New Energy and Industrial Technology Development Organization

Realize Mobile Communications Corp.

Hitachi, Ltd.

Cyber Creative Institute Co., Ltd.

November 9, 2016

Tōdai-ji Visitor's Guide Demonstration Experiment Using "Clean Beacons" Launched
- Human Navigation System Based on Maintenance-Free Beacons with No External Power Source -

On November 9, as part of a NEDO project, SoftBank Group's Realize Mobile Communications Corp., Hitachi, Ltd., and Cyber Creative Institute Co. Ltd., will launch a demonstration experiment utilizing wireless transmitter "Clean Beacons" and a smartphone app to provide visitor's guide at Tōdai-ji in Nara Prefecture.

This demonstration experiment aims to establish human navigation infrastructure by utilizing maintenance-free "Clean Beacons", which can run on indoor and outdoor lighting without the need for external power sources. By creating guidelines for use based on the results of this experiment, NEDO seeks to proceed with the construction of an open platform based on Clean Beacons and promote its dissemination. In the future, utilization of this technology is expected not only in the tourism and hospitality sector, but also in various areas including sales promotion and disaster prevention.
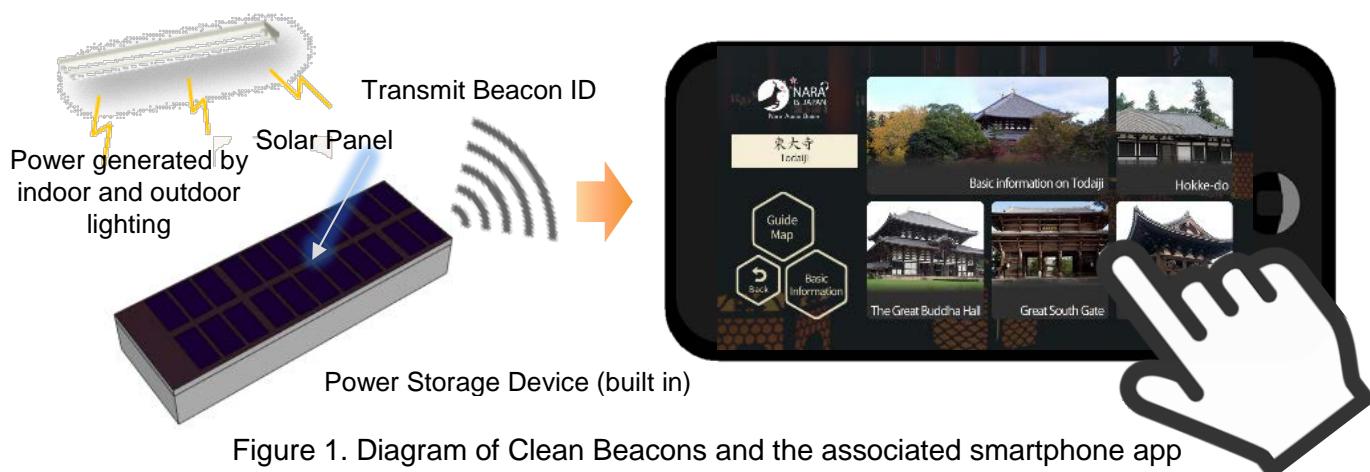

Figure 1. Diagram of Clean Beacons and the associated smartphone app

1. Overview

With the spread of IoT (Internet of Things) that connects everything via Internet, significant increases in energy consumption are expected. To deal with this issue, the creation of low-power and high-efficiency technologies is becoming an important topic. However, many of the Clean Devices[※1] designed to solve this issue have not come into widespread use due to high costs and their limited intended use. With this in mind, NEDO is developing use cases aimed at encouraging the widespread use of Clean Devices through the "Clean Device Promotion Program".

Recently, as represented by iBeacon®, beacons using wireless Bluetooth® Low Energy technology are being used to send triggers to information terminals such as smartphones, which can then be utilized for a variety of services including coupon distribution and local information acquisition. This area is expected to have an expansion of the market due to application of the technology to address various societal issues, including guidance to increasing tourists from foreign countries, local revitalization, and disaster and crime prevention. On the other hand, if beacon devices, which require a power source, are installed on a large scale and in large quantities, it will create operational issues such as battery replacement and management.

With this in mind, this project aims to solve these problems by developing and demonstrating a maintenance-free Clean Beacon[※2] that can operate 24 hours a day with no external power source [※3], and developing an open platform that can manage a large number of beacons.

In this demonstration experiment, tourists will download an app that corresponds to the services provided by the experiment. Once they approach Clean Beacons established on the site of Tōdai-ji, visitor's guide and navigation information will be automatically loaded (see Figure 1).

This demonstration experiment is expected to show the functionality and performance of Clean Beacons and open platforms[※4], identify problems, and improve their reliability for practical use.

