



# **D4.4 FINAL VERSION OF ENVISION PLATFORM**

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Project: Monitoring of Environmental Practices for Sustainable  
Agriculture Supported by Earth Observation

Acronym: ENVISION



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## Executive Summary

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Deliverable “D4.4 Final version of ENVISION platform” is the 4<sup>th</sup> deliverable of the WP4 and its main objective is to showcase how the services provided through the ENVISION project, may cover the needs of its business customers. In more detail, this deliverable aims to demonstrate the features of ENVISION platform and ENVISION mobile application, that are able to cover the specific needs of the users of each business case, as they identified in WP2 Commercial Service Requirements.

This document is organized into five parts:

- ☐ An introduction.
- ☐ A short description of the last versions of the ENVISION platform and mobile application.
- ☐ Three parts describing each business case and the way in which ENVISION came to fulfil their needs, regarding the monitoring of environmental practices for sustainable agriculture.

The aforementioned business cases are the Flemish Business Case, the Lithuanian and the Cyprus Business Cases (which share similar objectives and presented into the same part), and the Serbian Business Case.

Respectively, the specific business customers are the following:

- ☐ The Flemish paying agency (PA), LV Flanders.
- ☐ The Lithuanian Paying Agency (PA), NPA.
- ☐ The Cypriot Paying Agency (PA), CAPO.
- ☐ The Serbian Certification Body (CB), OCS.



## 1 Introduction

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### 1.1 General objective of ENVISION

The general objective of ENVISION is to fulfil the need for continuous and systematic monitoring of agricultural land, shifting the focus from fragmented monitoring limited to specific fields and dates (or time window) to territory-wide and all-year-round monitoring. To make this possible, the project provides Paying Agencies (PAs) and Certification Bodies (CBs), a state-of-the-art set of services, based on Earth Observation (EO) technology, as well as open heterogeneous data. By using these services, PAs and CBs are able to easily monitor the farmers' compliance to Common Agricultural Policy (CAP) agri-environmental standards, in a more cost efficient and less time-consuming way, as well as with more transparency.

### 1.2 Last modifications in the ENVISION Platform

In order to optimize the final version of the ENVISION platform and based on the interactions/meetings that were performed, the technical team made the below modifications:

- ☐ The parcels are now more distinctly on the map, and they are depicted with yellow colour, instead of grey.
- ☐ The "Crop Classification" field of the "General Info" block includes one more circle in the traffic light system, in order to achieve better accuracy, and also it uses a contour in order to highlight the circle which indicates the foreseen crop classification.
- ☐ The "Crop Classification" block now includes the "Crop Classification (Greening)" and the "CD Description" fields, which was not included before.
- ☐ The outcomes include the "Harvest Detection" and "Burned Area Detection" fields, which were not included before and now they are presented below the "Mowing Detection" field.
- ☐ The "Various Data" block now includes more information and more specifically the "Aspect", the "Slope", the "Water Proximity", the "Soil Erosion", the "K-Factor", the "C-Factor" and the "BSM" fields.
- ☐ The PDF that the users are able to export now includes more information. More specifically, it includes elements from all the information blocks of the selected parcel and not only the general information.

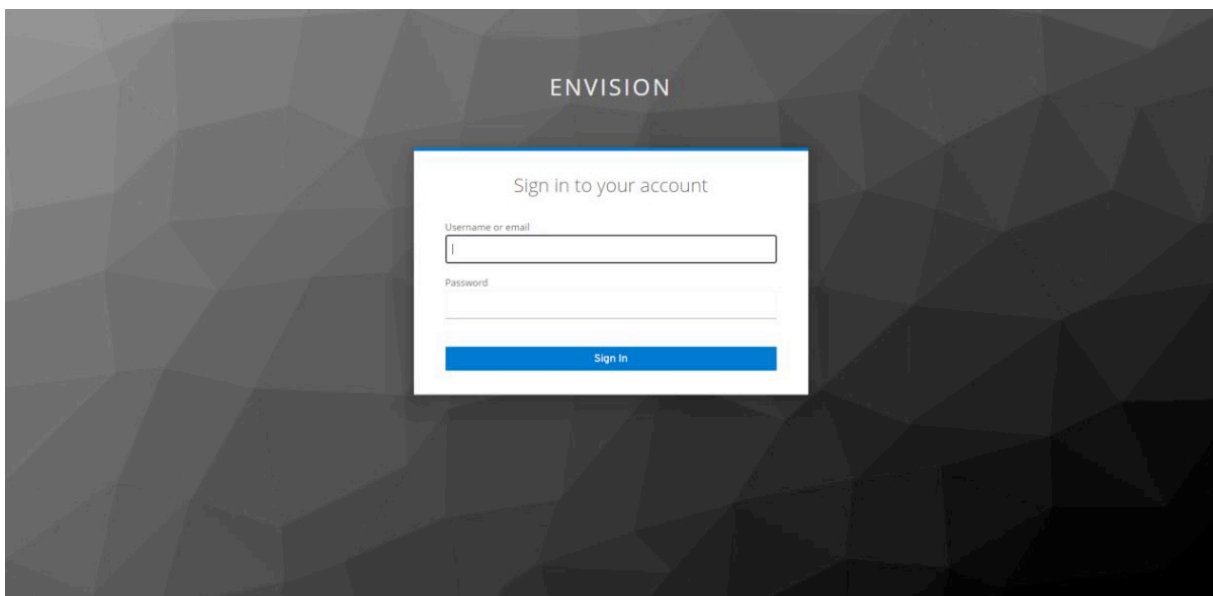
## 2 Short descriptions of the ENVISION platform and mobile application

Before the demonstration of the way in which the ENVISION platform and the ENVISION mobile application aim to fulfil the needs of each specific business case, it is useful to present a general and short description for both of them. In both cases (web and mobile applications), the provided solutions are the same for all business cases, leveraging results from a single, central database.

### 2.1 Short description of the ENVISION platform

The ENVISION platform is accessible through the following link: <https://platform.envision-h2020.eu/>.

The log in page of the platform is seen in the figure below, followed by a figure of the GDPR window that pops up after the user log in.



*Figure 1: Log in page*





Figure 2: GDPR pop up window which follows the log in

After consenting to the above Privacy Policy, users are directed to the below overview screen, where they are able to view all the imported parcels of their Area of Interest (AoI). There, they can easily detect the parcels that they are interested in, by selecting the preferred year, providing the parcel or applicant ID, writing the preferred declared crop code or applying the appropriate categorization, using the “Potential Problems” field.



Figure 3: Overview

After clicking on a specific parcel, users are able to see the information seen in the picture below, as well as a bell informing them of potential problems.

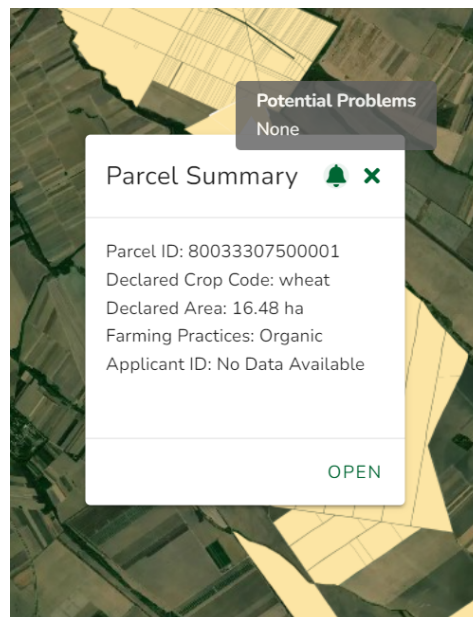


Figure 4: Parcel Summary

When they click the “OPEN” button, they are directed to the below parcel monitoring screen. There, they can see more information regarding the selected parcel and the output of the ENVISION services. In case that some data is not provided, the system displays the phrase “No Data Available”.

