Smart Agri Food Milestone Report

Organic-AgriWare

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1. Introduction

The aim of this report according to the SAF SME Milestone plan is to describe the application prototype, including the relation between the different components, results from testing(s), and a figure or diagram depicting the involved components. The results include the following:

- Prototype application documentation (e.g. personas and user stories' analysis, user manuals etc.)
- Executable software application.

The following sections present the methodology that was followed in order to collect the validated requirements of the Organic-AgriWare application by focusing on the problem addressed and identifying the user personas.

At the same time, it was necessary to capture and understand the user personas' needs so as to proceed building the application prototype. In order to meet the user personas' needs, it was important to collect feedback from the users on the features and functionalities that was initially built and have the first results from testing(s).

The solution validation process allows the simultaneous development and improvement of the application based on the feedback collected. The description of the components used for the executable software application provides a clear image of the overall architecture infrastructure, while the user manual provides an overview of how the application and its functionalities work.

2. Requirements elicitation and solution design

The whole process is divided in two phases, according to the *"Lean methodology"* (http://en.wikipedia.org/wiki/Lean_software_development):
During the need (problem) validation phase, Agro-Know team collected all requirements, views and suggestions and analysed them so as to report the top issues for each user persona that should be considered in the online service. The second phase (solution validation phase) contains the building of solutions that arise from the aforementioned validated requirements and the conduct of follow-up interviews in order to validate the proposed mock-ups and working prototype for the Organic-AgriWare application.

"Lean Methodology" describes a well-defined, precise process, with a verified goal in mind, in a way of constantly focusing on the actual users and their needs. The Organic-AgriWare application should start from the core of its existence: the users. This user-centred process aims to let users express their needs through specific "*problem validation interviews*", so as to better understand what their goal is when using Organic-AgriWare. Before these interviews, users have been categorized into Personas, according to their common needs and characteristics and consequently the requirements of the online service arose from this procedure.

2.1. Problem validation

The first phase of this process was to run focused interviews at the project's partners (ICROFS and SEGES) headquarters with people working there, to identify their needs and requirements of the Organic-AgriWare application. As agreed in the first project meeting, we have come up with 3 main user personas (Researchers, Advisors, Farmers) that will be investigated and analysed through the interview process.

The second phase of this process was to run 2 online surveys in the form of questionnaires, one version for researchers and one different version for farmers and advisors. The online surveys circulated for approximately 3 weeks and required no more than 10 minutes of the participants' time.

All face-to-face interviews aimed at validating with the users the needs of the persona they were representing. Some users represented more than one persona. The duration of each interview was around 20 minutes. (Some user cases required more than 20 minutes).

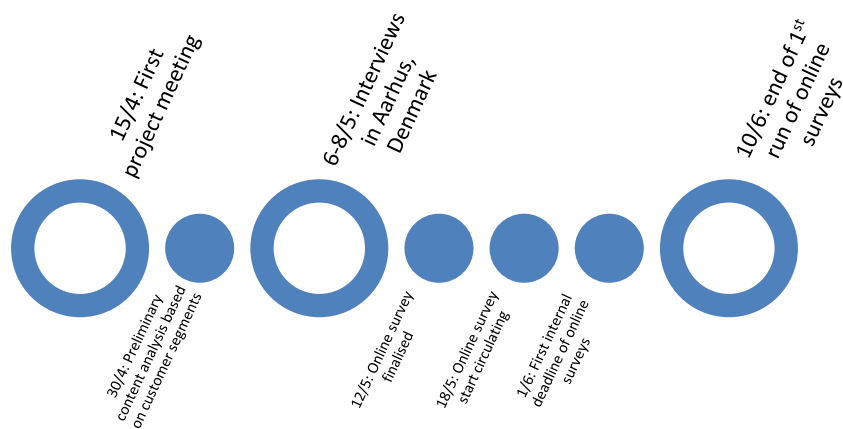Timeline of the followed process for collecting user requirements:

Figure 2.1 Use requirements collection process

The main aim for the interviews was to depict the needs of separate user groups, in order to examine the specifications that the online service will have. The aim of the online surveys was to collect even more opinions and answers in order to examine the specifications that the online service will have. As mentioned above, some users represented more than one persona, since some advisors were also farmers themselves.

