

Overview

Hitachi Smart Life Solutions Driven by Digitalization, Design, and Technology

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1. Introduction

During Japan's period of high economic growth, home appliance manufacturers catered to the consumer need to increase housework efficiency. Home appliance products offered mechanized and electrical solutions to housework chores. They became increasingly automated, labor-saving, and functional, reducing time spent on housework to help increase consumer disposable time (time not spent on housework). Growing environmental awareness led to environmental performance improvements in the form of energy- and water-saving home appliance products, reducing resource consumption and costs.

These advances in the automation, energy-saving ability, and functionality of home appliance products have been accompanied by digital technology advances in areas such as the Internet of Things (IoT), artificial intelligence (AI), and big data analysis. New lifestyle services have appeared as a result. Examples include ride-sharing services using personal vehicles,

accommodation-sharing services, and delivery services that can bring users whatever they want at any time. Since these services can be used easily with a smartphone, they are growing rapidly in both developed and emerging nations.

While home appliance products and lifestyle services naturally arose to meet consumer needs, the coming era of changing and diversifying lifestyles and values will require a fine-tuned understanding of the needs of each individual. This article presents Hitachi's Smart Life Solutions that will improve the quality of life (QoL) of people around the world by identifying their diversifying needs and providing them with products and services that meet those needs.

2. Diversifying Consumer Needs

Figure 1 shows the yearly growth of Japan's business-to-consumer (B2C) electronic commerce (e-commerce) market⁽¹⁾. The market size was about 18 trillion yen in 2018, with product sales (commodity

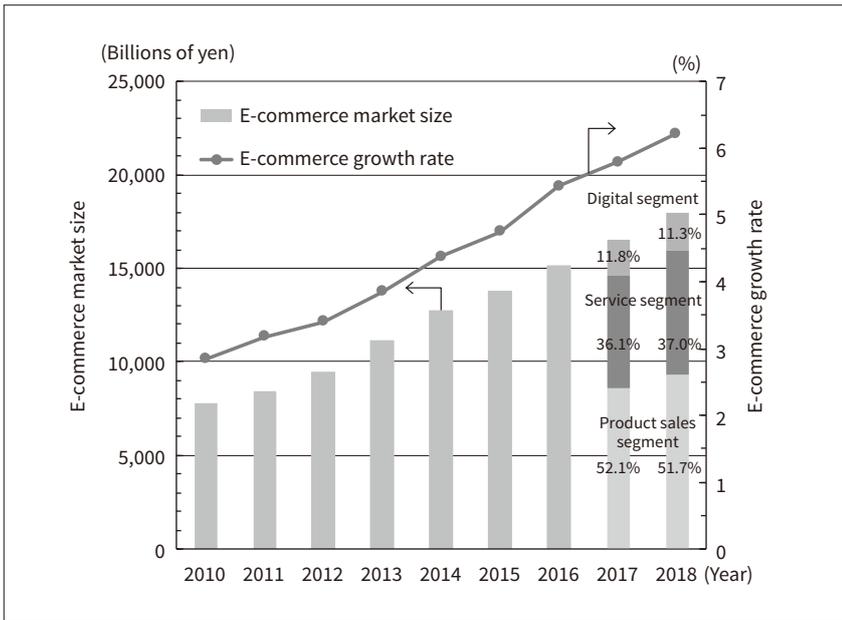


Figure 1 — B2C E-commerce Market Size and E-commerce Growth Rate

The business-to-consumer (B2C) electronic commerce (e-commerce) market was valued at JPY 17.9845 trillion in 2018 (a growth rate of 8.12%). In the product sales segment, the rate of smartphone-based use was about 40% (a 12% increase over the past 3 years).

purchases) accounting for about half. But a shift away from things toward experiences and away from ownership toward use is evident, with market growth for services such as travel services and food services, and for digital areas such as electronic publishing and paid music distribution. Growing demand for digital areas may be fueled by the on-demand nature of these areas that allows them to deliver whatever users want at any time. **Figure 2** shows the yearly growth of laundromats as another example (the data is slightly old)⁽²⁾. A Cabinet Office survey of consumption trends found that the prevalence of electric washing machines had reached 99% in Japan by 1979⁽³⁾. But the growth of

laundromats since then shows a change—a growing need for the use of laundry as a service.

