Promoting NEXPERIENCE: Customer Co-creation Methodology-based Design Thinking

Design thinking is a way for creative problem solving and adopts a human-centered perspective in its processes. It has been attracting interest as one approach to value creation while innovation-driven methods of creating new value become more important due to digital revolution. Hitachi uses design thinking for its Social Innovation Business, and has developed a methodology for customer co-creation called NEXPERIENCE that it applies to these areas. NEXPERIENCE is a methodology for discovering issues related primarily to value for customers or society, for ideating solutions to these issues, and for verifying the value of the solutions. The development of human resources who can apply this methodology will be an important requirement for creating value in a greater number of projects. This article presents the NEXPERIENCE-based key design thinking skills needed for Social Innovation Business, and the training activities being done to promote these skills.

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1. Introduction

Trends such as digital revolution and globalization are creating radical changes in industry and the world at an increasingly rapid pace. New businesses are continually appearing and companies at the forefront of the digital revolution boom are growing rapidly. However, some established companies are losing ground within their industries as they are edged out by competitors who are able to overcome the traditional boundaries between industries. The factors that determine business dominance have been shifting, first from MONOZUKURI (manufacturing) to solutions and services, and then further toward new types of value creation. Companies are competing on the basis of innovation-driven new value creation in both new and existing business areas[1]. This environment has generated interest in design thinking—an approach to producing innovations that discovers needs based on a human perspective instead of a technology perspective, and creatively generates new solutions for these needs[2].

The work done by Hitachi's Social Innovation Business is designed to generate solutions to social

issues. It creates value in areas such as energy, urban development, transportation, healthcare, finance, and manufacturing. Hitachi has developed a methodology for customer co-creation called NEXPERIENCE[3],[4] that is applied to these areas. NEXPERIENCE incorporates design thinking that is used to discover issues, ideate solutions to these issues, and verify the value of the solutions. Developing human resources who can apply the NEXPERIENCE methodology will be an important requirement for creating more value from a greater number of projects.

This article presents the NEXPERIENCE-based key design thinking skills needed for Social Innovation Business, and the training activities being done to teach these skills.

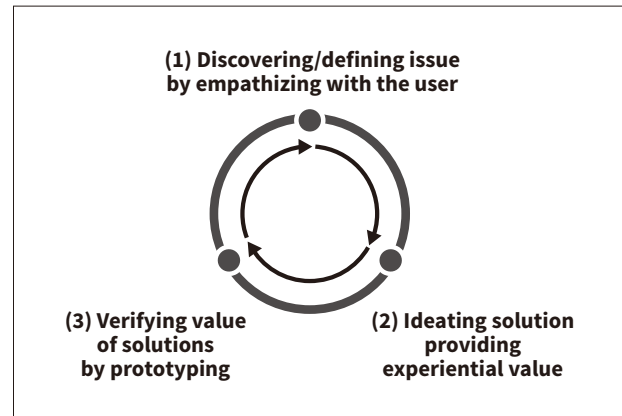## 2. Design Thinking for Social Innovation Business

2. 1
What is Design Thinking?

Design thinking[5] is an approach that uses the same mindsets and processes that designers use for design work and applies them to problem-solving. It creates a new product or service by repeatedly observing and empathizing with the user, defining the issue, ideating a solution to the issue that will provide experiential value to the user, creating a prototype of the solution, and testing it to verify its value (see **Figure 1**).

The recent interest in design thinking can be partially explained by today's diversifying needs and rapidly changing customer needs. Since understanding the nature and value of the issues that users face is becoming increasingly difficult, companies are eagerly adopting design thinking for its ability to discover services and solutions of value in an exploratory manner by rapidly and repeatedly ideating and verifying solutions.

Figure 1 — Design Thinking Process
Illustrated here is the exploratory approach that design thinking uses to repeatedly discover issues, ideate solutions, and verify their value.