The detailed table below (table 1) shows a summary of the interviewed people and the people who answered the online surveys in the first and second phases of the process respectively:

Table 1: Overview of the interviews and online surveys process

	Persona #1: Researchers	Persona #2: Advisors	Persona #3: Farmers	Total
Number of interviews	6	5	2	**13**
Number of replies to online surveys	4	13	3	**20**
Total number of contacts:	**10**	**18**	**5**	**33**

Persona #1: Researchers (e.g. university professors, researchers, scientific associates)

Persona #2: Advisors (e.g. advisors for the farmers, advisors for the advisors, agricultural extensive officers)

Persona #3: Farmers

2.2.   Identified Personas and Needs

The following section contains a brief description of every user persona and the needs that were identified through the interview and online survey processes. As mentioned above, the three different personas have been already identified in the Organic-AgriWare kick off meeting. These personas are the researchers, the farmers and the advisors. In some cases, all three personas can have the same needs and face the same problems, although from a different perspective. Real use-cases examples are provided in order to better understand the personas and their needs.

Persona #1: Researchers

Peter is a Professor at the University in Denmark. His area of expertise lies in Organic Agriculture. Peter has participated in many European and National research projects. He has many post-graduates students assisting him in his research topics. He needs to stay informed about all latest developments in the organic agriculture sector, not only in Denmark but worldwide. Accessing this information is not a problem for him. His problem is time: it takes him too much time to discover as well as filter all the scientific publications that exist dispersed in online and offline locations. Also, it is time consuming to continuously disseminate the research outcomes of his research project in the appropriate channels and would definitely prefer it if there was an automatic way to do it and save him the time. Another thing that would greatly help him save time is a smart search engine that would provide him with the results he wants each time.

Persona #2: Advisors

Erik is working as a farmer advisor in the Organic Agriculture sector in Denmark. He works side by side with organic agriculture farmers and advise them on how to take specific actions concerning their crops. He wants to keep himself updated on the approaches used and all the latest scientific research data so he can better consult his farmers. He sometimes has difficulty in accessing this information and he would like to be sure that he is not missing out on scientific research outcomes. He would like to search and access recent scientific publications so that he can keep track of what is being done in other countries.

Persona #3: Farmers

Thomas is an organic agriculture farmer, cultivating organic tomato in Denmark. He needs practical information related to organic agriculture techniques since he is not familiar with scientific research data. He is interested in accessing information related to his location and his crop. He would like to know more about his crop in terms of diseases, life-cycle, pest and weed management while improving his climate impact. He can understand, speak and read English in addition to his own native language so he would like to be able to know what is being done in other countries.

2.3.   Personas Needs (Problems & Features)

As mentioned in the Description of Work of the Organic-AgriWare application, the problem for the majority of organic agriculture stakeholders is that all necessary for them information is currently dispersed at different online and off-line locations/media. It is therefore difficult for the organic agriculture stakeholders to have easy access to the already acquired knowledge by the scientific community, as well as to collect the necessary context-related information and put it into the context of their challenges. Organic-AgriWare aims at providing advisors, farmers and researchers with context-based access to organic community knowledge. The combination of the organic agricultural research knowledge with other available practical information will maximize the practical benefits for organic farmers and the viability of their crop production. It will provide the end-users with a tailor made to their needs interface to open access repositories, as is the case of Organic Eprints, an international open access archive for papers and projects related to research in organic food and farming hosted by ICROFS. Through its advanced search capabilities, it will combine the archive's information with other useful resources for the user.

An overview of the needs that were expressed by the persona representatives after the problem validation phase is presented in the following tables. Among the problems listed in the interviews and the online surveys (see Annex), there were four problems that were selected by the majority of the users, according to the persona to which they belong, as presented in table 2.

Also, some possible features of the online service were suggested to the users, in order for them to choose the ones which would best help them, when it comes to discovering, sharing and disseminating research project outcomes and other information. Again, among the possible features listed, there were four features that were selected by the majority of the users, as presented in table 3.

Table 2: Problems related to discovering, sharing and disseminating research project outcomes

Problems related to discovering, sharing and disseminating research project outcomes	Researchers (Total:10)	Farmers/Advisors (Total: 23)	Total (Total:33)
It is difficult for me to find scientific publications about the organic agriculture topic of my interest	1 (10%)	12 (52%)	13 (39%)
It is time consuming to discover and filter the scientific publications related to a specific organic agriculture topic	6 (60%)	20 (87%)	26 (79%)
It is difficult for me to get access to best practices from other locations in my region or from other regions	4 (40%)	9 (39%)	13 (39%)
It is time consuming to continuously disseminate the research publications and the research outcomes of my research project	8 (80%)	0 (0%)	8 (24%)

Table 3: Features related to discovering, sharing and disseminating research project outcomes

