eROSA

e-infrastructure Roadmap
for Open Science in Agriculture

D1.3 - Online map of stakeholders &resources

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EXECUTIVE SUMMARY

As part of the Ecosystem & Community work package of the e-ROSA project, an online map of stakeholders and resources related to open science in agriculture has been developed. This map is part of the AGINFRA web portal (as it has been foreseen in the e-ROSA DoA), it is hosted at: http://map.aginfra.eu/ and it aims at supporting the cartography and visualization of the data ecosystem in agri-food. The technologies used are Apache HTML Server, MySQL database and PHP. As for the content management, the Drupal CMS has been selected.

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1 INTRODUCTION

The e-ROSA project seeks to build a shared vision of future sustainable e-infrastructures for research and education in agriculture in order to promote Open Science in this field and as such contribute to addressing related societal challenges. In order to achieve this goal, e-ROSA's main objective is to bring together the relevant scientific communities and stakeholders and engage them in the process of co-development of an ambitious, practical roadmap that provides the basis for the design and implementation of such e-infrastructures in the years to come.

In this context, the e-ROSA online map will support:

- The documentation of the scientific stakeholders by identifying different institutions, initiatives and groups – with a particular emphasis on stakeholders working on information technologies and computing and linked to agriculture (e.g. involved in data interoperability, big data in agriculture and related topics).
- The documentation of the research infrastructure facilities and e-infrastructure resources and services that have been deployed for agriculture, at a national, regional or international level (also covering generic e-infrastructures that could be of relevance to agriculture).

With this document, we present the technical updates carried out in the previous release of the system. We also present the mapping and visualisation solutions selected, as well as, an analysis of the entities documented for the final release of the online map. Last but not least, we reflect on sustainability scenarios and opportunities for the online mapping that was carried out by e-ROSA.

2 TECHNICAL UPDATES ON THE ONLINE MAP WEB SYSTEM

In the previous version of this deliverable (D1.2) the functionalities of the online map web system were presented. In this chapter, we present the technical updates carried out on the e-ROSA online map.

2.1 DESIGN

URL: http://www.aginfra.eu

The discovery page has been re-designed, following a "clean" design, keeping the same logic with the previous layout. In the new version, the search box has been kept on the top of the page whereas instead of placing the scientific disciplines below it, the visitor now sees the option of a data export (new functionality), along with the overview for the exact number of entities included in the e-ROSA online map. The scientific disciplines' icons were moved further down the page and their icons were re-designed as well.

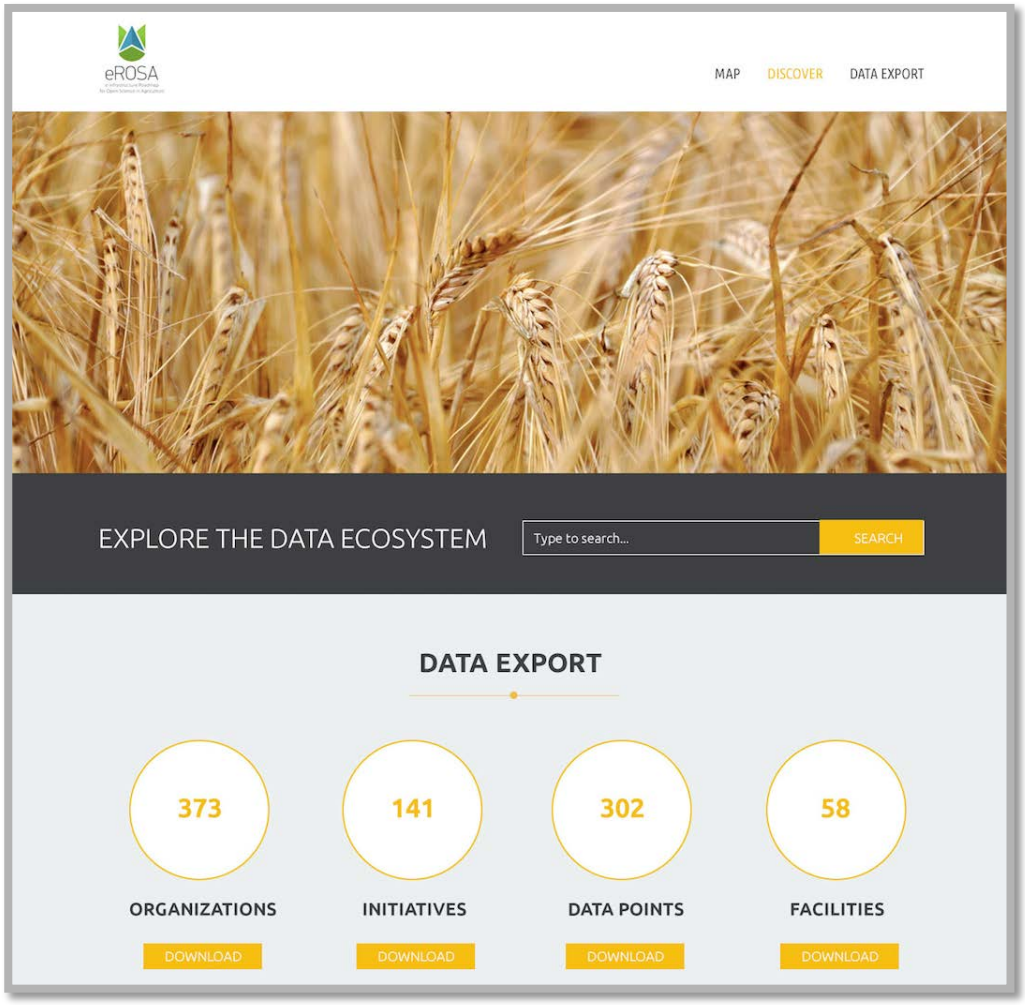

Figure 1: e-ROSA Discovery Page (text search)

In Figure 2, the new icons that represent the different Agri-Food disciplines can be found. If the visitor wishes to see all the scientific disciplines, they can choose the option "View all" so that all nineteen (19) disciplines appear.

