

## Overview

# Service Businesses Based on Collaborative Creation

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## REBUILDING BUSINESS ECOSYSTEMS

COMPETITION between companies in the information technology (IT) industry over recent years now extends beyond simply competing on value delivered, shifting instead toward companies competing to redefine the ecosystems in which their businesses operate<sup>(1)</sup>. The companies that succeed globally are those that rebuild their business ecosystem through new businesses that extend beyond areas where they have been active in the past, securing themselves a position in these sectors from which they can maintain steady growth. The value they deliver in doing so takes the form not of the products themselves, but of the platforms that serve as the core of the business ecosystem and the services that are based on them. These developments provide the background against which manufacturing is becoming increasingly service-oriented<sup>(2), (3)</sup>.

These changes can be thought of as a consequence of industry boundaries becoming less well defined due to rapid advances in IT, with the rebuilding of ecosystems arising from places that would not have been considered in the past. For example, nobody in the past could have imagined a retailer becoming a major player in the field of cloud computer services. Companies that only consider their current areas of business and traditional competitors are at risk of being left out in the cold by a rearrangement of their ecosystem arising unexpectedly.

The keys to corporate survival in such an environment lie in deciding who to collaborate with on collaborative creation of new businesses and whether to build a business ecosystem. What is needed are collaborative creation partners with dependable practical technologies with whom the business can share challenges and a vision for the future.

The aim of Social Innovation as pursued by Hitachi is to be the best collaborative creation partner in this sense of the term. Hitachi brings together its technologies in suitable combinations to supply solutions and grow in tandem with customers.

One such initiative aimed at accelerating Social Innovation was the reorganization by Hitachi of its research and development division in April 2015<sup>(4)</sup>.

Its three research laboratories and Design Division in Japan, and its overseas research and development (R&D) centers, were restructured into three new organizations: the Global Center for Social Innovation, the Center for Technology Innovation, and the Center for Exploratory Research.

The purpose of the new Global Center for Social Innovation<sup>(5)</sup> is to increase contact between Hitachi and its corporate customers, and to work alongside customers to share information about the challenges they face and devise solutions.

This issue of *Hitachi Review* focuses on the activities of the Global Center for Social Innovation and profiles Hitachi's involvement in new businesses and services being undertaken through collaborative creation with its customers.

## ORGANIZATIONAL STRUCTURE OF GLOBAL CENTER FOR SOCIAL INNOVATION

Adopting a global perspective is an essential part of Hitachi's Social Innovation Business. More than a few customer challenges and solutions transcend geographic boundaries. Furthermore, because the reorganization of business ecosystems is not limited to a single country or region, it is essential to pay attention to competitors around the world. Moreover, local operations are needed when entering overseas markets alongside customers.

With reference to these background factors, the Global Center for Social Innovation operates at four sites in different parts of the world: The Global Center for Social Innovation – Tokyo (which covers Japan and the Asia-Pacific region), Global Center for Social Innovation – North America, Global Center for Social Innovation – China, and Global Center for Social Innovation – Europe (which covers Europe, the

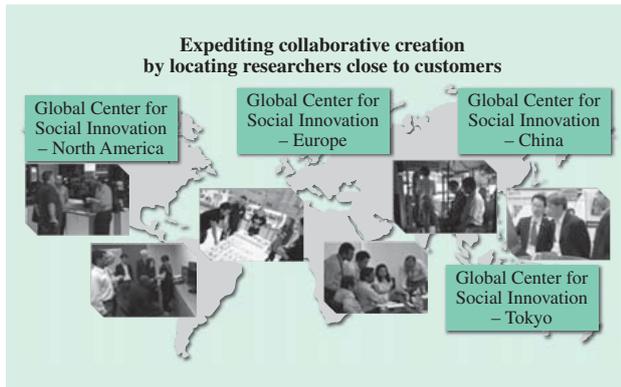


Fig. 1—Global Center for Social Innovation. The Global Center for Social Innovation operates at four sites: The Global Center for Social Innovation – Tokyo (which covers Japan and the Asia-Pacific region), Global Center for Social Innovation – North America, Global Center for Social Innovation – China, and Global Center for Social Innovation – Europe (which covers Europe, the Middle East, and Africa). It employs approximately 500 research staff.

Middle East, and Africa). It employs approximately 500 research staff (see Fig. 1).

The following chapter details the Global Center for Social Innovation – Tokyo based in Tokyo, which has a unique organization that includes designers and IT engineers.

