NEXPERIENCE Methodology for Creating New Solutions and Businesses

NEXPERIENCE is a methodology for generating new solutions and new businesses. It is used to bring new value to the world through collaborative creation between Hitachi and other companies. This value is supplied in the form of solutions and businesses. NEXPERIENCE has been successfully applied at Hitachi's global business sites since 2015, when various techniques and tools previously devised in and around Hitachi's R&D divisions were brought together systematically. This article presents the basic concept of NEXPERIENCE, along with its major techniques, tools, and achievements. It also looks at the rapid changes taking place in today's business environment in response to COVID-19, to present a blueprint for the future of collaborative creation and the digital technologies needed to assist it.

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1. Introduction

The spread of COVID-19 has created radical changes in the environment facing industry and the world at large. These changes will alter the business environment in the coming years, greatly impacting social systems, values, and work-style norms. However, discussions of business in the post-coronavirus era tend to unconsciously revert to conventional assumptions. The tendency is to become absorbed only in the issues immediately at hand while forgetting that changes in the background can alter the significance of issues. The world now needs more from innovation than just solutions to existing issues. Today's innovation also needs to envision a world where different assumptions apply, and to use that vision to devise new services and business opportunities.

Hitachi created a collaborative creation (co-creation) facility called *Kyōsō-no-Mori* on the campus of its Central Research Laboratory in Kokubunji, Tokyo in April 2019. Various co-creation projects have since originated from this facility. These projects have resulted in innovations that started from customer issues in areas such as business administration and operations. *Kyōsō-no-Mori* has consistently used the NEXPERIENCE co-creation methodology that Hitachi announced in 2015[1], [2]. It is a methodology that Hitachi uses to work with customers to generate innovations by creating new solutions, services, and businesses. It is part of Lumada[3], a general term encompassing solutions, services, and technologies provided by Hitachi.

But today's changing world is creating the need for refinements to co-creation and its methodology. This article provides a brief overview of NEXPERIENCE, presents some example NEXPERIENCE applications, and looks at the methodology's future outlook.

2. The NEXPERIENCE Co-Creation Methodology

NEXPERIENCE is a co-creation methodology that combines and systematizes service design and engineering. It is composed of multiple methods and IT tools, and encompasses a collection of use cases along with knowledge gained

from them through application of the methodology over a five-year period starting in 2015. Its major components are presented below in order of the co-creation flow (see **Figure 1**).

(1) Methods for discovering issues

Worldwide changes are sometimes heralded by *kizashi* (signs). Issues such as growing concern for the environment, the rise of the sharing economy and respect for diversity are base trends that represent more than just passing fads. They have been accompanied by *kizashi* in the form of new and unusual services, entrepreneurship trends, and the demands of certain trendsetting users. These *kizashi* of worldwide changes are collected by Hitachi and stored as clues to provide insights into the future[4]. Hitachi does not use these clues alone. Instead, it workshops them with partners as a way of devising visions for the future. The process consists of envisioning the near future and then backcasting from that vision to discover new opportunities for business creation and work reforms.

(2) Methods and IT tools for creating solutions

Co-creation workshops held with customers are attended by designers who bring transparency to discussions in real time, helping generate ideas and design business models. Discussion results are compiled into illustrations, charts, storyboards, and other materials designed to provide intuitive understanding so that the next discussion can resume quickly from where the previous discussion ended. The artificial intelligence (AI)[5] that helps generate ideas also takes part in the workshops. It takes in the discussion of the human participants while attempting to stimulate ideas by presenting previously stored related content in real time such as ideas, solution case studies, and recent news stories from around the world.

(3) Methods and IT tools for verifying value

NEXPERIENCE includes methods and simulators that assess and visualize the user convenience, social value, and business profitability of proposed ideas. The key to this verification lies in the construction of the computation model. Hitachi's previous business planning experience has been used to prepare standard computation models for a large number of business fields. Computation models are used to assess which factors result in increased risks when uncertain, and which factors determine success or failure sensitivity. These assessments are used to create approaches for implementing new businesses or services.