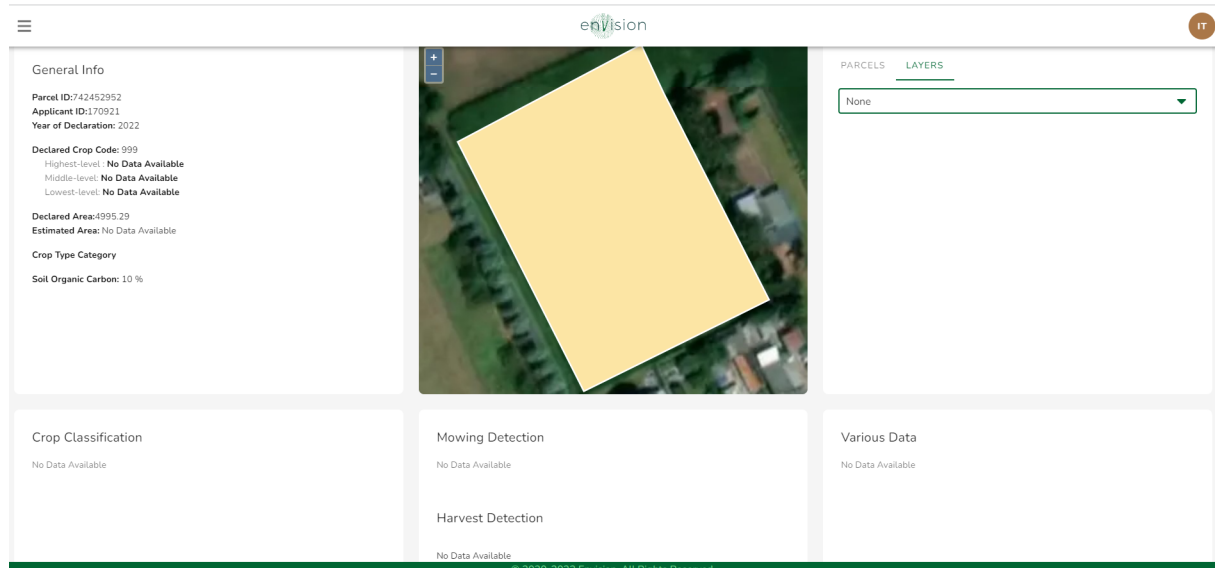
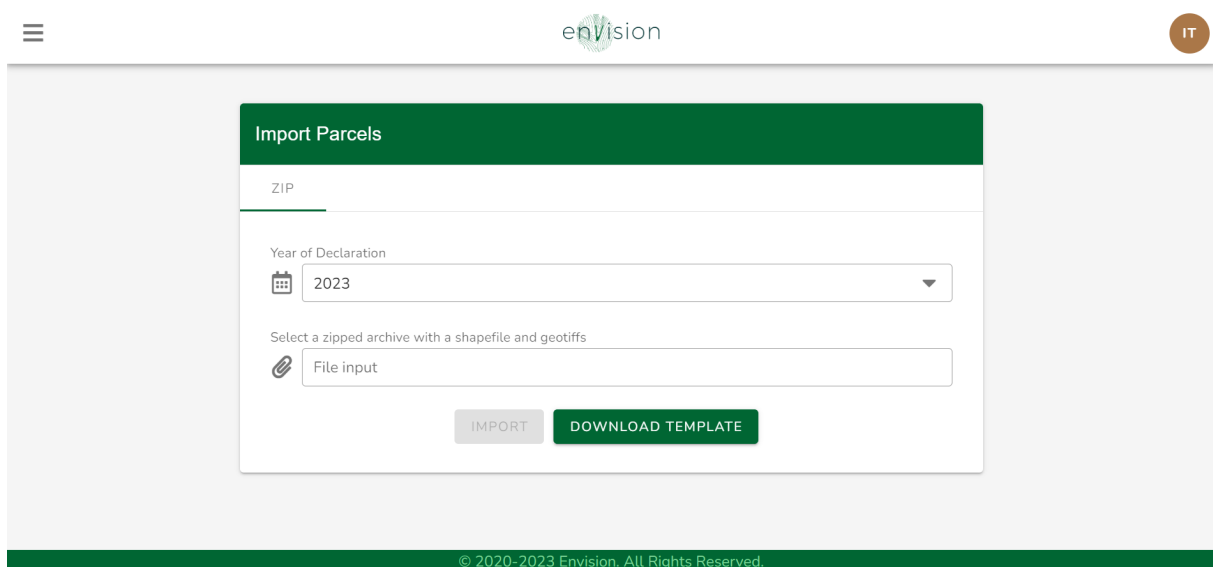


Figure 5: Parcel monitoring screen

Furthermore, the users are able to import their parcels in the form of a shapefile and set the year of declaration (it is only allowed to declare a parcel for the current or the previous year).



*Figure 6: Import functionality*

Last, through the “PDF EXPORT” option, they can download a pdf with the relevant information regarding a selected parcel.



**Business Case: CYPRUS**

**Parcel 73387-1109-39/36--1219-2**



**General Info**

Parcel ID:73387-1109-39/36--1219-2  
 Applicant ID:73387  
 Year of Declaration: 2022

Declared Crop Code: 75

Highest-level : Fallow  
 Middle-level: Fallow  
 Lowest-level: Fallow

Declared Area:880.28 ha  
 Estimated Area: No Data Available

Crop Classification: Green (Date: 31-03-2022)  
 Crop Type Category

Soil Organic Carbon: No Data Available

Figure 7: 1<sup>st</sup> page of PDF





### Crop Classification

	Crop Type	Confidence (%)	Family
1st Prediction	Fallow	92	No Data Available
2nd Prediction	Olive Trees	-	No Data Available
3rd Prediction	-	-	-

Crop Diversification (Greening): 0

CD Description: Exemption 1

### Mowing Detection

No Data Available

Figure 8: 2<sup>nd</sup> page of PDF

### Various Data

Requirement	Compliance
GAEC 1	-
GAEC 4	-
GAEC 6	-
GREEN 1	-
GREEN 2	-
SMR 1	(Risk: )

Aspect: No Data Available  
 Slope: No Data Available  
 Water Proximity: No Data Available

Soil Erosion: No Data Available

K-Factor: No Data Available  
 C-Factor: No Data Available

BSM

Figure 9: 3<sup>rd</sup> page of PDF



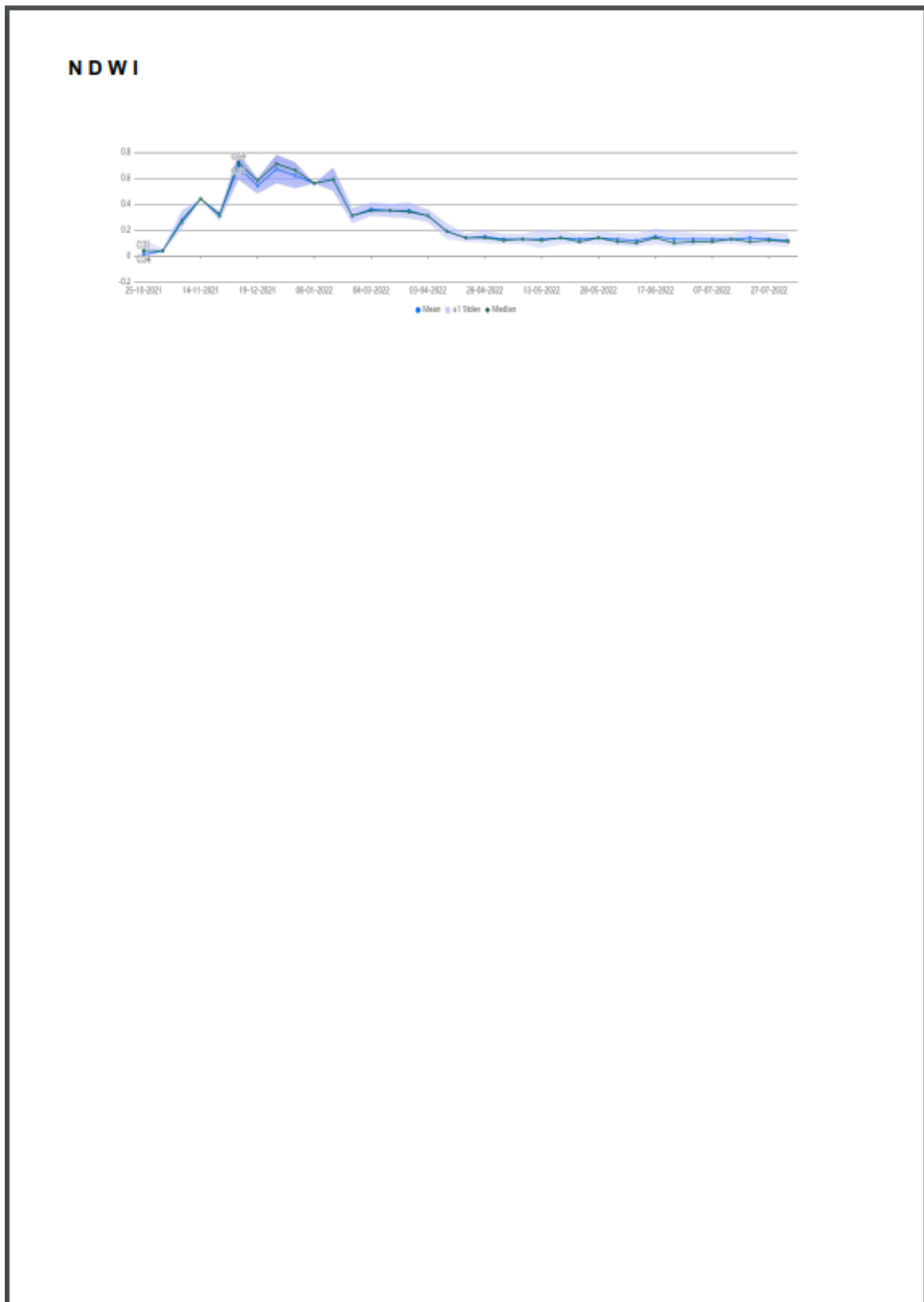
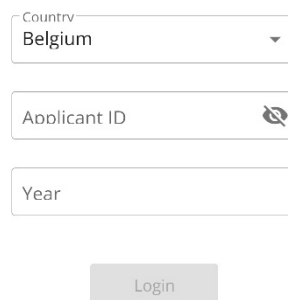