The other centers outside Japan, meanwhile, treat customers as a starting point for implementing their respective regional strategies.

The Global Center for Social Innovation – North America already has experience with the development of platforms for big data analytics, with its Big Data Lab established in 2013 playing a central role. In 2015, it went on to acquire Pentaho Corporation, a leading company in the data analytics field. In addition to using Pentaho's technology to augment its big data analytics platforms, it added more than 1,200 customer channels spread across more than 180 countries. It aims to expand its operation into new fields, such as network analysis solutions for the communications industry or production optimization solutions for the oil and gas industry.

The Global Center for Social Innovation – China engages in business development using as a foothold successful Hitachi products that have gained a presence in the Chinese market. One example is the deployment of the smart cash stream solution<sup>(a)</sup> to automated

(a) Smart cash stream solution

A solution developed by Hitachi for smarter operation of ATMs. Key features include money demand prediction for the efficient handling of the cash used to fill ATMs and route optimization for efficient filling of ATMs.

teller machines (ATMs). This solution improves the efficiency and rigor of cash handling. It is also developing urban and building solutions (“New Town” policy) based on its escalator and elevator business by working with the National Development and Reform Commission (NDRC) and engaging in collaborative creation with developers, city authorities, and others.

The Global Center for Social Innovation – Europe works on overcoming the challenges facing mature societies. It is engaged in the collaborative creation of the super hospital concept for making a 25% improvement in the efficiency of hospital administration in an aging population, smart energy systems that help achieve the environmental targets of the European Union (EU), and solutions for railway maintenance systems that deal with aging infrastructure.

## ROLE OF GLOBAL CENTER FOR SOCIAL INNOVATION – TOKYO

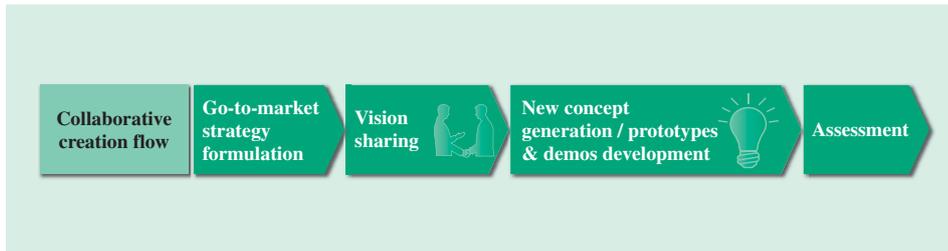
This is not the first time Hitachi has engaged in collaborative creation with customers. In the IT sector, Hitachi has made changes to the value it delivers. The first time the term “computer” appeared in *Hitachi Hyoron* (the Japanese language edition of *Hitachi Review*) was in 1961<sup>(6)</sup>, with “system” first appearing in 1971<sup>(7)</sup>, and “solution” in 1998<sup>(8)</sup>. These key terms have been appearing frequently in articles ever since.

As noted above, recent changes in the business environment have led to Hitachi to also target Social Innovations delivered with a view to rearranging business ecosystems rather than solutions that set out to overcome individual challenges.

The tools for achieving this include not only technology in the traditional sense of the word, but also techniques for social insights, marketing, business strategy, and business development processes. Furthermore, recognizing the challenge of how to provide ways of looking at intangible services from the design stage, as opposed to tangible products, Hitachi has been reevaluating the role of designers since the early 2000s<sup>(9)</sup>.

With regard to this, Hitachi has been developing and utilizing techniques for identifying changes in society, considering issues from a human-centric perspective<sup>(10)</sup>, and setting up businesses<sup>(11)</sup>. These techniques are called social science design methods, with designers having played a central role to date.

The Global Center for Social Innovation – Tokyo consists of these designers brought together with researchers.



*Fig. 2—Process of Collaborative Creation with Customers. The Global Center for Social Innovation – Tokyo seeks to work through this process rapidly by utilizing the Collaborative Creation Space, methodologies, and information technology.*

On the subject of having researchers involved in new business ventures, while it may seem odd, among the new business development practices that have attracted attention in recent years are those that adopt the sort of approaches used by researchers. The lean startup method<sup>(12)</sup> is a typical example. The approach it adopts, which involves a repeated process of establishing a hypothesis, conducting quantitative testing, and then reformulating the hypothesis, is identical to that used in research, an area where researchers have expertise.

