Satellite Monitoring Technologies for Telecom Sector

We know that Telecom companies are always eager to explore innovative technologies and practices that may benefit their clients.

Precision agriculture falls into this category as well since it can help agribusinesses and governments successfully address global food security challenges.

The recent development in the practical use of satellite monitoring and machine learning technologies has transformed the food production industry around the world. Farming of today is precision agriculture — eliminating guesswork, minimizing effort, reducing waste, cutting expenses, and maximizing productivity.

All of this and more can be easily achieved by using our digital precision agriculture platform, EOSDA Crop Monitoring. We've been working on this product a lot — making sure that the expertise of EOSDA in remote sensing is backed up by the latest available technologies. With years of experience in cooperating with businesses and governments globally, we are confident that this product will benefit them greatly.

Telecom companies may benefit from this by considering white labeling the EOSDA Crop Monitoring platform and providing it to the agribusinesses and governments to monitor the scattered fields through satellite imagery.

By reselling EOSDA Crop Monitoring under their own brand, Telecom companies can receive governmental and non-governmental grants for providing their AOIs of choice with the internet connection, thus promoting the idea of a sustainable environment.

EOSDA Crop Monitoring White Label

We offer a ready product created specifically for growers as a White Label solution. You can use the platform on your own domain, under a logo of your choice, with color themes you prefer, along with other customizations.

Also available is a Partner Management panel + a mobile app for crop scouting (Advanced WL option). You get to select the specific features you would like to be using. We will also assign a personal manager to assist you with every issue that might arise. The end result will be a fully customized product to answer your needs.

EOS DATA ANALYTICS

YOUR LOGO

CUSTOM COLOR

LIGHT MODE

EOSDA Crop Monitoring White Label

Field monitoring

✓ Regular monitoring of crop health based on the data retrieved from satellite imagery analyzed using remote sensing indices.

Weather analytics

✓ Hourly updates on the weather in the field's location, displaying such parameters as temperature, wind, humidity, and more. Historical data on temperatures and precipitation in the location available since 2008 and a hyper-local 14-day weather forecast.

Field leaderboard

✓ An interactive leaderboard that arranges all of the client's fields according to the latest changes in NDVI values directly related to crop health. It allows the field owner to react in a timely manner to any crop issues.

Scouting on web & mobile

✓ Automatic problem area detection provides scouts with leads — which areas within the field should be checked right away. The Mobile version has an offline mode, and allows scouts to take snapshots and generate reports right on the spot. Field owners can assign tasks to scouts online and monitor task completion from any location with an access to the internet.

Zoning

✓ Mapping of variations in vegetation and productivity within a field. The resulting maps can be used to perform variable-rate seed or fertilizer application, which is more cost-efficient and reduces waste.

Field activity log

✓ A convenient, interactive planner and manager of field activities where users can assign tasks to specific fields, monitor their completion, and more.

Data manager

✓ Allows you to import all the data about performed field activities directly from agricultural machinery to the Platform where you can manage it more easily.

Team management

✓ An interactive dashboard where you can manage a team of employees or members of a cooperative that are tending fields owned or shared by you. An owner can assign roles with different permission levels to other team members, allowing them to add or remove fields, create, edit, and close field monitor tasks, and more.

Mobile app

✓ Perfect tool for scouts to use while in the field thanks to offline maps, instant report generation, and more. Supports snapshots for visual proof of crop issues to be included in the reports. Field owners get more control over scout tasks, assigning scouts via email, and monitoring the status of task completion directly in the app or on the platform.

Partnership program domain

✓ An advanced, convenient partner management admin panel on a separate domain.

EOS DATA ANALYTICS

EOSDA Crop Monitoring API

One of the services we offer to our telecom clients is the EOSDA Crop Monitoring API documentation that provides access to data from regularly obtained satellite imagery, historical field and weather data archive, 14-day weather forecast, and more.

These features can easily be integrated into third-party software as well as on a third-party website. The integration will add value to the software and the website alike.

```
{
  "status": "succes"
  "result": [
    {
      "cloud": 0.0,
      "view_id": "S2L2A/35/U/PQ/2021/3/28/0/",
      "max": 0.2087113857269287,
      "variance": 0.00010315987143445837,
      "min": 0.15430861711502075,
      "date": "2021-03-28",
      "average": 0.181389311669578,
    },
    {
      "cloud": 0.0,
      "view_id": "S2L2A/35/U/PQ/2021/3/26/0/",
      "max": 0.36153846979141235,
      "variance": 0.0019967923401350714,
      "min": 0.17181207239627838,
      "date": "2021-03-26",
      "average": 0.27585086359384475,
    },
    {
      "cloud": 0.0,
      "view_id": "S2L2A/35/U/PQ/2021/3/23/0/",
      "max": 0.221264
      "vari
      "min
```

EOSDA Crop Monitoring API

Field satellite imagery

✓ Access to satellite images of the field with all the available indices (including NDVI, MSAVI, NDMI, and more). Custom indices can be created as well. The number of available bands depends on a satellite.