Figure 10: 4<sup>th</sup> page of PDF

## 2.2 Short description of the ENVISION mobile application

After the downloading of the application, users are able to log in by selecting their country, writing their applicant ID or their parcel ID in case of Serbia business case and the relevant year. In the respective stores (Google Play and Apple Store), there is no restriction with regards to the country. However, users only from the business cases are able to enter the application and view the respective results.

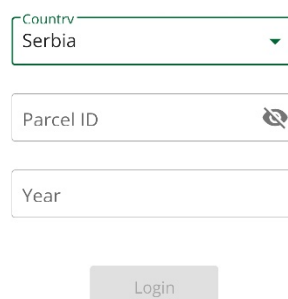
### Login



A login form for the ENVISION mobile application. It features a dropdown menu for 'Country' with 'Belgium' selected. Below it is a text input field for 'Applicant ID' with a small icon to its right. Underneath is a text input field for 'Year'. At the bottom is a grey 'Login' button.

Figure 11: Log in using Applicant ID

### Login



A login form for the ENVISION mobile application. It features a dropdown menu for 'Country' with 'Serbia' selected. Below it is a text input field for 'Parcel ID' with a small icon to its right. Underneath is a text input field for 'Year'. At the bottom is a grey 'Login' button.

Figure 12: Login using Parcel ID





After the above, they land in the below overview page, where they can see their imported parcels. Moreover, they are also able to use the list option, in order to access a list with all their imported parcels.



Figure 13: Overview

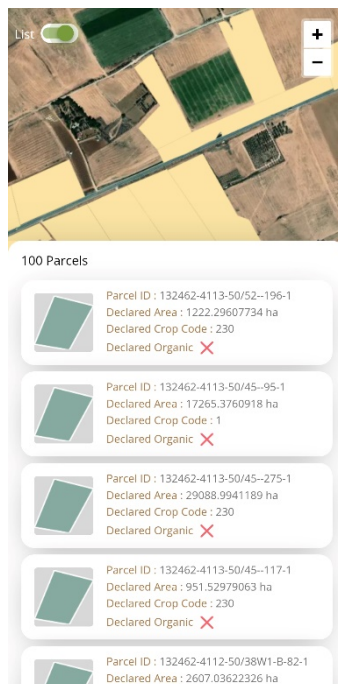


Figure 14: Overview with the list of parcels

By selecting one parcel, they are able to see more information for it, as seen below.

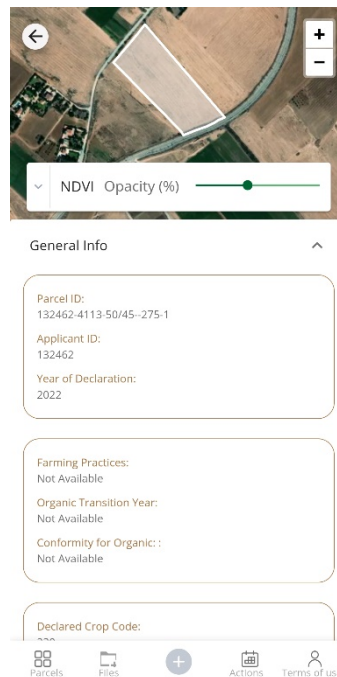


Figure 15: Information for a specific parcel

They are also able to access their uploaded photos, upload a new photo, add an action or read the terms of use.

It should be noted that in order for the users to upload a geotagged photo through the mobile application for a specific imported fields, they should be inside the field (since the mobile application calculates based on the received coordinates and the field's boundaries if the user is within these boundaries).

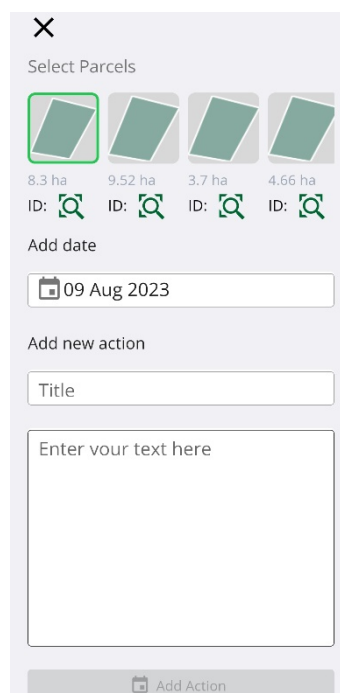


Figure 16: New action

### 3 Flemish Business Case: Monitoring the condition of the soil

#### 3.1 General Information for the Flemish Business Case

The Business Customer of this case is the Flemish paying agency, LV Flanders. During the ENVISION project, LV Flanders focuses on the use of the ENVISION platform in order to monitor the topsoil Soil Organic Carbon (SOC). In more detail, the main need of the LV Flanders during this project, is to implement continuous spatial and temporal monitoring of the SOC content and soil degradation in agricultural areas. As a result, the aim of this specific business case is to investigate ways for increasing the frequency, spatial cover, accuracy, and efficiency of the Flemish paying agency checks, regarding the cross-compliance obligations related to soil management and through the use of EO-based services and Machine Learning.

*Table 1: Service details regarding the Flemish Business Case*

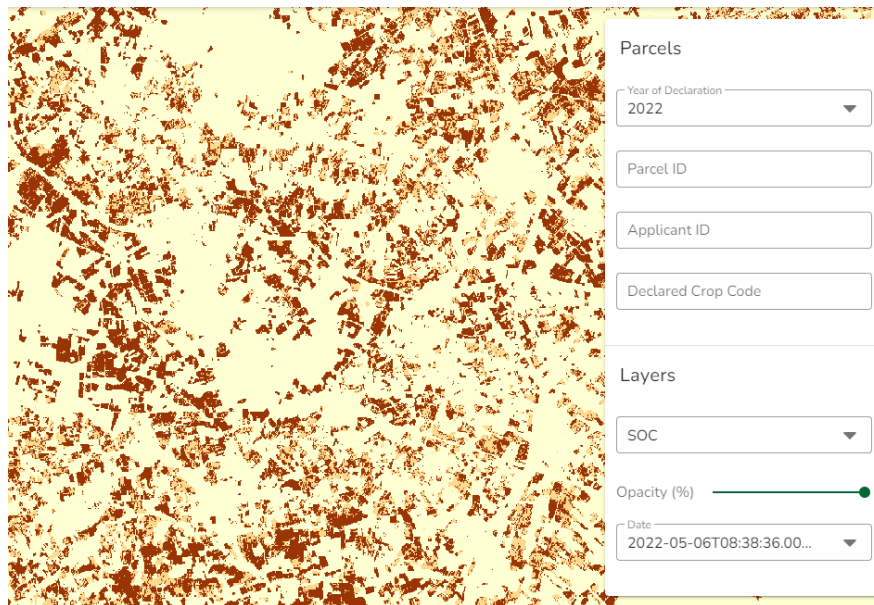
Service	Data Provider	Service Provider
Top-soil qualitative soil organic carbon estimations	LV	EV ILVO
Grassland activity monitoring and management	LV	NOA

LV tested the ENVISION service for SOC estimation at the parcel level and adjust it to provide estimations for the whole Flemish region (large scale). At a later stage, LV incorporated into their case the service grassland activity monitoring and management. This request was an easy task, since the ENVISION platform offers the same functionalities for all business cases. Therefore, once the results were ready from the service provider, they were visualized into the platform through the already established backend mechanisms.

