



**RE.  
CAP**

**Reinforcing CAP**

PROJECT ACRONYM: **RECAP**

PROJECT NUMBER: **693171**

PROJECT FULL TITLE: **Personalised public services in support of the implementation of the CAP**

**WORK PACKAGE NUMBER & NAME:**

WP.1 Project Management

**DELIVERABLE NUMBER & NAME:**

D1.10 Data Management Plan (3)



The project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 693171.

**Grant Agreement Number:** 693171

**Acronym:** RECAP

**Project Full Title:** Personalised public services in support of the implementation of the CAP

**Start Date:** 01/05/2016

**Duration:** 30 months

**Project URL:** [www.recap-h2020.eu](http://www.recap-h2020.eu)

**Deliverable Number & Name:** D1.10 Data Management Plan (3)

**Work Package Number & Name:** WP.1 Project Management

**Date of Delivery:** 03/12/2018

**Contractual:** 31/10/2018

**Actual:** 31/10/2018

**Nature:** Report

**Dissemination Level:** Public

**Lead Beneficiary:** DRAXIS

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## DOCUMENT HISTORY:

Versions	Issue Date	Stage	Changes	Contributor
1.0	22/10/2018	v1	Send for review	DRAXIS
2.0	29/10/2018	v2	Feedback from review	LAAS
3.0	03/12/2018	v3	Final version	DRAXIS

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## Executive Summary

The present document is a deliverable of the RECAP project, funded by the European Commission's Directorate – General for Research and Innovation (DG RTD), under its Horizon 2020 Innovation Action programme (H2020).

The deliverable presents the third and final version of the project Data Management Plan (DMP). This final version lists the various datasets that have been collected, processed or produced by the RECAP project and outlines the main data sharing and the major management principles that have been followed. Furthermore, it incorporated all the critical changes such as changes in the consortium policies and any external factors that may had impact on the data management within the project and might influence it even after the project duration.

The deliverable is structured in the following chapters:

-  Chapter 1 includes an introduction to the deliverable.
-  Chapter 2 includes the description of the datasets along with the documented changes and additional information.



# 1. Introduction











The RECAP project aims to develop and pilot test a platform for the delivery of public services that will enable the improved implementation of the CAP, targeting public Paying Agencies, Agricultural Consultants and farmers. The RECAP platform will make use of large volumes of publicly available data provided by satellite remote sensing, and user-generated provided by farmers through mobile devices.

This deliverable D1.10 “Data Management Plan (3)” aims to document all the updates on the RECAP project data management life cycle for all datasets to have been collected, processed and/ or generated and a description of how the results will be shared, including access procedures and preservation according to the guidelines in Horizon 2020 and General Data Protection Regulation (GDPR).







Although the DMP is being developed by DRAXIS, its implementation involves all project partners’ contribution. Since, this the final version of the project Data Management Plan all the Work Packages are included despite the fact that some of them might have not occurred any changes.

## 2. DMP Components in RECAP

### 2.1 DMP Components in WP1 – Project Management (DRAXIS)




DMP Component	Issues to be addressed
Data Summary	<p>Contact details of project partners and advisory board</p> <p>Databases containing all the necessary information regarding the project partners and Advisory Board members.</p> <p>The project partners data are stored in a simple table in the RECAP wiki, with the following fields:</p> <ul style="list-style-type: none"> <li> Name</li> <li> Email</li> <li> Phone</li> <li> Skype id</li> </ul> <p>The advisory board members data is described by the following fields:</p> <ul style="list-style-type: none"> <li> Name</li> <li> Description</li> <li> Affiliation</li> <li> Organisation</li> <li> Country</li> <li> Proposed by</li> </ul> <p>Furthermore, interviews have been conducted with the Advisory Board members and webinars have been held in order to inform them about the project status and progress. Most interviews and webinars have been conducted remotely either using Skype or WebEx.</p> <p>The expected size of the data is not applicable, as the size is not a meaningful measure. In total we have conducted 9 interviews and 2 webinars.</p> <p>Moreover, 2 consortium meetings have been conducted remotely in order to discuss the project progress and address any important issue. Work Package leaders have sent input on how they handle the data produced during the project.</p>
Making data findable, including provisions for metadata	<p>The data with regards to the interviews, webinars and consortium meetings are stored on DRAXIS server and are not directly accessible from outside. Moreover, these data cannot be made available to third parties. However, the interviews are available in D1.2 Report on Advisory Board meetings (1), D1.7 Report on Advisory Board meetings (2), D1.8 Report on Advisory Board meetings (3) and D1.9 Report on Advisory Board meetings (4). The dissemination level of these deliverables is public and they are available in the project's website and Wiki and in Zenodo<sup>1</sup> through the Digital Object Identifier (DOI):</p>

<sup>1</sup> <http://zenodo.org/>

	<ul style="list-style-type: none"> <li> D1.2 Report on Advisory Board meetings (1): DOI: 10.5281/zenodo.1442621</li> <li> D1.7 Report on Advisory Board meetings (2): DOI: 10.5281/zenodo.1442637</li> <li> D1.8 Report on Advisory Board meetings (3): DOI: 10.5281/zenodo.1442640</li> <li> D1.9 Report on Advisory Board meetings (4): DOI: 10.5281/zenodo.1476012</li> </ul> <p>The naming convention used is: Data_WP1_1_Advisory Board</p> <p>Regarding the input for the DMP, the data are also stored on DRAXIS server and are not directly accessible from outside. These data are presented in the respective deliverables, which are publicly available either through the project website and Wiki or through Zenodo with the following DOIs:</p> <ul style="list-style-type: none"> <li> D1.3 Data Management Plan (1): DOI: 10.5281/zenodo.1442627</li> <li> D1.5 Data Management Plan (2): DOI: 10.5281/zenodo.1442633</li> </ul> <p>The naming convention used is: Data_WP1_2_Data Management Plan.</p> <p>As part of any stored data, metadata were generated, which include sufficient information with appropriate keywords to help external and internal users to locate data and related information.</p>
Making data openly accessible	The datasets are not publicly available. All the data are made publicly available as part of the aforementioned deliverables and through, RECAP wiki, RECAP website and Zenodo.
Making data interoperable	N/A
Increase data re-use	Data are publicly available as part of the aforementioned deliverables and can be accessed and re-used by third parties indefinitely without a license.
Allocation of resources	No additional costs are foreseen for making this dataset FAIR.
Data security	The data have been collected for internal use in the project, and not intended for long-term preservation. No personal information will be kept after the end of the project. Furthermore, DRAXIS pays special attention to security and respects the privacy and confidentiality of the users' personal data by fully complying with the applicable national, European and international framework, and the European Union's General Data Protection Regulation 2016/679.
Ethical aspects	N/A
Other issues	N/A

