

# NEC Group's Approach to Social Value Design

NEC's Group Vision 2017 sets forth the aim of our company: "To be a leading global company leveraging the power of innovation to realize an information society friendly to humans and the earth," and guided by this vision, we are becoming a social value innovator in the business domain of "Solutions for Society." NEC's Social Value Design is studied from the two perspectives of the "User Experience" and the "Social Experience," and is the concept of the providing society and our business customers with new value created through innovation. At NEC, we are tackling the application of human-centered design (HCD) and Design Thinking on a Group-wide basis with the aim of promoting adoption of Social Value Design in our products and services.

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## 1. Introduction

In the not-so-distant future, the global population is forecast to reach the 9 billion mark. This explosive population growth not only has been accompanied by a growing global food problem, but also has put us face to face with challenges in a variety of areas from finite energy resources, global warming and the toll from natural disasters to the growing gap between

the "have" and "have not" regions of the world and the increasing burden on our aging infrastructure. The building of a better society for the future demands solutions to the diverse issues facing us on a global scale and the creation of an environment where people everywhere not only can live, but live well.

NEC Group's vision to be achieved by 2017 states "To be a leading global company leveraging the power of innovation to realize an information society friendly to humans and the earth."

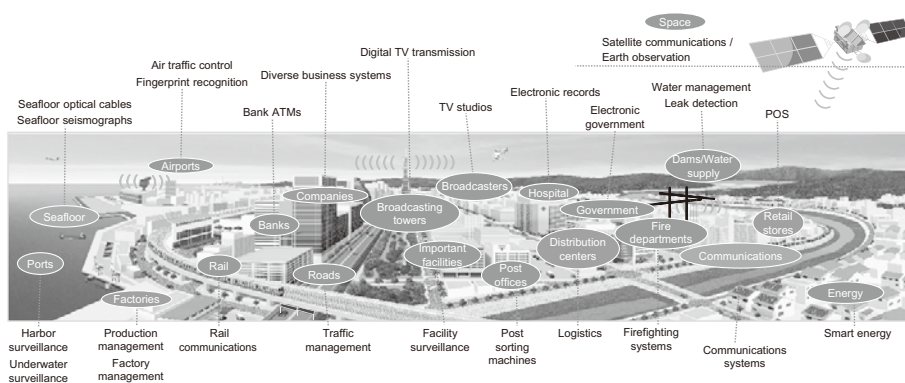


Fig. 1 Social infrastructure advances through ICT.

In order to make this vision a reality, NEC is exploiting ICT in a groupwide commitment to the business of solutions for society - solutions that provide advanced social infrastructure to the world, and through this business, NEC is aiming at contributing to solutions to the various challenges facing society (see Fig. 1).

## 2. Our Destination: To Become a Company That Innovates Social Value

Included among the many solutions for society provided by NEC are management systems for critical facilities, a nationwide disaster prevention system, and various systems to protect human life from natural disasters, cyber crime and other dangers of modern life, as well as smart energy applications, new information infrastructure, and services that provide access to quality medical care and education with equality. At NEC, we have asked ourselves what value is demanded of us by our customers and by society at large. We have answered by exploiting our core ICT assets and setting a course for our entire Group towards becoming social value innovator that provides the values of safety, security, efficiency and equality to society and the world (see Fig. 2).

Throughout the NEC Group, we are promoting the pursuit of Social Value Design as our approach to realizing the creation of value for society.

We define our concept of Social Value Design as the application of human-centered design (HCD) and Design Thinking toward the creation of new value that benefits society, the business of our customers, and other stakeholders.

This special issue will introduce the reader to how NEC Group tackles the challenge of Social Value Design and how we incorporate and promote this approach throughout our group.

### 2.1 Social Value Design in NEC Group

Social Value Design sketches a vision of the future from the

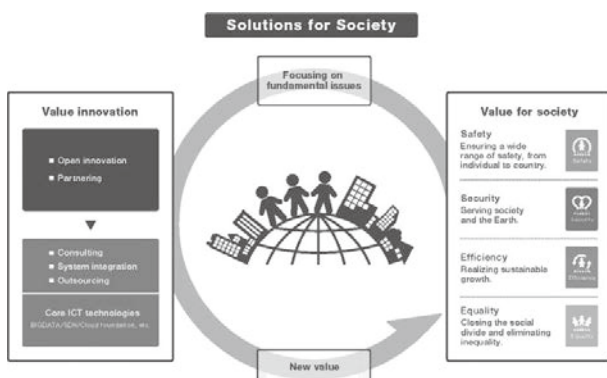


Fig. 2 NEC's Solutions for Society.