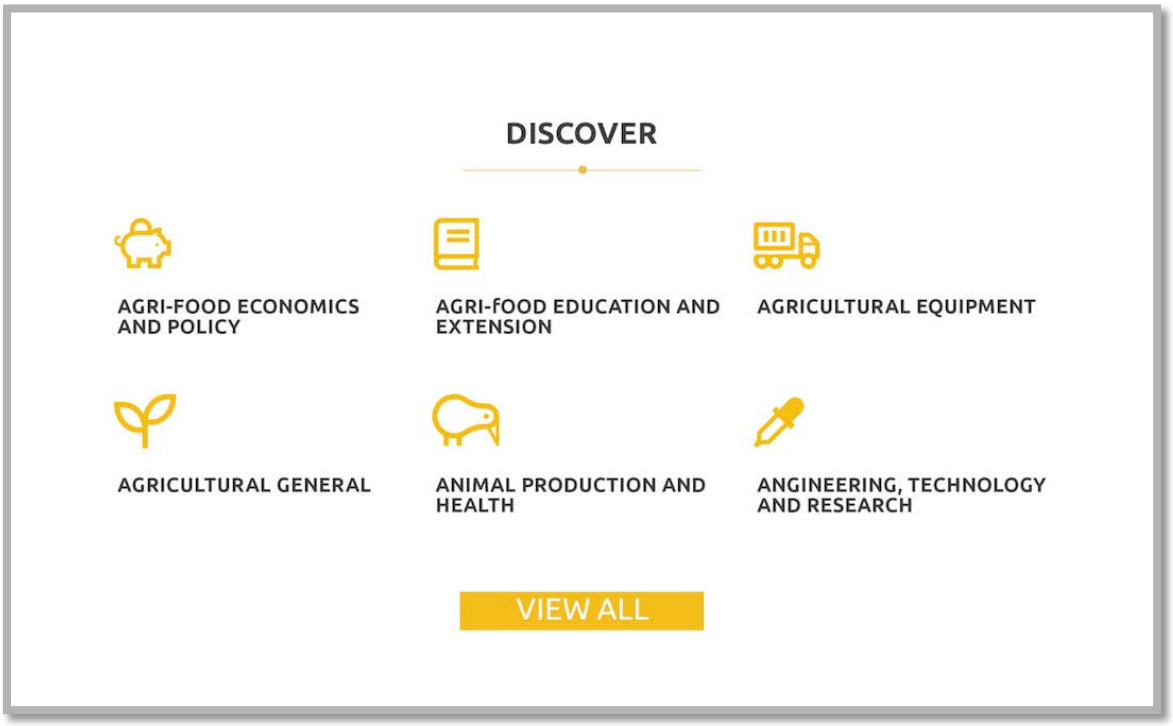

Figure 2: e-ROSA Discovery Page (browsing)

A new design has been implemented in the search results page as well. Once the user inputs a text for search or selects a scientific discipline, the screen shown in Figure 3 comes up, listing the results along with the available filters on the right that the visitor can use to filter the results further.

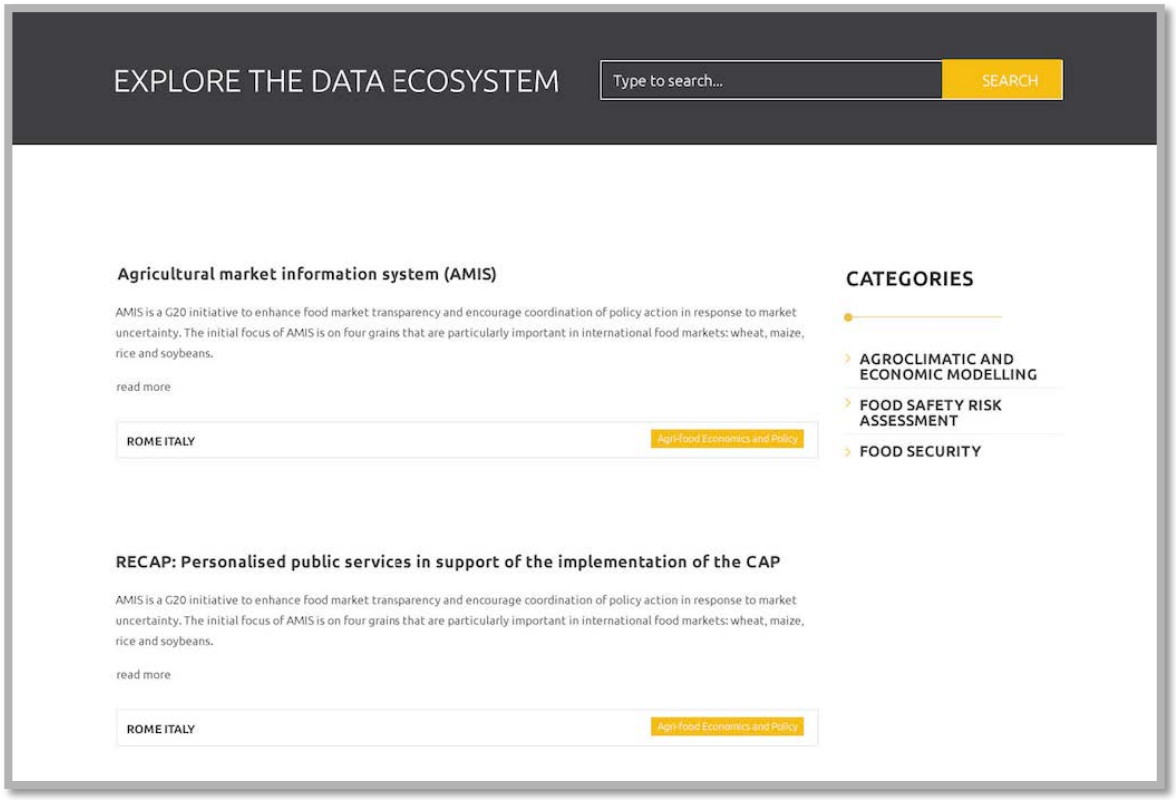

Figure 3: e-ROSA Search Results

Information on each entity's page is now presented in a clearer, less condensed manner. On the top of the page, the logo of the entity appears, followed by the title and a description. Below that, the rest of the information for the entity is presented, included its URL, location and the remaining information fields.