## 2.2 DMP Components in WP2 – Users' needs analysis & co-production of services (UREAD)

DMP Component	Issues to be addressed
Data Summary	The purpose of the data collection is the generation of user needs for scoping of the initial requirements (Deliverable 2.2) and also for the co-

	<p>production phase (Deliverable 2.4), where applicable results are also used to produce peer reviewed papers.</p> <p>Collating data from end users is an integral part of the RECAP project – co-production of the final product helps to ensure that a useful product is created.</p> <p>Questionnaire data (including written responses (.docx and .xlsx) and recordings (.mp3)) compromise the majority of the data.</p> <p>The origin of the data is from Paying Agency partners in the RECAP project, farmers in the partner countries as well as agricultural consultants and accreditation bodies in the partner countries.</p> <p>Written responses are likely to be fairly small in size (&lt;1Gb over the course of the project). Recordings are larger files and likely to be 10-20 Gb over the course of the project.</p> <p>The data is essential for the technical team to develop the RECAP platform; other partner teams throughout the project, as well as the wider research community when results are published will benefit.</p>
<p>Making data findable, including provisions for metadata</p>	<p>The data are stored on the University of Reading servers and labelled with the work package, country of origin and the type of data. As it contains confidential and sensitive information, the raw data will not be made available from outside but anonymized data can be made available upon request and after an evaluation of the request (i.e. purpose, goals, etc.).</p> <p>The data are available to the public through the D2.4 Report on co-production of services either through the project website and Wiki or through Zenodo with the following DOI: 10.5281/zenodo.1744847</p> <p>The naming convention used is: Data_WP2_1_User requirements Data Data_WP2_1_UK_User requirements Data</p> <p>As part of any stored data, metadata were generated, which include sufficient information:</p> <ul style="list-style-type: none"> <li> to link it to the research publications/ outputs,</li> <li> to identify the funder and discipline of the research, and</li> <li> with appropriate keywords to help external and internal users to locate data.</li> </ul>
<p>Making data openly accessible</p>	<p>The data will be kept closed until the end of the project due to data contain sensitive personal data and therefore it cannot legally be made public. Anonymized and summarised will be available in any public deliverable or through any other relevant publications.</p>
<p>Making data interoperable</p>	<p>N/A</p>
<p>Increase data re-use</p>	<p>Any data published in papers will be immediately available to meta-analysis. However, it is not legal to release sensitive personal data such as the questionnaire responses.</p> <p>Raw data contains sensitive personal data and cannot legally be made available.</p> <p>Data quality is assured by asking partners to fill out paper questionnaire in their own languages. These are the translated and stored in</p>





	spreadsheets. Separately, the interviews are recorded, translated and transcribed. This ensures accurate data recording and translation.
Allocation of resources	Costs of publishing papers in open access format is the key cost in this part of the project. During the duration of the project, money from the RECAP budget will be used to cover journal fees (these are approximately £1000/paper). Papers are likely to be published after the completion of the project, in this case the university has a fund to which we can apply in order to cover the costs of open access publishing. The data is stored on University of Reading servers.
Data security	University of Reading servers are managed by the university IT services and they are regularly backed up and secure. Data will be kept for 6 years after the end of the project. Furthermore, pays special attention to security and respects the privacy and confidentiality of the users' personal data by fully complying with the applicable national, European and international framework, and the European Union's General Data Protection Regulation 2016/679.
Ethical aspects	N/A
Other issues	N/A

## 2.3 DMP Components in WP3 – Service integration and customisation (DRAXIS – NOA)

### 2.3.1 System Architecture




DMP Component	Issues to be addressed
Data Summary	Functional and non-functional aspects, technical capabilities, components descriptions and dependencies, API descriptions, information flow diagrams, internal and external interfaces, software and hardware requirements and testing procedures related data specified and validated among the RECAP technical and pilot partners. Technical requirements reports have been created in order to describe the aforementioned procedures and requirements for all the pilots. These reports were the basis upon which the system has been developed and modified.
Making data findable, including provisions for metadata	The reports are stored on DRAXIS server and are not directly accessible from outside. Moreover, these data cannot be made available to third parties. However, they are both discoverable and accessible to the public through the D3.1 RECAP System Architecture. The deliverable contains a table stating all versions of the document, along with who contributed to each version, what the changes where as well as the date the new version was created. Moreover, the deliverable is publicly available either through the project website and Wiki or through Zenodo with the following DOI: 10.5281/zenodo.1442649. The naming convention used is: Data_WP3_1_System Architecture Data.

