Smart Monitoring Affirms or Disputes Subsidy Requests Across Europe

The European Union (EU)'s Common Agriculture Policy (CAP) provides subsidies to farmers across Europe with the purpose of maintaining a stable supply of affordable food while also ensuring that farmers can make a reasonable living.

EU countries are responsible for the administration and control of payments to farmers in their respective countries. But among the 28 countries that comprise the EU, policies such as CAP require a method for administration. The main building block of its payment management system is the Integrated Administration and Control System (IACS).

The standards of IACS ensure the checking of national administrations to determine if their farmers meet the conditions for income support by using:

- Automated software checks that validate or reject each request
- Physical on-farm controls (on-the-spot checks) of a sample of farmers

Only Farmers Who Demonstrate Accurate Land Use Are Funded

While land area is a deciding factor for funding requests to farmers, some farmers' requests included land that was unfarmable, such as rocky or tree-covered areas. To distribute the appropriate allotment of funds, a method was needed to determine the correct calculations of farmable land. Due to complex processes and the EU's sizeable landmass, a solution that could use automation was necessary.

The Austrian Paying Agency Agrarmarkt Austria (AMA) worked with GEOSYSTEMS GmbH, a Hexagon Geospatial Platinum Partner for the DACH region, to implement a machine-learning-based solution to foster an implementation of the IACS.

Satellite Imagery + Machine Learning = Smart Monitoring

Satellite data was being collected regularly from Planet and the European Union's Copernicus program, as well as from other data providers. The data was fed into an AI/machine learning-based spatial recipe, which was developed within ERDAS IMAGINE by GEOSYSTEMS GmbH and Revital Integrative Naturraumplanung GmbH. The spatial recipe automatically extracted over 36 different vegetation types from that content, including trees, low vegetation grass, and more.

The classification runs fully automated on the entirety of Austria and includes atmospheric correction and haze removal on satellite data as a pre-processing step. By using a spatial recipe, the classification can be run regularly with fresh data, thus providing the basis for a monitoring service.

Then the vegetation information is mapped onto each parcel of land. For cattle grazing, parcels that contain little vegetation (for example, mostly trees) do not warrant a subsidy because there are not defined forage areas. The vegetation information on each parcel is also superimposed on the 3D slope of each parcel.
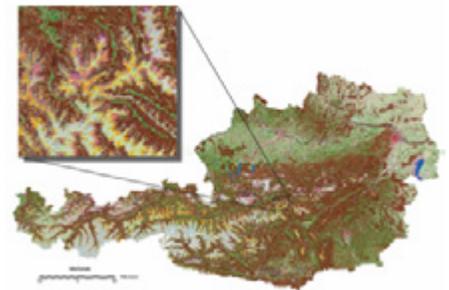
Automated Austrian-wide classification of Sentinel-2 data. The enlarged detail shows a PlanetScope classification.
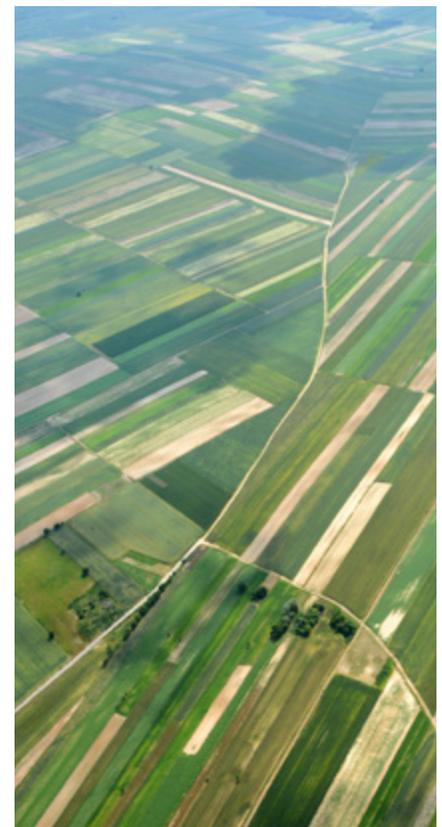
Visualization and Analytics Show the Results

The results of running the spatial recipes represent the parcels that have subsidy requests from farmers. The vegetation information is mapped onto each parcel. For something like cattle grazing, there are two factors that influence whether or not a subsidy is given: the vegetation and slope of the parcel. Both these elements can be identified with the latest version of M.App Enterprise.

