

## Special Contribution

# Taking Japan's Smart City Model to the World

## —Kashiwanoha Campus City—



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### Town Planning's Role in Solving Problems of Both Japan and the World

The recent Great East Japan Earthquake has left a sense of sorrow at the extensive loss of precious lives and of the need to be prepared for major disasters lodged deeply in people's hearts. It has also forcibly reminded us of the finite nature of electric power and that modern civilization is built on extremely fragile foundations. Environmental and resource problems and threats to biodiversity represent the negative face of economic progress, and while these continue to intensify on a global scale, rapidly aging populations in advanced economies, particularly Japan, are leading toward social impoverishment and decline. I believe this dangerous situation we now face can be rephrased in terms of the following question: given these conditions of limited resources and energy, declining populations, aging societies, and mature markets and industries, can we recreate the sort of vital and growing societies we once had?

Naturally, my answer is yes. The key, I believe, lies in town planning. Whereas "growth" was the core value of society back in the era of rapid expansion, our core value now is "sustainability." That is, the answer lies in the ability to pass our society on from generation to generation. As the problems we face are complex in structure, being multifaceted and interlinked, we need to take a broad view of the individual challenges and seek out ways of solving these simultaneously in an organic way. This is what the town planning approach is all about and one place where

it is being put into practice is in the smart city model at Kashiwanoha Campus City described in this article (see **Fig. 1** and **Fig. 2**). The challenges posed by the environment, energy, and aging populations are shared by all nations, particularly advanced economies, and what is needed most of all at this point in time is a solution model. Ahead of the rest of the world in its need to deal with these issues, Japan's problem solving capabilities are attracting attention from around the world, and it is fair to say that people are looking forward to seeing these solutions achieved.

### Town Planning for Kashiwanoha Campus City

A new lifestyle center is starting to take shape at Kashiwa City in Chiba Prefecture, a town of 400,000 people located 30 minutes by the Tsukuba Express from Akihabara in Tokyo. Centered around the Kashiwanoha Campus Station on the Tsukuba Express line, Kashiwanoha Campus City is a model next-generation city that incorporates the latest technologies, services, and systems combined with a participatory social experience for residents. It is being built through a joint public-private-academic project involving Kashiwa City, Chiba Prefecture, The University of Tokyo, and Chiba University. The aim is to construct a smart city for extended healthy living and the creation of new industry.

Kashiwanoha Campus City brings together the latest knowledge from The University of Tokyo, Chiba University, and elsewhere to produce a problem solving model and is