Features related to discovering, sharing and disseminating research project outcomes	Researchers (Total:10)	Farmers/Advisors (Total: 23)	Total (Total: 33)
To search and find all the publications relevant for the organic agriculture topic of my interest	9 (90%)	16 (70%)	25 (76%)
To search and find scientific publications based on the researcher's name	5 (50%)	8 35%)	13 (39%)
To find easily recommended scientific publications, best practices and practical information based on keywords	5 (50%)	16 (70%)	21 (64%)
To have a personalized service with specific agriculture information for my case and my location	4 (40%)	9 (39%)	13 (39%)

2.4.   Solution validation

All participants of the interviews and surveys were eager to participate in a follow-up "solution validation process", in order to express their opinions about the first prototype of the online service that will be created. Taking into consideration the outcomes of the face-to-face interviews and online surveys, a series of wireframes were created that would lead to the development of the application. A first working prototype was created and the participants of the interviews and surveys together with new participants and users of the application were asked to provide their feedback after using the application extensively, by completing an online questionnaire.

Participants of the survey were asked to provide their feedback on the application usability, information and interaction, to try certain features and decide if they are helpful, to check if there was anything not working properly and to suggest if there was something that could be improved based on their own personal needs.

The results include the following:

-   90% of the participants found the application easy to learn to operate
-   90% of the participants found the application easy to navigate
-   90% of the participants believe the application provides the search results quickly
-   90% of the participants believe it was easy to find the results that they needed
-   90% of the participants believe the application has an attractive appearance
-   90% of the participants believe the application provides relevant content/data suitable for their needs and interests

As mentioned above, participants made some very useful comments and suggestions concerning some features and possible improvements of the Organic-AgriWare application which were taken into consideration and which were included in the final version of the application prototype, if applicable. Such suggestions were to be able to filter the results by year of publication, or by language of the resource.

3. Application prototype description

3.1. Functionalities and Usage Scenarios

The main features and functionalities offered by the Organic-AgriWare prototype (http://organic-agriware.agroknow.gr/) are:

- The Organic-AgriWare landing page provides the user with the possibility to discover all available resources related to organic agriculture without having to register or log in to the system.

- Moreover, the landing page provides the user with the possibility to browse through the three different user categories of the application (namely researchers, advisors and farmers) and receive more specific organic agriculture content depending on the category chosen, again without having to register or log in.

- A user can opt to register and therefore log in to the system in order to receive a more specialized service: by creating his/her profile, the user will receive even more specific content based on his/her location and the information given upon creating the profile based on his/her topic of interest. This feature is under development and will be finalised shortly.

- The system will provide the registered user with a list of suggested resources based on location, topic of interest and previous searches, use and interaction with the application.

More specifically, the following table presents the usage scenarios where Organic-AgriWare interface and features are shown. The table also presents the users participating, a short description of the scenario and how it corresponds to the user manual section.

Table 4: Organic-AgriWare application usage scenarios

Scenario	User	Description	User Manual
Discover resources	All	A user wants to use the services that are provided by the Organic-AgriWare application, without having to register or login, by using keywords or filters.	Figure 4.7
Register/Create a profile	All	A user wants to use the more personalized services that are provided by the Organic-AgriWare application, by creating a profile and providing information.	Figure 4.13
Login	All	A user wants to use the more personalized services that are provided by the Organic-AgriWare application, by logging in and finding resources based on his/her preferences, location and previous use of the application.	Figure 4.4
Browsing by categories	All	A user wants to browse through the various subject categories, with or without login.	Figure 4.8

Scenario	User	Description	User Manual
Browsing by types	All	A user wants to browse through the various resources types, with or without login.	Figure 4.9
Browsing by selecting "researcher" view	All, mainly for researchers	A user wants to browse and get results based on the "researcher" view.	Figure 4.7
Browsing by selecting "advisor" view	All, mainly for advisors	A user wants to browse and get results based on the "advisor" view.	Figure 4.7
Browsing by selecting "farmer" view	All, mainly for farmers	A user wants to browse and get results based on the "farmer" view.	Figure 4.7

3.2.   Components

The FIWARE components that are used in the executable software application are:

FIWARE Cloud

The overall architecture infrastructure is based on three virtual machines (vms) located in Volos FIWARE node instances. These virtual machines host the web application, Orion Context Broker (CB) and Complex Event Processing GE (CEP) respectively. The communication between these vms is achieved by the internal FIWARE node network. Only the web application is externally published via a single public IP and with the domain name organic-agriware.agroknow.gr.