So, along with the appearance of various lifestyle services, consumer needs, lifestyles and values are changing. The focus is shifting from things to experiences, from ownership to use, and toward a sharing economy and on-demand services. The conventional ways of providing products will no longer be enough. Providers will also need to gather and analyze consumer needs and issues at various lifestyle contact points, providing solutions that combine multiple products and services (see **Figure 3**).

Figure 2 — Growth of Laundromats

The number of laundromats providing laundry as a service is growing every year.

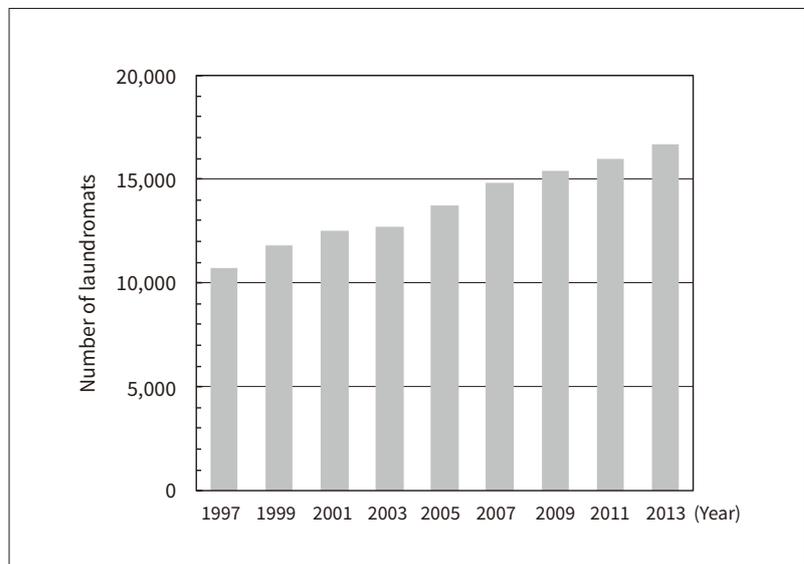
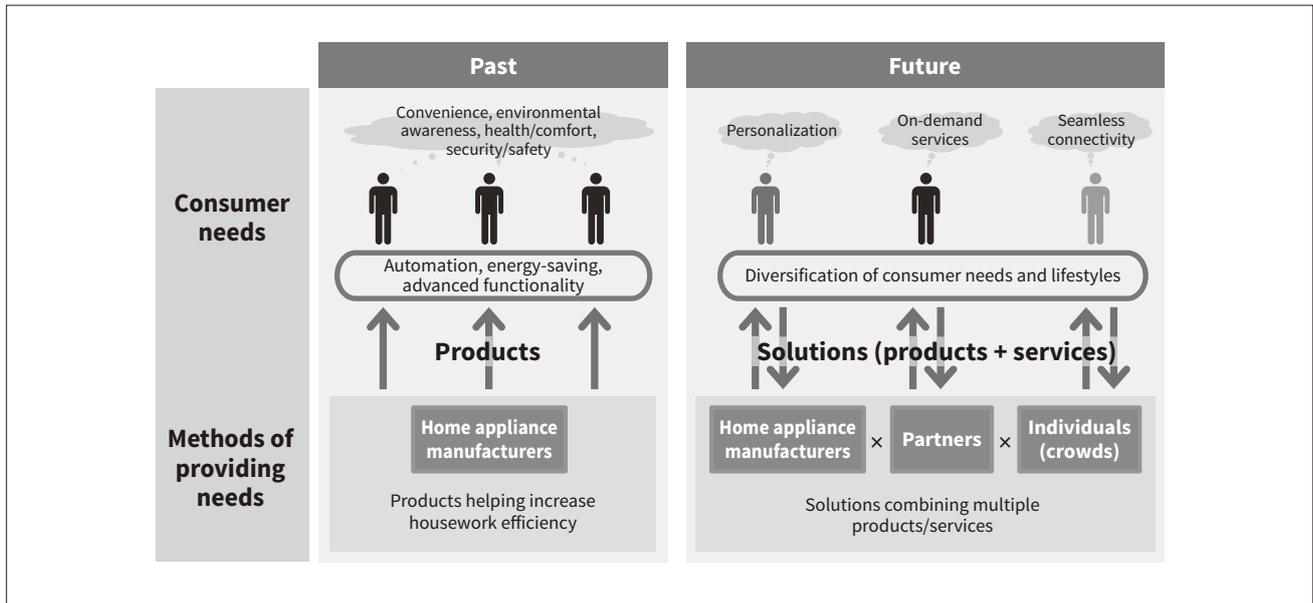


Figure 3 — Changing Lifestyles and Business

Diversifying personal needs and lifestyles are creating a shift to an era in which providers need to identify customer needs and provide solutions combining multiple products and services.



