innovative designs based on creative techniques by creativity of designers, the concept technique for future innovative designs based on systematic design

information as a user-centered method should be probed. The probe technique developed by Gaver is used as a form of x-probe in application [6].

This study presented a method of probing the concept of innovative products by utilizing interactivity. This probe provides users with clues to future products, not a simple user observation, thus enabling the users to experience such clues. Hence, the users can find out how such clues can be applied in their daily life as they experience the clues specifically. In an effort of approach to accomplish innovation based on interactivity, this study looked into the probe process of product opportunity through interactions as an example of the development of an organic user interface which newly appeared in the industry.



Fig. 2. Workbook provided to subjects

For this purpose, three days' workbooks were made. And along with the workbooks, plastic plates which carry OUI's interactivity were handed out as a clue. By carrying around these plastic plates in their everyday lives, 9 subjects thought about where to use the plate (product domain), and use the plates for what (function). They then answered the following questions in their workbooks. 1. Did you change the form of any kind throughout the day? 2. Explain in what situations you wanted to change the form to accomplish a purpose. 3. If current devices (smartphones, smart pads, etc.) were to be bendable, what functions would be good to add? All 9 subjects were to write down the answers in their workbooks like journals, take pictures of each situation written in their books, and turn them in to the researchers.

4 User Research Result

Needs for product category creatable through interactivity referred to as transformation, and functions practicable through transformations of a kind in everyday life were found. Followings are some of the needs extracted through interactivity referred to as transformation

- Seeking applications suitable for physical forms: Among the subject's demands were tendency in needs for transformation and application suitable to the context rather than preferring a particular form of transformation.

- Demands pursuing fun rather than productivity: Because physical transformation carries more physical task loads on the users compared to the existing interface, it prefers fun from physical movements rather than productivity.
- Pursuing transformation for self-storage/usage/movement: Many parts of demands for transformation preferred minimization for storing and organizing, and maximized transformation for efficiency during usage.
- Fixation through tension: desire for transformation forms when fixing different things or adhere them to the body through tension like stockings and hair ties.
- Expressing emotions through transformation: Expressing feelings through transformation action such as crumpling, tearing or ripping when angry.



Fig. 3. Pictures collected through User Research

According to the results of user research, the obtained data were differentiated from ones from evaluating usability by simply providing prototypes to the users, adding new functions to currently existing product function, or tracking users' everyday life with absence of any stimulus. These differentiated results showed that the collected needs were evaluated to have been helpful in deciding the product domain or its' main function. These results, as information focused on transformation which we wanted to design, showed very high efficiency in the process.

5 Limitation and Conclusion

This study started out with transformation, a type of interactivity, to identify what kind of needs it can create for the users. And exploratory study about “What

categories can the product create?” or “What kind of main functions can the product hold?” through these needs were conducted. Through this user research, we were able to find out that it was possible to extract needs related to interactivity.

However, needs we were hoping to obtain in the beginning happened to be needs as displays and input devices. But because they're out of control, and it's focusing on simple transformation, it seems better to provide more specific interactivity rather than these users research.

Also, current user research dealt only up to processes extracting needs, but processes connecting from needs to product concept and core functions could not be built. Therefore, if these processes are clearly built, it is likely to be used as a process for new product development and innovation starting with interactivity leading up to final product concept.

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