Scene search

✓ Essential function for adding fields to the system to enable crop monitoring and field data analytics. Links the field's location to the available satellite imagery.

Historical field trends

✓ Historical data on temperatures, precipitation, crop state, soil moisture, and more.

Point value

✓ Current and historical remote sensing index analytics (NDVI, NDMI, MSAVI, among others), showing crop development for a specific area between 10 and 500 meters.

Soil moisture

✓ Measuring soil moisture levels at both surface and root levels can generate important insights into how the crops should be treated in a specific field. Soil moisture data is available for most fields since 2015. By studying the historical soil moisture data, you can build trends to make better-informed recommendations.

Weather

✓ Access to historical weather data since 2008 for an area of interest within the 9×9 km grid and a 5-day weather forecast.

Crop classification

✓ Identification of the crop type growing in the field with an accuracy of up to 90%. The system combines satellite data retrieved from Sentinel-2 images with a 10-m resolution with ground data. You can make an inventory of crops growing on multiple fields at once, within a large region. The algorithm estimates hectarage/acreage and identifies arable land from nonarable.
The feature is currently only available in Ukraine.

Zoning (variable-rate application)

✓ Allows you to divide a field into zones for variable-rate application (VRA) of seeds and fertilizers. Precise use of resources according to the needs of each specific area of the field lowers input costs and reduces waste, while boosting the field's productivity.

✓ Vegetation maps will identify areas with different levels of crop stress within the field based on the latest available satellite image and according to a vegetation index. There are several vegetation indices to choose from, depending on the current crop's growth stage or the type of issue that needs to be detected.

✓ Based on these maps, agriculture professionals can decide on a more precise application of nitrogen fertilizer, according to the needs of the crop. Nitrogen should be applied regularly to uphold the health of the crops.

✓ Productivity maps identify areas with different levels of crop productivity within the field. The maps are built from all of the available satellite images for a selected period (since 2019) and based solely on the NDVI index values. The field's areas with lower productivity require more potassium and phosphorus fertilizers

Elevation

✓ Access to data on elevation (height above the sea level) of any specific point on the map — ranging from 3×3 meters to 2500×2500 meters.

Slope map

✓ Access to data on differences in elevation within a selected field measured in degrees.

Colorization API

✓ Possibility to customize the color scheme of the indices available on the EOSDA Crop Monitoring platform.

Custom solutions

EOSDA offers years worth of expertise in developing practical AI-powered solutions for agricultural purposes

You can request a solution that fits your particular case — and, thus, get a competetive edge over other players on the agro market.

Custom solutions

Land cover classification

✓ A map that contains geospatial information about different types (classes) of landcover: forests, water, croplands, urban areas, swamplands, and more. The map can represent as many classes as necessary. The map can be used to assess the natural resources located within an administrative area on any scale (farm, region, country, etc.).

Crop type classification

✓ Automatic identification of the type of crop growing within each field shown on the map. It is possible to create a crop classification map for a whole region, as large as a country. Our model is based on Sentinel-2 time-series images with a 10-m resolution and has an accuracy of up to 90%, depending on the quality and completeness of data. Maps are provided as .geotiff and .shp files. You also get the data on crop rotation, land use, and acreage/hectarage for each separate field and their total area.

Yield prediction

✓ The algorithm estimates the amount of crop that will be collected from specific fields based on the history of past yields. Input data includes but is not limited to growth stage information, temperatures, precipitation, and type of soil.

✓ The accuracy of estimates made 14 days prior to harvesting can reach up to 90% and largely depends on the quality and completeness of data. Values for the predicted yield can be downloaded as .xlsx, .csv, and .shp files.

✓ You also get a detailed PDF or .docx yield prediction report containing the review of all the data used in the analysis to better understand the grounds for the proposed yield forecast.