3. Smart Life Solutions From Hitachi GLS

In addition to the domestic lifestyle area, Hitachi Global Life Solutions, Inc. (Hitachi GLS) also works in the areas of homes, neighborhoods, and every aspect of lifestyle connected by lifestyle infrastructure. Hitachi GLS works to understand consumers by exploring their needs using design methods along with lifestyle data accumulated from the use of products and services⁽⁴⁾. The company also provides services and platforms alongside products, seeking to improve the QoL of individuals representing a variety of generations and lifestyles by inspiring emotions such as satisfaction, joy, security, and excitement. Helping solve issues of public concern is the ultimate aim of the company's work in this business segment, which Hitachi GLS calls Smart Life Business (see **Figure 4**).

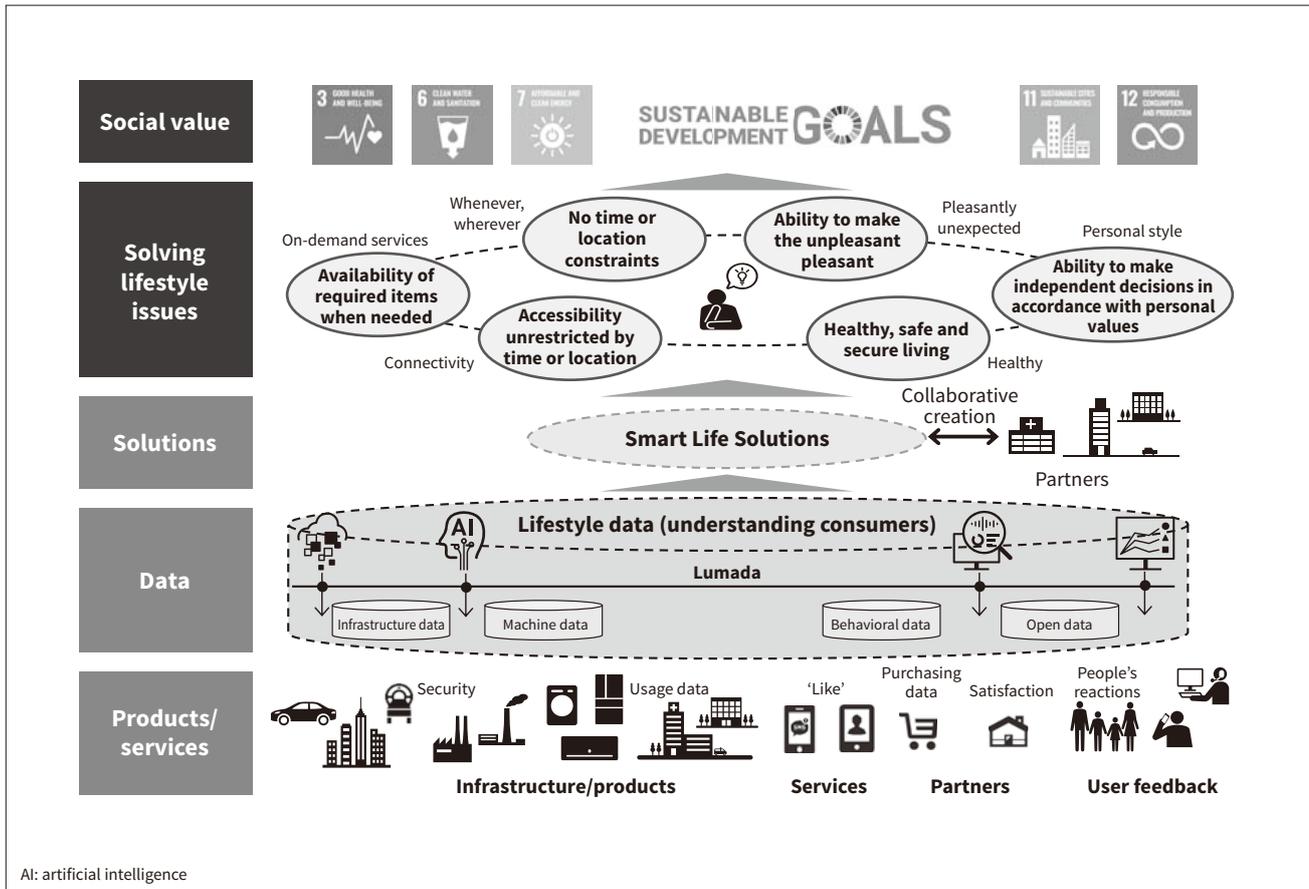
Understanding consumers is the starting point for achieving the Smart Life vision, and the use of digital technologies plays a crucial role here. Connected appliances with functions for exchanging data with the Internet or smartphones can identify increasing laundry load sizes and other housework-related changes largely unnoticed by users. The 'software-defined' concept of software-based refinement can