The cloud instances are accessible by SSH. A public ip is used to connect via SSH to the web application with a private key from the web application instance to other instances. The security in the communication of the interconnected cloud instances virtual machines is achieved by a token. The token is a hash key that in each Rest request is carried by the headers.
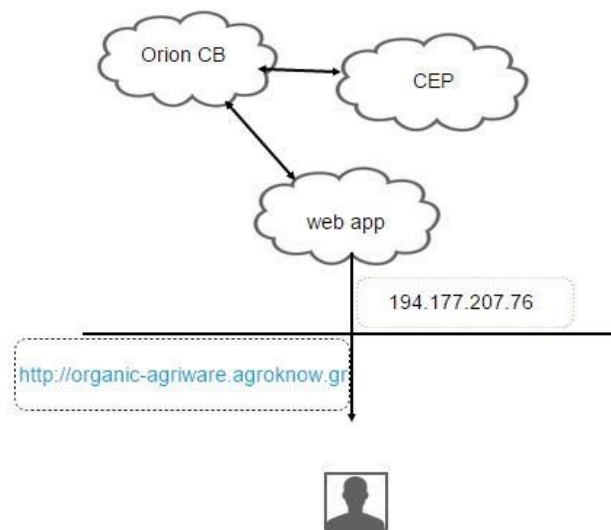

Figure 3.1 FIWARE components integration

In order to have the web application up and running, an Ubuntu Server 14.04.1 (x64) image was launched and all the appropriate installations were made. The main framework that was deployed in Ubuntu - apache web server and was used to develop the web app is the Drupal 7 framework with custom and contributed modules. Furthermore, in order to achieve the communication with CB, the FIWARE Rest client Drupal module was developed that sends user profile data from web app to CB. Finally, a token was generated and used for each request in order to have access to context broker and have the web app authenticated.

Orion Context Broker (CB)

The CV is the main component that stores the user's habits. These habits are stored in order to achieve the basic offering web application functionality like search results recommendations (as described previously) on very relative documents. User data like user's IP, location, real time search terms, favourite search terms, days registered, days to visit the web application, date timestamp creation. The data are transferred (posted) via Rest web service module that is hosted in web app instance to the CB's listen interface (API) that by default offers CB. Except of the pure data storing, the web app module functionality was extended by exploiting the CB's subscription functionality. This offering makes the offered service very scalable due to asynchronous notifications and without the need of polling repeatedly the CB. To explain better, we will refer the following example.

When a registered user is visiting the web application, we send his IP, location, preferred search terms, interest terms that has inserted to his profile, days to login, days to visit the web application and a timestamp. Also, if a user is a new user, we send also a subscription request from the web app to the CB. We are also working to connect CB with CEP as described below.

Complex Event Processing GE (CEP)

CEP is the main component that analyses the data events that is posted from CB. The model that we have already defined and included in cep instance take as event data a minimum value number of frequency search terms, a boolean flag that indicates if a user ip changed or location changed. Based on that situation we would like to post an event to web application in order to recommend on real time specific Organic-AgriWare documents based in user's interests. In order to achieve the connection between CB and CEP a java web service client is under development as mentioned which would transform JS events to the flat json structure that CEP API listen too.

FIWARE Lab Data interface

The Organic-AgriWare documents that we have in our possession are available through protocols like oai-pmh and CKAN with xml format in order to be imported to FIWARE data lab. In our case for the time being we imported some Organic-AgriWare xml documents by the manual way from the web interface.

FIWARE Lab Cloud interface

In order to create FIWARE virtual machines instances we used the FIWARE cloud lab. In more detail, we launched a virtual machine with specifications 4 GB ram, 2 VCPU and 40 GB disk for hosting the web application. Also we launched a virtual machine with 2 GB ram, 1 VCPU and 20 GB disk for CB and also another with the same characteristics for CEP. In order to have access to web application a public IP was allocated to the Ubuntu web app image. Also for the security concerns we defined some network rules and SSH keys.

3.3.   Ingestion

The Organic-AgriWare application offers data ingestion mechanism. The data ingestion mechanism is responsible for importing content and metadata records from multiple diverse sources that are publishing the metadata records through custom API, OAI-PMH protocol, RDF and dump files.

An importer with just a few clicks of configuration can ingest content from raw files that are located to web apps directory or from a web API through Rest Services and to be imported into Organic-AgriWare side. Also, before the data are stored in the database, the cleaning mechanism, if configured, removes unwanted content or curates it. For example, it can remove unwanted html characters. Another important functionality of the importer is the filtering mechanism that could be configured in order to filter out not relative content. For example, if a record is irrelevant to organic agriculture thematics, then this record will not be imported to Organic-AgriWare.