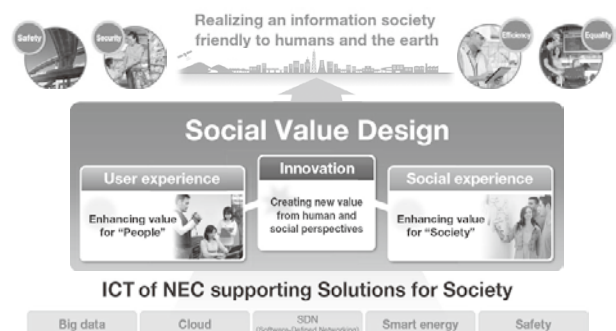


Fig. 3 Social Value Design.

perspective of the individual and society, and then completes the picture by designing and providing the businesses of our customers with relevant new value (see Fig. 3).

As our Information Society advances and systems become increasingly complex, the demand for ease of operational use also rises. Also as a result of the widespread penetration of smart devices, there are increasing expectations for a more comfortable experience that stirs the user desire to fully exploit the diverse devices entering the workplace and public space. In order to respond to such needs, it is vital to view systems and services from a human perspective and adopt a User Experience approach that enhances the value for people.

In addition, the creation of a vision for a city and the solution of various social issues using ICT necessitate the drafting of the image of the society that we would like to create, not only from the perspective of the individual person but also from standpoint of organized entities such as nations, corporations and even neighborhood associations. Answering these needs requires what we at NEC call the "Social Experience" approach to studying the issues - a way of thinking that seeks answers that will enhance the value of systems and services from the perspective of society at large.

However, the individual's desire for ease and comfort is often in conflict with the organization's pursuit of efficiency. The comfort of the individual is at odds with global environmental issues. These are few examples of why it is difficult to grasp and resolve issues from the perspective of both the individual and society.

In order for the life desired by an individual to mesh with the concept of a richer society overall, it is necessary to sketch a vision for the future that can be shared by both the individual and society. Consideration of the solution methodology based on a balanced perspective that draws on the standpoints of both the individual and society will lead to the creation of innovation.

We at NEC aim at innovation inspired by the two design perspectives: User Experience, which raises value from a human perspective, thereby enabling the comfortable utiliza-

tion of complex systems and services; and Social Experience, which elevates value from a social perspective, enabling the smooth operation of a sustainable society.

### (1) User Experience

#### - Increasing Value from the Perspective of the Individual -

In enhancement of the User Experience, design focuses on the users and proprietors of systems and services, and seeks to make the operation of systems and devices easy, efficient and comfortable, while providing equality of access irrespective of the user's nationality, abilities or other attributes.

- Producing designs which make complex systems and services easy to use and understand.
- Designing so that as many people as possible can use the product in various environments and conditions. (Universal design)
- Designing inspiration and appeal.

### (2) Social Experience

#### - Increasing Value from the Perspective of Society -

In the case of design from the standpoint of the Social Experience, the focus shifts to organizational entities such as society and groups. The design approach paints a picture of how society should ideally be, and seeks ideal solutions for the plurality of people who comprise society - for example, solutions that prevent human errors which trigger social problems, thereby enabling the smooth running of society.

- Design focused on urban vision or social issues (global environment, energy, food, water, urban infrastructure, disaster countermeasures, etc.).
- Taking organizations such as companies and national and local governments as stake holders, systems or services are designed together with the customers, the citizens of the region, and the administrative body.
- Designing with the purpose of making society and an entire organization operate efficiently and smoothly without any problems.

### (3) Innovation

#### - Creating New Value While Holding Both Perspectives -

Innovation grasps the points in contention between the individual and society perspectives, and that creates new value that strikes a balance between both viewpoints. Innovation takes highly advanced technologies and links them to value for the individual and society, which in turn changes the way we live and work for the better.

- Designing the vision and concept of the society or business.
- Designing a new life style or work style.
- Designing services or product ideas not yet in existence.

## 2.2 Realizing Social Value Design through HCD and Design Thinking

The realization of social value design requires a change in the way that we traditionally approach the development of

products and services. Called human-centered design (HCD), this development methodology is described in ISO9241-210, the standard for the ergonomics of human-system interaction issued by the International Organization for Standardization. HCD is the philosophy of making things according to the user instead of first producing something and then thinking about the user. It is characterized by first obtaining a highly detailed definition of the envisaged user and then proceeding with development with a shared understanding of this definition by the development team. The HCD development process is pursued according to the following four steps:

#### (1) Understand and specify the context of use

Identify the targeted users and obtain a thorough grasp of the context and conditions of the usage of the existing product/service/system. Determine the issues confronting the user and specific needs through various methods such as on-site observation, questionnaire research, assessment of the current system, etc.