2．Overview of Demonstration Experiment

Objective: Improving the reliability of Clean Beacons and open platforms for practical use

Implementation Period: November 9, 2016 to March 31, 2017

Implementation Location: Todai-ji Temple Grounds and Nara Park

Guide Area: 5 places (see Figure 2)

Name of App: Nara Audio Guide (free)

Available on iTunes:
https://itunes.apple.com/us/app/nara-audio-guide/id956381451

This visitor's guide is an iOS app and available in English, Chinese, and Korean for use among tourists from other countries. Once a smartphone with the installed app enters the visitor's guide movie starting point, radio waves emitted from the beacon are received, auto-playing the visitor's guide movie in accordance with the location. NEDO expects this to be a useful tool for introducing foreign tourists to an overview and history of Tōdai-ji, as well as educating them on manners for worship.

Nara Prefecture and the City of Nara is cooperating in this project with app installation instructions that will be distributed at the Tōdai-ji temple grounds, the Nara Visitor Center, and the Nara City General Tourist Information Center.

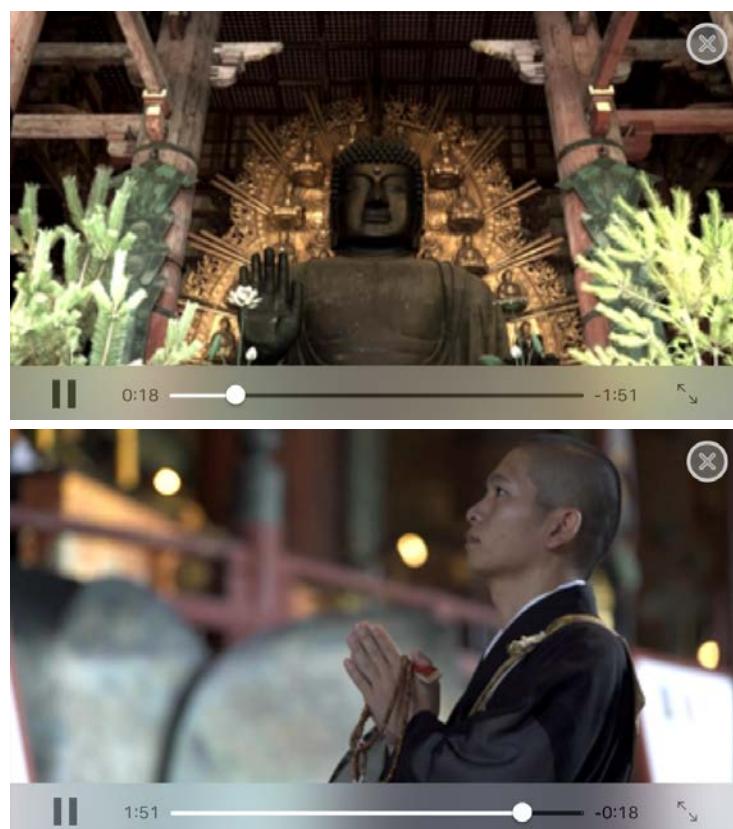Figure 2. Visitor's guide movie starting point

Figure 3. Example of visitor's guide movie screen
(Top) Explanation of the origins of the Great Buddha Hall at Tōdai-ji
(Bottom) Explanation of manners and practices at Tōdai-ji

3. Future Plans

After the completion of the project, by making public the Clean Beacon installation and use guideline and open platform's external interfaces as well as calling for cooperation from existing platforms and service providers, NEDO plans to propose the use in wider areas and contribute to establish and expand new services and markets.

Figure 4. Image of the future uses of beacon deployments

- iBeacon and iOS are a registered trademark of Apple Inc.
- Bluetooth is a registered trademark of the U.S. company Bluetooth SGI Inc.

【Glossary】

※1 Clean Device

These are defined as cutting edge electronic devices expected to have energy-saving effects through widespread implementation in society, which practical application is coming soon.

※2 Clean Beacon

This is the name of the beacon developed that does not rely on an external power source. It makes use of a proprietary "power management circuit for energy harvesting" technology developed by Hitachi, Ltd. as part of NEDO's "Projects to Develop Sensor Systems to Address Social Issues." This technology allows the beacon to start operation in a short period of time even in low light conditions (about 200 lux) such as the shade of a tree or indoor lighting. Because storing power needed for beacon operation can be performed at the same time, operations can continue for certain periods during the night or during a power failure.

※3 No external power source

Here, it is defined in the sense that energy harvesting operates autonomously without a battery or an external power source.

※4 Open Platform

The device management platform that provides the versatility to manage a large number of beacons install in a wide range. Thus, installed beacons are interoperable for multiple service operators, and service providers can provide services in a short period of time with less infrastructure investment.

4. For more information, please contact

（Regarding this News Release）

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