Feature Article

Technology tourism, new aspects of industry, smart city

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1. Smart city and smart grid

Since smart city started to be talked about, there have been many projects appearing around the world. Not only smart city but also smart grid and many projects named with "smart" have appeared and one of the famous words is smart grid.

Although the word smart city is a name of the business category, it was wrongly considered in Japan. In the era when smart city became popular, there were several key issues that were discussed seriously in Japan. Represented by COP15, the discussion of global warming began to be considered seriously around 2008. The United States was facing the Lehman shock problem, and as a result, renewable energy and revitalization of the economy were major topics that were carried by the U.S.A. and Japan.

One of the subjects that was confused with smart city was smart grid. It is the optimization of the power supply infrastructure from generation to the consumers. There are mainly four important functions in the electricity power infrastructure system. They are generation, transmission, transformation and distribution. Electricity is initially created at power plants. The role of this is called "power generation." Secondly, generated power in high voltage is sent on cables. It is called "power transmission". The transmitted power will change its voltage fitting to demands. It is called "power transformation." Finally, the power will be sent to the consumers. It is called "power distribution."

Smart city was sometimes misunderstood as a project related to electricity. Grid as in smart grid means the shape of a mesh like a fishnet. As the four functions of the power system needs cables and wire systems widely, it is called a grid. Smart grid project was designed to develop a total optimized power delivery industry system for the four functions with some new smart technologies. Along with the smart grid projects, a new technology called smart meter was also becoming a very popular target technology. It is set at the site of the consumer for sending consumption data back to the power companies. This data could help the power company to accurately estimate the demands and trends for optimized power systems from generation to delivery.

Finally, optimized electricity power business can be profitable for both the companies and the users. There is no need for explaining smart grid precisely here, but we can clearly see that smart grid is a infrastructural business project including smart meters. The important fact is that most of the projects with smart are truly business projects and also the names of the business themselves.

2. Smart city as a business industry

Such as smart grid and smart meter, smart city is a word defining an industry area started approximately around 2008 in the United States. In 2008, during the Lehman shock problem, the United States was looking for the next core of country regrowth. Carbon dioxide caused global warming discussion represented by COP15 (COP15 Fifteenth session of the Conference of the Parties), December 2009 in Copenhagen, Denmark) was the only hope and the key subject for that environment. President Obama finally found a solution with the slogan named "green new deal." The government, IBM and most of high-tech related companies such as General Electric started to use some new business slogans using smart or smart city. So, it is obviously true that the word smart city is a definition of a category of industry.

3. Case of IBM and GE

IBM, International Business Machines corporation, was struggling around the time in 2008, because even their high-tech industry was known as a leading company based on technology, and most of the customers whom IBM were dealing with were companies that had difficulty in that economic status of the United States. One of the big problems in those IT companies was that IT technologies and advanced services were becoming so common, Not only in computer usage but also in the market. IT companies were enjoying their business because their advantage was to provide hardware, software and services with consultation. However, due to the progress of IT technology, the price of the hardware was reduced significantly, pro-