In order to provide to the user all the resources of Organic-AgriWare, we use the powerful Apache Solr 1.4 engine. Furthermore the ingested content is indexed with Apache Solr and offered via this engine to the user search interface under a specific schema.
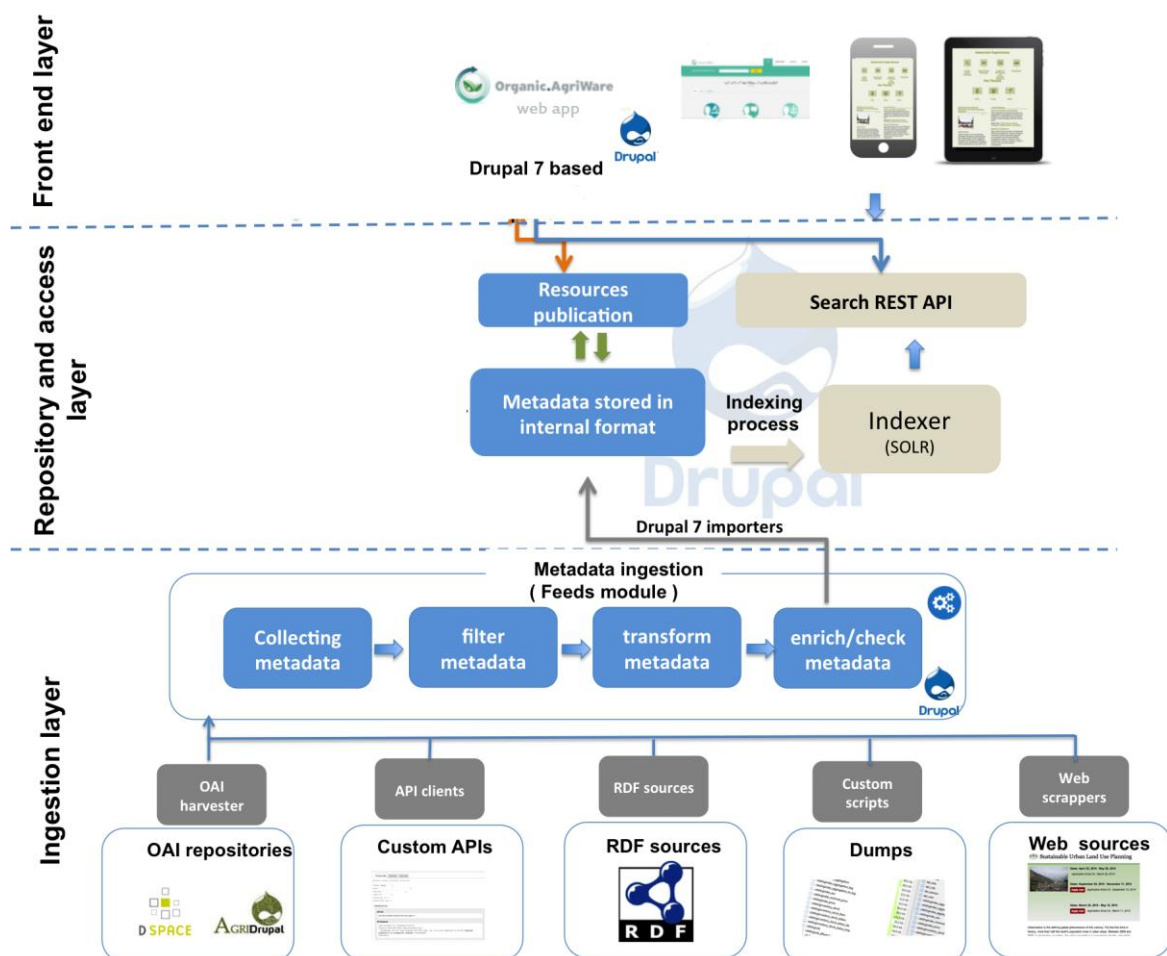

Figure 3.2 Organi-AgriWare Architecture

3.4.   Test beds

In order to check that the application prototype and all its features and components are working well together, we performed extended testing.

In order to check the interconnection between the FIWARE components, we made some RestFull requests. Therefore, in order to check the Orion Context Broker that is running on 192.168.111.132 ip we send some post requests with the user ip , the search term string and a number of days that a user has to login and also get requests in order to get the stored results. In similar way, we made some requests to CEP. Also, we made the configuration of CEP via the web tool proton that is offered at 192.168.111.133:8080/ProtonOnWebServerAdmin.

All these results can be found in Annex A (Testing results).

