

SMALL BUT PRACTICAL

AGRICULTURE HAS BEEN IMPORTANT TO TAIWAN FOR CENTURIES.
NOW MODERN DEMANDS MEAN IT IS ADOPTING MOBILE GIS.
PATTY CHEN EXPLAINS

One of the most important industries in Taiwan for centuries, agriculture is now facing extreme challenges from aging farmers, limited water resources and foreign competition. The government of Taiwan is therefore actively looking for different ways to enhance agricultural productivity.

The Agricultural Economy Section, Civil Affairs Office of Guanyin District, Taoyuan City, is the interface between the government and local farmers. Its main jobs are assisting farmers to prevent plant disease and insect pests, and managing permissions for farming, machine-use and so on. It also takes care of pollution-prevention and beautification, to build a sustainable environment. If there is a natural disaster, farmers can also submit subsidy applications to receive recompense.

The section sought new tools to assist them in their work. It chose mobile GIS to simplify its farmland maintenance workflow, because this can systemically collect and organise land information, and the mobile cost is relatively low.

The ideal scenario was that civil servants would be able to have an up-to-date basemap, satellite imagery and land parcel

layers together on single platform. This platform should integrate all the resources and allow investigators to make notes, change farm statuses and boundaries, take photos, and sync to the office's systems.

There were many mobile GIS solutions available from local geospatial consultants in Taiwan. One provided satellite imagery and cadastral data in map tile format – a light raster format that you can use as a basemap but is uneditable and does not contain detailed point, line or polygon features on. Hence, as there were plenty of areas that needed their cadastral boundaries reinvestigating, to make sure officers can find the right person to pay fees, data selection needed to be more flexible and editable, so the office decided not to use this solution.

Word of mouth

While Guanyin District was searching for a suitable mobile GIS solution, at a meeting of local sectors, it received a recommendation

from its neighbour, Daxi District, which has implemented SuperGIS solutions for 10 years. The two sections handle similar tasks, so Guanyin District began to research to see if they can duplicate Daxi District's solution in its own region.

Since Guanyin did not have extra budget to purchase new devices, it was looking for software that it could install on a commonly used OS but that was equipped with the most-used GIS functions. SuperSurv 10 for Android met all their requirements, as it is easy to use and offers an offline mode, supports multiple data formats, can connect with cloud drives and can import raster data as a basemap.

Starting in May 2017, Guanyin District began to use SuperSurv to audit farms, to investigate if certain farmland was eligible for disaster subsidy and update any land parcels as necessary. The officials pre-loaded cadastral maps and satellite imagery using Dropbox or Google Drive so they could display all the data in one app. The mobile GIS

PREVIOUSLY, ON-SITE INVESTIGATION TOOK MORE THAN ONE WORKING DAY; NOW, IT TAKES ONLY HALF DAY OR LESS



MOBILE GIS

app has successfully replaced the previous complicated paper workflow and the civil servants now don't need to bring paper maps, subsidy applications from farmers or additional documents, as all the data needed can be saved in single smart device.

Previously, on-site investigation took more than one working day; now, it takes only half day or less. The officials have more time for their other work – figuring out how to assist the Taiwanese agricultural industry. Mobile GIS successfully implemented, Guanyin District is now looking for a comprehensive GIS application.

Patty Chen is regional manager for Supergeo Technologies (www.supergeo.com.tw)

PREPARATION IN THE OFFICE

1. Save cadastral .SHP and satellite imagery to the Android tablet and open it in SuperSurv 10.
2. Enable the label to show the Parcel ID on the map for identification.
3. Find the target parcels by Query function and mark them as Waypoints.
4. Build new custom columns according to investigating items, such as Parcel ID and Condition of Crops. Items can be designed as a drop-down menu for quick selection.