Soil type classification

✓ Soil type maps allow you to assess biophysical parameters of soil that have an impact on crop development. With these maps, you can assess the state of fields and predict the probability of soil degradation.*

*Accuracy of the prediction depends on the completeness of additionally provided data, e.g. are there any water objects nearby, what's the slope degree of the field surface, and so on.

Field boundaries detection

✓ Automatic delineation of agricultural field outlines in the satellite image of an area of any size — from couple of fields to a whole region. The retrieved field contours (boundaries) can be uploaded to a GIS software as a .shp file. Large numbers of fields can be thus mapped without the need for allocating large sums of money and resources to the process.

Soil moisture analytics

✓ Mapping of soil moisture levels within fields and farms. You can keep track of moisture levels in the soil within your area of interest thanks to a 1-2 day satellite revisit and study the historical data available since 2002. Our algorithm calculates soil moisture amount at the surface and root depth (up to 70 cm). Combined with vegetation index value and relevant weather data, a soil moisture map can be used to remotely assess the state of crops within specific fields.

Harvest dynamics monitoring

✓ Remote estimation of the dates when each field of interest has been harvested either in this season or in the previous ones. We combine radar and optical satellite imagery from Sentinel-2 to construct time series and calculate the hectarage/acreage of fields with the recent sharp drop in vegetation index values.

✓ Estimated data values are available as .xlsx, .csv, and .shp files. You also get a PDF or .docx report stating the number of harvested fields, total hectarage/acreage and other data.

EOS DATA ANALYTICS
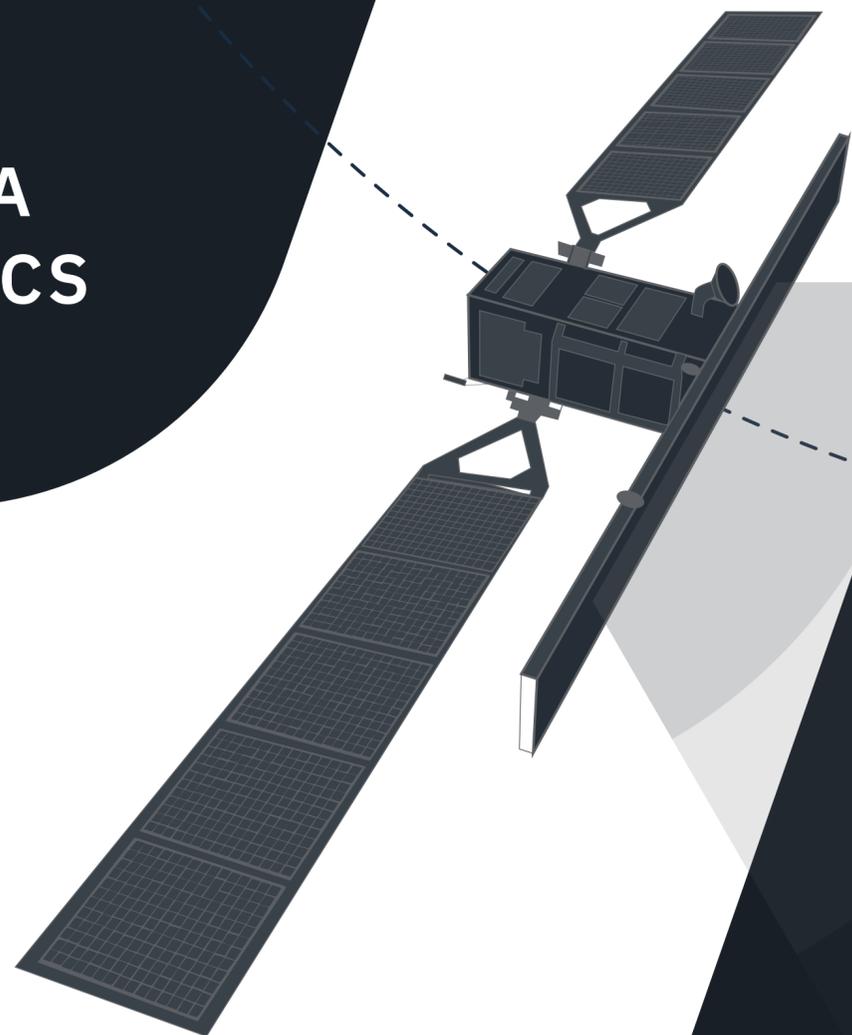
950 000 users of EOSDA products globally

170K+ current users of EOSDA Crop Monitoring worldwide

At least one registered user from every country on Earth

66 mln ha of fields added to the platform for monitoring

Contact us — let our experts guide you!

CONTACT US