(1) Discovering/defining issue by empathizing with the user

(3) Verifying value of solutions by prototyping

(2) Ideating solution providing experiential value

2. 2
Key Design Thinking Skills for Social Innovation Business

Hitachi creates solutions such as new insurance services for the under-insured and productivity improvement solutions for the energy industry[6] by applying NEXPERIENCE: Customer Co-creation Methodology based on design thinking, and using the Internet of Things (IoT), sensors, analytics technology and operational know-how. When working on the Social Innovation Business, the key elements to consider are value for stakeholders representing a wide range of different interests, and comprehensive solutions designed to provide that value by combining products and technologies. The key design thinking skills needed to discover issues, ideate solutions, and verify the solutions are listed below (see **Table 1**).
(1) Ability to discover issues linked to high value

Discovering issues requires more than just simple observations or interviews with users or customers. It requires looking for background characteristics or root causes, and closely examine the expected value and business benefits when the issue is solved. It is

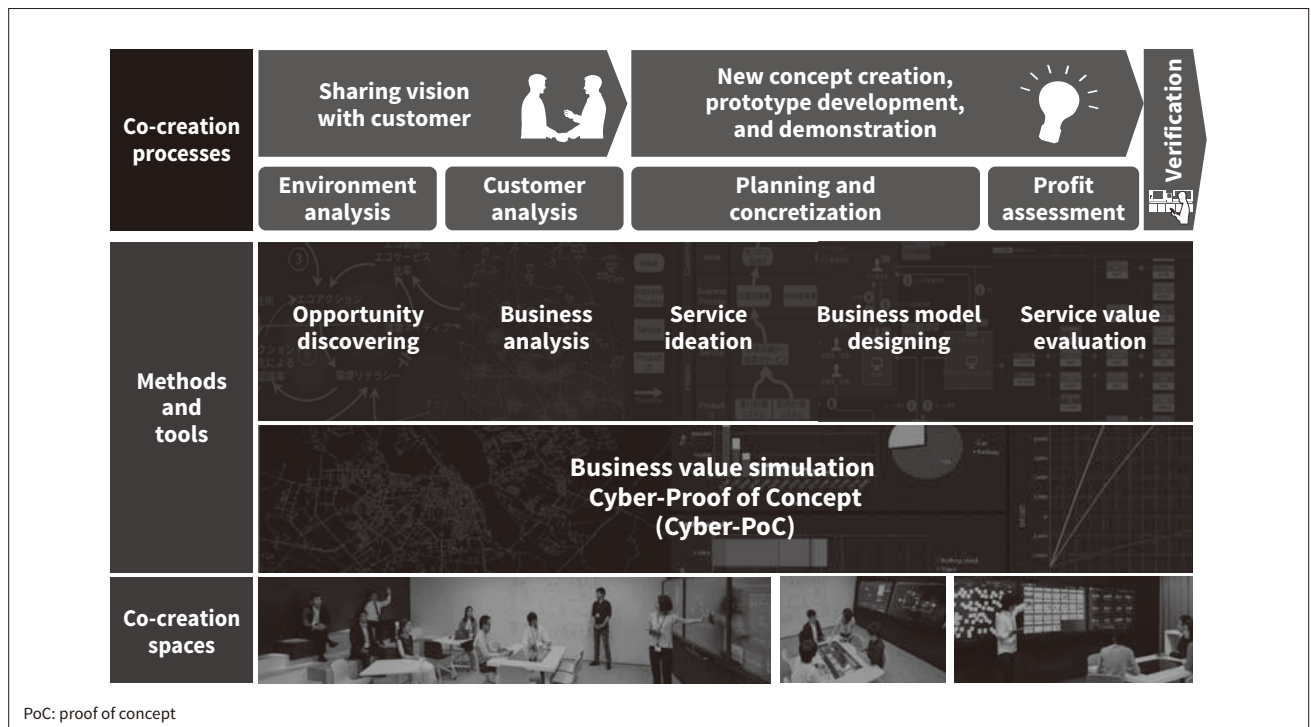**Table 1 — Key Skills for the Social Innovation Business**
The table below lists and describes the key design thinking skills for the Social Innovation Business.

Skill	Description
(1) Ability to discover issues	Being able to discover issues linked to high value related to customers, society, or business
(2) Ability to ideate solutions	Ideating solutions driven by OT, IT, and products and combine technologies from inside and outside Hitachi
(3) Ability to verify ideated solutions	Verifying value to the stakeholders in the business model

OT: operational technology

Figure 2 — Overview of NEXPERIENCE: Customer Co-creation Methodology

NEXPERIENCE is composed of methods, tools, and co-creation spaces that assist a series of customer co-creation processes.

