

New Tourism System Across Industries in Nikko, Japan

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Abstract—Tourist phobia has become a serious problem in Japan. Too many tourists visit Japan’s world heritage sites. Meanwhile, the population is decreasing in rural areas where there are beautiful natural features, farms, and animals. In conjunction with rural residents, we have devised a new scheme for enticing tourists away from famous places to a cattle farm in the mountains of Nikko, Japan. We plan to collect data about cows at the farm using sensors and LoRa technology, which is a spread spectrum modulation technique. Through a production information cooperation policy, these data, which reflect food quality, will be shared with restaurants near the world heritage sites. This is a gateway to learning about the rural area. Our goals are to develop regionally branded products, cultivate markets for them, and inform tourists of their availability. Such cross-sectional collaboration will create a new agritourism system.

Keywords- Society 5.0; agritourism; tourism phobia; LoRa.

I. INTRODUCTION

A lot of things are interconnected, resulting in a great amount of virtual data that is analysed using Artificial Intelligence (AI). This information exposes us to a new world. Primary, secondary, and tertiary industries are no longer separate; they connect and perform not only in the context of seamless service by Internet, but also with regard to new businesses connecting and analysing multiple scenes. For example, through AI analysis of big data consisting of diverse information, such as personal allergies, information on food products, food products stored in family refrigerators, retail store inventories, and market conditions. In Japan, this is called Society 5.0. It was proposed in the 5th Science and Technology Basic Plan as a future society to which Japan should aspire. It follows the hunting (Society 1.0), agricultural (Society 2.0), industrial (Society 3.0), and information societies (Society 4.0) [1].

The 2020 Olympics will be held in Tokyo. A lot of tourists will visit there. Meanwhile, the rural population is diminishing. We suggest a new system for attracting tourists to rural areas using the connection of Society 5.0.

The rest of the paper is structured as follows. In Section 2, we identify some tourism problems in Japan. In Section 3, we present our new agritourism and Society 5.0 system. We conclude in Section 4.

II. TOURISM PROBLEMS

International visitors to Japan have been steadily increasing in the last years. The number spiked to 18 million in 2016—a significant step towards the long-term target of 25 million by the start of 2020 (2010 performance: 8.61 million, 2011 estimate: 6.22 million [2]). However, this exponential increase has been accompanied by what seems like tourism phobia. Nowadays, tourism phobia is a significant worldwide problem. Concrete problems that are associated with the phenomenon are mainly traffic and the rising costs of room rent and restaurant dining.

In addition, people who live in tourist areas feel uncomfortable, as though they are not in their own town. This feeling is amplified by the use of smartphones. Specifically, since many travellers use smartphone devices on their trips, they do not ask residents for directions to their destinations; rather, they use smartphone applications and take photos. Research has been conducted in Nikko, which is one Japan’s world heritage sites. We developed applications to solve such kind of communication gap involving the area’s residents using a Bluetooth low energy beacon [3][4]. In this work, we present a new system that will not only serve the people who live in the central area of Nikko and the tourists who visit famous places near the local station, but also the people who live farther away in the rural area. We collaborated with the Oozasa cattle farm at Kirifurikhogen in Nikko. This large, beautiful farm is located in the mountains.

III. A NEW AGRITOURISM AND SOCIETY 5.0 SYSTEM

Based on Society 5.0, we intend to develop a new system that widely involves members of the Nikko area. It follows the hunting, agricultural, industrial, and information societies (Society 1.0 to 4.0). Using Internet access, these can all be connected. The plan is as described in the upcoming paragraphs.

A lot of tourists limit their visits to famous places at the world heritage sites. They have lunch or dinner or buy souvenirs nearby. However, such places can trigger tourist visits to other rural areas in Nikko where they can experience new agricultural dishes or goods at the restaurants or shops. Many original products are made at local farms, including cattle farms. We can provide information about those areas.