This research approach is also utilized for new business development, not technology development. That is, rather than haphazardly developing technology, this approach utilizes commercial knowledge when deciding which fields to enter, and designs the value and business to produce a profit forecast (hypothesis) before embarking on system design. This is then followed by a repeated process of subjecting the hypothesis to quantitative testing and reformulating the hypothesis. However, this cycle needs to be worked through at a speed that defies comparison with past practice.

Rather than simple technology development, the Global Center for Social Innovation – Tokyo engages in business collaborative creation. Fig. 2 shows the collaborative creation process. The stages of the process are as follows.

(1) Utilize business knowledge to choose which fields to enter by working with operational divisions that are familiar with business domains (establish a go-to-market strategy).

(2) Identify customer challenges from the social changes that serve as the background to business ecosystems, and develop a shared vision with the customer.

(3) Design new service and business model concepts and use prototypes, simulation, and other techniques to make estimates of profitability.

(4) Identify extensive Hitachi technologies and other commercial resources through “One Hitachi,” then implement solutions and verify their effectiveness.

In this collaborative creation process, the Global Center for Social Innovation – Tokyo aims to take on the role of bringing together customers and Hitachi’s operational divisions and other research centers (Center for Technology Innovation and Center for Exploratory Research) to lead practical business development.

Furthermore, to create the tools for achieving this, Hitachi is providing venues for discussions with customers and making agreements, together with the use of service and business model design methodologies, the adoption of IT in workshops, and simulation for business evaluation to establish mechanisms for working through the collaborative creation process at high speed by the repeated formulation and testing of hypotheses (see Fig. 3).



*Fig. 3—Collaborative Creation Space Provided by Global Center for Social Innovation – Tokyo. The Global Center for Social Innovation – Tokyo has a facility for holding discussions and reaching agreements with customers. It is used to hold workshops with customers to discuss, design, and simulate service and business models to evaluate them prior to implementation.*

TABLE 1. Articles in This Issue

*This issue splits Hitachi's work on creating service businesses that emerge out of collaborative creation with customers into three categories.*

Category	Subject	Article
Methods and tools for collaborative creation	Facilities	Interior Design for Collaborative Creation Space: Creating a Collaborative Environment Based on Color/Material/Finish
	Methods and tools	Collaborative Creation with Customers: Establishment of NEXPERIENCE
		Development of Methods for Visualizing Customer Value in Terms of People and Management
Big data analytics	Use of Human Big Data to Help Improve Productivity in Service Businesses	
Examples from Japan	Urban development	Application of Service Design and Vision Design by Collaborative Creation in Urban Development Business Initiatives Aimed at Creating a Universal Design City for 2020
		PKI Platform for Campus Information Systems Using Cloud-based Finger Vein Authentication and PBI
	Logistics	Framework for Collaborative Creation with Customers to Improve Warehouse Logistics
Examples from overseas	China	Collaborative Creation with Customers of Smart Branch Solution for Banks
	North America	Winning in Oil and Gas with Big Data Analytics

PKI: public key infrastructure PBI: public biometric infrastructure

## HOW ARTICLES IN THIS ISSUE RELATE TO HITACHI'S PLANS

The above chapters have described what Hitachi is doing to create service businesses that emerge out of collaborative creation with customers. This chapter goes on to explain how the articles in this issue fit into this scheme.

The articles fall into three broad categories. The first describes methods and tools for achieving collaborative creation. The second presents examples of collaborative creation in Japan. The third deals with Hitachi's regional strategy in global markets. These are described below (see Table 1).

(1) Methods and tools for achieving collaborative creation

“Interior Design for Collaborative Creation Space: Creating a Collaborative Environment Based on Color/Material/Finish,” describes the Collaborative Creation Space opened in Akasaka (in Minato-ku, Tokyo). This facility aims to provide not only the features needed for collaborative creation but also a fresh and comfortable space that encourages unrestricted imagination, designed with consideration for welcoming visitors. The article explains the design intentions and process.

“Collaborative Creation with Customers: Establishment of NEXPERIENCE” describes the NEXPERIENCE methodology for collaborative creation with customers provided by Hitachi. NEXPERIENCE covers a series of phases, from methods for discovering business opportunities to business model design methods. It is made up of techniques and IT tools for the creation of attractive service businesses, with consideration for the profitability and viability of a large number of stakeholders.

“Development of Methods for Visualizing Customer Value in Terms of People and Management” describes a method for identifying business challenges that can visualize management issues and their impact, and another for establishing and visualizing the structure of end-user needs.