#### 3.2 Tour to the ENVISION Platform for the Flemish Business Case

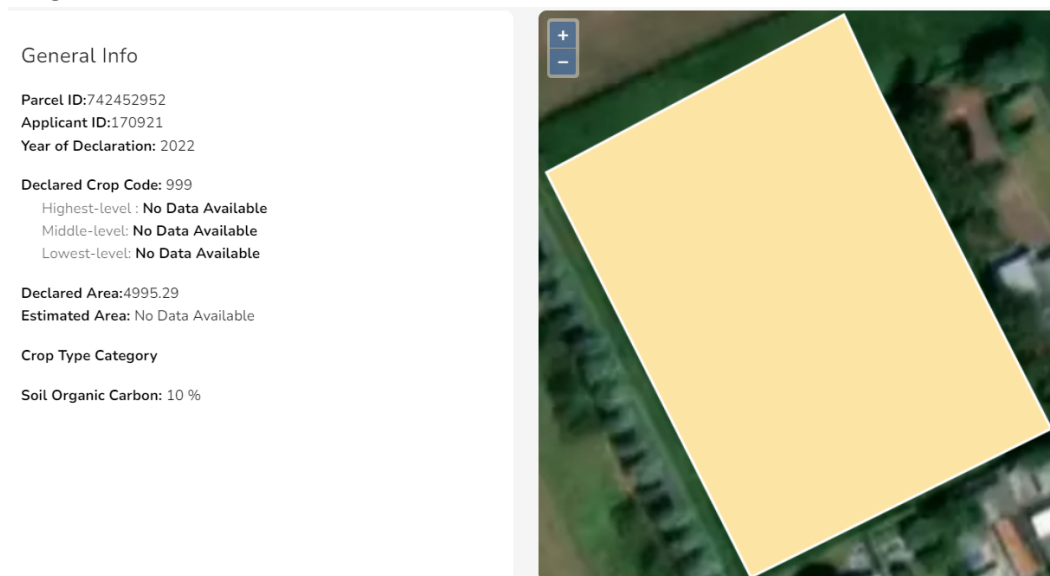
This section showcases the abilities which were provided to the LV Flanders, through the ENVISION platform and in line with the LV's needs, as they mentioned in the previous section.

First of all, as the LV Flanders is interested in the monitoring of Soil Organic Carbon, a SOC layer has been applied in the overview screen, in order to gain insights regarding the Soil Organic Carbon state in an area of interest, as seen below.



*Figure 17: SOC layer applied in the overview*

Moreover, if the LV Flanders needs to check the state of Soil Organic Carbon in a specific parcel, they are able to see the percentage of Soil Organic Carbon, in the General Info tab of the parcel monitoring screen, as seen below.



*Figure 18: General Info including the Soil Organic Carbon percentage*

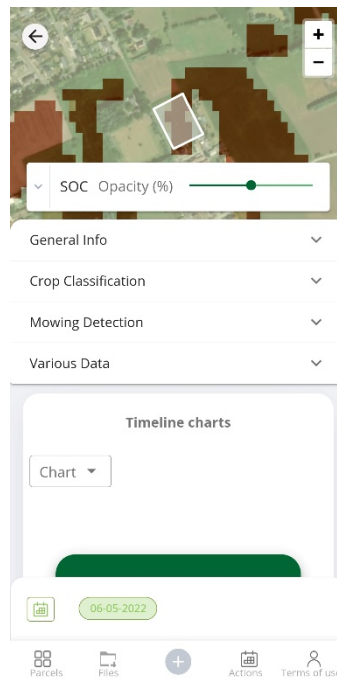
With these ENVISION features, LV Flanders are able to stop depending on costly and time-consuming soil samplings and laboratory examinations for the SOC monitoring, as they have the opportunity to easily monitor remotely the SOC state through the ENVISION platform. Also, with this automated process provided through the platform, LV Flanders are able to access a broader and continuous monitoring of the SOC state, and not only information for a specific area and a specific time.



### 3.3 Tour to the ENVISION Mobile Application for the Flemish Business Case

As the Flemish Business Case refers to the Soil Organic Carbon monitoring, the features provided through the ENVISION mobile application to the farmers of this case, are also concerning this issue.

Thus, the picture below presents the ability of farmers to apply the SOC layer in their parcels, in order to check the state of Soil Organic Carbon.



*Figure 19: SOC layer*

Moreover, farmers are able to access the Soil Organic Percentage of their parcels, through the General Info block, as seen below.

Parcel ID:  
742452952  
Applicant ID:  
170921  
Year of Declaration:  
2022

Farming Practices:  
Not Available  
Organic Transition Year:  
Not Available  
Conformity for Organic: :  
Not Available

Declared Crop Code:  
999  
Crop Type Category  
Highest Level: Not Available  
Middle Level: Not Available  
Lowest Level: Not Available

Declared Area:  
4995.29  
Estimated Area:  
Not Available  
Soil Organic Carbon:  
10 %

Parcels Files + Actions Terms of use

Figure 20: More Info displaying the SOC percentage

In conclusion, the above are very important for farmers, because through the ENVISION mobile application, they are able to monitor by their own the SOC state of their declared parcels, by using this free tool.

### 3.4 Further improvements

Should the Flemish Business case choose to adopt the ENVISION platform, there several enhancements to consider that would elevate its utility. One notable addition would be integrating farmers' input directly. This would allow farmers to easily upload soil analysis results via the mobile application, ensuring these metrics are both accessible and displayed on the ENVISION platform. Moreover, farmers could provide deeper insights into individual parcels by sharing details like soil texture and type. To enhance clarity, it would be preferable to display distinct classes rather than percentages for SOC.

## 4 Lithuanian Business Case and Cypriot Business Case: Monitoring multiple environmental and climate requirements of CAP

### 4.1 General Information for the Lithuanian and Cyprus Business Cases

The Lithuanian Business Case and the Cypriot Business Case, are presented during the same unit, because they share almost the same goal. The Business Customer of the Lithuanian Business Case is the Lithuanian Paying Agency (PA), NPA, while the Business Customer of the Cypriot Business Case is the Cypriot Paying Agency (PA), CAPO.

The Lithuanian business case focuses on the use of the following ENVISION services:

*Table 2: Service details regarding the Lithuanian Business Case*

Service	Data Provider	Service Provider
Harvest events detection	NPA	NOA
Stubble burning identification on arable land	NPA	NOA
Minimum soil cover for soil erosion	NPA	NOA
Runoff risk assessment for the reduction of water pollution in nitrate vulnerable areas	NPA	NOA
Confirmation of GSAA	NPA	NOA
Smart sampling for OTSC inspections	NPA	NOA
Crops diversification compliance	NPA	NOA
Grassland activity monitoring and management	NPA	NOA

*Table 3: Service details regarding the Cypriot Business Case*

Service	Data Provider	Service Provider
Stubble burning identification on arable land	CAPO	NOA
Detection of illegal land clearing in Natura2000 protection areas	CAPO	NOA
Minimum soil cover for soil erosion	CAPO	NOA
Runoff risk assessment for the reduction of water pollution in nitrate vulnerable areas	CAPO	NOA
Confirmation of GSAA	CAPO	NOA
Smart sampling for OTSC inspections	CAPO	NOA
Crops diversification compliance	CAPO	NOA



In evaluation the readiness levels between NPA and CAPO for the integration of the ENVISION services and platform, distinct contracts are apparent. NPA has already showcased a proactive interest in leveraging EO technologies for monitoring farmers' activities, as evidenced by their involvement in several similar projects (one of which is the RECAP project). They also show a preference for methodologies that move away from traditional on-farm checks. On the other hand, CAPO continues to rely on a more conventional approach to monitor farmers. This method consists of on-farm checks, administrative controls, and limited use of remote sensing services. However, both PAs own established infrastructures, and thus, they required a simplified system for the seamless integration and visualization of the offered services.

## 4.2 Tour to the ENVISION Platform for the Lithuanian and Cypriot Business Cases

This section showcases the abilities which are provided to NPA and CAPO, through the ENVISION platform and in line with their needs, as they mentioned in the respective deliverables from WP2.

First of all, through the navigation in the overview screen and by clicking the “Potential Problems” field, users are able to select the preferred option from a list, e.g. “Crop Classification”, in order to classify the imported parcels of the Area of Interest (AOI), regarding their compliance or not (the green colour represents the parcels which predicted as compliant and the red color represents the parcels which predicted as non-compliant), as seen in figure 19. Also, by using the filters, users are able to display only one category, e.g. the non-compliant, as seen in figure 20.