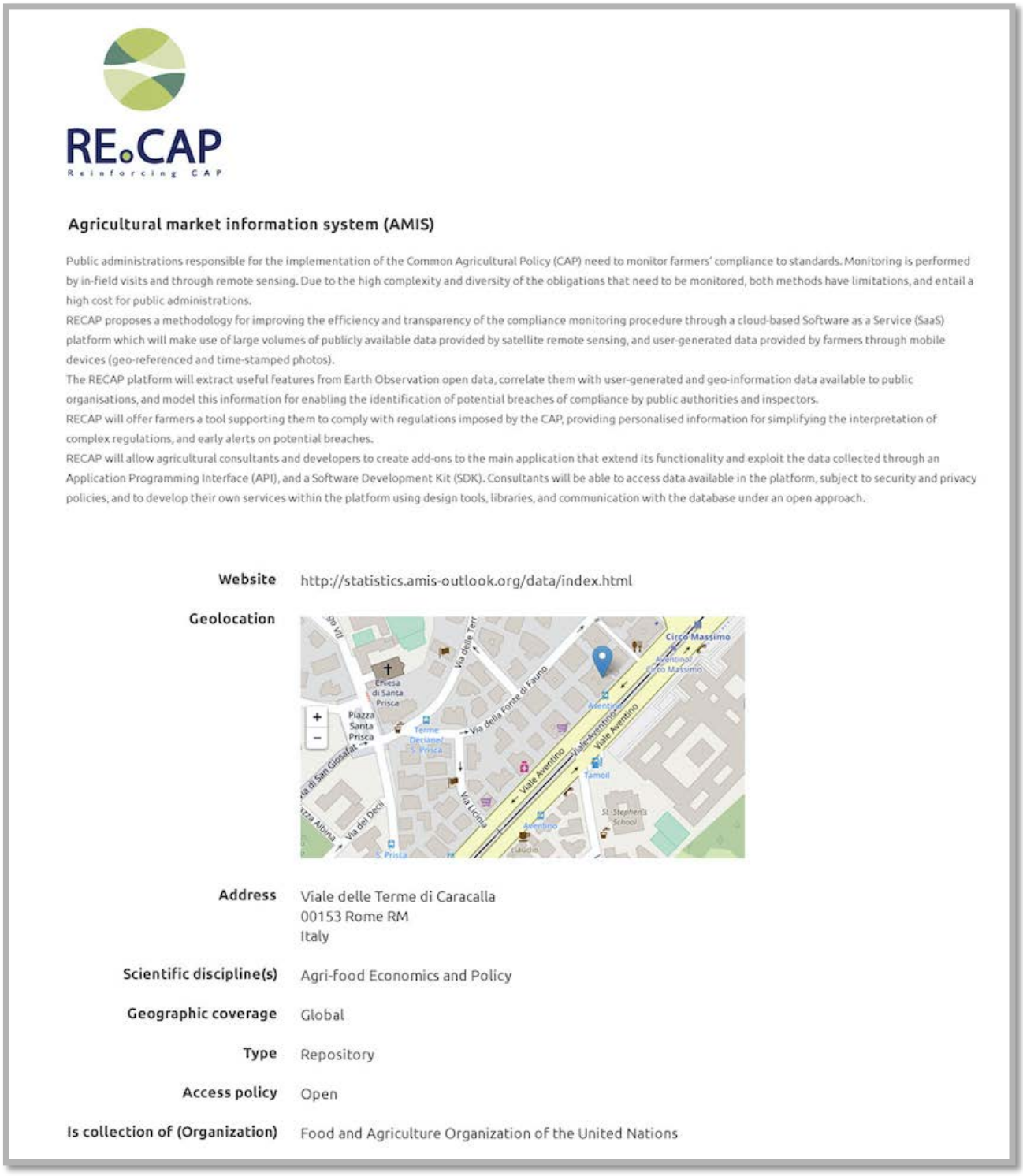

Figure 4: Entity page on e-ROSA online map

2.2 DATA EXPORT

As it was briefly mentioned in the previous paragraph, the functionality of a data export was implemented in the re-designed version of the e-ROSA online map. More specifically, the visitor can now download a Comma Separated Values (CSV) file of each different entity (namely, Organizations, Initiatives, Data Points

and Facilities). This can be done by following the “Download” button which will initiate a download of a CSV file with the full set of metadata, locally on the visitor’s computer.

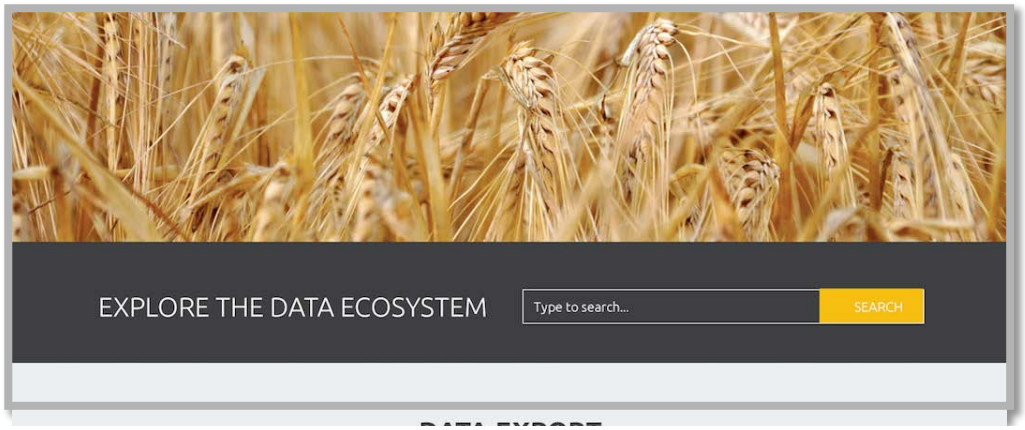

Figure 5: e-ROSA Data Export

3 ACTIONS FOR CONTENT ENRICHMENT

For the 1st release of the e-ROSA online map, a total of 650 entities were uploaded onto the map. More specifically, for the 1st release, the following entities were available:

- 300 organizations
- 296 data points
- 37 initiatives
- 31 facilities

To further increase the number of entities on the e-ROSA online map, an online campaign was launched, aiming to collect input through the Open Call that was already up and running (as described in "D1.5 – Synthesis of results & contribution to roadmap (M12)").

In addition to that, e-ROSA has strategic partnerships with ICT-AGRI (http://ict-agri.eu/) and CIARD RING (http://ring.ciard.net/), using their respective platforms as a source to identify organizations, initiatives, data points and facilities that fall within the scope of e-ROSA. The following table reports on the increase that was made possible through these actions.

No	Type of entity	1st release	Final release	Increase (%)
1	Organization	300	422	40%
2	Data Point	269	304	13%
3	Initiative	37	141	281%
4	Facility	31	58	87%
	Total	**650**	**925**	**42%**

Table 1: Entities' Increase from 1st to Final Release

4 ANALYSIS OF THE CONTENT OF THE FINAL RELEASE

In the following paragraphs, we perform an analysis and presentation on the main characteristics of the content that is contained in the 1st release of the online map. This analysis will serve as input to the enrichment of the content for the next release and will also help to better target the campaigns that will invite relevant stakeholders to review the coverage of the online map and add or revise information, by adding their institution, team or project to it.

4.1 ORGANIZATIONS

For the final release of the map, four hundred and twenty-two organisations (422) were identified, originating from a comprehensive online search for relevant stakeholders but also through the Open Call.

4.1.1 Organizations per Country

Looking at these organisations, we see that the most represented country is India with a share of 10.6% in relation to the total number of organisations. China (7.4%) and United States (6.9%) follow, with the United Kingdom (5.2%), Italy (4.7%) and France (4.7%) following. Completing the top ten with the most represented countries, Egypt (4.3%), Germany (4.3%), Russia (3.6%), Brazil (3.1%) and Spain (2.8%) follow.

