"Design Thinking" To Create Innovations

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Abstract

In the era of "from things to events," the desired design functions are shifting significantly. In addition to traditional designs implemented via colors and shapes, designs are now expected to extract essential value both for society and for individuals and to contribute to the creation of products based on innovative ideas as well as new visions for the future society. The methods and processes of "Design Thinking" are effectively creating such innovations. NEC is actively promoting Social Value Designs for the creation of innovations via practice projects for adding original methods to Design Thinking.

Keywords

design thinking, innovations

1. The Changing Role of Design

NEC's Social Value Design consists of powerful concepts leading to innovations and the specific methods for implementing them. In order to overcome difficult situations and create better solutions for the advanced and complicated society, "Innovations" based on broad viewpoints are essential. It is no exaggeration to say that the success of solutions for society depends on the possession of "Innovative Capabilities." Furthermore, in order to provide safe, secure solutions for society at a stable rate, individual "Feelings" or "Inspirations" generated among limited number of people are not enough; wisdom and mechanisms capable of creating innovations are now essential.

At NEC, we are currently developing powerful design concepts leading to innovations as well as specific methods that support their implementation. These are based on the wisdom, expertise and technologies that have been cultivated over more than a century in developing our innovative solutions. Consequently, we are now proposing "Social Value Design" based on design methods that shift the emphasis from the design of "what is visible" to "what is intangible" ("Value," "Concept," "Vision", etc.).

Following the advancement of information and communications technology (ICT), its importance in social infrastructures, such as providing public services without delays, has increased. In addition, the dissemination of smart devices is changing lifestyles both in workplaces as well as in the homes of people. In renovating society and lifestyles, it has become indispensable in providing "Essential Values" for both society and individuals by applying safe mechanisms that can avoid human errors and improve the comforts and the quality of our lives.

A shift "from things to events" was proposed some time ago. However, in order to provide "Essential Values," it is vital to perform the design from the viewpoint of providing the various stakeholders with "Events" (intangible experience values). Following the emergence of such social needs, the functions of the design also shift from things to events. Specifically, the expected functions are not only the traditional "Thing" based functions such as coloring and styling but also the "Event" based functions, such as the development of products and services based on the extraction of "Essential Values" and the creation of ideas, and proposals regarding the shape and vision of the future society.

2. Social Value Design and Design Thinking

2.1 Social Value Design

The "essential values" for society and those for individuals are not always in accord. This is because there are cases in which the consistency of human and social perspectives sometimes differs. For example, in conflicts generated by the pursuit of comfort by individuals and in the pursuit of efficiency by organizations as well as those caused by the desired comfort of individuals and global environmental issues.

Social Value Design is an NEC-original concept for creating innovations by arranging solutions based on balancing human and social perspectives. A solution is not an idea that puts priority on either party or a compromise plan. It is the proposal of a new idea that can resolve contradictions and meet the needs of both human and social perspectives.

The process and methods for innovation such as the "Human-Centered Design (HCD)" and the "Design Thinking" are currently attracting attention. "Design Thinking" consists of "creating something new." In other words, it is the application of the ideas and methods of designers for driving innovations both in business and in society.

2.2 Design Thinking

In the current environment of fierce competition created by globalization and by the entry of new competing industries, society and enterprises can no longer expect growth in the traditional way or benefit automatically from proven experiences. Stereotyped notions sometimes may inhibit the creation of new strategies, and innovation can be the tool that breaks down such fixed ideas.

"Design Thinking" is a process and method for creating innovations that is capable of reforming business and society. It is regarded as serving the creation of new enterprises and business models as well as supporting business strategies for building corporations and developing new visions for society.

An example of a "Design Thinking" application by NEC is the project entitled "A Co-created Project with the Tigre Municipality, Argentina to Project a Social Vision for the Year 2030 (see pages XX-XX in the present issue). This project aims at planning in cooperation with the city government officers for the shape that the city should be in 2030, based on the projected course of development of the city. It also expounds an action program for the city that can fill the gaps lying between the present reality and the proposals for the future.

In drafting the future vision, the traditional design of colors and shapes or the current methods and processes for product/service improvements are deemed to be useless. The projected vision should not only be excellent in terms of its appeal to the senses, but it should also match the sense of values of individuals as well as of the orientation of society toward the future.

In such a case, the methods and processes of "Design Thinking" for the creation of Innovations are effective.

3. Features of NEC's "Design Thinking"

In general, the process of "Design Thinking" consists of the five steps of understanding, observation, visualization, evaluation / improvement and implementation. NEC's "Design Thinking" process is similar, but its main characteristics are; 1) in order to apply "Design Thinking" in the business field, not only humans but also organizations, corporations and the wider society are personified as target users and their essential value is thereby made clear; and 2) the method of organizing engineers and designers into unique teams in order to create innovative ideas co-creatively.

Below we describe the Smart Mobile Cloud (SMC) as a platform providing cloud services for smart devices as an example of Design Thinking (also see pages XX-XX in the present issue).