4. User Manual

4.1.   Organic-AgriWare Structure

The Organic-AgriWare main page is consisted from 2 major sections: a header consisting of a main menu that is available to all users, and browsing all the pages of the portal and is positioned in upper area of the site and a second section – the main body – where the pages of the portal are being projected. There is also a footer section which contains useful information about the portal and the partners involved (fig. 4.1). The portal has the following sections:

1. Home page
2. Researchers view
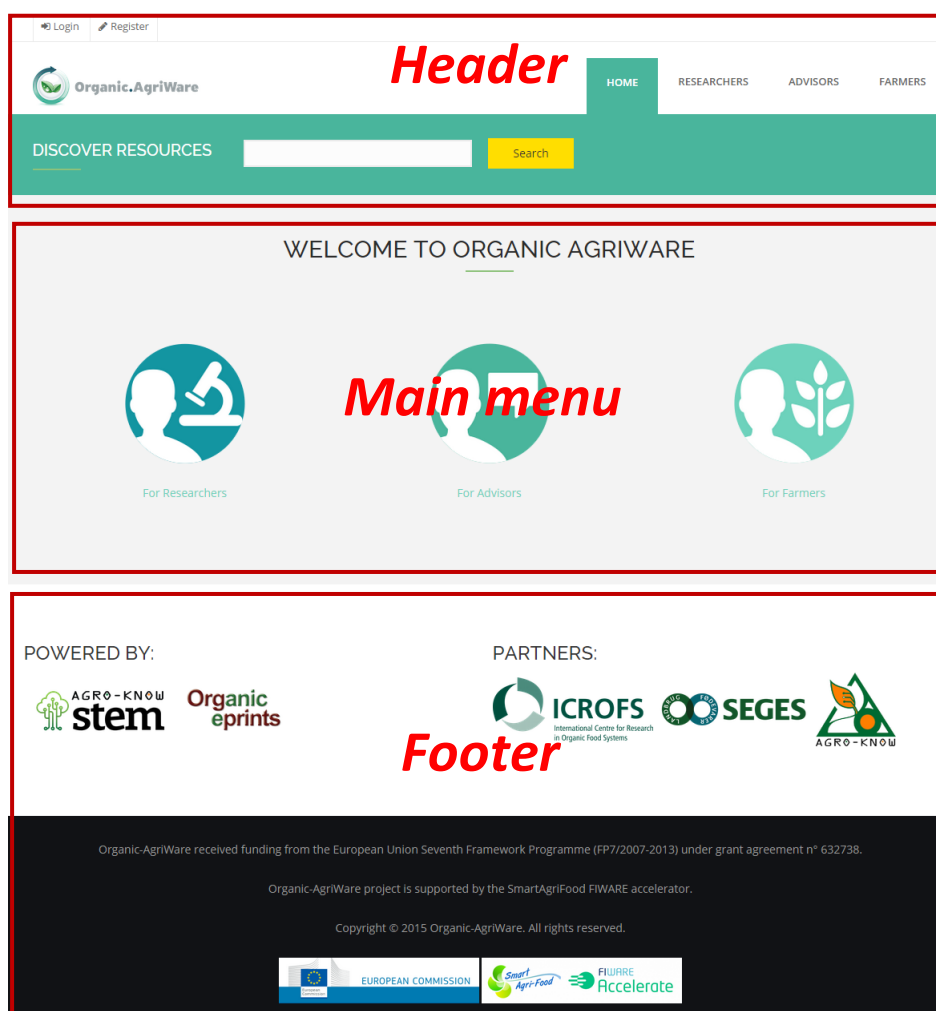3. Advisors view
4. Farmers view
5. Resources search page

Figure 4.1 Organic-AgriWare main page (sections)

4.2. Organic-AgriWare Sections

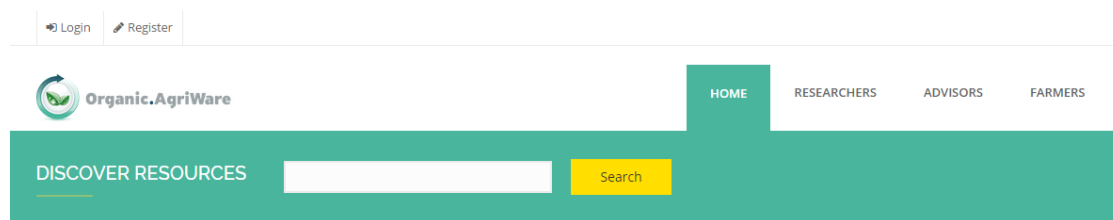### 4.2.1. Header – Main Menu

Figure 4.2 Organic-AgriWare header

The first section of the portal consists of all the important elements that can be useful to the users at any time while they are using the portal, hence this section is always available to the users independently on the page they are currently using. Since the main function of the portal is searching resources, the search box constitutes the main component of the header area (fig. 4.2). In addition to the search box, Organic-AgriWare design uses an "always-visible" strap at the upper part of the website where users can:

- Login
- Register
- Browse between the different user groups

More specifically through the header the user can access the following functions of the portal.