	As part of any stored data, metadata are generated, which include sufficient information with appropriate keywords to help external and internal users to locate data.
Making data openly accessible	All data are made publicly available as part of the D3.1: System architecture and through Zenodo.
Making data interoperable	N/A
Increase data re-use	Data are publicly available as part of the D3.1: System Architecture and can be accessed and re-used by third parties indefinitely without a license.
Allocation of resources	No additional costs are foreseen for making this dataset FAIR.
Data security	The data have been collected for internal use in the project, and not intended for long-term preservation. Furthermore, DRAXIS fully complies with the applicable national, European and international framework, and the European Union's General Data Protection Regulation 2016/679.
Ethical aspects	N/A
Other issues	N/A

### 2.3.2 RECAP Platform

DMP Component	Issues to be addressed
Data Summary	<p>Various data like users' personal information, farm information, farm logs, reports and shapefiles containing farm location have been generated via the platform. All of these data are useful for the self-assessment process and the creation of meaningful tasks for the farmers. The data described above are saved in the RECAP central database.</p> <p>All user actions (login, logout, account creation, visits on specific parts of the app) are logged and kept in the form of a text file. This log is useful for debugging purposes.</p> <p>Reports containing information on user devices (which browsers and mobile phones) as well as number of mobile downloads (taken from play store for android downloads and app store for mac downloads) are useful for marketing and exploitation purposes, as well as decisions regarding the supported browsers and operating systems.</p> <p>Furthermore, inspection results have been generated by the inspectors through the system. The inspection results are available through the farmer's electronic record and are saved in the RECAP central database. Inspectors are able to discover all inspection results, whereas farmers are only able to discover results of their farms. The administrator of the app is able to discover all the inspection results generated by the platform.</p>
Making data findable, including provisions for metadata	<p>The data are not directly accessible from outside. These data cannot be made available to third parties. However, the data are available to the public through the deliverables D3.3 Software components development, D3.4 1<sup>st</sup> version of product backlog and development report and D3.5 Final version of revised product backlog and development report.</p> <p>The dissemination level of these deliverables is public and they are available in the project's website and Wiki and in Zenodo through the Digital Object Identifier (DOI):</p>







	<ul style="list-style-type: none"> <li> D3.3 Software components development: DOI: 10.5281/zenodo.1442655</li> <li> D3.4 1<sup>st</sup> version of product backlog and development report: DOI: 10.5281/zenodo.1442659</li> <li> D3.5 Final version of revised product backlog and development report: DOI: 10.5281/zenodo.1475999</li> </ul> <p>The naming convention used is: Data_WP3_2_RECAP platform Data. Every action on the platform will produce meaningful metadata such as time and date of data creation or data amendments and owners of actions that took place as well as associated farmer, inspector and inspection type will be saved along with the inspection results to enhance the discoverability of the results. However, only the administrator of the platform will be able to discover all the data generated by it. The database is not discoverable to other network machines operating on the same LAN, VLAN with the DB server or other networks. Therefore, only users with access to the server (RECAP technical team members) are able to discover the database.</p>
Making data openly accessible	<p>Only registered users and administrators have access to the data. The data produced by the platform are sensitive private data and cannot be shared with others without the user's permission. No open data will be created as part of RECAP. The database will only be accessible by the authorized technical team.</p>
Making data interoperable	N/A
Increase data re-use	<p>RECAP will be integrated with third party applications, currently being used by the local governments, in order to re-use information already inserted in those systems. Moreover, the language of the content and data are in the pilot languages (English, Greek, Lithuanian, Spanish and Serbian). The raw data are not publicly available. However, the RECAP platform is an open source platform and it is offered under the GNU General Public License version 3 and it is accessible through Zenodo through the DOI: 10.5281/zenodo.1451796.</p>
Allocation of resources	<p>Resources have been allocated according to the project plan and WP3 allocated resources. No additional costs are foreseen for making this dataset FAIR.</p>
Data security	<p>All platform generated data have been saved on the RECAP database server. Encryption has been used to protect sensitive user data like emails and passwords. All data are transferred via SSL connections to ensure secure exchange of information. If there is need for updates, the old data are overwritten and all actions are audited in detail and a log is kept, containing the changed text for security reasons. The system is weekly backed up and the back-ups are kept for 3 days. All backups are hosted on a remote server to avoid disaster scenarios.</p>



	<p>All servers are hosted behind firewalls inspecting all incoming requests against known vulnerabilities such as SQL injection, cookie tampering and cross-site scripting. Finally, IP restriction enforces the secure storage of data.</p> <p>DRAXIS pays special attention to security and respects the privacy and confidentiality of the users' personal data by fully complying with the applicable national, European and international framework, and the European Union's General Data Protection Regulation 2016/679. Moreover, "Personal Data Protection Policy " and "Terms and Conditions" have been included in the RECAP platform, in order to inform the users of how RECAP collects, processes, discloses and protects the incoming information.</p> <p>The RECAP platform will not keep personal data and other information after the end of the action that took place on 31-10-2018.</p>
Ethical aspects	All farmer generated data will be protected and will not be shared without the farmer's consent.
Other issues	N/A

### 2.3.3 Software Development Tool (SDK)

DMP Component	Issues to be addressed
Data Summary	<p>Various data like users' personal information, farm information, farm logs, reports and shapefiles containing farm location have been generated via the platform. All of these data are useful for the agricultural consultants or even the Paying Agencies to create added value services on the top of the RECAP platform.</p> <p>The SDK tool was developed based on the user requirements identified and collected through questionnaires.</p>
Making data findable, including provisions for metadata	<p>The data collected from the questionnaires are not directly accessible from outside and are stored on the University of Reading servers. These data cannot be made available to third parties. However, the data are available to the public through the deliverables D3.3 Software components development, D3.4 1<sup>st</sup> version of product backlog and development report, D3.5 Final version of revised product backlog and development report and D2.4 Report on co-production of services.</p> <p>The dissemination level of these deliverables is public and they are available in the project's website and Wiki and in Zenodo through the Digital Object Identifier (DOI):</p>