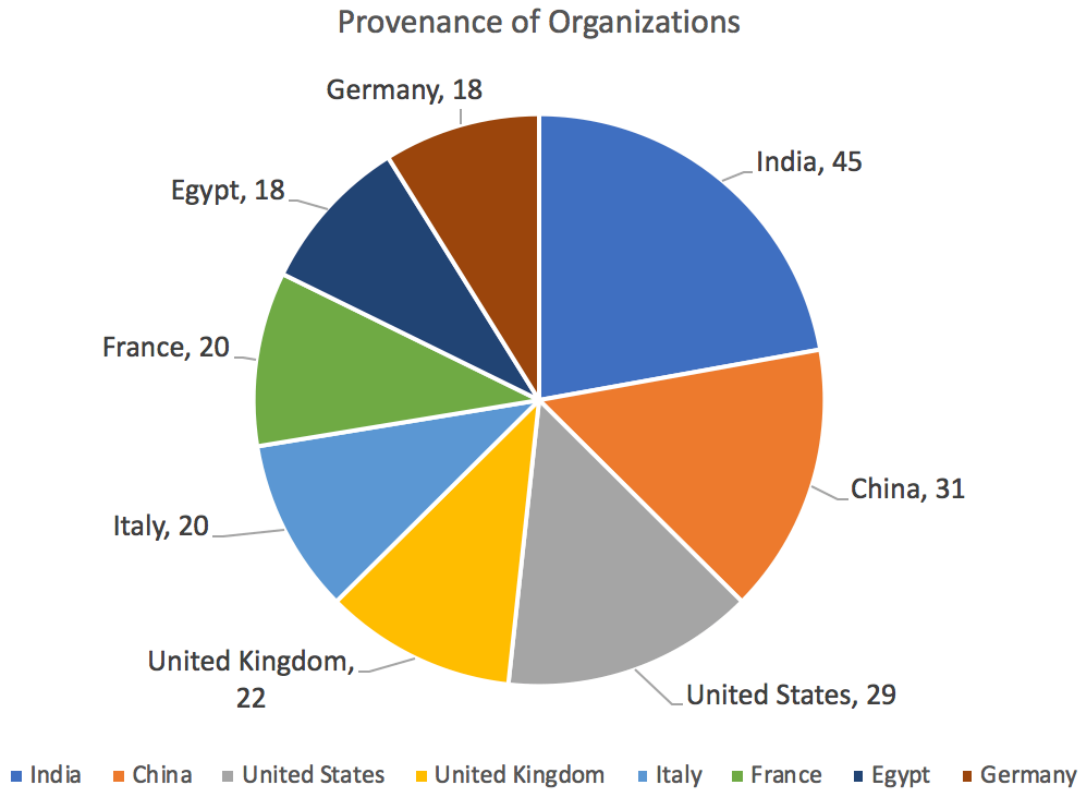

Figure 6: Countries with highest number of Organisations identified

In total, four hundred twenty-two (422) organisations come from eighty-five (85) different countries, which shows that the sample of organisations uploaded on the online map, spreads across the globe, offering a representative sample of organisations for the second release of the map.

4.1.2 Organizations per Continent

Looking at the distribution of Organisations across the five continents, we see that, apart from Oceania, all the other continents are sufficiently represented.

Continent	Count	Percentage (%)
Africa	48	11.4%
America	79	18.7%
Asia	110	26.1%
Europe	181	42.9%
Oceania	4	0.9%
TOTAL	**422**	**100%**

Table 2: Organisations per Continent

This analysis shows that organisations are spread around the different continents with Europe to be the most represented continent.

4.1.3 Organizations per Scientific Discipline

Looking at the primary scientific discipline of each organisation inserted onto the e-ROSA online map, the main scientific disciplines represented so far are "*Engineering, Technology and Research*" (20.9%), "*Plant Production and Protection*" (13,7%), "*Agriculture – General*" (13.5%) and "*Agri-food Education and Extension*" (9.2%).

In addition to the previous ones, "*Natural Resources and Environment*" (7.1%), "*Food safety and Human nutrition*" (5.7%), "*Information Management*"(4.3%) and "*Rural and Social Development*" (4.0%) are disciplines that are quite frequent in the organisations represented on the online map.

Scientific Discipline	Count	Percentage (%)
Engineering, Technology and Research	88	20.9%
Plant Production and Protection	58	13.7%
Agriculture - General	57	13.5%
Agri-food Education and Extension	39	9.2%
Animal Production and Health	31	7.3%
Natural Resources and Environment	30	7.1%
Food safety and Human nutrition	24	5.7%
Information Management	18	4.3%
Rural and Social Development	17	4.0%
Fisheries and Aquaculture	12	2.8%
Farming Practices and Systems	11	2.6%

Forestry	11	2.6%
Government, Administration and Legislation	11	2.6%
Food Security	7	1.7%
Agri-food Economics and Policy	6	1.4%
Agricultural equipment	1	0.2%
Geographical and Regional Information	1	0.2%
TOTAL	**422**	**100%**

Table 3: Organisations per Scientific Discipline

Overall, a total of seventeen (17) scientific disciplines were assigned to organizations in the online map with nine (9) of the disciplines representing 85.8% of the organizations.

4.2 INITIATIVES

4.2.1 Initiative Coverage

Out of the one hundred and forty-one (141) initiatives represented on online map, the majority of them (79%) represent initiatives that are covering Europe through their activities. National (11%) and international (10%) initiatives are equally represented.

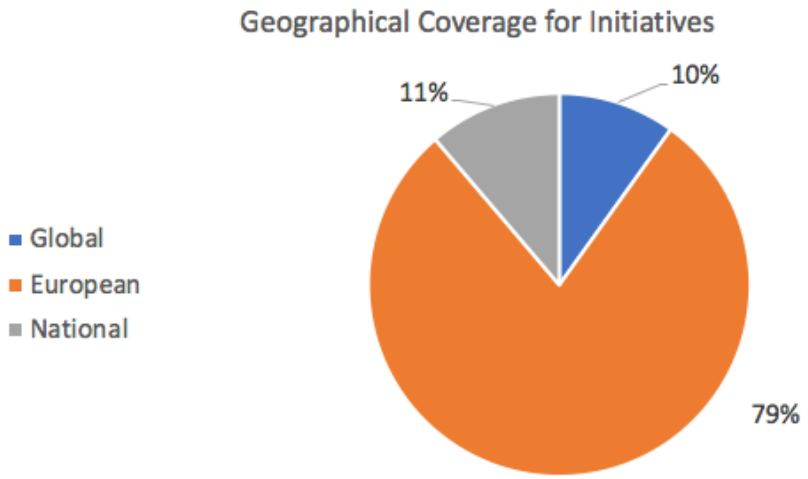

Figure 7: Geographical Coverage for Initiatives

4.2.2 Initiatives per Scientific Discipline

Looking at the primary scientific discipline of each initiative inserted onto the e-ROSA online map, the main scientific disciplines represented so far are "*Farming Practices and Systems*" (24.1%), "*Agriculture-General*" (14.9%), "*Information Management*" (12.1%) and "*Plant Production and Protection*" (9.9%).