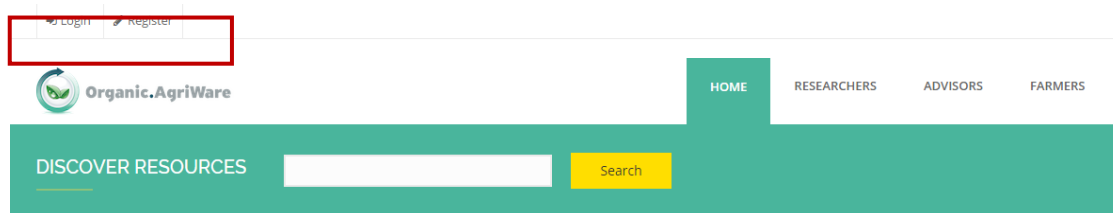**Login and Register Buttons**

Figure 4.3 Organic-AgriWare login & register buttons

From the upper left area of the header users can login Organic-AgriWare or register for a new account (fig. 4.3). There are two different types of users: non-registered users and registered users. Through the login page (fig. 4.4), a user can sign in using his credentials or request for a new password to be sent to the e-mail they have used to register in the portal. New users can use the registration button to proceed with the registration, as it will be explained later.
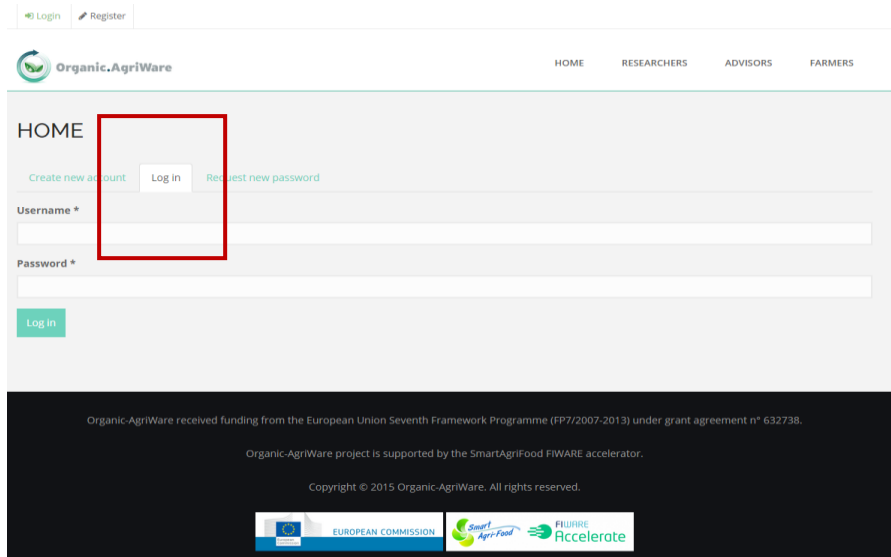
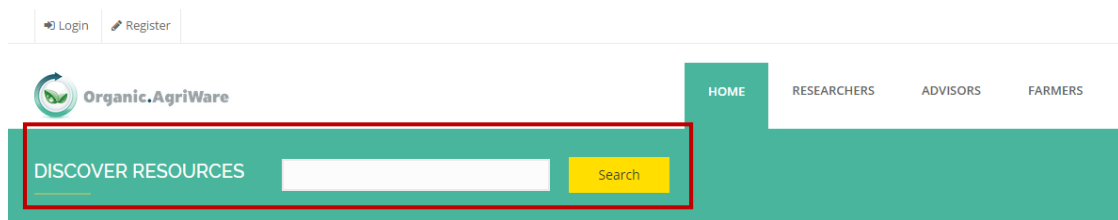**Figure 4.4 Organic-AgriWare login menu**

