CASE STUDY

Smart City Taiwan – Harnessing the power of smart tech to deliver healthcare solutions

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The ‘Smart City Taiwan’ initiative was launched in 2018 by Taiwan’s Industrial Development Bureau (IDB) under the Ministry of Economic Affairs (MOEA). Its aim is to further the accomplishments of past nationwide projects to digitise large swathes of Taiwan’s infrastructure and public services, using innovative solutions to solve the challenges facing government, business and citizens in a modern economy. The ‘Smart City Taiwan’ initiative utilises a range of ‘smart’ technologies, such as IoT, Big Data and AI.

Solutions are provided as part of a so-called Public-Private-People Partnership (PPPP) model, bringing together the public and private sectors, alongside academic institutions such as the Industrial Technology Research Institute (ITRI). Taiwan’s central government has committed to implementing polices that enable the delivery of solutions to address issues identified by local governments – with the aim that this collaborative approach can create solutions that can be exported globally.

Smart City solutions have to date been implemented in 22 cities and counties across Taiwan, even overseas to address issues around transport, healthcare, agriculture and governance.

This report looks at four Smart City case studies in the area of healthcare, spanning topics including eyesight testing, dementia and diabetes.

AI image recognition brings eye-testing to remote areas

The lack of access to eye healthcare is a significant issue in remote areas of Taiwan, where it can be difficult to set up temporary testing sites and equipment. Citizens residing in these regions are also deemed less likely to seek medical care. Almost half of the 29 administrative districts in the New Taipei City principality do not contain eye clinics.

To tackle the problem, the Smart City initiative has launched an AI-powered portable service from Leo Systems Inc. to provide eye examinations to people in remote regions. It targets "at risk" groups such as seniors and those with diabetes (which are 25x more likely to suffer from eye disease), serving as an early warning system for eye problems.

This portable solution uses smart AI-assisted image analysis on retinal tests, which can also reveal other issues such as diabetes, hypertension and risk of stroke. The images are then reviewed in the cloud by qualified doctors and ophthalmologists – and about 15 per cent of patients tested are referred for further treatment.

More than 10,000 patients have been tested under the scheme to date, which has been rolled out at 39 regular locations in remote areas. It has also managed to reduce social, medical and welfare costs.

Creating senior-friendly communities using IoT sensors

About 8 per cent of people in Taiwan will suffer from dementia in their lifetime, though it can be as high as 14 per cent in some regions, such as Pingtung – significantly increasing long-term healthcare costs.

In a bid to create a senior-friendly environment in these regions, the Smart City Initiative has developed the 'Safety D+ Card' to track seniors with dementia, allowing them to explore greater distances with confidence.

The solution, provided by Fashion Intelligence Co. Ltd., uses IoT and Bluetooth technology – often embedded into jewellery – which can track the wearer via a network of public hotspots. In case of incident, seniors can request assistance by pressing an SOS distress button, while messages are automatically sent to carers when users go beyond a defined area.

Across the four service locations where the solution has been deployed, more than 15,000 cards have been issued and more than 80 per cent of dementia sufferers use one. Moreover, the technology has been expanded for other use cases such as notifications for parents when children arrive at school, tracking individuals quarantined during COVID-19, and tracking factory workers on site.

The 'Safety D+ Card' used in Taiwan has been successfully exported to a number of other countries in South East Asia, including China, Thailand, Malaysia and Vietnam.

Using the cloud to combine patient and hospital data

Taiwan's largest community network of health monitoring services has been rolled out across Kaohsiung, Pingtung, and Penghu by AdvMeds. This platform aims to reduce the burden on hospitals, more efficiently reach patients in remote areas, and encourage self-health monitoring. The overall goal is to prevent the deterioration of chronic diseases through daily health management.

There are more than a hundred 'self-help health stations' currently deployed across the three regions, which allows patients to upload healthcare information to a 'co-care cloud'. This cloud integrates the uploaded patient data with information held by hospitals and clinics, providing local doctors with a detailed view of their patients.

More than 1.3 million patients across the three service locations have been served on the platform to date and more than 338 medical facilities are connected and sharing their data. The majority of users (57 per cent) are also in the 50+ years old categories.

The platform has been exported to 18 countries across the South Asia region, including China, Thailand, Malaysia, Vietnam and Cambodia.

Building a community platform to combat diabetes

The iDiabCare Management Platform is another successful example of an initiative that links doctors and patients via the cloud. Deployed in three service locations, the solution, provided by Compal Electronics Inc., combines machine learning, medical support and a social platform to serve diabetes sufferers around the world.

There has been a sharp rise in diabetes in Taiwan in recent years, but a lack of patient-centric care system to address the issue. Without a platform for diabetes companies to share information and resources, patients have been unable to receive a bespoke service that suits their needs.

iDiabCare interfaces with Hospital Information Systems (HIS) so that patients can view testing data through the app. Functions such as food identification and diet recommendations are provided via AI technology – and patient physiological data can be sent to medical personnel for monitoring.

More than 70,000 diabetes sufferers are using the platform, which has resulted in numerous positive health outcomes and efficiencies. For example, there was an improvement in glycated hemoglobin in almost half of users, while doctors were able to reduce the time they spent on individual patients in around 70 per cent of cases.

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About the Industrial Development Bureau (IDB)

Industrial Development Bureau (IDB) is the administrative agency of the Ministry of Economic Affairs of Taiwan. IDB serves the role to formulate industrial policies, and to oversee various industries including metal & mechanical, information technology, consumer goods & chemical, knowledge services, as well as sustainable development in Taiwan. It is also the governing agency for the Smart City Taiwan initiative. The initiative aims at utilising all types of smart technologies (such as IoT, Big Data and AI) to effectively integrate local, industry, and civilian needs. With support from central government, collaboration and integration between local governments and industry stakeholders has resulted in many successful Smart City solutions originating from Taiwan being delivered to the global marketplace.

For B2B meeting requests with the companies in this case study or further inquiries, please email service@communications.org.tw

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[1] https://www.marketsandmarkets.com/Market-Reports/agriculture-drones-market-23709764.html

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