The list of the “Potential Problems” field includes the following:

- ☐ Area
- ☐ Crop Classification
- ☐ Mowing Detection
- ☐ GAEC 1
- ☐ GAEC 4
- ☐ GAEC 6
- ☐ GREEN 1
- ☐ GREEN 2
- ☐ SMR 1

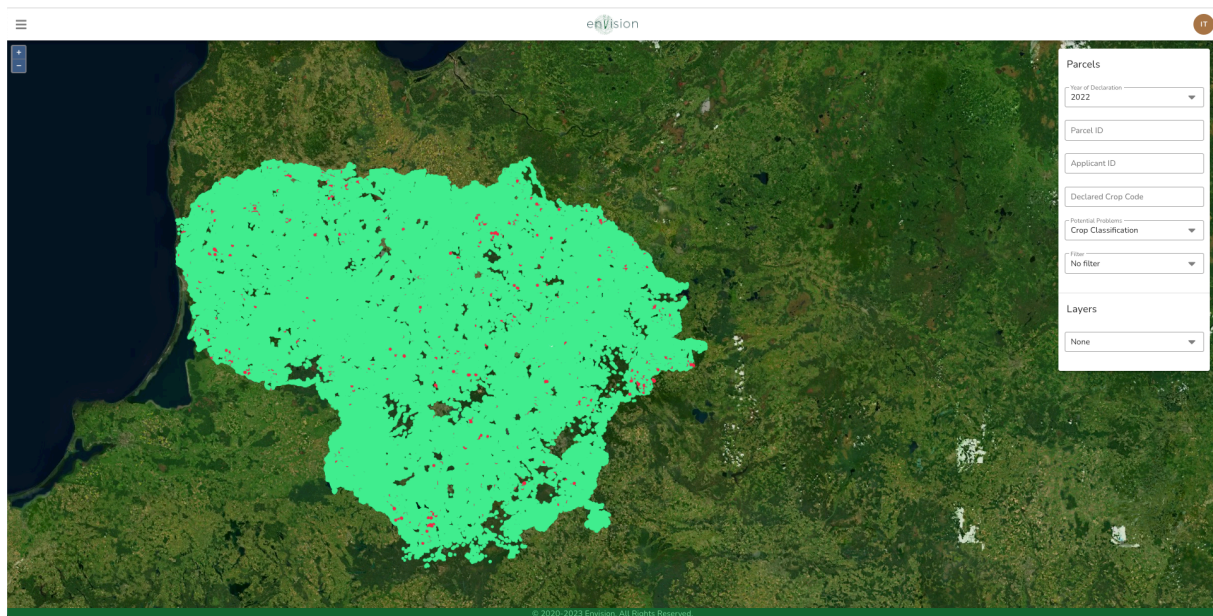


Figure 21: Overview displaying the Crop Classification

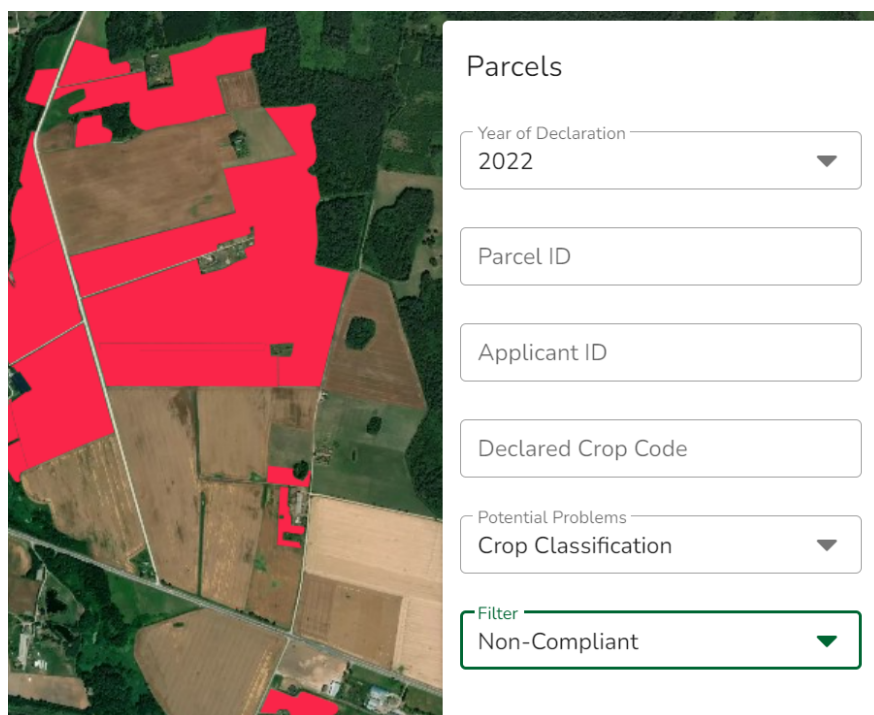


Figure 22: Overview displaying the non-compliant parcels, regarding the results of Crop Classification

After selecting a specific parcel, the users of the Lithuanian Business Case and the users of the Cypriot Business Case, are directed in the parcel monitoring screen, where they are able to see the parcel's general info, as seen in figures 21 and 22 respectively.



Figure 23: General Info in Lithuanian Business Case



Figure 24: General Info in Cypriot Business Case

Also, users are able to access other information regarding the outcomes of the ENVISION services, as seen in figures 23 and 24.