Scientific Discipline	Count	Percentage (%)
Farming Practices and Systems	34	24.1%
Agriculture - General	21	14.9%
Information Management	17	12.1%
Plant Production and Protection	14	9.9%
Animal Production and Health	12	8.5%
Engineering, Technology and Research	12	8.5%
Forestry	7	5%
Natural Resources and Environment	7	5%
Food safety and Human nutrition	6	4.3%
Fisheries and Aquaculture	3	2.1%
Food Security	3	2.1%
Agri-food Economics and Policy	2	1.4%
Agri-food Education and Extension	1	0.7%
Food technology	1	0.7%
Food distribution	1	0.7%
TOTAL	**141**	**100%**

Table 4: Initiatives per Scientific Discipline

4.2.3 Initiatives per Data Science Category

Looking at the Data Science categories, three of them have certainly stood out in regards to the initiatives that are presently described on the e-ROSA online map. More specifically, "*Support for decision-making*" (14.2%), "*Community building*" (10%) and "*Technology Adoption*" (9.4%) are the main Data Science categories retrieved. Despite the fact that the remaining categories are lower in numbers, we see that all of them are represented which indicates that the sample of initiatives currently on the online map is quite diverse and well-selected.

Data Science Category	Count	Percentage (%)
Support for decision-making	44	14.2%
Community building	31	10.0%
Technology adoption	29	9.4%
Information Management	27	8.7%
Data discovery & access	25	8.1%
Data integration	21	6.8%
Governance	20	6.5%

Data production	20	6.5%
Data publication	20	6.5%
Standardization & recommendations	16	5.2%
Data analytics	12	3.9%
Modelling & simulation	11	3.5%
e-infrastructure	10	3.2%
Data visualisation	8	2.6%
Data storage	7	2.3%
Workflows	4	1.3%
Computation	2	0.6%
Semantics	1	0.3%
Data ownership	1	0.3%
Data veracity	1	0.3%

Table 5: Initiatives per Data Science Category

4.3 DATA POINTS

4.3.1 Data Point Type

Related to the Type of the data points published on the e-ROSA online map, their majority (87.2%) is either a "*Repository*" (47.7%) or a "*Catalogue*" (37.8%). A limited number of "*Aggregators*" of data points were identified (8.9%) whereas only 12 (5.6%) data points are offered as a "*Set*".

Data Point Type	Count	Percentage (%)
Repository	145	47.7%
Catalogue	115	37.8%
Aggregator	27	8.9%
Set	17	5.6%
TOTAL	**304**	**100%**

Table 6: Data Points per Type

4.3.2 Data Point Coverage

Looking at the geographical coverage of the data points on the e-ROSA online map, we see that 52% of the data points contain data of a national scope whereas 39% of them relate to data that are international. 7% of the data points offer data that cover the European region as a whole and 2% of them concern a different geographical area (covering entire continents or regions).

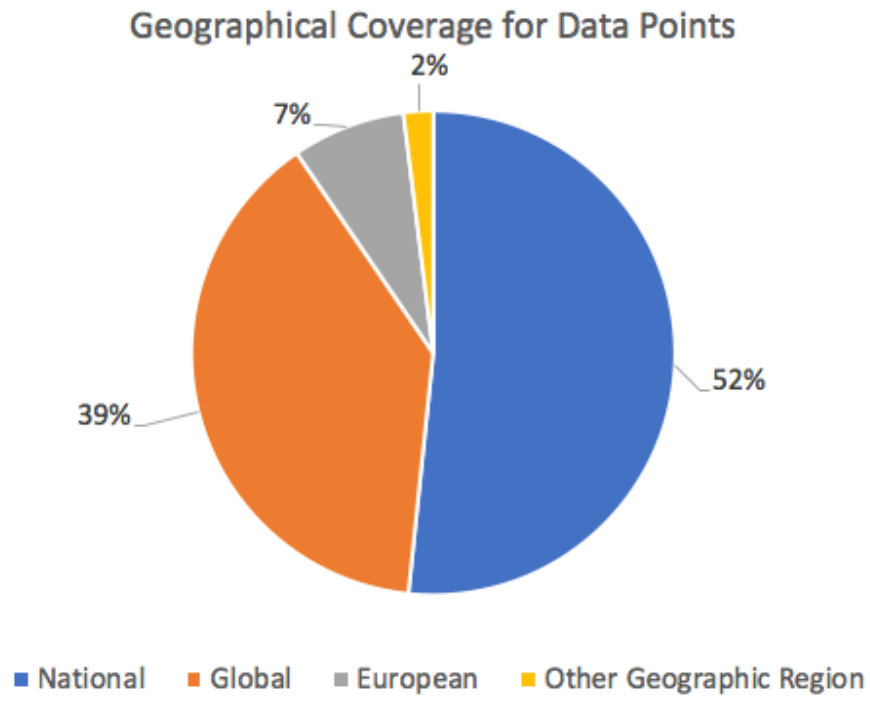

Figure 8: Geographical Coverage for Data Points

4.3.3 Data Point Access

The high majority of the data points have an open access policy. However, there are also cases with data points that adopt other access policies such as controlled or private.

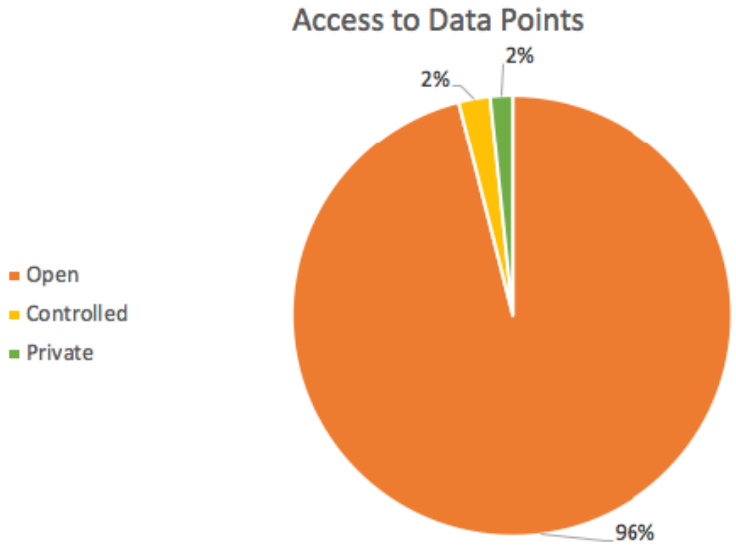

Figure 9: Access for Data Points

4.3.4 Data Points per Scientific Discipline

Examining the Data Points, it is evident that the entities uploaded on the e-ROSA online map cover a wide range of scientific disciplines. The most common Data Point scientific disciplines, are the ones related to "*Plant Production and Protection*" (29.9%), followed by "*Agriculture-General*" (21.4%) and "*Food Safety*

and Human Nutrition" (17.1%). "*Natural Resources and Environment*" (12.2%) is the fourth most represented category.