3. Co-creation Track Record

Hitachi has used NEXPERIENCE to work on over 1,000 customer co-creation projects in fields such as mobility, smart life, industry, energy, and IT. Two of these projects are presented here.

The first project is a service called Eki-shi-vision[*] that provides information to rail transport users[6]. The service makes station crowding information easily accessible from any location on a smartphone. The information provided is designed to give station users an easy way to adjust boarding times, select alternative routes, or make similar decisions.

When developing the service, ethnographic research and workshops were used to discover that rail transport users need a way to find station crowding information when rail schedules are disrupted. However, since transmitting unedited images of crowded station facilities would infringe

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* Eki-shi-vision is a registered trademark of the Tokyu Corporation.

Figure 1 — NEXPERIENCE Co-creation Methodology
Hitachi's NEXPERIENCE co-creation methodology is composed of methods, IT tools, and co-creation spaces that assist the flow of processes used to create innovations.
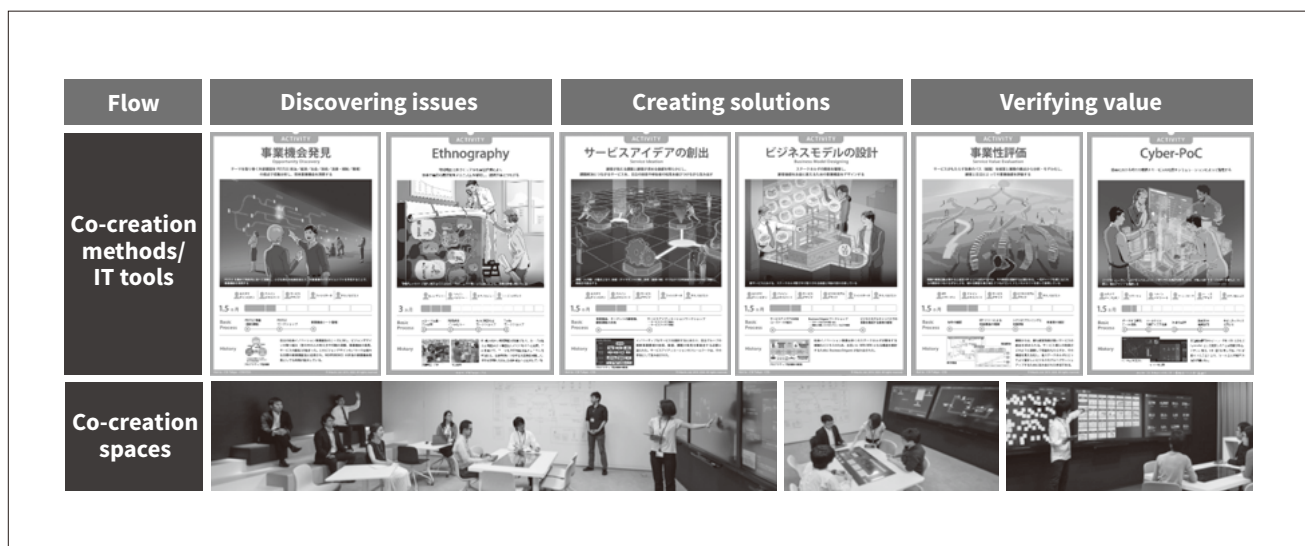
on the privacy of the station users shown, a service ideation method was used to derive a solution to this problem that drew on expertise both in the areas of technology and design. People flow analysis was used with cameras in station facilities to recognize the shapes of people walking. These shapes are transformed into icons depicting orientation and movement that are transmitted in real time to give an immediate sense of the station's crowding level (see **Figure 2**).

The second project is a solution that helps formulate and execute production and sales plans[7]. Issues such as diversifying customer needs and the recent spread of COVID-19 are creating large fluctuations in manufacturing industry demand, resulting in various issues throughout supply chains such as production delays, stock shortages, and overproduction. The solution handles this demand fluctuation by automatically formulating manufacturing and sales strategies designed to help maximize business key performance indicators (KPIs), or production and sales plans reflecting site restrictions. Demonstration testing has shown that the solution reduces the time needed for decision-making by about 95%.