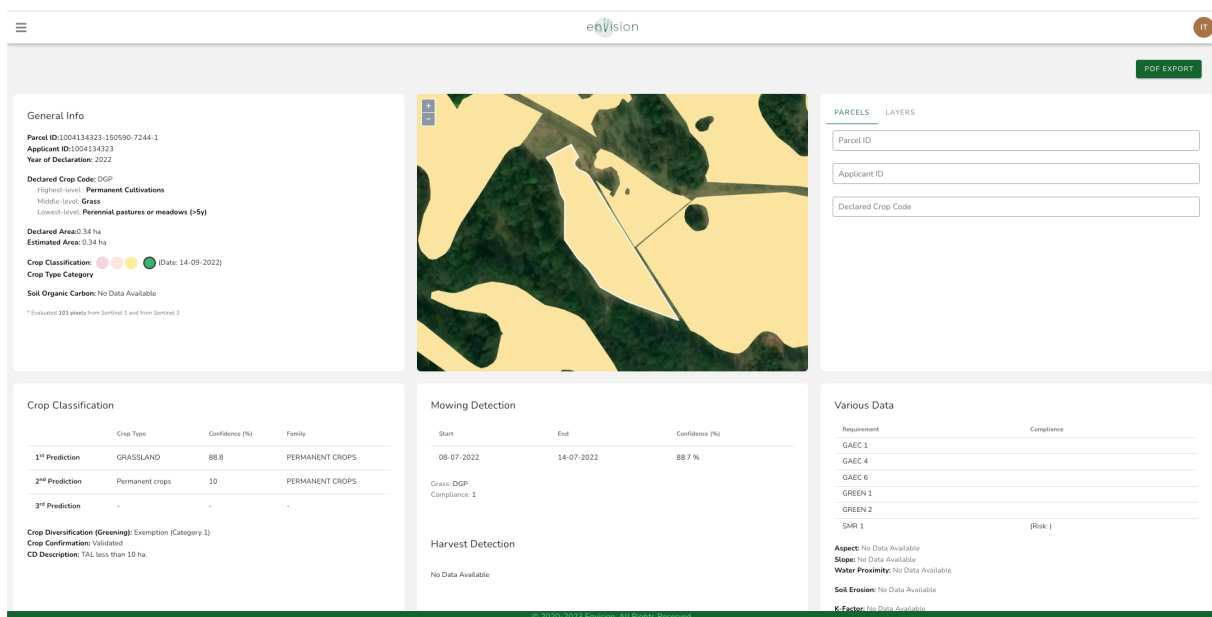


Figure 25: ENVISION outcomes for the Lithuanian case

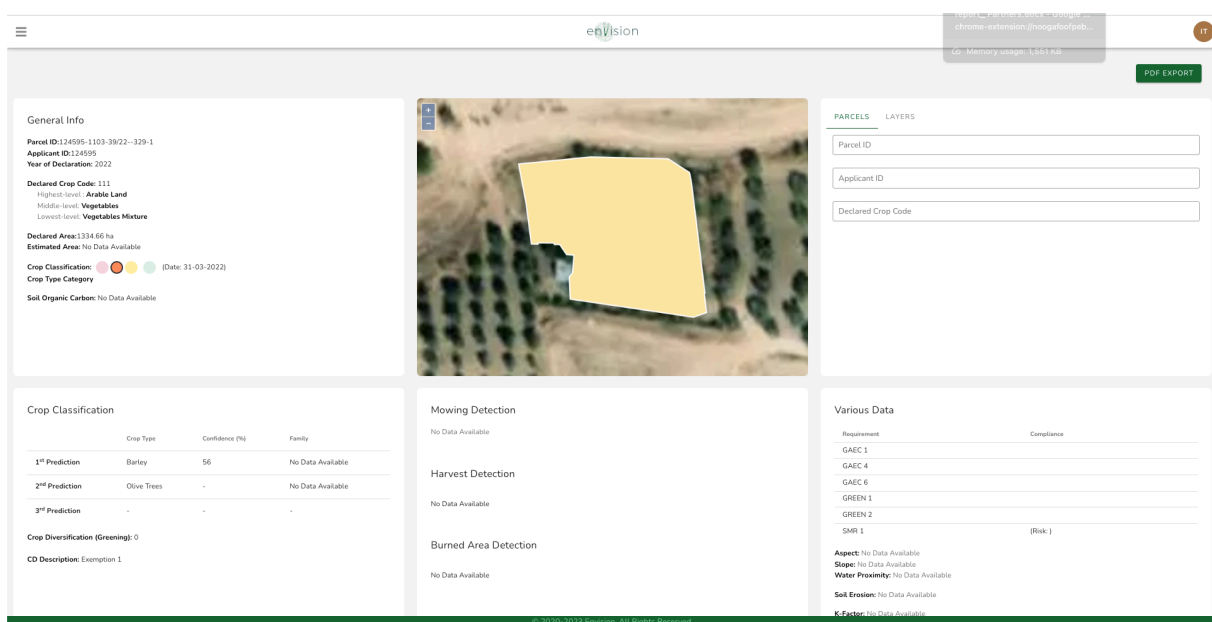


Figure 26 ENVISION outcomes for the Cypriot case

In more detail, users are able to access services that derived from the cultivated crop type maps. They can seamlessly engage with an intuitive traffic light system, which evaluates and signifies if the declared crop type is correct or not, complete with the date of its prediction. In addition to this, users are able to view a dual prediction system, each accompanied by its respective confidence level expressed in percentages. This enriching interface also offers them insights on crop diversification, coupled with a comprehensive crop confirmation and a descriptive breakdown of crop diversification (more information in the D3.7).

Another feature users can access pertains to mowing detection data. This capability holds particular importance in the agricultural domain. The CAP has instituted specific environmental and climate mandates concerning grassland mowing activities. These mandates are designed to promote

sustainable agricultural practices and ensure conservation of natural habitats. By leveraging the mowing detection, feature, users can efficiently monitor and identify farmers who might be deviating from these stipulated guidelines. Such near-real-time monitoring is important, not only to maintain the ecological balance but also to ensure that farming activities align with Europe’s sustainability and environmental preservation objectives.

Lastly, within the “Various Data” block, users across both business cases can seamlessly explore an array of data tied to each imported parcel, regarding:

- ☐ The farmers’ compliance with the GAEC 1, GAEC 4, GAEC 6, GREEN 1, GREEN 2 and SMR 1 requirements.
- ☐ Landscape orientation (aspect).
- ☐ Slope.
- ☐ Water proximity.
- ☐ Soil erosion.
- ☐ K-Factor.
- ☐ C-Factor.

Moreover, users gain access to time-series of crop growth indices. This includes statistical metrics and notable dates marking peak and nadir values for each index. Such a feature proves invaluable for both NMA and CAPO users, providing them with insights into the dynamic state of vegetation. By analysing these charts, they can recognize patterns and fluctuations in pertinent indices over time.

Zooming into specifics, Lithuanian case users can study time-series data on indices like NDVI (Normalized Difference Vegetation Index), NDWI (Normalized Difference Water Index) and PSRI (Plant Senescence Reflectance Index). In contrast, Cypriot case users can have access to time-series of NDWI (Normalized Difference Water Index) and SAVI (Soil-Adjusted Vegetation Index). Relevant examples are shown below.

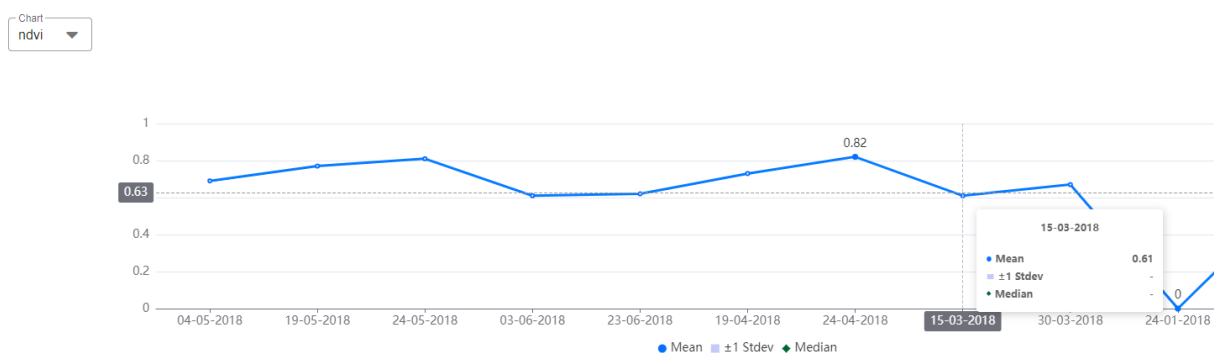


Figure 27: NDVI chart

Chart  
psri

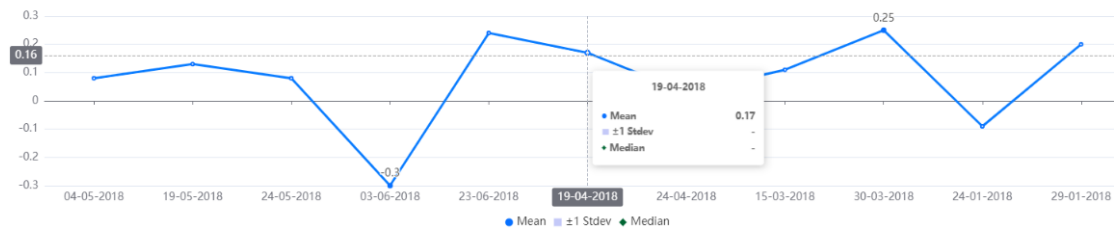


Figure 28: PSRI chart

Chart  
ndwi

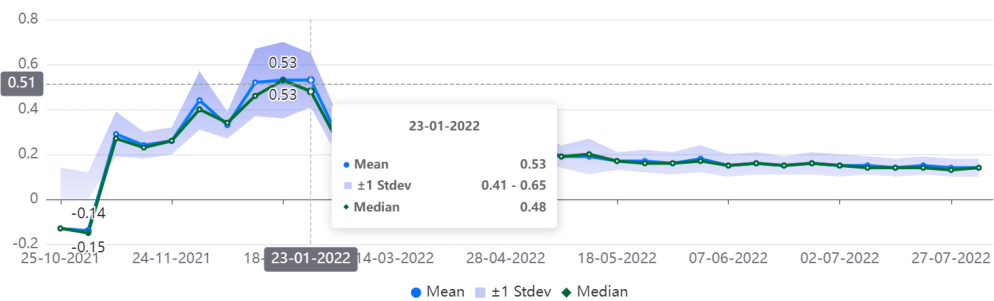


Figure 29: NDWI chart

Chart  
savi

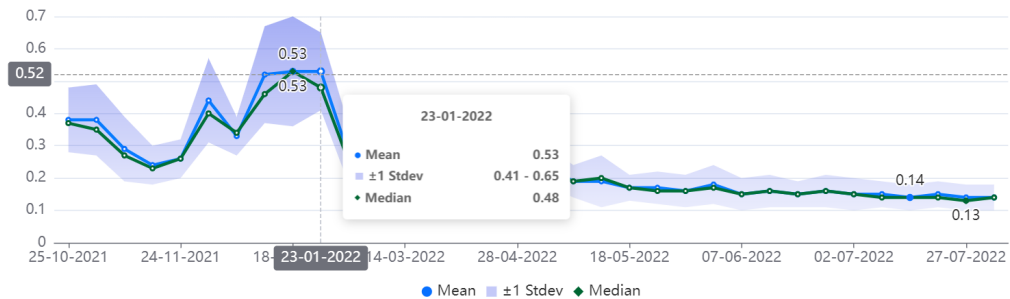


Figure 30: SAVI chart

### 4.3 Tour to the ENVISION Mobile Application for the Lithuanian and Cypriot Business Cases

This section showcases the additional features provided to farmers through the Lithuanian and Cypriot Business Cases, regarding the objectives of each case.

First of all, concerning the Lithuanian case, the figure 29 presents the information provided in the General Info block, including Crop Classification, Crop Type Category, Declared Area and Estimated Area, and the figure 30 presents more details regarding the Crop Classification, depending on the outputs of the ENVISION services.