Following the aforementioned, "*Forestry*" (6.3%), "*Animal Production and Health*" (3.6%) and "*Fisheries and Aquaculture*" (2.3%) are also found in a significant number of Data Points.

Scientific Discipline	Count	Percentage (%)
Plant Production and Protection	91	29.9%
Agriculture - General	65	21.4%
Food safety and Human nutrition	52	17.1%
Natural Resources and Environment	37	12.2%
Forestry	19	6.3%
Fisheries and Aquaculture	11	3.6%
Animal Production and Health	7	2.3%
Farming Practices and Systems	6	2.0%
Food Security	5	1.6%
Geographical and Regional Information	4	1.3%
Engineering, Technology and Research	3	1%
Rural and Social Development	2	0.7%
Agricultural equipment	1	0.3%
Agri-food Economics and Policy	1	0.3%
TOTAL	**304**	**100%**

Table 7: Data Points per Scientific Discipline

4.4 FACILITIES

4.4.1 Facilities Coverage

Out of the fifty-eight (58) facilities represented on the e-ROSA online map, the majority of them (60%) concern European facilities whereas a large number relates to international facilities (31%). Only a small percentage of them (9%) relates to facilities that operate on a national level.

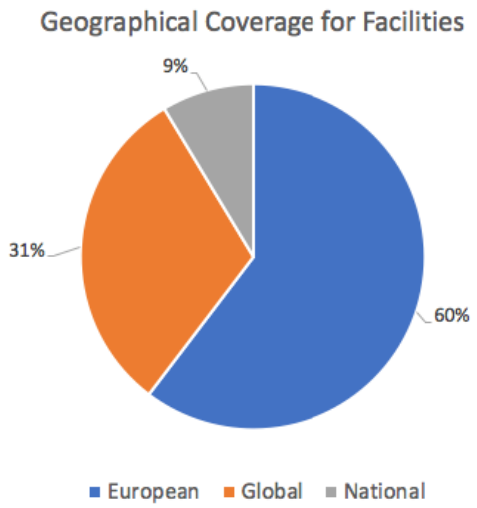

Figure 10: Geographical Coverage for Facilities

4.4.2 Development Stage of Facilities

When it comes to the development stage of the facilities on the e-ROSA online map, most of them (82%) represent an operational service whereas only 18% of them represent a facility that is being developedin the context of a project.

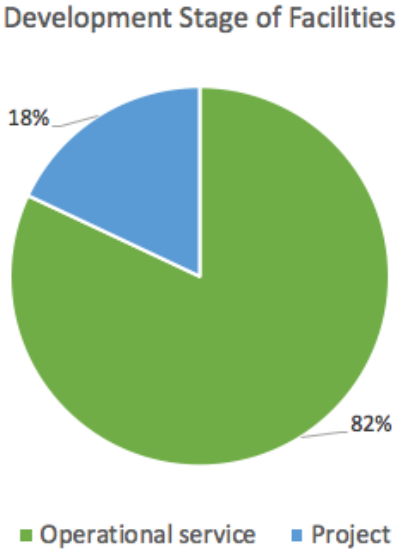

Figure 11: Development Stage of Facilities

4.4.3 Facility Access Policy

As far as the access policy is concerned, most of the facilities identified are open (75%) whereas 18% of them offer controlled access and 7% of them are private.

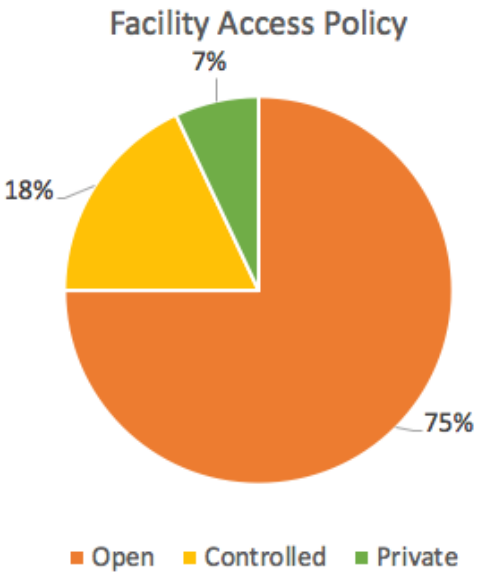

Figure 12: Access Policy of Facilities

4.4.4 Facilities per Scientific Discipline

The majority of facilities uploaded on the e-ROSA online map, are split among the disciplines of "*Agriculture - General*" (36.2%), "*Engineering, Technology & Research*" (22.4%) and "*Natural Resources and Environment*" (12.1%). Another 12.1% of them are related to "*Information Management*" and the remaining facilities are related to "*Plant Production and Protection*" (3.4%), "*Farming Practices*" (3.4%) and "*Systems*" (1.7%), "*Food Security and Forestry*" (1.7%).

Scientific Discipline	Count	Percentage (%)
Agriculture - General	21	36.2%
Engineering, Technology and Research	13	22.4%
Natural Resources and Environment	11	19%
Information Management	7	12.1%
Plant Production and Protection	2	3.4%
Farming Practices and Systems	2	3.4%
Food Security	1	1.7%
Forestry	1	1.7%
Total	**58**	100%

Table 8: Facilities per Scientific Discipline

4.4.5 Facilities per Data Science Category

In regard to the Data Science categories of the facilities currently on the e-ROSA online map, their majority (41.4%) is related to "*Data discovery & access*" and 25.9% are related to "*e-Infrastructures*". "*Semantics*" (6.9%) and "*Data Integration*" (5.2%) are the third most "popular" Data Science categories whereas the remaining are represented by one (2) cases (3.4%), namely "*Technical data interoperability*", "*Community*

building", "*Data production*", "*Data visualisation*", "*Modelling, statistics & simulation*" and "*Data publication*".