In addition, we can send effective, pertinent messages. As shown in Figure 1, farms (primary industry), factories (secondary industry), and restaurants/shops (tertiary industry) communicate using information tools. This is Society 5.0 in Japan (Figure 2). In order to offer visitors a marvellous experience, we aim to construct a food chain using the information flow from raw products (such as milk, meat, and vegetables), thus bringing new value to the food. We will then entice tourists away from the busy main streets in Nikko to the serenity of the natural farms and high plains.

Food is one of the most important tourist attractions. For example, Travel Trade News reported that among Thai people’s motivations for visiting Japan, television programmes or movies that featured Japan were responsible for 65%, closely followed by Japanese food at 61% [5]. Chinese people use Social Network Service (SNS) and they try to take new, original photos. They will receive information using our application and have a chance to visit rural areas.

In the world of Society 5.0, the type of information mentioned above is gathered via a sensor network using a low-cost wide area network such as LoRa and analysed using AI. It is then transferred to consumers via the Internet of Things (IoT). For example, through cooperation with the cattle farm, we intend to work to verify the quality of milk that their grazing cows make. It is said that the quality of milk that is produced by grazing cows is superior to milk

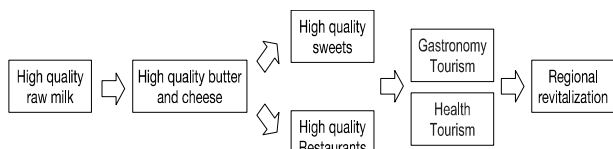


Figure 1. Extending Agriculture to Tourism.

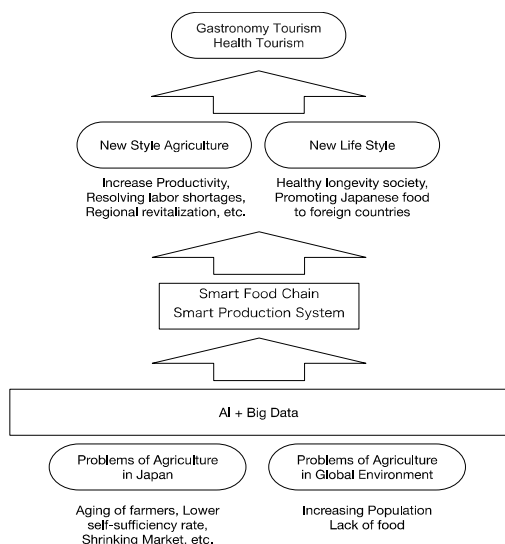


Figure 2. Society 5.0 in Nikko.

from cows that are housed in a barn; however, more information is needed to confirm this. To that end, using LoRa, which is suitable under the circumstances because it

offers low-cost wide area communication features, we will collect data about each cow on the field at the cattle farm (200ha). The research has begun and 80% of the area can be covered now. We will place sensors on cows and prove the superiority of the farm’s methods through data analysis. Quantification for the quality of milk can help the cattle farm and restaurants explain why their dishes are special, i.e., because the ingredients are sourced from a cattle farm in Nikko. Foreign tourists tend to choose authentic traditional Japanese food; however, milk is not a traditional Japanese food. For instance, foreign tourists like Japanese beef, which is known as Wagyu beef, despite the fact that beef, like milk, is not one of our traditional foods. In fact, Japanese beef is not much different from the American beef. Nevertheless, Wagyu has become a Japanese brand, and we intend to develop our project involving cows and milk in much the same direction. Furthermore, given that milk is a raw material for making cheese and butter, and milk is itself a basic food for making various dishes, the success of this project will benefit restaurants, cake shops, and supermarkets.

IV. CONCLUSION

Nowadays, many tourists are very interested in food quality. Rural areas are beautiful and often viewed as beneficial to visitors’ health. However, instead of extending a direct invitation, we will attract tourists using clear data and information. Quantitative data is particularly persuasive. This project aims to connect natural, high-quality foods, mobility, and the cattle farm. By linking several industries using Information and Communication Technology (ICT), we will contribute to the whole area’s activity level. This system will vitalise the local economy and support the modernisation of the countryside with an eye towards tourism.

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