EXAMPLE CASES IN THE FIELD

Verifying land use

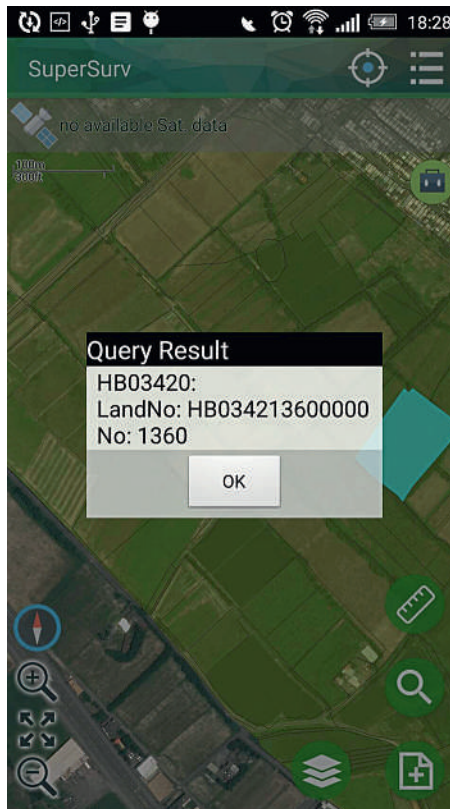
Use Waypoint to guide users to the target parcel. This is very important for field workers as there is usually no clear path or boundary in the field. After arrival, the appointed parcel, edit its attribute table to update current conditions, such as idle, growing, planting or waiting for harvest.

Checking damages caused by natural disasters

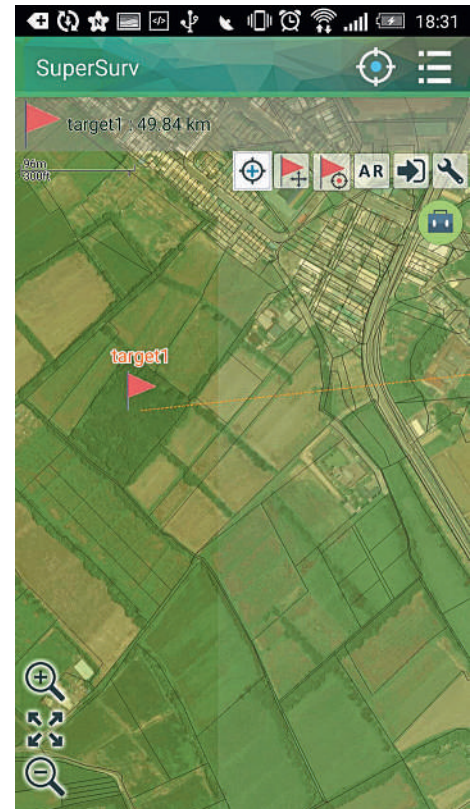
To survey damage, field inspectors record the damaged areas by creating new polygons using the GPS signal of the Android device. Applications can then be double-checked against digital proofs.

Inspecting if land use is under regulation

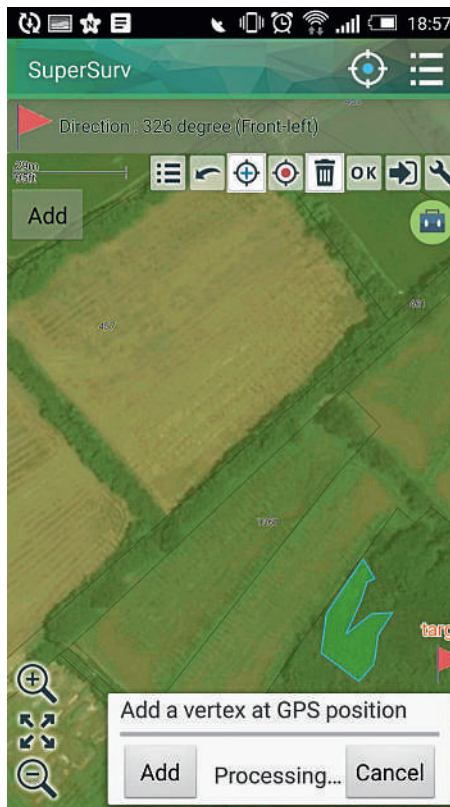
The officer goes to the target area and checks whether the site obeys regulations. If it doesn't, inspectors can edit or create new layer to save it in .SHP and also take a photo.



Import satellite imagery and .SHP GIS data into SuperSurv and use Query to check each parcel's info



Use Waypoint to guide yourself to a specific parcel. This is important for field workers, as usually there isn't a clear path



Survey a damaged area using an Android device's GPS signal and save it in a sharable GIS format

ID:	0
Name:	damage
Memo:	<input type="text"/>
inspect or:	B
Crops type:	corn
Photo:	Choose a photo or take a photo.
Date:	2018/01/02
Time:	18:37:17
Area(m ²):	266.131
note:	<input type="text"/>
Status:	destroyed
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

Create a new polygon and record its attribute using a dropdown menu. The app also counts area automatically so that civil servants can audit subsidy easily