Data Science Category	Count	Percentage (%)
Data discovery & access	24	41.4%
e-infrastructure	15	25.9%
Semantics	4	6.9%
Data integration	3	5.2%
Technical data interoperability	2	3.4%
Community building	2	3.4%
Data production	2	3.4%
Data visualisation	2	3.4%
Modelling, statistics & simulation	2	3.4%
Data publication	2	3.4%
Total	**58**	**100%**

Table 9: Facilities per Data Science Category

4.5 OVERVIEW

This section looks at the use of scientific disciplines in all the entities on the e-ROSA online map and it also reports on the overall findings from the analysis.

Looking at the Scientific Disciplines across all the different entities, it is evident that most of the entities uploaded on the e-ROSA online map are related to either "*Plant Production and Protection*" (17.8%) or "*Agriculture-General*" (17.7%). Other scientific disciplines that were also represented in the sample of entities were "*Engineering, Technology and Research*" (12.5%), "*Natural Resources and Environment*" (9.2%), "*Food safety and Human nutrition*" (8.9%) and "*Farming Practices and Systems*" (5.7%).

Scientific Discipline	Count	Percentage (%)
Plant Production and Protection	165	17.8%
Agriculture - General	164	17.7%
Engineering, Technology and Research	116	12.5%
Natural Resources and Environment	85	9.2%
Food safety and Human nutrition	82	8.9%
Farming Practices and Systems	53	5.7%
Animal Production and Health	50	5.4%
Information Management	42	4.5%
Agri-food Education and Extension	40	4.3%
Forestry	38	4.1%
Fisheries and Aquaculture	26	2.8%

Rural and Social Development	19	2.1%
Food Security	16	1.7%
Government, Administration and Legislation	11	1.2%
Agri-food Economics and Policy	9	1%
Geographical and Regional Information	5	0.5%
Agricultural equipment	2	0.2%
Food distribution	1	0.1%
Food technology	1	0.1%
Total	**925**	**100%**

Table 10: Scientific Disciplines for all entities

The data presented in the previous table can be used to (a) identify entities that are related to scientific disciplines that are under-represented on the e-ROSA online map and (b) to extract useful information related to the scientific disciplines that are pursued/researched by the entities identified, worldwide. This could lead to a better understanding of the global landscape on agricultural topics, allowing for further actions and decisions on a policy/strategic level.

Overall, looking at the analysis of the entities collected thus far onto the e-ROSA online map, the following conclusions can be made:

- Related to the organizations identified so far, the sample of 422 organizations is well-balanced and representative on the level of continents and countries. Looking also at the main disciplines that these organizations represent, it is evident that all disciplines currently in the e-ROSA data model are represented in the selected sample.
- As far as the initiatives are concerned, most of them are targeted at a European or International level which showcases the fact that major initiatives with high impact are selected in this version of the map, including all the major ongoing initiatives on open science in agriculture.
- In relation to the data points, the majority concern either aggregators or repositories, which are more technologically mature and offer a wide range of data. In addition to that, most of the identified data points are offered only on a national level which enhances the necessity of their presence on the e-ROSA online map, to allow for their visibility and potential reuse on applications and services.
- On the same topic, the large majority of the data points identified are open (96%), which allows for their use and reuse and they also cover all the agricultural disciplines which makes the map relevant to a wider range of interested stakeholders of the e-ROSA communities.
- As far as the facilities identified are concerned, their majority are offering services on a European or International level, a fact that enhances their importance for the community as a whole. Also, their majority (82%) represents operational services that are ready for use while at the same time, they are open (75%). On top of that, the facilities identified are a representative sample in terms of the data science categories defined by the e-ROSA data model.
- Looking at the scientific disciplines across the different entities, it is evident that all of them are sufficiently represented in the sample of the 925 entities identified on the e-ROSA online map.

5 SUSTAINABILITY PLAN

5.1 e-ROSA Online Map as a SAAS Model

In this chapter, the e-ROSA Online Map will be analyzed following the Software as a Service (SaaS) model. In particular, this means that users will have access and will be able to use the online map produced by the eROSA consortium. The aim of the map will be to serve the research communities needs for exploring and further analyzing the agri-food data ecosystem.

The operation of the online map will be based on the existing cloud infrastructure operated by Agroknow. A fixed and specific kind of data will be provided for free and in order these data to be exported, a special on demand request, only from online map's special members, will be required. In order a user to be online map's special member, will have to advance an annual small amount of money. Furthermore, if a user wants to upload his own data and to create a personal dashboard will have to be a special premium member. In this case, the amount of money that will have to advance will be more significant than the amount of the first case.

5.2 Users

Users will be able to login into the platform with different access levels:

Basic users: Users will have access to the e-ROSA Online Map where all the provided data is imprinted and will be able to get informed about the them at the "Discover" page.

Special member users: Users will be able to be special member users after their registration on the e-ROSA Online Map platform. By being special members, they will be allowed to download the data they prefer and will be subscribed to the eROSA newsletter.

Special premium member users: Users will choose to be a special premium member when they will register at the platform. Apart from the special members' users benefits that they will exploit, will have the ability to submit their personal content in the four categories (organization, data point, initiative and facility). Moreover, they will be able to create their own user-customized dashboard by selecting the existing scientific disciplines, geographic areas, data science categories and countries of their preference. At their dashboard a special analysis of their chosen contents will be able to be performed in order useful information to be extracted. Finally, these users will be allowed to expose their dashboard through a machine-readable integration with third-party application. The name of this function will be eROSA Data API.

5.3 Sources of Revenues

It is expected that the e-ROSA Online Map will generate revenues from the registered users. There will be an access charge that can be of the type of a standard flat annual subscription fee renewed every year.

5.4 Forecast of Users

The estimation of the number of users that will be registered on the online map is substantial as it will be the main guide for the costs and revenues associated with the online map.

The potential registered number of users is estimated to be the total number of entities were uploaded onto the map, hence, the potential users for the first year (2019) will be 925.

As it appears in chapter 3 of this document, the increase of the users during a very short time of period is sunning. In particular, for the first release of the eROSA online map that was performed at April 2017 and lasted 9 months, until December 2017, the number of entities were 650 while, after 6 months, until its final release at June 2018, the increment rose around to 42%.

It is important to report that in order this increase to be performed an online campaign was launched. In the future, it is expected similar dissemination activities to be performed. So, it is assumed that the second year the registered users' increment will be around 30% and the third year around 20%.

5.5 Required Resources

For the production environment currently is used one Virtua Machine (VM). The number of VMs is not expected to change regardless of the upcoming increase in the number of users.

VM has been purchased from Amazon Web Services and its annual cost is 350 €. It is assumed that in the future, that the number of users will be increased, the cost will slightly rise to 370 € per year.