UDCK: Urban Design Center Kashiwa-no-ha

**Fig. 1** — Overview of Kashiwanoha Campus City and Surrounds.



**Fig. 2** — Image of Completed City.

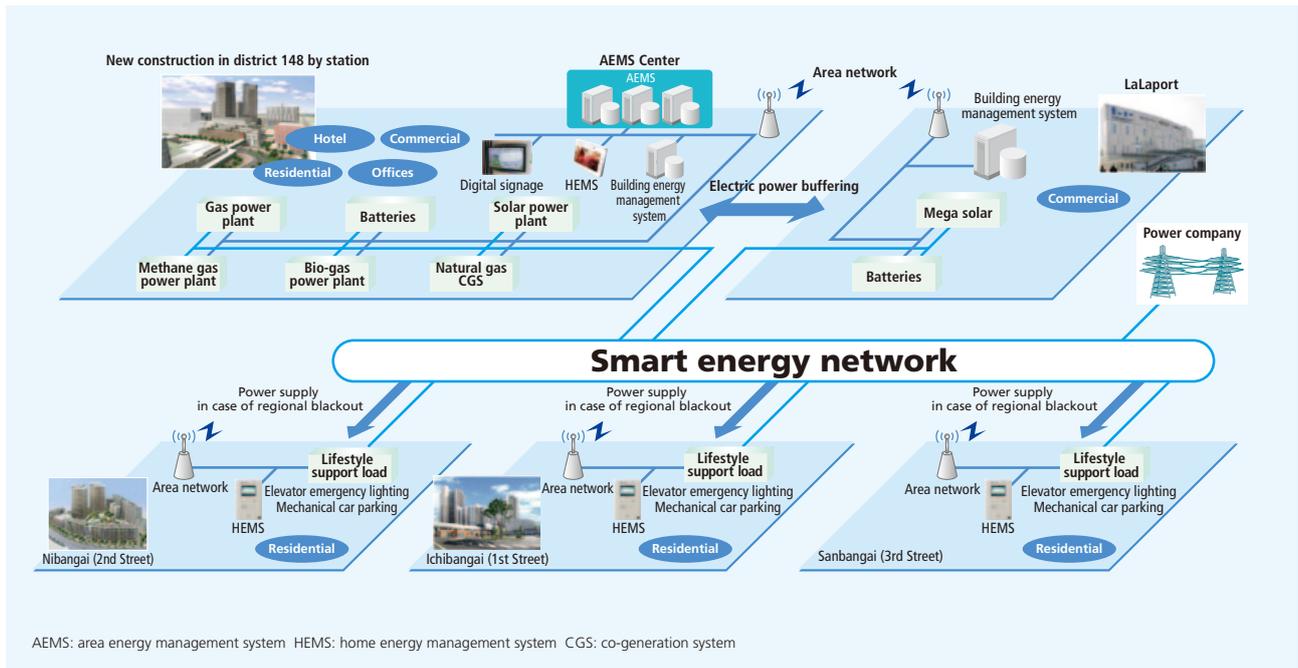


Fig. 3 — Energy Network being Built in Five Blocks around Kashiwanoha Campus Station.

undertaking its realization in a sustained and autonomous way through cooperation between residents, companies, and others. The aim is to build a new social system called the “Co-Create Eco-System” (a joint approach to sustainability), which allows everyone who feels a desire to contribute to their region, from the elderly to the young people who make up the next generation, to participate in the running of the city.

### Paradigm Shift after March 2011 Earthquake

The Great East Japan Earthquake has led to a major reappraisal of town planning values. It has shown up the fragility of society relying on large power systems such as nuclear power plants and has brought a lifestyle shift from one in which a reliable supply of electric power was taken for granted to one in which the problem of energy is recognized as a fact of life. What is needed for the future is an optimum mix of centralized grid-based energy sources such as thermal or nuclear power and distributed power supplies that combine elements such as community-based photovoltaic, wind, biomass, and other forms of renewable energy as well as cogeneration and storage batteries. The objective is to perform overall optimization of power, gas, heat, unused energy, and other sources to achieve efficient energy management. It is also recognized that we need to construct robust energy networks that can withstand disasters, including providing alternate lines of energy supply in order to ensure security of supply.

In the past, suppliers and consumers have been separated, with users able to consume without regard for the overall energy supply. The first thing we need to do is to change this approach. As consumers and suppliers will

coexist in close proximity in future communities that have succeeded in implementing smart grids that link distributed energy sources, it will become a common practice for them to switch roles flexibly as circumstances require while producing, storing, and conserving energy on a regional basis. Energy generation and consumption will become more transparent with anyone being able to become an energy supplier producing renewable energy and with the use of batteries installed in electric cars, homes, or elsewhere to buffer the energy flows. Such participatory low-carbon communities will lead to the creation of a new lifestyle in which electricity conservation becomes part of daily life (see Fig. 3).

### Taking Growth-oriented, Fine-tuned Japanese Smart City Model to the World

In addition to building low-carbon cities around the

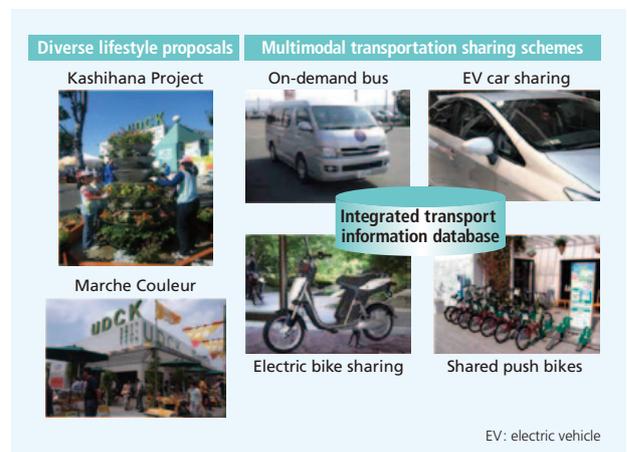


Fig. 4 — Fantastic Outlook for Future Communities.