also be used to update features such as operation modes to keep pace with continuously changing user preferences. In the future, these features could be linked to services through data usage. Handling security and privacy issues is a mandatory requirement when gathering data. The security technologies Hitachi has accumulated for IT applications will continue to be harnessed to provide safe and secure operating environments.

Just as for conventional products, in order to understand people, a key requirement for Smart Life Solutions is to explore needs and create value using design methods accumulated through the development of home appliances. The design concept processes of observing, ideating, testing and implementing, along with pioneering activities such as human-centered design and experience design have given rise to the experience-oriented approach (ex approach)⁽⁵⁾, leading to creation of new value through dialogue with customers. Hitachi GLS wants to use this method to gain a deeper understanding of people. Technology is important for understanding and satisfying diverse needs. Hitachi GLS will provide unique Smart Life Solutions by drawing on an extensive portfolio of Hitachi technologies accumulated in the areas of IT, operational technology (OT), and products. It includes technologies for measuring various states

Figure 4 — Overview of Smart Life Business

The Smart Life Business uses products and services to understand consumers and solve lifestyle issues derived from the findings. It provides Smart Life Solutions that improve consumer quality of life (QoL) and help provide value to the public.



and changes for lifestyle applications, technologies for analyzing the measured data, AI technology for making optimum decisions, and control/robotics technologies for appropriately controlling devices on the basis of those decisions.

4. Smart Life Solution Examples

Examples of Smart Life Solutions are provided in the four articles that follow.

The first article is about Doshiteru, a remote monitoring service for unaccompanied seniors. Doshiteru was Hitachi GLS's initial foray into the Smart Life Business segment. The company began taking applications for the service in June 2019. The solution was created to meet the needs of households concerned about the welfare of an elderly family member living apart from them. It enables the unaccompanied senior's condition to be checked at any time using sensing

technology that respects privacy. It is one example of providing value based on the analysis of digital data.

The second article is about Peloridge, an app-based social media service for food. Based on the concept of "Discovering New Great Food," Peloridge is a smartphone app for sharing personal food experiences and excitement along with user stories. Food is a subject with both positive aspects such as tasty and healthy menu selections, as well as negative aspects such as food safety and food loss. The service is designed to help provide solutions for both of these aspects.

The third article is about a new product development process that uses the concept of backcasting to envision the way future society and lifestyles should be, and derive the specifications and technology requirements of subsequent products and services. It presents examples of new value derived using the Kizashi (future signs) method, Hitachi's original method of identifying future trends that was developed as a design research technique.

The final article is about how the public is participating in the digital age in anticipation of realizing Japan's Society 5.0 plan. It presents the future living lab activities being done to encourage the use of technology by the public as a way to take part in local projects on a voluntary basis. Work based at the *Kyōsō-no-Mori* site created within Hitachi's Central Research Laboratory in Kokubunji, Tokyo is discussed as an example.

5. Conclusions

This article has looked at the goals for the Smart Life Solutions being worked on by Hitachi GLS. The Smart Life Business segment still has many lifestyle challenges and issues of public concern to solve. Hitachi GLS will continue to help provide value driven by Smart Life Solutions by using digitalization, design, and technology along with collaborative creation with partners from inside and outside Hitachi.

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