5.6 Personnel Cost

5.6.1 Data Curation

For the curation of the new content that will be added to the online map, 10% of a full-time employee is required in the first year of operation. During the next two years of operation, it is estimated that the full-time employee that will be required will be slightly increased to 12%

5.6.2 Maintenance of the online map

For the monitoring, maintenance, operation and updates of all APIs and services of the platform, 10% of a full-time employee for all three years of operations

5.6.3 Development of the online map

For the design of the new pages and functionalities of the online map, 30% of a full-time employee is required in the first year, whereas in the next years this will be increased to 40%.

The following table shows the required number of personnel per year of operation.

Required Personnel (FTEs)	2019	2020	2021
Data Curation	10%	12%	12%
Maintenance of the online map	10%	10%	10%
Development of the online map	30%	40%	40%

Table 11: Required Personnel in FTEs

5.6.4 Cost for personnel

The total annual personnel cost can be calculated by multiplying the total number of PMs per year by their cost. At this point is important to be mentioned that the actual costs depend on the specific organization

and respective PM rates. The rates that were used per type of personnel are presented in Table 12, while at the Table 13 is presented the personnel cost in 3 years.

Type of Personnel	Expertise	PM Cost (€)	Annual Cost (€)
Data Curation	Agri-food Domain expert	2.500	30.000 €
Maintenance of the online map	IT Expert	2.500	30.000 €
Development of the online map	Developer	3.500	42.000 €

Table 12: Annual cost per type of personnel

Type of Personnel	2019	2020	2021
Data Curation	3.000 €	3.600€	3.600€
Maintenance of the online map	3.000€	3.000€	3.000€
Development of the online map	12.600€	16.800€	16.800€
Total	**18.600€**	**23.400€**	**23.400€**

Table 13: Cost of Personnel

5.7 Revenue Estimation

To estimate the amount of money that registered users will have to pay, we should at first account the Total cost for the online map. After adding the Total personnel cost with the VM cost it appears that the online map cost is **18.950€** for the first year and **23.770€** for each of the next two years.

As aforementioned, the registered users will be divided into two categories, Special member users and Special premium member users. The forecast of the number of the registered users for the first year (2019) is 925 and is estimated that 70% (647) of them to choose to be Special premium member users and 30% (278) Special member users. It is defined that each year the Special premium member users will pay the 75% of the annual amount while, the Special member users the 25%. For the first year the Special premium member users will pay 14.212,5€ and the Special member users 4.737,5€.

In order to calculate the specific amount that each user will have to pay annually, we should divide the annual amount that each kind of users will have to pay with their number. For the Special premium member users for the first year it appears to be 21,82€≈ 22€ while for the Special member users 17,04€.

It is defined that each year each of the Special premium member users will pay 22€ (1.83€ per month) and each of the Special member users 17€ (1.41€ per month), regardless of the increase of users and of the total amount to be paid.

Given that for the next two years (2020, 2021) the above percentages remain the same and that the increment of registered users will be 30% for the second year and 20% for the third year, it appears that the registered users for the second year will be 1.202, the Special member users 360 and the Special premium member users 842. For the third year the registered users will be 1.442, the Special member users 432 and the Special premium member users 1.010.

Taking into account the aforementioned instructions, the second year the total payable amount will be 24.600€ and regarding each of the two team, the Special premium member users will pay (22 x 842) 18.480€ and the Special member users (17 x 360) 6.120€. The third year the total payable amount will be 29.564€ and more in detail the Special premium member users will pay (22 x 1.010) 22.220€ and the Special member users (17 x 432) 7.344€.

The first year is not expected to make any profit, while in the coming two years it is expected that there will be a staggered profit. In order to calculate the percentage of profit that will emerge in the next two years we have to remove the annual Total cost for the online map from the actual amount of money that both team of users will pay annually.

In particular, for the second year it appears that the profit will be (24.600 – 23.770) 830€ and the third year (29.564 – 23.770) 5.794€. During, the second year the expected profit will be 3,3% of total revenue, whereas during the third year the expected profit will be 19,5% of total revenue.

In Table 14 and Table 15 it is presented the increase in the number of users and the increase in the payable amount in 3 years respectively.

	2019	2020	2021
Forecast registered users	925	1.202	1.442
Special premium member users	647	842	1.010
Special member users	278	360	432

Table 14: The increase of users in 3 years

	2019	2020	2021
Total payable amount	18.950€	24.600€	29.564€
Special premium member users	14.212,5€	18.480€	22.220€
Special member users	4.737,5€	6.120€	7.344€

Table 15: The increase of users' payable amount in 3 years

6 KEY CONCLUSIONS & FUTURE WORK

The analysis of the content on the e-ROSA online map has shown that the agri-food landscape is extremely heterogeneous and scattered. The distribution of all entities across the different scientific disciplines confirms this. Another interesting finding that comes out from the analysis carried out, is that the majority of the data is produced, stored and processed in repositories at an institutional level. Many sources of data are open and technologically mature, which represents a significant resource that the agri-food community can build upon.

Aligned with the notions described above, and as it was mentioned in the introduction, e-ROSA has already formed strategic partnerships with ICT-AGRI (http://ict-agri.eu/) and CIARD RING (http://ring.ciard.net/). Through these partnerships, e-ROSA aims to explore additional sustainability scenarios (apart from those described in section 5) for the outcomes of the project, connecting to the communities of ICT-AGRI and CIARD RING, on multiple levels, including the implementation of new ventures, the development of technical solutions for the agricultural communities as well as policy-related topics of joint interest.

The exercise that was carried out through the e-ROSA mapping activity has produced a concrete method and a dataset focused on research. These tools can be used to further analyze the basic components of the ecosystem of agricultural research worldwide. An example of how the e-ROSA mapping exercise can be extended or connected with other similar initiatives (that may have a different focus), to create added-value for the agricultural sector, is the AIOTI Project (https://aioti.eu/).

Another potential collaboration to be explored is one with the Futurium platform (https://ec.europa.eu/futurium/en/). This platform facilitates dialogue between European citizens on EU policies, including different topics such as “ICT4Water”, “Digital4Science”, “Urban Agenda for the EU”, etc. Including a topic dedicated to agri-food, involving the entities mapped by e-ROSA is one direction that will be explored in the future.

Finally, a significant challenge and open issue that was also pointed out through the eROSA mapping activity is related to the lack of standards and specifications to describe in a uniform way the services provided by e-infrastructures. Through the description of a considerable sample of facilities, it has become apparent that there's a great diversity in the terms used to describe the services offered and a big difference in the definitions attached to these terms. This challenge was also introduced quite recently, in the consultation on European e-Infrastructures on the Futurium platform (https://ec.europa.eu/futurium/en/content/consultation-european-e-infrastructure-closed).