CASE STUDY

HEXAGON GEOSPATIAL

Enhancing Agricultural Development By Detecting Rock Features on Farmlands in Northern Ireland

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Farmlands in the United Kingdom (UK) often receive government grants. These grants are contingent upon the amount of arable land on the plot. In many cases, especially in Northern Ireland, these lands contain non-arable areas such as rock formations and areas covered with shale. A precise calculation of the arable land is necessary in order for these grants to be processed effectively.

There are two government departments that must work together to perform this function. Land & Property Services (LPS), which is part of the Department of Finance and Personnel in Belfast, Ireland, is responsible for determining the actual valuation of properties. LPS works in conjunction with the Department of Agriculture and Rural Development (DARD), which is responsible for promoting sustainable economic growth and the development of the countryside.

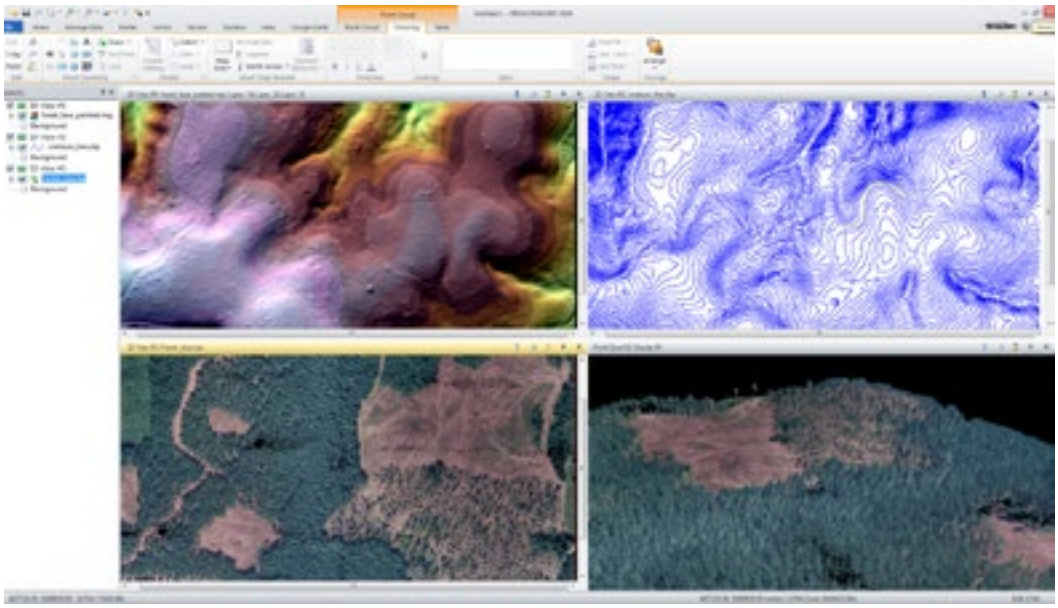
Classifying Ineligible Features

To effectively classify these rock/stone areas on farmlands, otherwise known as ineligible features, LPS needed the right geospatial solutions to extract the areas from the grant calculations.