	<ul style="list-style-type: none"> <li> D3.3 Software components development: DOI: 10.5281/zenodo.1442655</li> <li> D3.4 1<sup>st</sup> version of product backlog and development report: DOI: 10.5281/zenodo.1442659</li> <li> D3.5 Final version of revised product backlog and development report: DOI: 10.5281/zenodo.1475999</li> <li> D2.4 Report on co-production of services: DOI: 10.5281/zenodo.1744847</li> </ul> <p>The naming convention used is: Data_WP3_3_RECAP SDK tool Data.</p>
Making data openly accessible	Only registered users (agricultural consultants-developers) are able to use the RECAP SDK tool.
Making data interoperable	N/A
Increase data re-use	Through SDK users are able to re-use the RECAP data and generate added value services for them and their clients. The SDK has been developed in a common programming and user-friendly language, php. However, the RECAP SDK tool is an open source and it is offered under the GNU General Public License version 3 and it is accessible through Zenodo through the DOI: 10.5281/zenodo.1475193
Allocation of resources	Resources have been allocated according to the project plan and WP3 allocated resources. No additional costs are foreseen for making this dataset FAIR.
Data security	DRAXIS pays special attention to security and respects the privacy and confidentiality of the users' personal data by fully complying with the applicable national, European and international framework, and the European Union's General Data Protection Regulation 2016/679. The RECAP platform will not keep personal data and other information after the end of the action that took place on 31-10-2018.
Ethical aspects	N/A
Other issues	N/A

### 2.3.4 User uploaded photos

DMP Component	Issues to be addressed
Data Summary	RECAP users are able to upload photos from a farm. These photos are timestamped and geolocated and are saved in the RECAP database. The purpose of the images is to prove compliance or not. The most common file type expected is jpg.
Making data findable, including provisions for metadata	Metadata related to the location and the time of the taken photo as well as a name, description and tag for the photo are saved. These metadata help the discoverability of the photos within the platform. Farmers are able to discover photos related to their farms (uploaded either by them or the inspectors) and Paying Agencies are able to discover all photos that have been granted access to.

	The images folder is not discoverable by systems or persons in the same or other servers in the same LAN/VLAN as the storage/database server.
Making data openly accessible	Only if the farmer allows to, some photos might be openly used within the RECAP platform as good practice examples. Otherwise the photos will only be only accessible by the relevant RECAP users.
Making data interoperable	Photos are saved in jpeg format.
Increase data re-use	Farmers are able to download photos and use them in any way they want. Inspectors and paying agencies have limited abilities of reusing the data, depending on the access level given by the farmer.
Allocation of resources	Resources have been allocated according to the project plan and WP3 allocated resources. No additional costs are foreseen for making this dataset FAIR.
Data security	<p>User generated photos are saved on the RECAP server. SSL connections are established so that all data are transferred securely.</p> <p>In case of necessary updates, the old data are overwritten and all actions are audited in detail and a log is kept, containing the changed text for security reasons. The system is weekly backed up and the back-ups are kept for 3 days. All backups are hosted on a remote server to avoid disaster scenarios.</p> <p>All servers are hosted behind firewalls inspecting all incoming requests against known vulnerabilities such as SQL injection, cookie tampering and cross-site scripting. Finally, IP restriction enforces the secure storage of data.</p> <p>DRAXIS pays special attention to security and respects the privacy and confidentiality of the users' personal data by fully complying with the applicable national, European and international framework, and the European Union's General Data Protection Regulation 2016/679. Moreover, "Personal Data Protection Policy" and "Terms and Conditions" have been included in the RECAP platform, in order to inform the users of how RECAP collects, processes, discloses and protects the incoming information.</p> <p>The RECAP platform will not keep uploaded photos after the end of the action that took place on 31-10-2018.</p>
Ethical aspects	All user generated data are protected and will not be shared without the farmer's consent.
Other issues	N/A

### 2.3.5 E-learning material

DMP Component	Issues to be addressed
Data Summary	As part of RECAP videos and presentations have been created in order to educate farmers and inspectors on the current best practices. Some of them are available for the users to view whenever they want and some other will be available only via live webinars.

Making data findable, including provisions for metadata	<p>Metadata such as video format, duration, size, time of views, number of participants for live webinars will be saved along with the videos and the presentations in order to enhance the discoverability of the results.</p> <p>All registered users are able to discover the e-learning material via a dedicated area that lists all the available sources.</p> <p>The database and the storage area is not discoverable to other network machines operating on the same LAN, VLAN with the DB server or other networks. Therefore, only users with access to the server (RECAP technical team members) are able to discover the database and the storage area.</p>
Making data openly accessible	<p>The e-learning material is only accessible through the RECAP platform. All RECAP users have access to that material.</p> <p>The database is only accessible by the authorized technical team.</p>
Making data interoperable	N/A
Increase data re-use	The e-learning material is mainly created by the paying agencies and there is a possibility to re-use existing material from other similar systems.
Allocation of resources	Resources have been allocated according to the project plan and WP3 allocated resources. No additional costs are foreseen for making this dataset FAIR.
Data security	<p>Videos and power point presentations are saved on the RECAP database server. All data are transferred via SSL connections to ensure secure exchange of information.</p> <p>The system is weekly backed up and the back-ups are kept for 3 days. All backups are hosted on a remote server to avoid disaster scenarios.</p> <p>DRAXIS pays special attention to security and respects the privacy and confidentiality of the users' personal data by fully complying with the applicable national, European and international framework, and the European Union's General Data Protection Regulation 2016/679. Moreover, "Personal Data Protection Policy " and "Terms and Conditions" have been included in the RECAP platform, in order to inform the users of how RECAP collects, processes, discloses and protects the incoming information.</p> <p>The RECAP platform will not keep e-learning material after the end of the action that took place on 31-10-2018.</p>
Ethical aspects	N/A
Other issues	N/A

### 2.3.6CC laws and rules

DMP Component	Issues to be addressed
Data Summary	Cross compliance law and inspection lists with checkpoints are used both by the inspectors during the inspections but also by the farmers to perform some sort of self-assessment. The lists have been given to the technical team by the Paying agencies in a various format (excel, word) and have been transformed in electronic form.