Co-creation processes	Sharing vision with customer		New concept creation, prototype development, and demonstration		Verification
	Environment analysis	Customer analysis	Planning and concretization	Profit assessment	

Methods and tools: Opportunity discovering · Business analysis · Service ideation · Business model designing · Service value evaluation

Business value simulation Cyber-Proof of Concept (Cyber-PoC)

Co-creation spaces

PoC: proof of concept

also important to look for any other issues that would generate value if solved, and to discover issues linked to high value. Along with solutions providing value to users or society, it is important not to miss any solutions that could generate business value.

(2) Ability to ideate solutions driven by OT, IT, and products

Instead of solutions rooted in products from their own departments, employees applying design thinking need to ideate solutions that will generate genuine value by combining technologies and products from both inside and outside Hitachi. When creating value for the Social Innovation Business, designers need to consider comprehensive solution ideas driven by operational technology (OT), IT, and products.

(3) Ability to verify ideated solutions that incorporate business models

When verifying ideated solutions, it is important to verify the value provided to each stakeholder in the business model so that the project will be able to provide the solution to society sustainably. In addition to user value, it is also important to verify value in the form of mutual win-win relationships among the solution provider and its partners or other relevant stakeholders.

NEXPERIENCE was developed in 2015 as a way to discover issues, ideate solutions, and verify their value for the Social Innovation Business described above (see **Figure 2**). NEXPERIENCE is composed of opportunity discovering and business analysis methods for discovering issues; and service ideation, business model designing, and service value evaluation methods for ideating solutions and verifying solutions. NEXPERIENCE has been applied to about 1,000 cases to date worldwide.
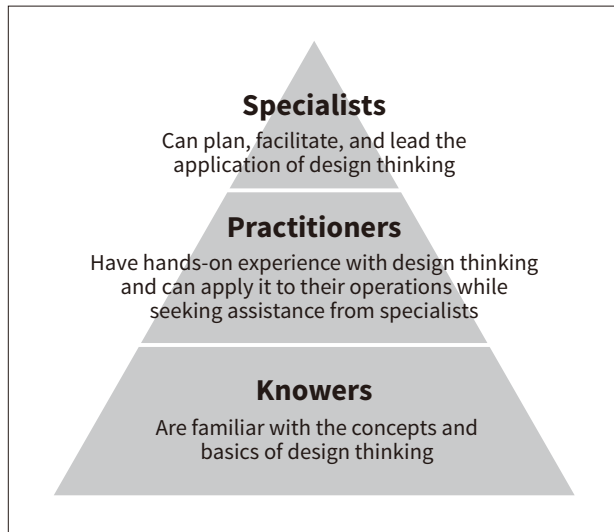
3. Design Thinking Skills Training Approaches

3.1
Training target

Design thinking is used for more than just creating new business. When applying solutions to existing business areas and customer needs are uncertain, design thinking provides an effective way to identify customer issues, create suitable proposals based on existing solutions, and rapidly verify the value of those proposals. The process of discovering issues, ideating solutions, and verifying their value is effective for creating value in-house. In addition to customer-related

Specialists
Can plan, facilitate, and lead the
application of design thinking

Practitioners
Have hands-on experience with design thinking
and can apply it to their operations while
seeking assistance from specialists

Knowers
Are familiar with the concepts and
basics of design thinking

front-office sections such as sales or development, it is also effective in back-office sections that provide in-house services or assistance to front-office sections.

The targets of design thinking skills training are therefore not limited to particular sections. They are primarily composed of the three types below (see **Figure 3**).

(1) Design thinking knowers

As described above, design thinking is effective for a wide range of sections. It should therefore be considered basic business knowledge that all employees should understand and be familiar with. All employees will also eventually need to understand design thinking to achieve Hitachi's Group-wide goal of becoming an innovation partner for the IoT era.

(2) Design thinking practitioners

When called for, leaders and members of projects for planning and implementing solutions need to be able to work on the project with specialists (described below), to implement the design thinking process of discovering issues, ideating solutions, and verifying their value. In addition to project members, projects also require domain experts familiar with the industry or customer, and engineers for studying idea feasibility and creating prototypes. These project participants should ideally also understand design thinking and be able to assist and implement the overall project. So, the human resources who implement design thinking in actual projects are known as practitioners.