Parcel ID:  
1011675306-133606-1806-1  
Applicant ID:  
1011675306  
Year of Declaration:  
2022

Farming Practices:  
Not Available  
Organic Transition Year:  
Not Available  
Conformity for Organic: :  
Not Available

Declared Crop Code:  
DGP  
Crop Classification:  
(Date: 14-09-2022)  
Crop Type Category  
Highest Level: Permanent Cultivations  
Middle Level: Grass  
Lowest Level: Perennial pastures or meadows (>5y)

Declared Area:  
11.66 ha  
Estimated Area:  
11.666 ha  
Soil Organic Carbon:  
Not Available

Parcels Files Actions Terms of use

Figure 31: General Info in Lithuanian Business Case

Select a layer

General Info

Crop Classification

	Crop Code	Confidence	F
Major Prediction	GRASSLAND	88.3	F C
Minor Prediction	Permanent crops	3.1	F C

Result: Validated  
Crop Compliance: true  
Crop Diversification: Compliant (Category 2) (TAL greater than 30 ha.)  
  
\* Evaluated 4277 pixels from Satellite 1 and 3423 pixels from Satellite 2

Mowing Detection

Various Data

Parcels Files Actions Terms of use

Figure 32: Crop Classification in Lithuania Business Case

On the other hand, concerning the Cypriot case, the figure 31 presents the information provided in the General Info block, including Crop Classification, Crop Type Category and Declared Area, and the figure 32 presents more details regarding the Crop Classification, depending on the outputs of the ENVISION services.

Parcel ID:  
05762-1233-30/27W1-B-488-1  
Applicant ID:  
05762  
Year of Declaration:  
2022

Farming Practices:  
Not Available  
Organic Transition Year:  
Not Available  
Conformity for Organic: :  
Not Available

Declared Crop Code:  
3  
Crop Classification:  
(Date: 31-03-2022)  
Crop Type Category  
Highest Level: Arable Land  
Middle Level: Cereals  
Lowest Level: Barley

Declared Area:  
2854.84663385 ha  
Estimated Area:  
Not Available  
Soil Organic Carbon:  
Not Available

Parcels Files + Actions Terms of use

Figure 33: General Info in Cyprus Business Case

Select a layer

General Info

Crop Classification

	Crop Code	Confidence	Family
Major Prediction	Barley	90	Not Availat
Minor Prediction	Soft Wheat	0	Not Availat

Result:  
Crop Compliance: Not Available  
Crop Diversification: 0 (-1)

\* Evaluated **pixels** from Satellite 1 and **24 pixels** from Satellite 2

Mowing Detection

Parcels Files + Actions Terms of use

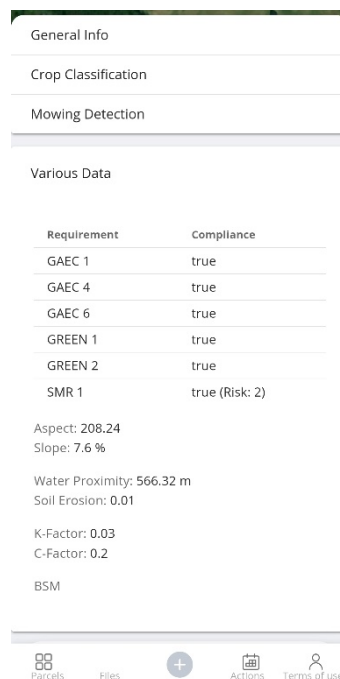
Figure 34: Crop Classification in Cyprus Business Case

Moreover, through the “Various Data” block, farmers of both cases are able to access by their own and for each declared parcel, various data regarding:

- ☐ The farmers’ compliance with the GAEC 1, GAEC 4, GAEC 6, GREEN 1, GREEN 2 and SMR 1 requirements.
- ☐ Landscape orientation (aspect).
- ☐ Slope.

- ☐ Water proximity.
- ☐ Soil erosion.
- ☐ K-Factor.
- ☐ C-Factor.

A relevant example is presented in the figure below.



*Figure 35: Various Data*

Farmers from both business cases have access to time-series data that illustrate the evolution of crop growth monitoring indices. These data are enriched with insightful statistical analysis, pinpointing the highest and lowest value that was measured for every index. This feature not only meets but enhances the goal of NMA and CAPO to offer farmers a complimentary, user-friendly tool, ensuring they remain well-informed about the health and vitality of their crops.

In more detail, Lithuanian farmers can access time-series of the crop growth monitoring indices like NDVI (Normalized Difference Vegetation Index), NDWI (Normalized Difference Water Index) and PSRI (Plant Senescence Reflectance Index). Meanwhile, the Cypriot ones have access to NDWI (Normalized Difference Water Index) and SAVI (Soil-Adjusted Vegetation Index). Relevant examples are shown below.

Crop Classification

Mowing Detection

Various Data



Figure 36: SAVI chart

NDVI PRODUCTION: NDVI

K-Factor: 0.03

C-Factor: 0.2

BSM



Figure 37: NDVI chart



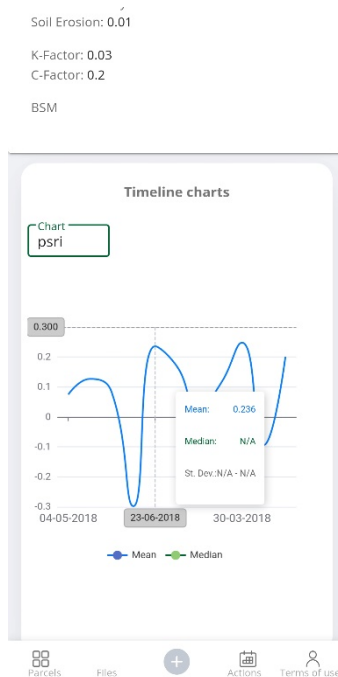


Figure 38: PSRI chart

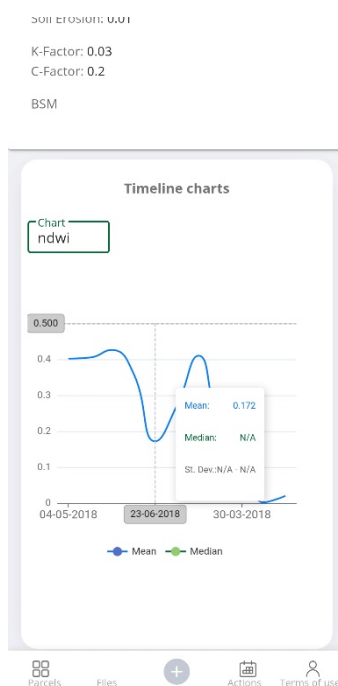


Figure 39: NDWI chart

#### 4.4 Further improvements

Using the mobile application in an operational environmental and incorporating into their existing workflows beyond the project, some enhancements could be implemented. For instance, a notification center would be added in order for the user to receive several diverse notifications/ updates from the responsible authority to perform corrective actions during the declarations period. This notification center would also keep record of all the received notifications. Furthermore, a farm

calendar could be added in order for the farmer to register all the actions performed in the fields per agricultural activity. Lastly, the geotagged photos would be incorporated into the machine learning process.

## 5 Serbian Business Case

### 5.1 General Information for the Serbian Business Case

The Business Customer of this case is the OCS, which is the authorized Serbian Certification Body (CB), dealing with the control and certification of organic products (i.e. the Serbian Organic Certification System). During the ENVISION project, OCS focuses on using the appropriate services, in order to improve the overall monitoring of organic certification requirements, through the implementation of state-of-the-art EO technology.

*Table 4: Service details regarding the Serbian Business Case*

Service	Data Provider	Service Provider
Crop growth monitoring/ Crop phenology monitoring	OCS	AgroApps
Distinction of organic farming practices	OCS	AgroApps

The organic certification procedure, which is followed by OCS includes the below two parts:

- ☐ Preparation period: This part includes office work, in order to prepare the checklist for the on-site controls.
- ☐ On-site control: This part includes the checking of farmer records, working dairy, and other relevant documentation, the on-site monitoring of farm biodiversity, soil fertility and soil structure, the monitoring of prohibited substances usage, and measurements of buffer zones, strings and rows.

Therefore, in the Serbian business case, the central objective is the strategic application of ENVISION service to optimize OCS inspections through the use of the ENVISION platform and the mobile application. By doing so, OCS aims to elevate the monitoring processes inherent to organic farming. Furthermore, it emphasizes the importance of clearly differentiating between organic and conventional agricultural methods, ensuring that practices in both realms are appropriately recognized and validated.

In the Serbian case, the platform follows the structure and design experienced in prior business cases. It remains consistent backend logic, application flow, and user experience across the platform, What sets this particular case apart is its unique approach to importing parcel data. Serbia sources its parcels' geometries from Geosrbija, a comprehensive platform that centralizes the nation's spatial data. To streamline the OCS' parcel import process, a specialized integration with Geosrbija has been performed.