When developing the solution, Hitachi worked on reforming manufacturing processes by holding discussions with the customer. These discussions focused on the need for responding promptly to changing demand by researching manufacturing and sales strategies on a daily basis to propose production and sales plans. When researching these strategies and plans, several parameters (such as sales prices, sales volumes, production volumes, and equipment utilization rates) needed to be considered for each purchaser and product. Maximizing profits, sales, and cash flow (business KPIs) called for research on manufacturing and sales strategies using multiple different approaches. Teamwork

among different departments was also needed to propose and execute production and sales plans, creating limits on the work that could be done by human workers. Hitachi responded by developing a solution that uses information obtained from workshops and other sources to analyze the needs that sites have for interdepartmental plan proposals and research on manufacturing and sales strategies. The solution uses the results to model different types of strategies to help propose and execute production and sales plans by incorporating supply chain management (SCM) optimization simulation technology from Hitachi Solutions Limited (see **Figure 3**).

The examples presented in this section were both co-creation projects originating from customer issues. Hitachi has also worked on several other different types of co-creation projects that have originated from visions, changing markets, changing technologies, and other stimuli. NEXPERIENCE generates new services and new solutions by combining methods and tools tailored to the type of co-creation or the project characteristics.

4. Work being Done around the World

NEXPERIENCE has been used in North America, China, Southeast Asia, India, Europe, and Australia to enable worldwide sharing of acquired knowledge and work on refinements. Some of these efforts involve creating tangible embodiments of methods and tools in the form of cards distributed in-house by Hitachi throughout the world. Each card provides an overview of a method or tool, presented alongside information such as objectives, estimated man-hours, tips, and examples. The cards are illustrated to aid

Figure 2 — Example Eki-shi-vision Screen
Eki-shi-vision uses icons to represent passenger movement, letting it show crowding levels in rail transport facilities while maintaining the privacy of the passengers shown.

Figure 3 — Overview of Formulation and Execution Solution of Production and Sales Plan

The solution automatically proposes manufacturing and sales strategies designed to boost key performance indicators (KPIs), or production and sales plans reflecting site restrictions.

SCM: supply chain management
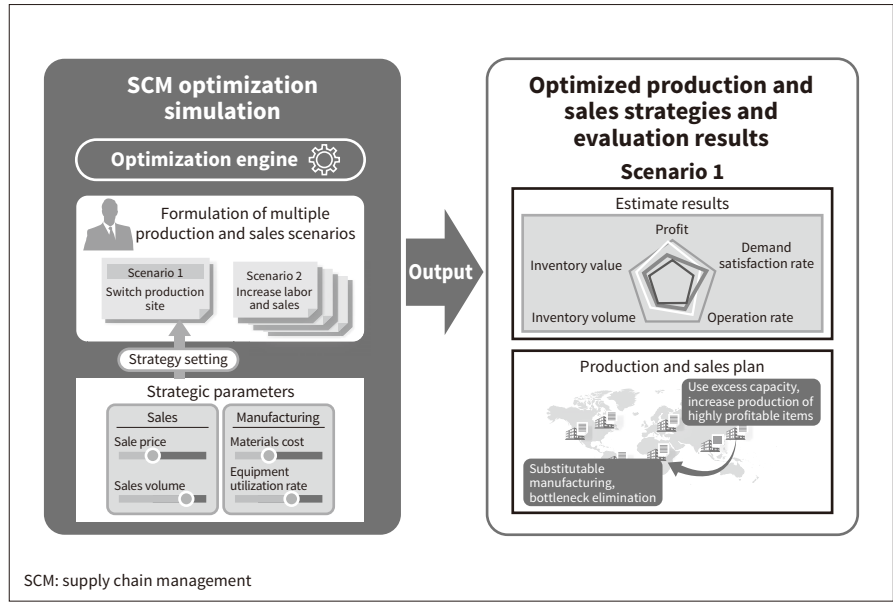
comprehension. Detailed manuals and guidelines are given as separate reference materials. The NEXPERIENCE cards are useful for presenting methods to both Hitachi employees and customers. Hitachi has also demonstrated their effectiveness when discussing combinations of methods suited to projects.