#### (2) Clarify the goal

Clarify what the user wants, and then formulate the specifications and design objectives that will satisfy the user based on various parameters including the corporate strategy, technology currently possessed by the user and human resources. In this phase, it is important to list and assess the desired specifications according to the degree of value provided to the user, and not according to functional or technological matters.

#### (3) Produce design solution

Visualize the user's requirements and then transform them into a design solution. Produce a simple prototype to verify whether the formulated design objectives are correct. Depending on the solution, the production of a paper prototype (mockup made of paper) to provide an idea of scale or perhaps a wireframe model that shows the general elements of the design or layout on a screen may be sufficient.

#### (4) Evaluate the design against requirements

Obtain an assessment of the solution from the user's perspective by using the prototype (the "visualization" of the design solution) described in the above Step 3, and reflect the feedback to refine the design process. User tests consisting of an evaluation by the target user or a heuristic evaluation consisting of an assessment by an expert with user behavior principles as a rule of thumb may be used. Repeated cycles of design and evaluation will refine the product/service.

NEC has also focused attention on the methodology of Design Thinking. This is an approach used in business for the purpose of creating something new such as market creation, business models and new services. While the approach conceived by IDEO, a US design consultancy and a leading proponent of Design Thinking, places importance on concept

generation and visualization in a five-step methodology of understanding, observation, visualization, evaluation and refinement/implementation that employ tools such as “fieldwork”, “prototyping”, “user testing”, and “brainstorming”, the Design Thinking process is essentially the same as that for HCD.

NEC’s Social Value Design creates new value for society and the business of our customers by using an array of original developed tools in addition to the HCD and Design Thinking approaches. Those tools include new methodologies that combine technology and business knowledge with behavioral and psychological analysis, assessment of the process support environment inclusive of HCD, and evaluation systems.

### 3. About Group-wide Internal Promotion of Social Value Design

#### 3.1 Approach by Business Units in NEC Group

The practice of HCD in the NEC Group can be traced back to the 1980s and our research and development of human interfaces. In the 1990s, NEC began tackling HCD with its development of user terminals that incorporate aspects of universal design, for example, ATM machines that supported the needs of people with visual impairment and electronic voting machines for local governments. In 2000s, the scope of our application of HCD expanded as we began exploring and incorporating the User Experience and other tools in our approach. With the establishment of the Design Strategy Group by the headquarters in July 2011, NEC launched full-scale promotion of HCD throughout the Group.

In order to realize our Group Vision of an “information society friendly to humans and the earth,” it is necessary to promote adoption of our HCD philosophy not only by product and service development departments, but also in all our operations from business and planning to sales promotion, R&D and operational support. In addition, it is necessary to consider perspective of the User Experience in all points of contact with customers and stakeholders including marketing activities, communication activities including websites, manufacturing, logistics and maintenance services.

We believe that the pursuit of all activities from the perspective of Social Value Design by every employee in every department throughout the NEC Group will lead to innovation and social value that is uniquely NEC’s.

#### 3.2 Approach by Product/Service Development Departments

In order to create and supply the customer with value unique to NEC, the development of products and services is one of the Group’s most important activities. For this purpose, the HCD approach is applied in the NEC Group’s development of products and services in the domain of the Solutions for Soci-

ety. With the aim of building an organization that will sustain the practice of this approach and enhance the value provided to our customers, we are promoting the adoption of this philosophy throughout the Group.

The promotion of HCD within the NEC Group can be broadly divided into two categories: Basic Promotion Activities that provide each business department and unit with a common structure and shared functionality to support the practice of this design approach across the organization, and Practical Application Promotion Activities that promote the independent application of the approach within each department.

#### (1) Basic Promotion Activities

Basic Promotion Activities span a wide variety of activities from Social Value Design R&D, HCD and Design Thinking training, and approach standardization (guidelines, standard design templates and other rules and standardized processes) to the sharing of best practices and case studies.

#### (2) Practical Application Promotion Activities

In these activities, the focus is on promoting the application of HCD in the development of products and services in each business department. In the pursuit of promotion, it is important that maintain the multiple perspectives of how activities are executed throughout individual departments, their coordination across departmental lines and their optimization. For this purpose, NEC has appointed a manager in charge of HCD in each department, and is tackling the establishment of an organizational structure to facilitate the sharing of information on a group-wide level.

The organizational framework is shown in Fig. 4. The formulation of policy and its promotion is undertaken by the Design Strategy Group, MONODUKURI Innovation Division and the Technological Strategy Planning Division.