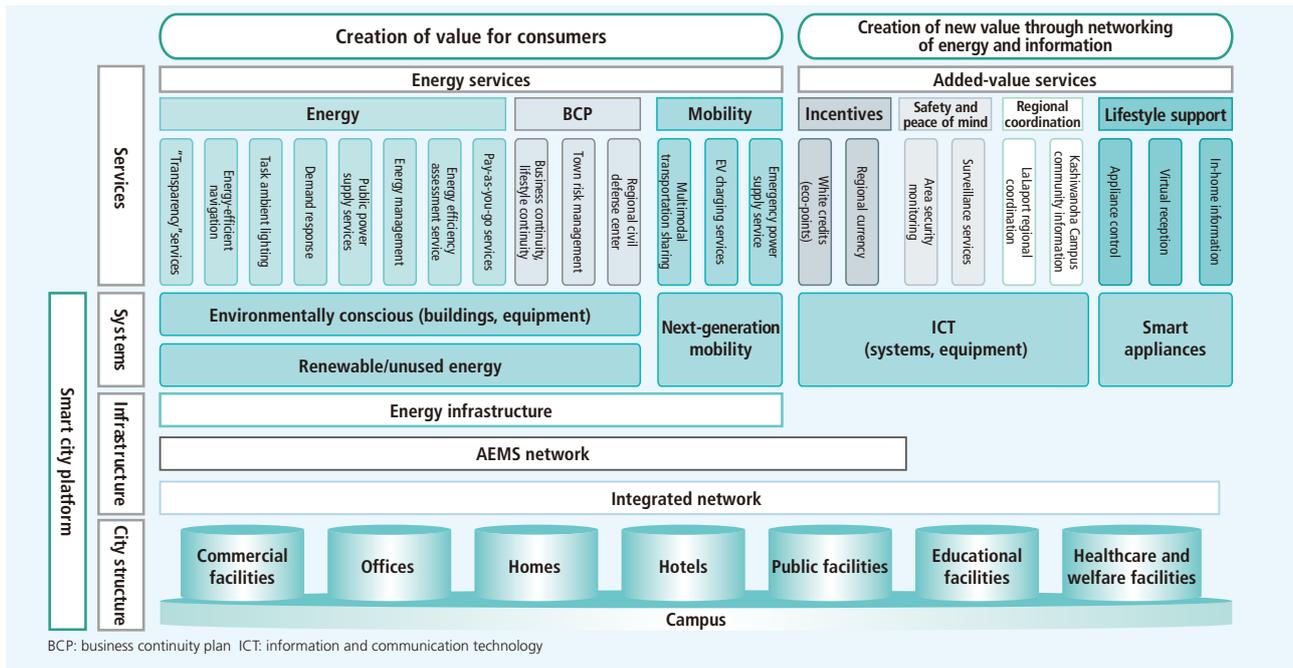


Fig. 5 — Integrated Regional Infrastructure.

world that contribute to reducing the burden on the global environment across entire regions, a true smart city (wise city) is one that is able to sustain ongoing growth so that everyone can experience a healthy lifestyle that provides peace of mind, safety, and fulfillment in a high-quality community. Although lack of space prevents me from discussing community building in this article, I hope to realize the Japanese smart city model, which creates happy and fulfilling living environments while also making broader proposals, not only about advances in technology, but also about people's shift to a new lifestyle (see Fig. 4). Realizing this ideal will involve having residents make use of the advanced technologies that have been introduced into the community, and will require regional collaboration based on the PDCA (plan, do, check, and action) cycle aimed at making incremental functional improvements in anticipation of future technological innovation. We intend to build a model for public systems that encompass a wide range of areas, extending from the next generation of ICT (information and communication technology) to fields such as facilities management, mobility management, healthcare services, energy services, and infrastructure control, and which involve growing alongside the wider region (see Fig. 5).

Hitachi has for many years been developing and operating the Shinkansen operation management system (a system widely recognized for its continued evolutions for years), and is also a partner in the Future City Model Projects of the Japan Business Federation at Kashiwanoha Campus. For the future, I hope our two organizations can combine their respective capabilities and work together as partners with an integral place in the community to build

these knowledge-based public systems at the Kashiwanoha Campus City.

Packaging these management systems for the production, conservation, and storing of energy along with a participatory approach to community building and the establishment of a one-stop service for smart city development will deliver us a business model that is highly competitive in the global market. While building the next generation of energy systems presents a challenge to the entire world, it is anticipated to become an engine for sustained growth that will be in demand all around the world.

The Smart City Project is a joint venture involving leading companies from the environmental sector and has Hitachi playing a central role. It is taking up the challenge of bringing together the diverse know-how and technologies of all the participating companies to establish a Japanese smart city model at Kashiwanoha Campus City, which we seek to make into a de facto international standard. I look forward to your cooperation in the future.

\* This article was originally written in December 2011.

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Joined Mitsui Fudosan Co., Ltd. in 1967. Appointed General Manager of Development Planning in 1992. Appointed Managing Director and General Manager of No. 1 Project Planning Department, Project Planning Division in 1995. Appointed Executive Director and General Manager of Project Planning Division in 1996. Appointed Senior Executive Managing Director and General Manager of Project Planning Division in 1997. Appointed Senior Executive Managing Director and General Manager of Asset Management Division in April, 1998. Appointed President in June 1998. Appointed President and Chief Executive Officer in 2001. Appointed to his current position in June 2011.

Mr. Iwasa is the Vice Chairman of the Japan Business Federation, Chairman of The Real Estate Companies Association of Japan, Chairman of The Association for Real Estate Securitization, and Member of The Tokyo Chamber of Commerce and Industry.