While NEXPERIENCE was mostly developed in Japan, business environments and approaches to co-creation vary in different parts of the world. The methods developed in Japan cannot be used as-is, they are tailored independently to each local region. While not every item is given the NEXPERIENCE label, each tool and method put to practical use somewhere in the world is presented in a card of the same format as a way to spread awareness of it to the rest of the world (see **Figure 4**).

5. Conclusions

NEXPERIENCE is a co-creation methodology that incorporates design thinking. It has been applied to over 1,000 projects since 2015, helping to grow customer businesses. But faced with today's radically changing business environment, companies now need to reassess the value their business provides to the public. Now more than ever, companies are being called on to justify their existence in terms of their social, environmental, and economic value as a whole, instead of just considering their own economic value.

To adapt to this shift, Hitachi will be refining *Kyōsō-no-Mori* in two ways. One will be to reassess the assumptions of

Figure 4 — NEXPERIENCE Cards and Example Method (Hitachi Vantara)

Creating a set of cards that brings together the methods and methodologies of collaborative creators from different regions has created more opportunities to use NEXPERIENCE throughout the world.
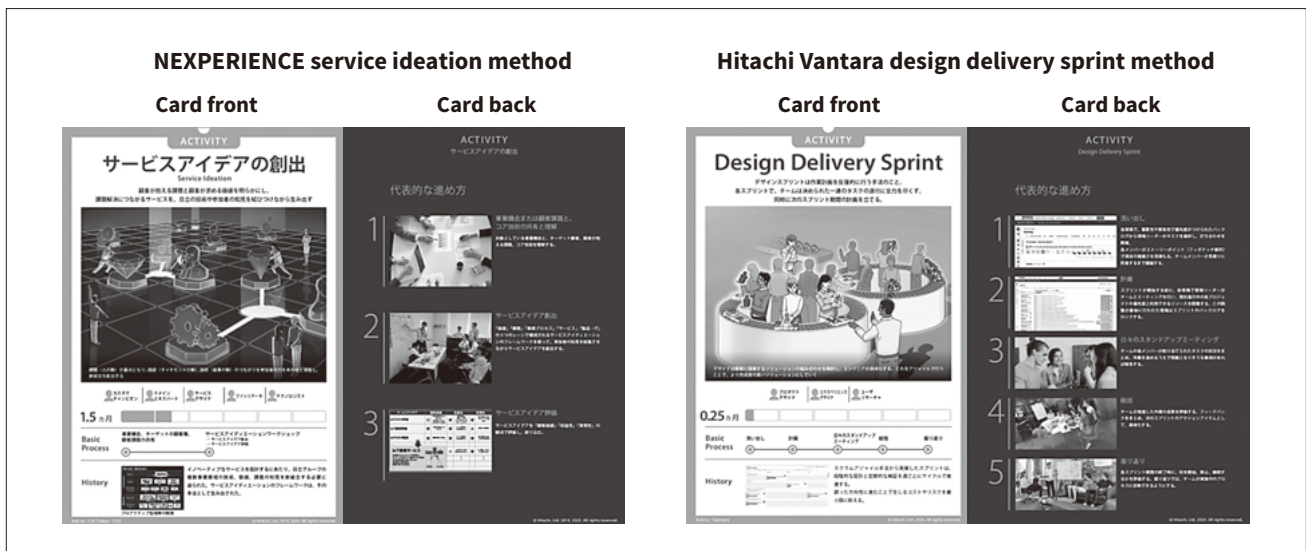
the modern world. Holding discussions rooted in reassessments of these assumptions will make it possible to pioneer groundbreaking new business areas while simultaneously using co-creation to achieve solutions that assist with issues of public concern. The other refinement will be to construct a co-creation environment transcending the limitations of time and space. The traditional method of ethnographic research done through fieldwork will be combined with research done remotely, and digitally linked to a co-creation space made available worldwide. These elements will create a platform that enables experts to take part in discussions from anywhere in the world. Business assessments will combine augmented reality (AR) and mixed reality (MR) to bring more realism to visualizations of the social, environmental, and the economic value.

Hitachi will continue helping to create social innovations by refining NEXPERIENCE, reassessing the issues themselves, and drawing on the latest technologies.

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