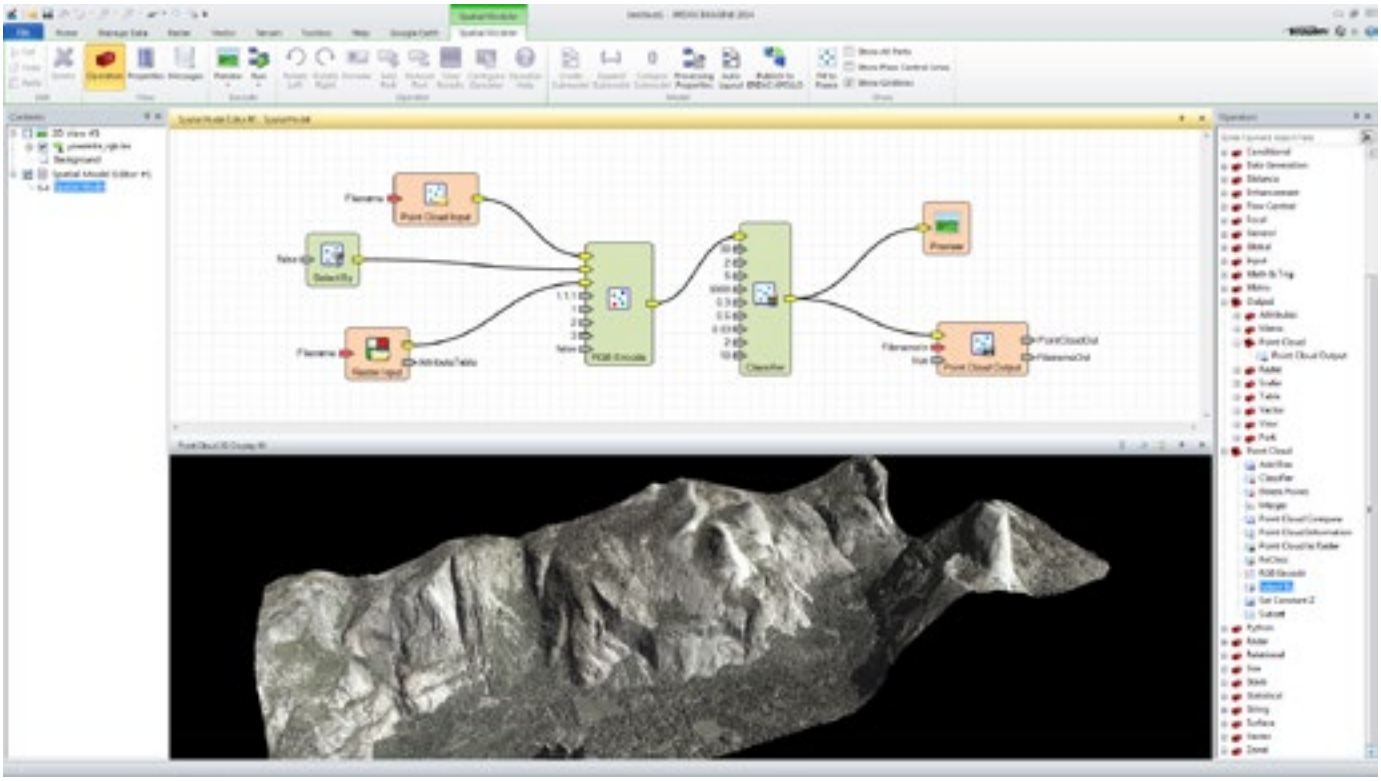
To facilitate their demanding needs, LPS recently implemented ERDAS IMAGINE from Hexagon Geospatial, which empowers organizations to collect, process, analyze and understand raw geospatial data. The software also delivers usable information for enhancing decision-making efforts.

Hexagon Geospatial's partner Irish Mapping and GIS Solutions (IMGS) implemented the solution for LPS. IMGS is Ireland's leading supplier of spatial solutions for government, utility and telecommunications industries.

"Using ERDAS IMAGINE and the latest in airborne imagery, the LPS have saved significant man hours by automating what would have been a labour-intensive survey process and reduced the need for field survey using the powerful remote sensing tools available in IMAGINE," said IMGS General Manager, Ciaran Kirk.



Create several derivatives from your Point Cloud data like painted relief bare earth models and contours



IMAGINE Spatial Modeler

In the past, LPS used 40cm ortho imagery to manually view and classify each of the rocky areas. From there, they required the use of a combination of desktop applications to reclassify and mosaic 16 tiles into a single sheet output.

Automate the Process

LPS saved time and effort by creating reusable Spatial Models in ERDAS IMAGINE. These models allow the LPS to automatically detect ineligible features in common areas, including upland fields that are owned by more than one farmer. The models leverage the near infrared (NIR) and red bands from the imagery to calculate a Normalized Difference Vegetation Index (NDVI). This NDVI provides critical information in the separation of arable and non-arable land.

IMAGINE Photogrammetry includes all Mosaic functionality

This index was then used as part of a larger model that utilized criteria-based statements in the IMAGINE Spatial Modeler to carry out the entire classification and reclassification process.

When faced with images or tiles which displayed different shading, they employed the ERDAS IMAGINE pan-sharpen functionality to process and match the shading across all of the tiles. These tiles were then quickly and easily mosaicked in IMAGINE, creating a seamless output.

Greater Throughput and Fewer Errors

As a result of this effort, LPS has officially moved away from doing what was once a very cumbersome and error-prone manual process. Now fully automated, this process allows the organization to be more efficient and effective in providing vital farmland data to DARD.

In the future, LPS plans on reproducing this process – especially using 4-band imagery for feature creation – in many future projects.

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