CASE STUDY

Smart City Taiwan – Embracing smart tech to transform Taiwan's agricultural sector

Sponsored by

INDUSTRIAL DEVELOPMENT BUREAU, MINISTRY OF ECONOMIC AFFAIRS
經 濟 部 工 業 局

Published by

MOBILE WORLD LIVE

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 three Smart City case studies in the area of agriculture, focusing on areas such as fish farming and crop spraying.

How IoT-powered pond monitoring is revolutionizing fish farming

The livelihoods of Taiwanese fish farmers are under constant threat from extreme weather and natural disasters, particularly around harvest time. Meanwhile, there is growing concern among the wider general public about food production environments and the risk of contaminated food.

This prompted the creation of an IoT water quality control monitoring system to help Taiwan's so-called "aquaculturists" monitor changes in fishponds. The solution allows them to precisely monitor water data such as dissolved oxygen, pH levels, reduction potential, salt levels and temperature – providing an early warning system of disaster damage.

The 'Aquadlink Smart Monitoring System', developed by Quadlink Technology Inc., monitors and processes water data in real-time. It is linked to a smart control panel that is able to activate and deactivate aerators and feeding machines. The information is then uploaded to the cloud and can be accessed by a mobile app.

More than 300 ponds across Taiwan are now uploading data to the Aquadlink Cloud. This has allowed the industry to provide food safety "resumes" which also assists with calculating production rates, insurance premiums and logistics. Supply chain partners – such as aqua equipment suppliers – have also been integrated into the system.

The solution is currently deployed in eight service areas across Taiwan. It has increased commercial fish farming production by 20 per cent, while reducing power consumption by at least 30 per cent comparted to traditional monitoring equipment.

More than 100 versions of the solutions have been exported to the South Asia region, including Philippines and Indonesia, covering approximately 1,000 hectares of fishing ponds.

Taiwan takes pioneering role in agricultural drones

The maintenance of agricultural land has traditionally required substantial manpower, long working hours and high labour costs. The use of pesticides and fertilizers can also be harmful. The combination of drone technology and AI image recognition can therefore save costs, drive efficiencies and improve safety in areas such as crop spraying.

This solution by GEOSAT Aerospace a& Technology Inc. has been deployed in two service areas in Taiwan as part of the Smart City initiative. Drones are used to identify and analyse planting areas and determine growth conditions of crops in order to plan planting and spraying schedules.

The aerial photography and satellite imagery captured are analysed using AI image recognition and uploaded to the cloud. This data can then be used to efficiently schedule drone spraying operations. For example, multispectral and thermal sensors are used to detect dry areas and accurately control water spray volume.

A spray drone is able to cover up to 600 hectares per day and is considered 60 times more efficient than traditional methods.

The global market for agriculture drones is expected to grow from $1.2 billion in 2020 to $5.7 billion by 2025 - a growth rate of 36 per cent per year (CAGR)[i]. A few key factors driving the growth of this market are pressure on global food supply due to growing world population and increase in venture funding for the development of agriculture drones.

Taiwan's drone industry is considered cutting edge and one of the few able to compete with China's competitive drone industry. As well as the fleet of agricultural drones in Taiwan, a new company has also been set up to sell the solution in Malaysia and it is planning to be rolled-out to other foreign markets.

Smart platform combines agriculture and tourism

A Smart Agricultural Economy Platform by Foxconn Global Network Corporation (FHnet) has been rolled on in Taitung Country that integrates local tourist attractions and agricultural resources in a bid to energize the local economy.

By combining IoT and blockchain technologies, the platform is able to provide a range of services for local farmers, including the ability to produce food 'resumes', purchasing tools, monitoring services and sales management.

This allows farmers to meet the Taiwan Good Agriculture Practice (TGAP) guidelines, which provide end consumers with food safety guarantees – and ultimately drives industry revenue. The solution claims to have increased management efficiencies by 30 per cent and reduced farming costs by 25 per cent.

On the tourism side, the platform is able to integrate elements that showcase and promote local culture, utilising Augmented Reality (AR) technology.

INDUSTRIAL DEVELOPMENT BUREAU,
MINISTRY OF ECONOMIC AFFAIRS
經 濟 部 工 業 局

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

Mobile World Live is the premier destination for news, insight and intelligence for the global mobile industry. Armed with a dedicated team of experienced reporters from around the world, we are the industry's most trusted media outlet for breaking news, special features, investigative reporting, and expert analysis of today's biggest stories.

We are firmly committed to delivering accurate, quality journalism to our readers through news articles, video broadcasts, live and digital events, and more. Our engaged audience of mobile, tech and telecom professionals, including C-suite executives, business decision makers and influencers depend on the unrivalled content and analysis Mobile World Live provides to make informed business decisions every day.

Since 2016, Mobile World Live has also had a team of in-house media and marketing experts who work directly with our brand partners to produce bespoke content and deliver it to our audience in strategic yet innovative ways. Our portfolio of custom work - including whitepapers, webinars, live studio interviews, case studies, industry surveys and more – leverage the same level of industry knowledge and perspective that propels our newsroom.

Mobile World Live is published by, but editorially independent from, the GSMA, producing Show Daily publications for all GSMA events and Mobile World Live TV – the award-winning broadcast service of Mobile World Congress and home to GSMA event keynote presentations.

Find out more at www.mobileworldlive.com

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

Disclaimer: The views and opinions expressed in this report are those of the authors and do not necessarily reflect the official policy or position of the GSMA or its subsidiaries.