



PROJECT TITLE

Turn Hiroshima into a "Smart City"—Develop an Intelligent Traffic System That Gives Priority to Public Transportation

COMPANY NAME

Chuden Engineering Consultants Co.,Ltd.

Transforming Hiroshima into a Smart City

Traffic in downtown Hiroshima has increased over the years, with the number of private cars increasing and causing accidents with local public transportation services. However, because of underdeveloped urban areas, individuals cannot give up using their own vehicles. Moreover, in the case of a storm or natural disaster, the first thing to suffer in these areas is always public transit. Due to these issues, this project aims to use radio frequency technology to develop a new infrastructure that uses communication-based intelligent transportation systems (ITS). In addition to this, they are planning to develop other methods to connect the outer suburbs and inner city limits by creating ride sharing services.



Connecting Streetcars, Bus Services, and Cars in Hiroshima

The amount of traffic that flows into downtown Hiroshima often makes it hard for individuals to get around by car. This is due to the large volume of traffic from streetcars, private vehicles, and other modes of public transportation. Due to the fact that Hiroshima has a large tram infrastructure that runs throughout the whole of downtown, it can make it difficult for automobiles to navigate the roads at times, causing delays and sometimes even accidents. This is especially troubling during rush hour.

Many of the suburbs surrounding Hiroshima are what are coined as "old-new" cities. These towns, which back in their prime were the latest in housing and infrastructure, haven't kept up with the times, making them difficult to access. Adding to this problem is the aging population which requires private vehicles to get around. Due to the fact that these areas don't have sufficient public transportation, the elderly are often forced to drive themselves, but with the increase of traffic accidents involving older drivers, many have been forced to surrender their licenses. All of this is made worse by natural disasters that strike the area.

That's why we have decided to take action. The theme of our project is "transforming Hiroshima into a smart city that people want to live in and visit." The technology used in this study is communication-based intelligent transportation systems (ITS) technology. This bidirectional communication system can share data collected from each transit vehicle. A few field studies have been performed in Hiroshima already. This time around, the consortium has required a whole new group of participants, including Chuden Engineering Consultants Inc., who have valuable public works experience. Other members include Hiroshima and Tokyo University, NALTEC, Hiroshima Electric Railway, and Mazda.

A Transportation Infrastructure Connecting All Modes of Transit and People

The first stage of this new project is to solve the current problems with both suburb and city infrastructures. After this has been achieved, the developers are setting their sights on a system that can fuse the two seamlessly. Currently, field tests are being conducted in the downtown area. These tests are monitoring the flow of both vehicle and pedestrian traffic using sensors installed on traffic lights. These sensors use ITS technology and will be able to paint a bigger picture of what is going on downtown. A perk to using this system is that it can detect movement from streetcars, buses, cars and pedestrians that the human eye cannot. This will hopefully lead to less overall traffic accidents. Furthermore, this system will bring Japan up to date compared with other developed countries by giving emergency vehicles access to signal controls. While the amount of recorded data that will be sent seems to be a potential problem, experts believe the installation of 5G networks will solve this issue.

The streetcar stop, Hiroden-Honsha-Mae, will be the place of one future field study. Currently, cars and other vehicles are not allowed to share the roads with tram tracks on them, but this station has a wider and longer platform than usual (3m X 54m). Back in 2018 the stop had been renovated with a more modern design, and during that renovation developers made the decision to make it wide enough to share with buses. Despite this change however, coordinating traffic between the arriving streetcars and buses has been a problem. This is where the ITS system would come in to play. By implementing this system, developers hope to expand streetcar platforms to bus usage as well.

Beyond Conventional ITS: A Possible Tool for Disaster Management

2020 will mark the beginning of field tests in suburban areas around Hiroshima. The goal of these tests will be to improve the use of public transportation in the case of natural disasters. By having a system of data sharing, communication amongst various vehicles will be possible, allowing for a more efficient traffic flow. Another possibility is that this technology will help with the implantation of AI cars and rideshare vehicles in the future. With better public transit comes the added benefit of the elderly having to rely less on personal vehicles.

Back in 2018, when Hiroshima was hit with heavy rain and landslides, a majority of the roads were destroyed in the aftermath of the storm. This forced many to evacuate, causing panic and chaos on the already damaged roads. However, if the ITS system had already been installed at that time, it is believed that a lot of this panic could have been avoided. Access to real time traffic information, as well as road closures, in addition to computer control of traffic signals could have greatly aided disaster relief efforts at the time.

A Future That Should Already Be: Hiroshima the "Smart City"

Toyokazu Yamazaki, a section chief in charge at Chuden Consulting, said that, "This consortium exists to create the inevitable future of Hiroshima." He continued by saying, "While the main goal of this project is to lessen traffic jams and accidents in the city, there will be more opportunities to use 5G and AI technology to solve other problems throughout the area. Hiroshima will continue to evolve, and take its first steps into the future as a smart city, a place where people can live a safe and comfortable life."



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