(3) Design thinking specialists

Projects that plan or implement solutions have a vital need for workers to plan the application of design thinking, use and facilitate the use of suitable methods, and provide leadership. These human resources are known as design thinking specialists.

3. 2
Training Approaches

This section describes the training approaches used to promote design thinking skills. Training for design thinking knowers is provided for all employees. It is designed to improve basic understanding through e-learning and periodic education at times such as when joining the company. Training for design thinking practitioners consists of exercise-centered training and hands-on training on actual projects. Each participant trains to learn when to apply design thinking to their own operations and works on becoming proficient in applying it while seeking assistance from specialists as needed. Training for design thinking specialists consists of several years of practical training on the job. Specialists are trained in planning and facilitating the application of design thinking through on-site experience. The next section describes training activities for practitioners and specialists.

4. Promoting NEXPERIENCE-based Design Thinking

4. 1
Design Thinking Practitioner Training

As a training activity to develop practitioners, the Hitachi Institute of Technology, which was integrated into Hitachi Academy Co., Ltd. in April 1, 2019, provides training designed to teach the NEXPERIENCE methods below.

(1) Discovering business opportunities by identifying future trends

(2) Ideating services driven by OT, IT, and products

(3) Designing business models

(4) Service value evaluation in terms of stakeholder value

Trainees separate into teams of about six members each. The teams spend three days receiving hands-on training ranging from discovering business

Figure 4 — NEXPERIENCE Training Session
Trainees taking part in a team exercise.

opportunities to ideating services, designing business models, and evaluating business value. The training is done through repeated lectures and team exercises that apply the methods (see **Figure 4**). Trainees are able to gain practical experience that mirrors the business concept planning process. Trainees have rated the program highly in the questionnaires given out after each session.

4. 2
Design Thinking Specialist Training

The activities offered for training specialists include special practical training (SPT)—a practical training program for design thinking knowers and practitioners in Hitachi business divisions. The SPT program is operated by a department in Hitachi that conducts co-creation activities utilizing NEXPERIENCE according to the experience-oriented approach[7]. This department consists of designers, business consultants, and systems engineers with the skills of design thinking specialists, and along with promoting co-creation activities, these specialists also play a role in cultivating design thinking personnel. SPT trainees selected from multiple business divisions are admitted for a set term. They are assigned to work on actual projects together with the design thinking specialists described above, and act as specialists to work on the required skills training. Unlike trainees in short-term, partial training programs centered on lectures and exercises, SPT trainees work on actual projects for periods ranging from months to years. Implementing projects while learning from specialist actions and advice teaches SPT trainees how to implement design thinking and facilitate each method when working on overall project processes. They also experience the

benefits created while personally receiving feedback from customers. The program lets SPT trainees experience design thinking application as a series of events occurring on-site in real time, enabling them to work on mastering the specialist-level skills required.

To enhance the benefits of this hands-on experience, the department, in keeping with its experience-oriented approach, periodically plans and organizes events such as educational courses on specific NEXPERIENCE methods and case study meetings. SPT trainees can apply the skills and knowledge acquired at the events to their own practical uses right away. The events are also meaningful opportunities for SPT trainees to exchange the insight and problem awareness they have acquired from their routine practical work. These events are open to SPT trainees both during and after their training period, helpful for ongoing learning, skill updates, and networking after training.

This section has presented the specialist training activities. Hitachi periodically holds an event for specialists called the NEXPERIENCE Summit that brings together design thinking specialists from around the world. The event lets participants share practical case studies, techniques, and lessons. It promotes global collaboration by encouraging the formation of interpersonal connections and expands the community of design thinking applications by promoting design thinking studies by specialists themselves.

5. Conclusions

Design thinking is not a magic wand that anyone can use to create innovations, but a guide for achieving

better results. When using this guide to create better results, taking action and practicing repeatedly at will is a key requirement. While thinking implies just thinking, design-thinking-promoting activities emphasize the key elements of will and action.

When handling the Social Innovation Business, it is important to develop the human resources who will use the methods, and to work on co-creation in teams containing diverse member lineups. Hitachi's work on promoting design thinking will not be limited to in-house activities in the future. It will focus on popularizing design thinking among outside companies and universities as a way to expand open co-creation for work on social issues.

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