Making data findable, including provisions for metadata	The datasets are not available to the public but only to the RECAP consortium. However, all registered users have access to the laws and the inspection checklists via the RECAP platform. The naming convention used is: Data_WP3_4_RECAP CC rules Data. Metadata related to the different versions of the checklists and the newest updates of the laws, along with dates and times will also be saved. Metadata help the easy discoverability of the most up to date content.
Making data openly accessible	N/A
Making data interoperable	N/A
Increase data re-use	N/A
Allocation of resources	Resources have been allocated according to the project plan and WP3 allocated resources. No additional costs are foreseen for making this dataset FAIR.
Data security	All content related to CC laws and inspections are securely saved on the RECAP database server. All data are transferred via SSL connections to ensure secure exchange of information. The system is weekly backed up and the back-ups are kept for 3 days. All backups are hosted on a remote server to avoid disaster scenarios. DRAXIS pays special attention to security and respects the privacy and confidentiality of the users' personal data by fully complying with the applicable national, European and international framework, and the European Union's General Data Protection Regulation 2016/679. Moreover, "Personal Data Protection Policy" and "Terms and Conditions" have been included in the RECAP platform, in order to inform the users of how RECAP collects, processes, discloses and protects the incoming information.
Ethical aspects	N/A
Other issues	N/A

### 2.3.7 Information extraction and modeling from remotely sensed data

DMP Component	Issues to be addressed
Data Summary	Collection of Very High Resolution (VHR) satellite imagery and farmer declarations. Generation of satellite based spectral indices and remote sensing classification products. Generation of soil loss estimation products based on revised Universal Soil Loss Equation (RUSLE) using Rainfall erosivity (R-factor), Soil Erodibility (K-factor), Topography (LS-factor), Cover Management (C-factor) and Support Practices (P-factor) data. All data sets were used to establish a mechanism for breaches of cross-compliance and introduce the concept of smart sampling the fields to be inspected. The products were used in the pilot implementation. Processing of open and commercial satellite data for monitoring CAP implementation is in the core of RECAP.



	<p>Data are available in raster and vector format, accessible through a MapServer application on top of a PostGIS database.</p> <p>Historical, Landsat-based spectral indices have been used to assist a time-series analysis at the preliminary research phase of the development. Sentinel-2 data were used exclusively for the output remote sensing products delivered to the RECAP platform.</p> <p>The origin of the data was USGS for Landsat (<a href="http://glovis.usgs.gov/">http://glovis.usgs.gov/</a>) and ESA for Sentinel, delivered through the Hellenic National Sentinel Data Mirror Site (<a href="http://sentinels.space.noa.gr/">http://sentinels.space.noa.gr/</a>) and the Copernicus Open Access Hub (<a href="https://scihub.copernicus.eu/dhus/#/home">https://scihub.copernicus.eu/dhus/#/home</a>). Farmers' declarations, along with access to the Land Parcel Identification System (LPIS), and VHR imagery has been provided by the Paying Agencies that participate in the project. VHR imagery was used in the preliminary research phase of the RS component development.</p> <p>Sentinel-2 data are Landsat-8 images are around 1 GB each, both compressed. For 5 pilot cases, and a need to have at least one image per month on a yearly basis, with cloud cover percentage under the required threshold, we end up with imagery amounting to at least 12 GB and at most 200 GB per pilot case. Indices and classification products account for an additional 90% generated data for each pilot. VHR imagery is of the order of 20GB in total. Vector data are a few MBs in size.</p> <p>Data and products are useful for the Paying Agencies, the farmers themselves and the farmer consultants. They are ingested to the RECAP platform and disseminated to project stakeholders, while their usefulness was demonstrated during the pilot cases. VHR satellite data were not redistributed, and a relevant agreement has been signed to ensure that these data are used only for the development and demonstration activities of RECAP.</p> <p>Data and products will be useful for the Paying Agencies, the farmers themselves and the farmer consultants. They will be ingested by the RECAP platform and disseminated to project stakeholders, while their usefulness will be demonstrated during the pilot cases. VHR satellite data will not be redistributed, and a relevant agreement has been signed to ensure that these data are used only for the development and demonstration activities of RECAP.</p>
<p>Making data findable, including provisions for metadata</p>	<p>Data (rasters) are stored at the National Observatory of Athens servers and labeled with the area of interest id, timestamp and type of data. MapServer and PostGIS provide a build-in keyword search tool that is used.</p> <p>The image data and the processed products are available to all stakeholders through a PostGIS. Registered users have unlimited access to the products for the duration of the project, with the exception of the VHR satellite data and farmers' declarations.</p>
<p>Making data openly accessible</p>	<p>Spectral Indices and EO-based classification objects are made available through the RECAP platform. Commercial VHR satellite imagery that was used in the context of the pilots was restricted due to the associated</p>