This browser-based smart monitoring solution visualizes the information from the vegetation layer that is used to calculate how much vegetation is actually there. Administrators can see the vegetation make-up of the given parcels. Areas that are predominantly vegetation meet the guidelines defined by the EU. Areas that are primarily covered by non-vegetation do not warrant access to subsidies.

Slope is another deciding factor. By superimposing the parcel information onto a slope, you also can filter information by slope type. The slope type also influences the allotment and the subsidies given to farmers.
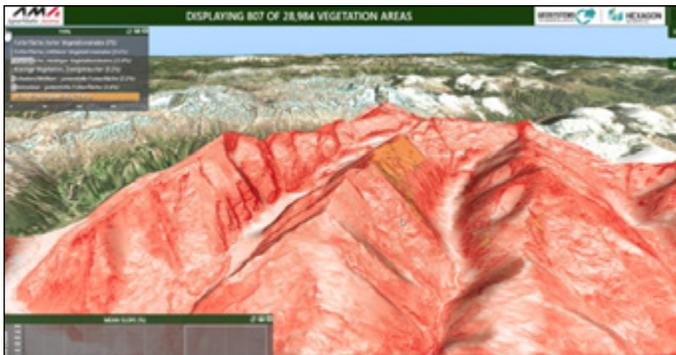
3D visualization of the LandApp showing the slope aspect

Taking a Mobile App to Visit a Sample of Farmers

In addition to automated software checks that validate or reject each request, the second way the IACS helps national administrations determine income support is by having them perform on-the-spot checks of a sample of farmers.

With solutions built with M.App Enterprise, field workers can take mobile devices to examine the land and talk to famers directly, showing them the same information and visual results on a mobile device that are in the administrator's enterprise database.

Hexagon's Geospatial division has built the Smart Monitoring solution on its M.App Enterprise platform. An ideal tool to monitor assets, evaluate changes, and take action, M.App Enterprise is a privately-hosted solution that allows organizations to deploy Hexagon Smart M.Apps that dynamically address their location-based business problems.

This latest version of M.App Enterprise integrates 3D visualization capabilities, analytics, and management, machine-learning-based classification operators from the integrated Spatial Modeler, a graphical interface for building and running geoprocessing workflows.

Merging geospatial information with operational information helps paying agencies to establish the allotment of funds that are ultimately given to farmers to support the EU's Common Agriculture Policy. Contact us for more information about this solution.

Contact Us

🌐 https://go.hexagongeospatial.com/contact-us-today

About Hexagon

Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous — ensuring a scalable, sustainable future.

Hexagon's Geospatial division creates solutions that visualize location intelligence, delivering a 5D smart digital reality with insight into what was, what is, what could be, what should be, and ultimately, what will be.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 20,000 employees in 50 countries and net sales of approximately 4.3bn USD. Learn more at hexagon.com and follow us @HexagonAB.

About GEOSYSTEMS GmbH

GEOSYSTEMS is a software vendor and service partner for geospatial solutions and helps public authorities, private companies and educational organizations to easily transform location-based data into actionable information. As Hexagon Geospatial platinum partner, GEOSYSTEMS offers not only leading-edge products for remote sensing, photogrammetry, GIS and data management, but also Hexagon Smart M.App solutions for easy-to-use dynamic map experiences. In addition, GEOSYSTEMS develops customized applications, implements tailor-made workflows and provides excellent trainings.

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ABOUT Revital Integrative Naturraumplanung GmbH

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