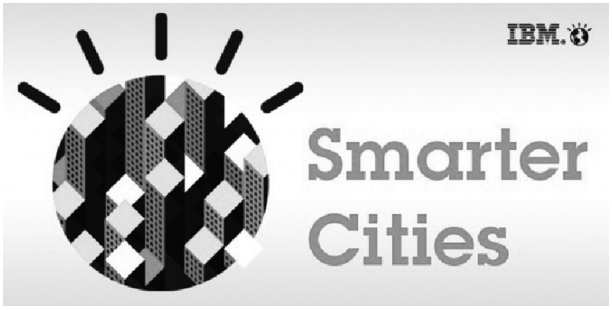

Figure 1: IBM smart city

gramming with software became so simple and easy, services were provided by a variety of small and middle class IT companies, and consultation services for IT implementation became a main job of the legacy business consulting companies such as Price Water House and Deloitte. It means IT companies could not continue with their original business models with customers; they needed a new market. The market the IT company IBM meant was the industry. They had business divisions by industry worldwide. The organization had divisions by name of the industry. The headquarters of the financial sector organization spread throughout the world was in the United States, manufacturing sector, distribution sector, and the other sectors. Every sector had sub-sectors like steel, automobile, automotive, machinery or electronics in the manufacturing sector. Categorization of industry was the key of the business strategy for the IT organizations. Every industry needs different requirements for making their business better with new IT system applications. That is the reason why IT companies traditionally use the industry segmentation for their business organizations. The difficulty was that there was a strong need for IT companies to create NEW industry where industry itself cannot perform the IT project without the support from IT companies. That was the city: smart city as an industry. IBM announced that Smarter planet and Smarter city in 2008 at that historical tough time. GE, General Electric, had the same problem. Home compliance industry grown in the United States was also facing serious problems. The old-style mechanical machine-based products were required to be equipped with digital functionalities. However, as a company they need not only the product requirement-based market but also a business strategy market that they could sell their product groups combined under a new industry concept in order to make their business big and differentiated from competitors. That was also the city. GE and IBM announced a similar concept at very close timing when Obama announced the green new deal.

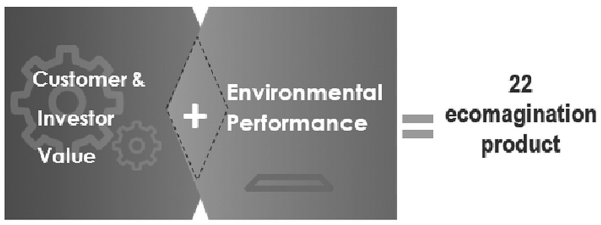

Figure 2: Ecomagination by General Electric

4. IT and electronic companies in Japan

At the same time in 2008, Japanese IT companies and electronic companies were struggling with the weakened economy and the similar market as IBM and GE. There were discussions of global warming, environmental issues and smart grid just beginning. The media company Nikkei BP, business publishing, was also struggling with the weakening Japanese industry. The business magazines can be sold well when the industries are strong. The final action as a result was to make a slogan with smart city collaborated with IBM in Japan. IT companies in Japan like IBM and electronic companies like GE got together and made a consortium named "smart city week." The chairperson was Nikkei BP but also IBM Japan, Fujitsu, NEC Hitachi, Panasonic, even Tokyu railways and other city business related companies were called up in order to passionate Japanese market with the new industry name "smart city."

5. Sub-industry of smart city

As smart city is a category of business and industry, there are some sub-categories or some way of its aspects to start business. Transportation, water supply, energy, public safety, health, education, local government, and other sub-categories are seen in Figure 3. There are many ways to consider the sub-category of smart cities by its purpose or stakeholders. Figure 3 has three areas. Administration, Infrastructure and Citizen areas have major sub-categories within. If it is municipality oriented, the viewpoint may be from its operational services for citizens. These categories of smart city are often described as some foci of the projects. For instance, IBM or digital related companies explain these as their service capabilities that could be provided to their customers. If the customer was an automotive company, IBM may show the solution for the electric vehicle power supply and optimization of the location for power fill stations. Once the company was the power supply industry, energy focused infrastructure smart city category would be considered as a target area where the company will apply new

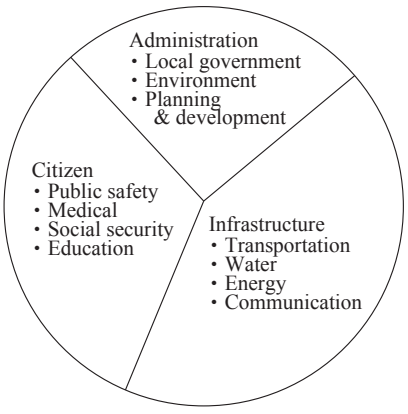

Figure 3: Categories of smart city

solutions to make the company better.

We, Japan, are expecting the 2020 Tokyo Olympic games, and due to this Olympic games, the focus of the smart city categorization of Japan toward the games has been changing. A few years ago, when the great earthquake recovery had just begun, the news of the Tokyo Olympic games was announced. People and industry have been promoted with expectations of its good influence. Construction industry, medias, character consumer goods industry and many other industries are looking forward to the effect of that. It could be said the smart city focus at the time was to consider the infrastructure. After years, the concern of the society turned into how we could receive foreigners coming to Japan. Do we have enough security to prevent trouble? Are the signs in towns enough to avoid trouble between Japanese citizens and the guests? It looks like the concern has shifted from infrastructure to public security.

