"Fukushima Wheel": Tackling the World's urban problems using bicycles

'Reinventing the wheel' is an idiomatic expression that means 'to invent something that has already been invented'. But in the case of Eyes Japan, an enterprise based in Aizuwakamatsu, Fukushima Prefecture, it can also mean a ground-breaking innovation that is challenging the way the world views bicycles.

Using the bicycle to create new social infrastructure

Fukushima Wheel, a project conceived and developed by Eyes, Japan, aims to integrate a 'bicycle sharing' system into social infrastructure, in order to make the vision of a sustainable society a reality.
Through sensors attached to the bicycle, environmental data, such as radiation levels, nitrogen compounds in the atmosphere, temperature and humidity levels, is collected. This information is sent to a server via smartphones, which in turn feeds into a data bank. The aggregated data can then be used in analysing trends.

Additionally, Light Emitting Diodes (LED) that are attached to the rear wheels allow images and words to be displayed on the wheel, enabling the bicycles to serve as marketing tools that can be used in advertising and in business development.

"Overseas, where environmental consciousness is high, the concept and convenience of the bicycle-share system is already popular. But in many cases, bicycle-share businesses that are unable to see any profits or pay-offs find it difficult to carry on operations. However, if Fukushima Wheel was to be incorporated into their bicycles, the gains from the advertisements displayed on their wheels may enable them to raise their revenues and continue operations. They will also be able to capitalise on the environmental data that they collect from the region," says Eyes, Japan representative, Mr. Jun Yamadera.

A 'kinstugi' transformation of the future

'Fukushima Wheel' was born as a result of the Great East Japan Earthquake. Aizuwakamatsu is home to the well-known Imori Yama, castles and a number of other historic sites that are popular among tourists and school students. But after the earthquake, the number of tourists fell by almost 90% when compared to previous years. And although there was a rise in the number of visitors in the period after the NHK drama " Yae no Sakura" (a story set in Aizu) was aired, it proved to be only temporary. Even foreign tourists, who had always been lured by the beauty of the Fukushima countryside, were put off by the negative press following the nuclear disaster and chose to visit other destinations in Japan. The number of visitors to the Fukushima Prefecture dwindled to only 0.1% of all visitors to Japan.

"The numerous tourists just vanished. As someone who was born and raised in Aizuwakamatsu, I felt as if something had to be done. I felt that I had a mission, to make this a more convenient and easy-to-visit town. It was from this sentiment that 'Fukushima Wheel' was born," recalls Mr. Yamadera.

“In Japan, ceramic and porcelain containers that break or crack are repaired using lacquer mixed with gold dust, a technique that is called ‘*kintsugi*’. This method was originally intended to mend broken containers, but when this technique is applied with skill, it can add tremendously to the value to the piece, making the mended vessel more worthy than the original. In the same way, the intention behind this project was to improve the situation by adding value,” he says.

Just like in *kinstugi*, the intention is not only to repair what is broken, but also to transform it into something of even greater value. And perhaps it is because lacquer has its origins in Aizuwakamatsu, that this special idea was conceived here. The fact that there is a place such as this, a place that is deeply associated with a traditional craft and yet is a place of modern innovation - this is what makes it particularly meaningful.

Changing the world with an innovation from Aizu

Fukushima Wheel has been very well received at SXSW and Maker Faire Bay Area held in the United States, as well as at events in Europe and across Asia. At present, the project is focussed on activities centred on educating people about the practical applications of the wheel and on actual demonstrations. However, Mr. Yamadera is now beginning to realize the real difficulties involved in introducing a new system to the market.

“Fukushima Wheel is a project that proposes a way to build a more sustainable society. But in Japan, there has only been interest from businesses that are already involved in promoting bicycles, and other environmental agencies,” says Mr. Yamadera.

In a world where IoT is making rapid progress and gaining popularity, it has been difficult for the market to understand and accept the concept of a ‘mono-service.’ “We are beginning to understand that despite a general awareness that it is indeed possible to create a better society, the reality is that there is still a lot of resistance to new ideas and new concepts that don’t already exist.”

Contrary to this, the reaction from abroad has been tremendously positive. It is through participating in research forums and other such events several times a year that has Mr. Yamadera has become aware of the full potential of the project. In the more forward-thinking and environmentally conscious countries, where there have been many moves to establish ‘car-free days’ etc., Fukushima Wheel has been recognized as a solution to the problem they have been trying to solve. Hailed as a ground-breaking system, it has garnered a lot of attention.

Fukushima Wheel’s value lies in not merely enabling profits through a bicycle share system, but also in being able to gather a variety of data that could help to combat the challenges facing urban areas. Data related to the environment, such as the radiation and PM 2.5 levels in Fukushima, is information that would be otherwise difficult to find out. Additionally, the data concerning the bicycle’s movements could provide

information about condition of roads and also help to identify bicycle-share excursion hotspots for tourists. By combining and leveraging this data, it is possible to contribute to better urban development.

“While we have carried out actual demonstrations in Japan, we would like to leverage the attention that we have received from countries abroad, nations that have a full understanding of the bicycle-share system, in order to create more awareness about Fukushima Wheel,” Mr. Yamadera says, his words reflecting his enthusiasm for global expansion.

Technology has the ability to improve society

Cutting-edge technology has the power to direct society towards a better future. Mr. Yamdera affirms that innovation is the *raison d’etre* behind their enterprise and that Fukushima Wheel is a key example. There are, however, other projects, in the medical and agricultural industries, that are in the pipeline for Eyes, Japan.

“From the first time that I encountered the Internet, I have only been looking towards the future. Technology can still bring about a lot more improvements in society. Value that we haven’t yet seen, things that we can’t even imagine now will all be realities in the future,” Mr Yamadera says, in conclusion.

As an enterprise that is challenging innovation, Eyes, Japan is generating a lot of interest. Its aim: to change the world...from Aizu, Fukushima. The bright, luminescent wheel that they have re-invented will no doubt be decorating city streets all over the world before long.

Through Intel ‘iQ’, Eyes, Japan plans to announce the details of its new project aimed at the early detection of cancer through saliva using artificial intelligence, in the near future.

https://iq.intel.co.jp/rental-bicycle-environment-big-data/

Translated from the Japanese article by Malavika Nataraj