	<p>restrictions of the satellite data vendor and the Joint Research Center (JRC). Farmers' declarations are considered to be Personal data and hence will be not open for reuse.</p> <p>Data and products are made accessible through an API on top a PostgreSQL database.</p> <p>No special software is needed. A user can create scripts to access and query the database and retrieve relevant datasets.</p> <p>The data and associated metadata are deposited in NOAA's servers.</p>
Making data interoperable	<p>PostGIS and MapServer is a widely accessible tool for managing geospatial information. No standard vocabulary will be used and no ontology mapping is foreseen.</p>
Increase data re-use	<p>The EO-based geospatial products that have been generated in RECAP are made available for re-use for the project's lifetime and beyond.</p> <p>All EO-based products will remain usable after the end of the project.</p> <p>No particular data quality assurance process is followed, and no relevant warranties will be provided.</p> <p>EO-based products will remain re-usable at least two years after the project's conclusion.</p>
Allocation of resources	<p>Costs for maintaining a database of the EO-based products that will be generated to serve the pilot demonstrations are negligible. Fees have been paid for the publication <a href="https://doi.org/10.3390/rs10060911">https://doi.org/10.3390/rs10060911</a>.</p> <p>Data is stored on NOAA's servers.</p> <p>Long term preservation of the products generated for the pilots is minimal. However, if this is to scale-up and go beyond the demonstration phase, then making data FAIR will incur significant costs. Generating FAIR spectral indices and EO-based classification products for large geographical regions and with frequent updates, has a potential for cross-fertilization of different fields (e.g. precision farming, CAP compliance, environmental monitoring, disaster management, etc.).</p>
Data security	<p>NOA servers are managed by the IT department. They are regularly backed up and secure. NOAA fully complies with the applicable national, European and international framework, and the European Union's General Data Protection Regulation 2016/679.</p>
Ethical aspects	N/A
Other issues	N/A

### 2.3.8 Maps




DMP Component	Issues to be addressed
Data Summary	The following maps have been provided by the pilot countries and are used by the RECAP platform in the form of map layers:



	<ul style="list-style-type: none"> <li> Habitat</li> <li> Natura sites,</li> <li> Nitrate Vulnerable Zones,</li> <li> Botanical Heritage Sites</li> <li> Watercourse maps</li> <li> Slope map (or DEM)</li> <li> Administrative boundaries and settlements</li> <li> Land Use / Land Cover Maps, as detailed as possible</li> <li> ILOT and sub-ILOT</li> <li> LPIS (WMS or SHP)</li> </ul> <p>The need comes from the fact that by using these maps, useful information regarding the compliance to the rules will be derived. All maps are not produced as part of this project but as explained they have been provided to the technical team by the pilots and will be reused. The types of the maps differ but some indicative types for vectors are ESRI Shapefile, GeoJSON, GML, etc. and for rasters is GeoTiff. Similarly, the size varies a lot, from 1KB to 10GB. Vector data are store in PostGIS database and raster data in the file system and both are served to the RECAP platform through Geoserver.</p>
Making data findable, including provisions for metadata	<p>All registered users have access to the above maps. The users are able to identify the maps by their distinctive name. The naming convention used is: Data_WP3_5_RECAP Maps Data. Metadata are generated related to the different versions of the maps. Metadata help the easy discoverability of the most up to date content.</p>
Making data openly accessible	N/A
Making data interoperable	Maps are saved in standard formats that are commonly used through OGC services.
Increase data re-use	N/A
Allocation of resources	Resources have been allocated according to the project plan and WP3 allocated resources. No additional costs are foreseen for making this dataset FAIR.
Data security	<p>All maps are saved on the RECAP server. SSL connections are established so that all data are transferred securely. In case of necessary updates, the old data are overwritten and all actions are audited in detail and a log is kept, containing the changed text for security reasons. The system is weekly backed up and the back-ups are kept for 3 days. All backups are hosted on a remote server to avoid disaster scenarios. All servers are hosted behind firewalls inspecting all incoming requests against known vulnerabilities such as SQL injection, cookie tampering and cross-site scripting. Finally, IP restriction enforces the secure storage of data. DRAXIS pays special attention to security and respects the privacy and confidentiality of the users' personal data by fully complying with the</p>

	applicable national, European and international framework, and the European Union's General Data Protection Regulation 2016/679.
Ethical aspects	N/A
Other issues	N/A

### 2.3.9 Examples of BPS applications

DMP Component	Issues to be addressed
Data Summary	Examples of previous years submitted BPS applications have been shared with the technical team. As part of the user journey, the farmers have to enter details similar to the ones they have entered in the BPS application hence the use of such data allowed the effective design of the DB as well as training material for the classifiers of the Remote Sensing Component. The data have been delivered in excel sheets by all pilots.
Making data findable, including provisions for metadata	Only the technical team have access to these data and they have not been used on the RECAP platform. The naming convention used is: Data_WP3_6_BPS Examples Data. No metadata will be produced.
Making data openly accessible	N/A
Making data interoperable	N/A
Increase data re-use	N/A
Allocation of resources	N/A
Data security	All data are securely saved in the DRAXIS and NOA's premises. Both DRAXIS and NOA pay special attention to security and respects the privacy and confidentiality of the users' personal data by fully complying with the applicable national, European and international framework, and the European Union's General Data Protection Regulation 2016/679. Furthermore, the technical team has signed three Confidentiality Agreements with the Greek Paying Agency in order to use these data: <ul style="list-style-type: none"> <li> ID: 16211, Date: 17/02/2017</li> <li> ID: 28222, Date: 24/03/2017</li> <li> ID: 53535, Date: 14/06/2017</li> </ul>
Ethical aspects	N/A
Other issues	N/A




### 2.4 DMP Components in WP4 – Deployment and operation (INI)

DMP Component	Issues to be addressed
Data Summary	The main purpose of the data collection within WP4 is to i) monitor the effective implementation of the pilots; and to ii) evaluate the RECAP Platform. WP4 data collection addresses the main objectives of the project since it allows the evaluation of the RECAP Platform in the 5 participating territories (Greece, Spain, Lithuania, UK and Serbia) and takes into