## 5.2 Tour to the ENVISION Platform for the Serbian Business Case

This section showcases the abilities which are provided to the OCS, through the ENVISION platform and in line with the OCS's needs, as they mentioned in the respective deliverable (D3.7).

As this Business Customer is interested in the distinction of organic vs conventional practices, through the "Potential Problems" field, users are able to select the option "Organic Classification", in order to classify the imported parcels of their Area of Interest (AOI), regarding their compliance or not (the green colour represents the parcels which predicted as organic and the red colour represents the parcels which predicted as non-organic). Also, users are able to use a filter, in order to display only one category, e.g. the non-organic. Relevant examples presented in the two pictures below.



Figure 40: Overview displaying the Organic Classification

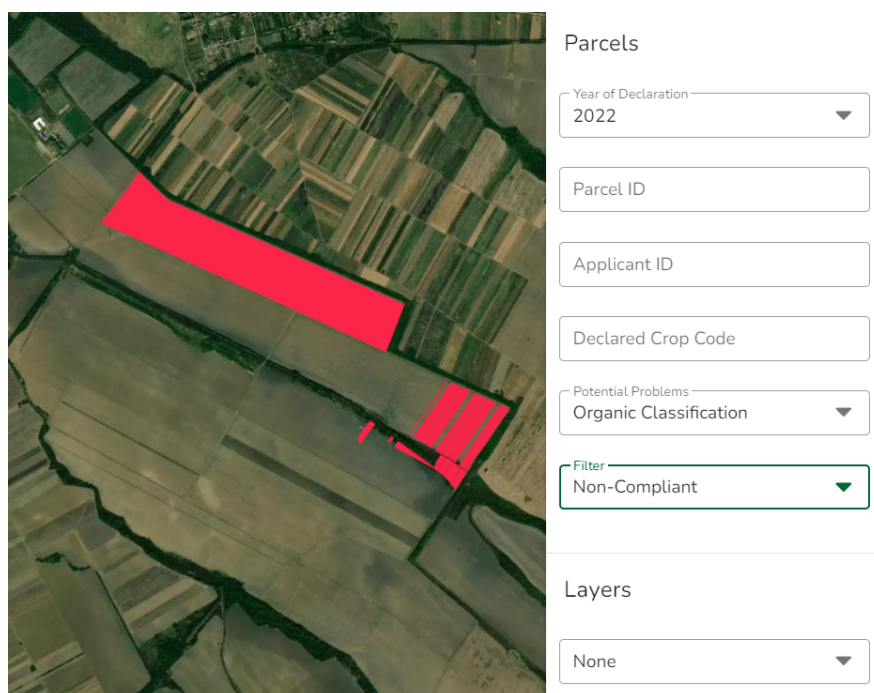


Figure 41: Overview displaying the Non-organic parcels, regarding the Organic Classification

By selecting a specific parcel, users are directed to the parcel monitoring screen, when they are able to see the parcel general info, as seen below.

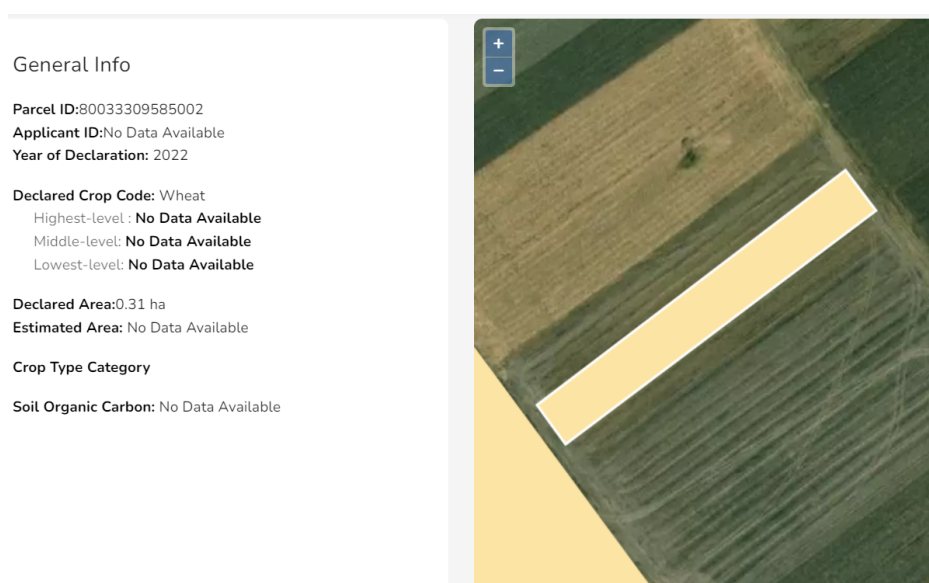


Figure 42: General Info

### 5.3 Tour to the ENVISION Mobile Application for the Serbian Business Case

The figure 43 presents the parcel information in the overview screen, where farmers are able to quickly check if the crop of a selected parcel is declared as organic or not, and figure 44 shows the relevant General Info block.



Figure 43: Overview

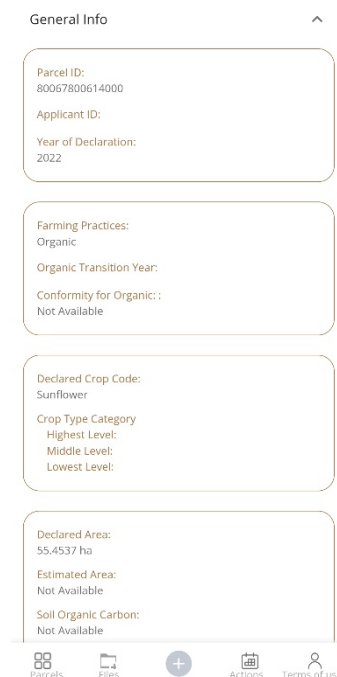


Figure 44: General Info

## 5.4 Further improvements

The ENVISION platform could be further improved in order to assist OCS, or any other CB, in their daily operational processes. For instance, the platform could also cover the stage of declarations submission and certification (i.e. EU TRACES NT), or even manage the inspections allocation and monitoring.

## 6 The ENVISION Platform

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The implementation of the ENVISION project was grounded in user-centric design principles. From its earliest stages, feedback indicated a strong preference for simplicity, given that most of the end-users had established infrastructures which they did not wish to replace. However, a consistent theme was the desire for a backup system to aid them during emergencies. With this in mind, ENVISION was built through close collaboration with end-users, informed by their invaluable feedback (refer to WP2 deliverables).

The ENVISION platform emerges as a versatile hub assisting all business cases and potential stakeholders interested in accessing its services. Its design logic centered on comprehending the workflow of each end-user, then harmonizing these varied requirements to develop a user-centric, holistic platform ready to serve as a broad spectrum of stakeholders. For example, every end-user wanted the capacity to upload parcels for monitoring. To this end, a robust mechanism was built, with certain customization like the Serbian integration. Given the existing APIs, adding external systems to fetch parcel geometries becomes a straightforward endeavor. Moreover, user feedback highlighted the importance of viewing results at both the AOI level and on a per-parcel basis. Consequently, two screens have been developed: an overview screen showcasing AOI-based results, such as crop classification, distinction of organic farming practices and soil organic carbon, as well as a more detailed parcel-level view.

Although the services are offered from three distinct providers, each drawing from varied data sources and infrastructures, ENVISION consolidates everything into a unified database. This synergetic architecture ensures users do not have to perform connections with multiple service providers. Instead, a single interface with the ENVISION platform suffices. However, for those who prefer direct access to a specific provider, dedicated APIs are available.

Leveraging on an open-source approach, the ENVISION platform offers many benefits to its users and developers. One of the most important benefits is the flexibility it affords: stakeholders can freely adapt, modify, and extend the platform's capabilities to suit their unique needs. An aspect very important when it comes to public authorities. Another innovation is that a diverse community can contribute improvements, feature extensions, and new integrations, thereby constantly enriching the platform.

Additionally, the transparency of open-source ensures a higher level of security and trust. Users can inspect the code for vulnerabilities, ensuring that the platform maintains rigorous security standards. Moreover, without the constraints of proprietary systems, integration with third-party tools and systems becomes more streamlined, emphasizing the platform's commitment to interoperability.

However, with freedom comes responsibility. While the platform offers ample room for customization, there are inherent limits to ensure stability and maintain core functionalities. Standardisation is pivotal to ensuring a consistent user experience, platform stability, and compatibility across various implementations. As such, while clients tailor the platform to a

significant extent, core architectural elements and certain standardized workflows remain consistent. This balance ensures that while clients can adapt the platform to reflect their brand or operational differences, the underlying robustness and reliability of ENVISION are never compromised.







# End of Document



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