PROJECT 09

PROJECT TITLE | Developing a Management System Using Blockchain Technology to Manage Individual's Health Care Information in Hiroshima and an Open Data Distribution Platform with a Functions of Information Trust

COMPANY NAME | Hiroshima University

Creating a Secure and Connected System of Information Sharing to Help Individuals Reach One Hundred and Beyond

The main purpose of Hiroshima Sandbox is to construct a system of open data distribution across various industries and to use that information to further develop new practices and services. Until now, in order to achieve this goal the project has focused its efforts on creating the platform base, as well as conducting field tests, and gaining the rights to data utilization. However, a new goal has emerged, and that focus is now directed towards the healthcare system, and making the lives of the people who live there better.

Blockchain-Based Open Data Distribution Platform with a Functions of Information Trust
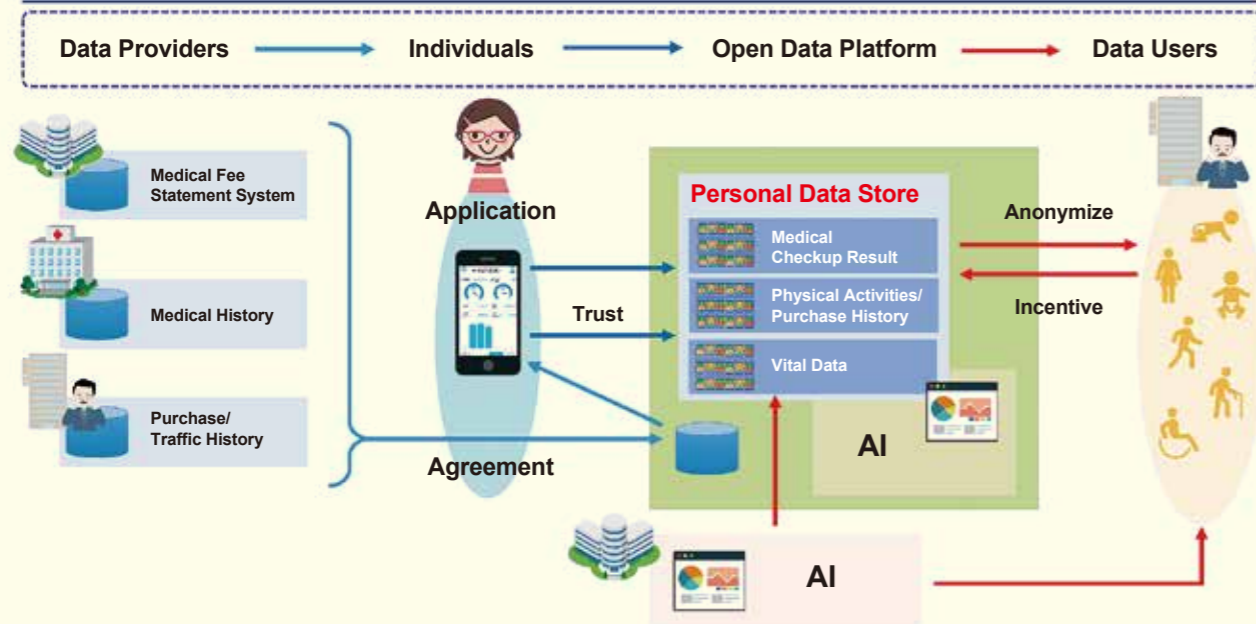
How Society 5.0 Can Change Healthcare

In 2016, the Japanese government put forth a proposal to create a "Society 5.0" ahead of the rest of the developed world. This society would aim to merge the virtual and real worlds as we know them using AI and IoT technology. With interconnected realities the ability to share and analyze many forms of data will become significantly easier. It was for this reason that Hiroshima Sandbox first came to be.

A team led by Hiroshima University, and utilizing a platform designed by OKEIOS, have already started field tests. The platform in question makes use of blockchain technology, much like that of many cryptocurrencies. For this project Hiroshima University will make the call on how the majority of information is shared and collected, however, individuals who participate will have to sign release forms detailing how the team plans to use their information. While in some cases anonymizing data is necessary, other cases may call for maintaining a clear connection with each individual.

According to Yasuki Kihara, vice president of Hiroshima University, and a certified cardiologist, **"If we can compile a comprehensive medical files on individuals spanning their whole life, from birth until death, we might be able to find several never before thought of connections. Of course it doesn't only stop at medical history, but a patient's life style choices as well. Things like their purchase history or their history of physical activities. These harder to track bits of information might just be what doctors and health care physicians need to help prevent life threatening diseases, and help in other preventative measures."**

A System of Trust

When society 5.0 is finally achieved, it will be like a "whole new world," says Kihara. The use of AI and IoT to **"create a world where one can go about their daily lives, but at the same time have instant access to a wide range of information- it's something out of a Sci-Fi fantasy. However, the concept of trust, and entrusting one's personal information to such technology will be the main concern moving forward."**

All information information collected will be likely used by third party companies, so trust is of the upmost importance. An example of how this would work would be a pharmaceutical company that is producing a new diabetes drug, and needs information about potential patients. They would search through a large database, and then request for information disclosures from any matched individuals. The project is also thinking of introducing a token system that would works as a sort of digital certificate in exchange for providing information.

Currently, patient information is only available to the specific hospital where the patient is being treated. The medical fee statement system is Japan is the only intergraded system in use, however it doesn't provide an accurate description of most patient's health. In addition to that, any studies conducted by private companies like pharmaceuticals tends to stay only within that company, and is never shared with the public. Some hospitals have started to adopt an electronic system of information sharing, but most do not have a universal system, so many are not compatible with one another. In what the Japanese government dubs "society 4.0", or our current reality, a lot of valuable data is scattered and divided. Constructing an open data distribution system will be the first step into the society of the future.

Creating a Real Sci-Fi Fantasy

When it comes to patient healthcare information, **"it is one of the most sensitive fields out there,"** says Kihara. **"That's why it's important to create a system that builds trust, and one that can potentially be used in a number of fields."** Members of the team feel that if you have a comprehensive data system, that can collect and analyze all aspects of your daily life, from food to exercise, then individuals can live a long, healthy life- maybe even until one hundred. **"You can't enjoy your golden years if you become bed ridden at eighty five. The ideal system would be to not only collect data from each individual, but to have a system that can also give advice as well. Imagine a future where sensors can know the amount of calories purchased per day, and advise on healthier options. There's a possibility to give incentives, such as discounts, for healthy purchases too,"** remarks Kihara. He continues by saying, **"Currently we are only conducting filed tests in Hiroshima, but out aim is to create a platform that unities the whole of Japan. I'm quite proud of this project, and am amazed by the advances that we are able to achieve."**

A Sense of Urgency Offering "Smart" Healthcare in Rural Areas

The field tests that are currently underway in areas across Hiroshima will continue until 2020 before focusing on a nation wide network. A lot of the current data is being collected from wearable technology in accordance with local municipalities. Kihara comments on this by saying, **"local governing bodies recognize the importance of this project, but of course they have their misgivings, especially in relation to patient's personal information. However, in local rural areas where the aging population is highest, and hospitals are scarce, officials are starting to put more hope in projects like this. An example of this is Usuki city where they have already introduced a type of data collection system and seen some positive results. If I'm the primary doctor of a certain patient, I shouldn't keep that information solely to myself, but share it with other health care providers in hopes of providing the best possible treatment for that individual. I really hope that Hiroshima, and the rest of Japan, embraces this kind of treatment."**

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