	<p>account the different end-users groups (e.g. Farmers/ Agricultural Consultants, Inspectors, Certification Bodies, Paying Agencies).</p> <p>WP4 data collection is mainly made through the following documents:</p> <ul style="list-style-type: none"> <li>● WP4 Monitoring Sheet (Excel) and Pilot Implementation Report (Word) for monitoring the implementation of Pilots. Those documents are filled out by the 5 Pilot Teams;</li> <li>● Evaluation Questionnaire (Google Forms or Excel) for collecting feedback from the Pilot participants as user of the RECAP Platform. Evaluation Questionnaire includes a Privacy Notice and it is filled out by the Pilot participants (users of the RECAP Platform). Data collected through the Evaluation Questionnaire is exclusively for analytical and statistical purposes; and will not be re-used.</li> </ul> <p>As a result, the origin of WP4 data is mainly from:</p> <ul style="list-style-type: none"> <li>● Partners of the project;</li> <li>● Pilot participants (Farmers/ Agricultural Consultants, Inspectors, Certification Bodies, Paying Agencies).</li> </ul> <p>WP4 data collection is only used for the evaluation of the RECAP Platform, and the definition of potential recommendations for its improvement.</p>
<p>Making data findable, including provisions for metadata</p>	<p>The raw data collected in WP4 are not made publicly available as it includes confidential and sensitive personal information.</p> <p>Once treated and anonymized, the results of the implementation and the evaluation of the 5 Pilots conducted in WP4 are made public in D4.3 Intermediate Evaluation and Adaptation Report, D4.4 Final Evaluation Report and D4.5 Report on procedures followed and lessons learnt.</p> <p>The dissemination level of these deliverables is public and they are available in the project's website and Wiki and in Zenodo through the Digital Object Identifier (DOI):</p> <ul style="list-style-type: none"> <li>● D4.3 Intermediate Evaluation and Adaptation Report: DOI: 10.5281/zenodo.1442676</li> <li>● D4.4 Final Evaluation Report: DOI: 10.5281/zenodo.1744861</li> <li>● D4.5 Report on procedures followed and lessons learnt: DOI: 10.5281/zenodo.1885901</li> </ul> <p>Data are stored on INI's servers and labelled with the task name, country of origin and the type of data. Data will be searchable by country, task name and data type.</p> <p>The naming convention used is: Data_WP4_1_Intermediate Pilot Evaluation_&lt;Country&gt; Data</p> <p>As part of any stored data, metadata were generated, which include sufficient information:</p>



	<ul style="list-style-type: none"> <li> to link it to the research publications/ outputs,</li> <li> to identify the funder and discipline of the research, and</li> <li> with appropriate keywords to help external and internal users to locate data.</li> </ul>
Making data openly accessible	<p>All raw data collected in WP4 are for internal use within the project consortium, as the objective of WP4 is to validate the RECAP platform developed in WP3. As raw data contain sensitive personal data, the databases are not publicly available.</p> <p>Data will be stored on INI's servers.</p> <p>Raw data will be treated in order to produce D4.3, D4.4 and D4.5, which are public deliverables and are accessible through Zenodo.</p>
Making data interoperable	N/A
Increase data re-use	<p>The data of WP4 have started to be collected and generated in WP4 in the fall 2017, and all the specifications and periods of use, and re-use have been established in deliverable D4.1 Pilot Plan which is public accessible through Zenodo with the DOI: 10.5281/zenodo.1442670.</p> <p>Data quality have been assured by asking partners to fill out evaluation questionnaire in their own languages. Feedback collected have been translated into English in order to ensure accurate data collection and analysis.</p> <p>Data collected through the Evaluation Questionnaire is exclusively for analytical and statistical purposes; and will not be re-used. Once treated and anonymized, the results of the implementation and the evaluation of the 5 Pilots conducted in WP4 are made public in D4.3, D4.4 and D4.5.</p>
Allocation of resources	Resources have been allocated according to the project plan and WP4 allocated resources. No additional costs are foreseen for making this dataset FAIR.
Data security	The data are collected for internal use in the project, and not intended for long-term preservation. WP4 leader (INI) keeps two daily incremental backups, one on a separate disk and another one on a remote server within Spain. For the purpose of the evaluation, the following personal data were collected, through the Evaluation Questionnaire:



-  Pilot Country
-  End user profile
-  Email
-  Age
-  Education
-  Name and Surname
-  Home or Farm Address
-  Phone number
-  Social accounts links
-  CAP claimant identification number
-  Holding No
-  Location of the parcels

For abovementioned personal data all GDPR principles were followed and performed with respective actions by the pilot partners:

1. **Lawfulness, fairness and transparency** - All data collection practises during the project are not breaking the law. Personal data is collected in a fair way in relation to the data subject. Nothing is hidden from data subjects and reasons for collection were clearly stated and well explained to every data subject.
2. **Purpose limitation** – Purpose of collection is not only clearly stated, yet the collected data will be stored only until such purpose is completed. In addition, there was no processing of the data for the archiving purposes in the public interest or for scientific, historical or statistical purposes.
3. **Data minimisation** – Collected personal data are minimised as much as possible to achieve the purpose of the project.
4. **Accuracy** - Inaccurate or incomplete data were erased or rectified.
5. **Storage limitation** – All personal data collected during the project will be deleted after the project (when it is no longer necessary).
6. **Integrity and confidentiality (security)** – All personal data related to data subject are stored in a form that enables identification of the data subject.
7. **Accountability** – All partners integrate all appropriate technical and organisational measures within the company to secure the overall effectiveness, compliance with the law, etc.