6. Tourism in smart city

When you see the area named Citizens in Figure 3, there are many small categories within. One of the important subjects is how the citizens can relax. People need not only to be relaxed but also to act. Leisure, culture, sports, and other important activities that relax citizens for their life and work are very important factors and functions of the city. Nowadays, modern transportation has been allowing citizens to be able to travel easily around to a variety of destinations in the world. Even if money was sufficiently saved, going abroad was not so common in many countries. In consideration of tourism, the contribution by the development progress of transportation is such an important factor that made it easier. Tourism, especially fun trips, has become an important area and sub-industry with smart city in countries.

7. Tourism with new intention in purpose

Another factor that makes people go to tour is the popularism of goal oriented or purpose designated intentional travel. Famous and popular places for fun trips are still a motivation for people to travel. It is very common for travel agencies to take citizens to the destinations as major activities of the tour companies, however there is another new aspect in tourism. As a business category, the smart city, it has to be with some demand even in the area of tourism. That seems to be called "technology tourism," a new aspect of the tourism industry that could be a smart city functionality for people to travel and for cities to receive people.

8. Technology tourism

There is a very famous observatory on the high top of a mountain in Hawaii. It is also very famous for the sunset and sunrise among people of the world. Tourists who are not scientists, but common citizens come there from distance. The purpose is to see the scenery or the observatory itself. They also spend a few days at the foot of the mountain relaxing on the beach, rent special 4WD vehicles, hire guides or a driver to go up to the top. Considering this case, tourists need sufficient functions of the city. People should have a smooth transportation infrastructure to depart from their home to get to the town at the foot of the mountain. Public transportation, airport, airline and other necessary tools to move. On the other hand, the town that receives those tourists needs to have some infrastructural functions with accommodation, places for food and service to let people go up the mountain. If this tourism for the Hawaii island observatory can have extra purposes that tourists and the tourist receiving town never thought of, they could expect more opportunities to travel or more opportunities to receive.

Many companies always want to see the referable cases from deep professional viewpoints. If the Hawaiian observatory and the town could provide much deeper scientific opportunities for business-people to study and learn, an extra amount of candidate tourists could be expected. The Hawaiian observatory and other volcano related places have facilities for those who want to study and learn more from professional observations.

9. Strategy of technology tourism

Please look at Figure 4. This is a stage on each strategy of the technology tourism that smart city has to have as a new strategy to aggregate extra tourists and to promote the local economy and its industry. First, from the top box, people will come and want to see the technologies in the smart city sites. The box is in green. The point is to introduce the site with intentional technological information. Normally, those sites provide their sizes, weights and other numbers and histories but in this strategy, they provide more technical information that common tourists cannot understand. On the right of the box, it says government projects and international medias. In order to inform this special opportunity, the site in the smart city should approach the government and international medias as well. Of course, the value of the site must be well defined and prepared. Once the government recognizes the value that industries may have some important professional data or experience through this site, they immediately deliver that to industries. Once industry and the government are made aware, medias may move forward quickly.

The next stage is to show the technology to them. In order to do that effectively, a professional visitor centre, web sites and technical tours are mandatory. There should be many more actions needed. At this moment, the site or the city already have a visitor centre and those new smart city assets. After showing the technology on the site intentionally to the specialized visitors, those people will start thinking of some relationships between the sites and their own business, because they came not to have a fun but for some missions. Then, there will appear additional questions. Additional information provision is the next action and the functions that smart city has to have. Seminars and museums are easy to consider but some special hotels at the intentional place should also be considered. Hotels ultimately close to the site or special scientific tours and