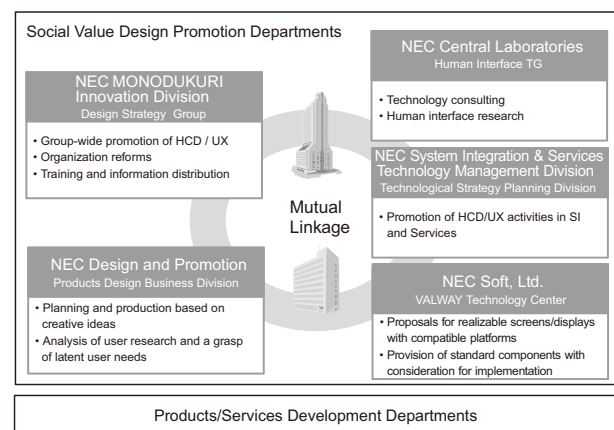


Fig. 4 NEC Group’s organizational structure for the promotion of Social Value Design.

sion, System Integration & Services Technology Management Division at NEC's headquarters. The Central Laboratories is in charge of User Experience Design R&D and provides the Group with technology consulting. NEC Design & Promotion Department (Products Design Business Division) and teams of experts from NEC Soft, Ltd. provide interdepartmental coordination for the practical application of HCD.

#### 4. Social Value Design and Future Prospects

The HCD and Design Thinking methodologies and processes that make Social Value Design possible can be applied to a wide range of products and services; however, in the future, the provision of solutions for an increasingly advanced and complex society from the perspective of social value will require acquisition of practical experience in new domains of business and careful verification of their effectiveness.

**(1) Reinforcement of application in new business domains**

NEC will apply HCD and Design Thinking processes in the domain of new business and the creation of new business models. Through the development of a process framework that spans from observations in the field and acquisition of an understanding of users to the creation of innovation, and through the lateral deployment of the selected skills and tools, NEC will reinforce its promotion of Social Value Design practices new business areas.

**(2) Global-scale promotion**

In addition to conventional activities such as overseas fieldwork and global user persona (hypothetical user models), NEC will acquire a solid grasp of the advancing needs of the social infrastructure in each country/region and promote the preparation of shared tools and processes to enable development with the specific country/region in mind.

#### 5. Structure of This Special Issue

In this special issue, we would like to introduce the reader to NEC Group's approach to Social Value Design from the perspective of the previously mentioned "Basic Promotion Activities" and "Practical Application Promotion Activities".

In our explanation of Basic Promotion Activities, we will focus on our research to advance our Social Value Design approach and activities to develop original NEC methodologies.

Our look at Practical Application Promotion Activities will cover various case studies based on the 2 key perspectives of NEC Group's approach to Social Value Design: the Social Experience and the User Experience. Explanations of each case study will be made from the perspective of the pursuit of development and innovation that aims at creating safety, security, efficiency and equality - the value provided by NEC.

In conclusion, the special issue will examine the methodologies for analysis of the results of projects that employ HCD and Design Thinking principles from the perspective of promotion of Social Value Design in NEC Group, and then provide an overall picture of our activities including the building of an organizational structure in accordance with the previously mentioned analyses, the fostering of human resources and other policy and action to promote the thorough deployment of our approach.

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The details about this paper can be seen at the following.

**Related URL:**

Design at NEC

<http://www.nec.com/en/global/design/index.html>

Social Value Design by NEC

<http://www.nec.com/en/global/design/policy/index.html>

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## Vol.8 No.3 Social Value Design - Contributing to Social Value Innovations

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NEC Group's Approach to Social Value Design

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UX Improvement Framework for Large-Scale System Development

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Qualitative Research that Confirms the Need to Create Communities in the Aging Society

Design and Development of the Smart Mobile Cloud (SMC) - a Cloud Computing Service Platform based on Design Thinking Methodology

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Development of DCMSTORE-POS, a POS System for Mass Retailers Based on Human-Centered Design

Applying Human-Centered Design (HCD) Solutions in Industrial Machinery Products Manufacturing

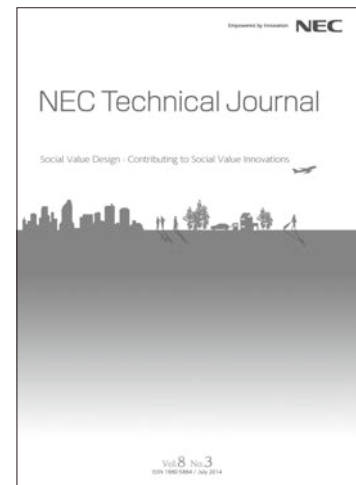
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Development of Multifunctional Business Phone by Applying Social Value Design

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#### NEC Group's Approach to Social Value Design

Social Value Design Promotion Activities in NEC



Vol.8 No.3

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Special Issue TOP