All the involved parties in the questionnaire collection and pilot implementation fully comply with the applicable national, European and international framework, and the European Union's General Data Protection Regulation 2016/679. Specifically,



	<ul style="list-style-type: none"> <li>• INI abides by the Spanish regulation in terms of protection of personal data (Ley Orgánica 15/1999 de 13 de diciembre and Real Decreto 1720/2007 de 21 de diciembre) and is controlled each year by an Auditor regarding the Policy of Data Protection and receive compliance Certificate.</li> <li>• INO, responsible for the Serbian pilot, is compliant with the regulations of respected Serbian law (Zakon o zaštiti podataka o ličnosti -Sl. glasnik RS", br. 97/2008, 104/2009 - dr. zakon, 68/2012 - odluka US i 107/2012) as well as with the regulations of the reformed EU General Data Protection Regulation (GDPR).</li> <li>• Strutt &amp; Parker, responsible for the UK pilot, have a standard approach to GDPR across the BNP group and they also have a Chief Data Officer.</li> <li>• OPEKEPE, responsible for the Greek pilot, handled the data based on the ISO 27001:2013 Information technology- Security techniques- Information security management systems- Requirements and following GDPR.</li> <li>• INTIA, responsible for the Spanish pilot, provided the data with encrypted.</li> <li>• NMA, responsible for the Lithuanian pilot with regards to the inspections, reviewed all the personal data processed in NMA and a register of personal data processing records was prepared. Legal acts regulating NMA activities were also reviewed and changed accordingly with GDPR. Data Protection Officer was also appointed in NMA.</li> <li>• LAAS, responsible for the Lithuanian pilot with regards to the farmers and agricultural consultants, has already implemented the IT solutions which are necessary for security and accounting of data processing. Data Protection Officer was also appointed in LAAS.</li> </ul>
Ethical aspects	<p>An Informed Consent Form has been prepared for the participation to Pilot Activities. It was translated in local languages by the pilot partners, and included in the RECAP Platform. The agreement is asked in the process of signing up into the RECAP Platform.</p> <p>Evaluation Questionnaire includes a Privacy Notice that specifies that the treatment of the data is confidential, complies with GDPR and is carried out exclusively for analytical and statistical purposes.</p> <p>In the frame of Focus Group or Individual Interviews with Pilot participants, a clear verbal explanation is provided to each interviewee and focus group participant.</p>
Other issues	N/A



## 2.5 DMP Components in WP5 – Dissemination & Exploitation (ETAM)

DMP Component	Issues to be addressed
Data Summary	<p>Data collection is necessary for the elaboration of the Dissemination and Communication Strategy, the establishment and management of the Network of Interest, the Market assessment and the Business plan. Specifically, they are necessary for target groups’ tracking procedure and for Paying Agencies, agricultural consultants and farmers collective bodies’ profiling.</p> <p>Regarding the types and formats of data collected, these are lists of communication recipients and target groups’ lists in excel files containing organisations/bodies and their e-mail addresses.</p> <p>Parts of the lists have been developed in previous projects of the WP leader. The rest of the data has been developed through desk research.</p> <p>Regarding the data utility, they are useful to the WP leader for carrying out communication and dissemination and for the development of the business plan.</p> <p>Early on May 2018, ETAM contacted everyone whose information was held to make them aware and to ensure compliance with the General Data Protection Regulation (GDPR) that came into effect on the 25th May 2018.</p>
Making data findable, including provisions for metadata	<p>The data are available through the public deliverables and are accessible through Zenodo:</p> <ul style="list-style-type: none"> <li> D5.1 Communication and dissemination plan: DOI: 10.5281/zenodo.1442678</li> <li> D5.2 Market Assessment Report: DOI: 10.5281/zenodo.1442680</li> <li> D5.3 Dissemination pack: DOI: 10.5281/zenodo.1442682</li> <li> D5.4 Network of interest meeting report (1): DOI: 10.5281/zenodo.1442688</li> <li> D5.5 Project Workshops (1): DOI: 10.5281/zenodo.1442690</li> <li> D5.7 Network of interest meeting report (2): DOI: 10.5281/zenodo.1442696</li> <li> D5.9 Project Workshops (2): DOI: 10.5281/zenodo.1486689</li> <li> D5.10 Network of interest meeting report (3): DOI: 10.5281/zenodo.1476524</li> </ul> <p>The naming conventions used are:</p> <ul style="list-style-type: none"> <li> Data_WP5_1_Communication and dissemination Data</li> <li> Data_WP5_2_Market Assessment Data</li> <li> Data_WP5_3_Network of Interest Data</li> <li> Data_WP5_4_Project Workshops Data</li> </ul>



	As part of any stored data, metadata were generated, which include sufficient information with appropriate keywords to help external and internal users to locate data and related information.
Making data openly accessible	Data concerning e-mail addresses are not openly available, as being personal data. Deliverables publically posted on the website of RECAP, on the RECAP Wiki and Zenodo make available all respective data. No particular methods or software tools are needed to access the data. Data are stored on ETAM server.
Making data interoperable	N/A
Increase data re-use	Deliverables publically posted on the website of RECAP, on the RECAP Wiki and Zenodo make available all respective data without any restrictions.
Allocation of resources	Resources have been allocated according to the project plan and WP5 allocated resources. No additional costs are foreseen for making this dataset FAIR.
Data security	ETAM fully complies with the applicable national, European and international framework, and the European Union's General Data Protection Regulation 2016/679.
Ethical aspects	N/A
Other issues	N/A



## 3. Conclusion

This final DMP reflects the data management strategy regarding the collection, management, sharing, archiving and preservation of data and the procedure that RECAP followed in order to efficiently manage the data collected and/ or generated during the project.

## Abbreviations

API	Application Programming Interface
BPS	Basic Payments Scheme
CAP	Common Agricultural Policy
CC	Cross Compliance
DEM	Digital Elevation Model
DMP	Data Management Plan
DOI	Digital Object Identifier
ESA	European Space Agency
EU	European Union
IP	Internet Provider
jpeg	Joint Photographic Experts Group
JRS	Joint Research Center
mp3	Motion Picture Experts Groups Layer-3
LAN	Local Area Network
LPIS	Land Parcel Identification Systems
OGC	Open Geospatial Consortium
PDF	Portable Document Format
RS	Remote Sensing
RUSLE	Revised Universal Soil Loss Equation
SQL	Structured Query Language
SSL	Secure Sockets Layers
USGS	United States Geological Survey
VHR	Very High Resolution
VLAN	Virtual LAN
WMS	Web Map Server
XML	Extensible Markup Language