“Use of Human Big Data to Help Improve Productivity in Service Businesses” describes techniques that use quantitative analysis to support the management of service and knowledge workers. It presents a method for identifying action characteristics that uses wearable sensors that measure activity and an artificial intelligence (AI). It also describes how the techniques were put into practice to identify and quantify the action characteristics that increase organizational activity levels.

(2) Examples of collaborative creation in Japan

The articles in this category present examples of urban development, information systems, and logistics.

“Application of Service Design and Vision Design by Collaborative Creation in Urban Development Business” describes urban development. As the problems and challenges facing cities become more severe and diverse, Hitachi aims to provide a more comfortable way of life and create societies and cities that are conscious of the environment. This article presents the involvement of Mitsui Fudosan Co., Ltd. in establishing the Kashiwa-no-ha Smart City as an example of working with a customer on activities that extend from the creation of a vision for the future to service delivery.

“Initiatives Aimed at Creating a Universal Design City for 2020” describes an example of collaborative creation for urban development. The “UD city” is a vision for overcoming challenges such as the extreme

aging of the population that is confronting Japan. It was put forward in the “Implementation of Advanced Infrastructure Systems from Japan in 2020—Realizing a Dream that Originates from Japan,” an FY2014 project of the Council on Competitiveness-Nippon (COCN) with participation by 17 companies. The article describes the respective approaches of Kajima Corporation and Hitachi, Ltd. to urban development based on the concept of universal design, together with the outlook for the future.

“PKI<sup>(b)</sup> Platform for Campus Information Systems Using Cloud-based Finger Vein Authentication and PBI<sup>(c)</sup>” presents examples of collaborative creation with a university of safe, secure, and convenient academic systems, and social infrastructure. It describes a joint demonstration project that combined cloud-based finger vein authentication with existing campus information systems on site in order to identify the problems associated with installation and operation and prepare for wider deployment.

“Framework for Collaborative Creation with Customers to Improve Warehouse Logistics” presents a case study of improving logistics and operational efficiency at customer warehouses. It uses this example to present a framework for collaborative creation with customers to analyze and improve working practices at distribution warehouses. The framework provides two different approaches for supporting appropriate warehouse operations: the holding of workshop discussions with warehouse staff to identify and overcome problems, and the analysis of data collected from a variety of sensors.

### (3) Hitachi’s regional strategy in global markets

“Collaborative Creation with Customers of Smart Branch Solution for Banks” presents a case study from the banking sector in China. The smart branch solution for banks was developed through joint innovation with local partners and customer banks. The solution provides self-service tools, security plans, and precision marketing plans to improve the

#### (b) PKI

An abbreviation of “public key infrastructure,” meaning an information security platform that provides functions for electronic authentication, electronic signatures, and encryption. It works by having a trusted third party issue certificates to users (public key certificates) in order to verify their identity. Public key encryption uses a key pair (a public and a private key) for encryption and decryption. As information encrypted using the public key can only be decrypted using the private key, the security of the information is assured so long as the private key is kept safe.

#### (c) PBI

An abbreviation of (template-based) “public biometric infrastructure.” It performs authentication in the same way as PKI, except that finger vein or other biometric information is used as the private key. This use of biometric information provides a convenient, secure, and reliable means of identity verification.

bank’s brand image, the efficiency of branch (outlet) operation, and marketing.

“Winning in Oil and Gas with Big Data Analytics” describes work on big data analytics in the North American oil and gas industry. Hitachi has developed a data analytics platform in response to demand for the timely implementation of data analytics solutions through collaborative creation with customers. It can be used for the rapid configuration of systems for collecting a wide range of operational data, such as oil and gas production volumes, from diverse sources and presenting it to the operator in terms of various different KPIs<sup>(d)</sup>. The system brings together analytics techniques built up by the Big Data Lab.

## COLLABORATIVE CREATION IN THE FUTURE

Hitachi’s new initiative in collaborative creation with customers began with the reorganization of the Research & Development Group.

To make a success of this, Hitachi intends to focus on human resource skill definition and training that can adapt to new business environments, accumulating experience in service businesses, formulating policies for an intellectual property strategy for collaborative creation, and developing mechanisms for identifying the best technologies and commercial resources for collaborative creation.

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#### (d) KPI

An abbreviation of “key performance indicator,” meaning a quantitative measurement of the extent to which an organization has achieved a target. KPIs are the particularly important indicators among those used for monitoring the progress of business processes.

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