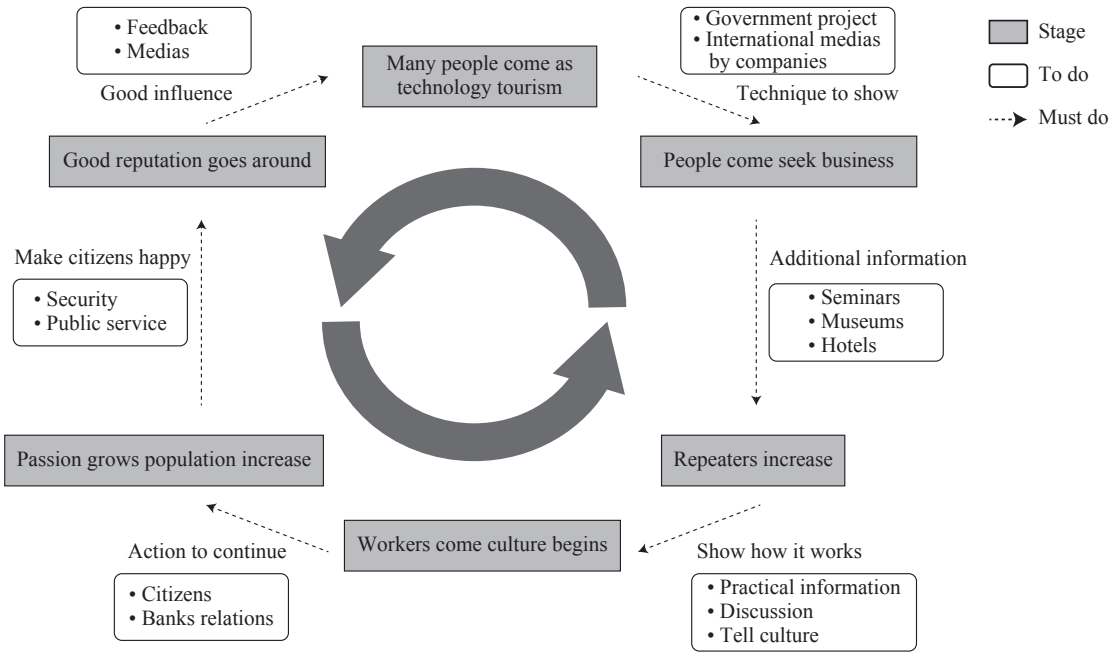

Figure 4: Strategy of technology tourist invitation

hotels, such as special functioned hotels are ideas. If the smart city technology tourism action reaches this point, they could expect repeating visitors to come. Repeaters with business intention are important because they could be a strong supporter of the site. Simultaneously they will step forward to know things deeper to realize their intention for business. At this point, what the smart city needs to consider are more practical information and its discussion to help repeater visitors realize the future. Behind those ideas, cultures and philosophy must be shared by them. Repeaters will be sharing information, but they will do different actions beside the site. For example, if the site provides the power generation functions, repeaters will not do the same business and some related equipment supply or service provision might be their intention. Showing how it works will make those fans go on to the real business world. They will come to WORK not SEE. Workers will come, and new business and cultures will begin.

The next strategy is to try making the site sustainable. Workers come and work as the original citizens. They need to be treated as the original citizens who lived there. Bank support for business and private citizens is needed, and many other activities for treating them are also very important actions to allow them to live and work continuously. Action by action, the passion grows and the population of people and industry will increase.

The final stage in this first circle is not fundamental support but advanced care of citizens. They are not the tourists anymore. Public security and services must be there. When those factors are ready, the original tourists have become citizens who feel very happy and start to have a strong reputation for the city. At last, they will start aggregating new tourists for the second round of this technology tourism as the owners.

10. Tourism and the smart city

Thinking about tourism as just a temporary business, without any creation of the asset or making good towns, is sometimes the way of Japanese industry consideration. Tourism means, of course, travel related business by a travel agency or accommodation. If you imagine the countries and cities of Europe, there are so many languages and also the common language English there. Over 20 years ago, Germany, Italy or France, those non-English speaking countries, were the places where English was not convenient to use. However, even in those countries, the level of English has been raised significantly now. One of the reasons was to receive and entertain tourists for business but also people have started to stay and live there now. Countries in Europe are so close and the cultures are overwrapped. For example, Austrian citizens living closer to Italy speak Italian. Railroads are meshed all over the EU and connected to the U.K. So, now we cannot separate tourism from city development and country development.

Along with many disasters caused by nature and politics recently in the world, smarter cities where people can live peacefully and calmly are the priority. The citizens could be tourists who might have become permanent citizens. Many people from Asian countries are moving to Japan and starting to live as Japanese citizens now. Not just tourism but tourism as a part of smart city development, this way of consideration has become so important. If tourism is the industry, and if industry needs tourism, technology tourism is one of the foci with which Japanese companies and business people can easily lead the world.