Smart devices are currently undergoing a remarkable dissemination both among individuals and enterprises. Various services are deployed to support them and the severity and complexity of competing services are increasing day by day. In such a competitive environment, the advantages for enterprises are that one stop solutions are provided, and for individuals that are value-added services provided by those enterprises that receive benefits from the one-stop solutions.

The SMC provides users with safety functions by means of user authentication/approval mechanisms and information leakage prevention through mobile devices. It can also improve the convenience of purchases by offering a means of mobile settlement and store location information, and also it can improve the ability to deliver various notices to smartphones in real time so that users may receive services more frequently. It is the support for the fair value provision regardless of time or location that is an important feature of mobile devices. In addition SMC can also support efficient store operations by providing analyses of the situation of sales at EC (Electronic Commerce) sites.

In order to create new customer values permanently, NEC emphasizes the following points via its Design Thinking.

3.1 Value Extraction Provided for Users

In general, the concept of "User Experience" does not limit "users" to our targeted customers. Instead, it covers all of the stakeholders associated with a project, including the persons actually utilizing it, as well as those running it, and defines the value for each individual. At NEC, we practice the approach to "Social Experience" both for businesses and for the wider society by personifying organizations, corporations and society

Table Examples of the arrangement of values provided for users.

	Value Proposition	Insights	Emotional benefits	Functional benefits	Implementation of benefits requirements	Describing users and use scenes
Truly safe to use	Security that protects the mind, information and properties	Always safe to use	Protection awareness	Assistance by professionals (lawyer, etc.)		
				Human help via available information		
			Intimate personal relationships without causing offence			
		No cheating	Protection awareness			
		No failure		Elimination of erroneous transmissions		
	Comfort in always enabling the same approach			Similar quality to TV, PC and mobile phones		
				Similar quality communications with persons either at home or elsewhere		

as well as individuals effectively as the targeted users, and by defining their values.

With regard to the SMC, we conducted inquiries of the stakeholders on the topic of the targeted services and held brainstorming sessions participated by the sales department, project leading department, development department and designers including HCD professionals. This strategy helped define the insights that make users believe in the need for certain behavior, as well as clarifying the values that are unique to the SMC, "Value Proposition" (**Table**).

3.2 Co-creation of Ideas

The values defined above are subjected to the "Design Thinking" method in order to generate new ideas. During this process, inconsistencies among requirements, tradeoffs between them and the gap between the requirements and the technologies for their implementation may occur. Resolution of such issues, therefore, tends to enable innovation creation.

With regard to the above we propose the co-creation of technology and design, or the collaboration of engineers and designers as a team. Field observations and inquiries based on collaborations with designers enables the extraction of values from the viewpoint of actual people living their lives and societal characteristics that have not hitherto been visible to engineers. We forecast that this process will lead to the discovery of more effective solutions.

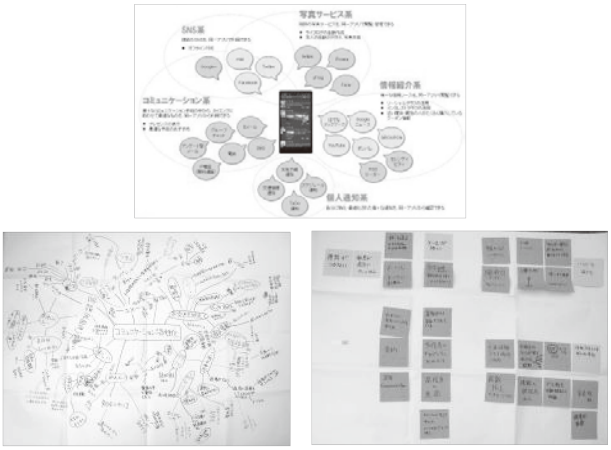

Fig. Examples of idea generation based on a mind map.

With regard to the SMC, we have generated innovative ideas via brainstorming and by the development of mind maps (**Fig**.). Designers including HCD professionals share ideas with the sales engineers and developers, visualize them, consider the ideas of both parties and examine their future perspectives. The aim is to create new products and enterprises for which novelty and variance become key factors.

In addition, the setting of value improvement for users as our primary goal, we pursue "what can satisfy the users" in order to derive the desired format. This policy is also connected to the establishment of the in-house targets for the development of various products and the solutions and services needed to achieve the goal. The examinations and checks from such a viewpoint also serve for screening customer viewpoints in developing strategies and business operation plans.

4. Future Perspectives

With the aim of building mechanisms for creating innovations, NEC is promoting skills on how to generate ideas and methods for practice of projects and workshops in collaboration with universities and engineer-designers.

In contributing to the creation of social values, we aim to expand the scope of the application of "Design Thinking" based on the Social Value Design concept. We will contribute thereby to the solution of individual, corporate and social issues that are tending to become increasingly complex.

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Special Issue TOP