Search Input Box

Figure 4.5 Organic-AgriWare Search box

The search input box is available to users though all web pages of the portal (fig. 4.5). The search box is positioned in the middle left area of this section. Through the search input box, users have the option to browse directly through all available resources by typing "*" or get results based on keywords used. Organic-AgriWare features resources in many different languages, so users can use keywords in more than one language, as long as there is at least one resource featuring the specific keyword in its title, regardless of the preselected keywords used in the application.
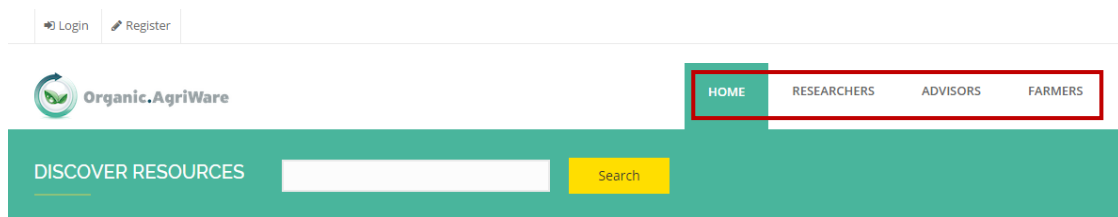
Main Navigation Menu

Figure 4.6 Organic-AgriWare navigation menu

This is the basic menu available in all pages to all users. Through this menu the user can choose to navigate either to the home page or to the different user type views (fig. 4.6).

4.2.2. Organic-AgriWare home page

The home page of the portal (fig. 4.7) has three featured areas with pre-fixed queries that link to the same sub-page with specific content, the "Browse by categories" page (fig. 4.8). However, even though the categories are the same for all three user groups (i.e. Animal Husbandry, Crop Husbandry, Farming Systems etc.), in the next level ("Browse by type", fig. 4.9), depending on the initial choice selected by the user (Researchers, Advisors or Farmers), there are pre-fixed queries that link users with preselected resource types of Organic Eprints. These filters were selected based on the user requirements and needs identified in the first step of the development process and the classification was based on the most populated categories based on the Organic Eprints classification system.
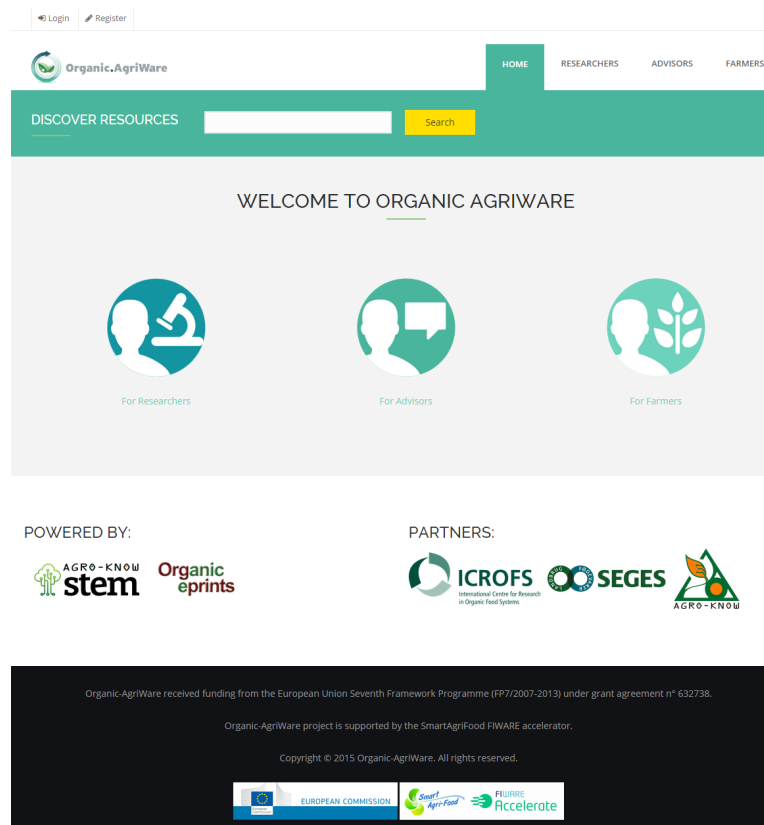

Figure 4.7 Organic-AgriWare homepage

More specifically, the section "For Researchers" directly links users with the following preselected resource types: Conference paper, Journal paper, Thesis, Project description. The section "For Advisors" directly links users with the following preselected resource types: Newspaper or magazine article, Book, Report, Report chapter and finally, the section "For Farmers" directly links users with the following preselected resource types: Newspaper or magazine article, Book, Report, Book chapter (fig. 4.9).

However, when the user proceeds to the next level where results are shown after selecting the user type, the category and the resource type, on the right side of the results, the user can find all the filters used together with the other subject categories and resource types, so all related results are available to all users regardless of their type (fig. 4.10). More details on how the results are presented are given in the next section (Resources search page).

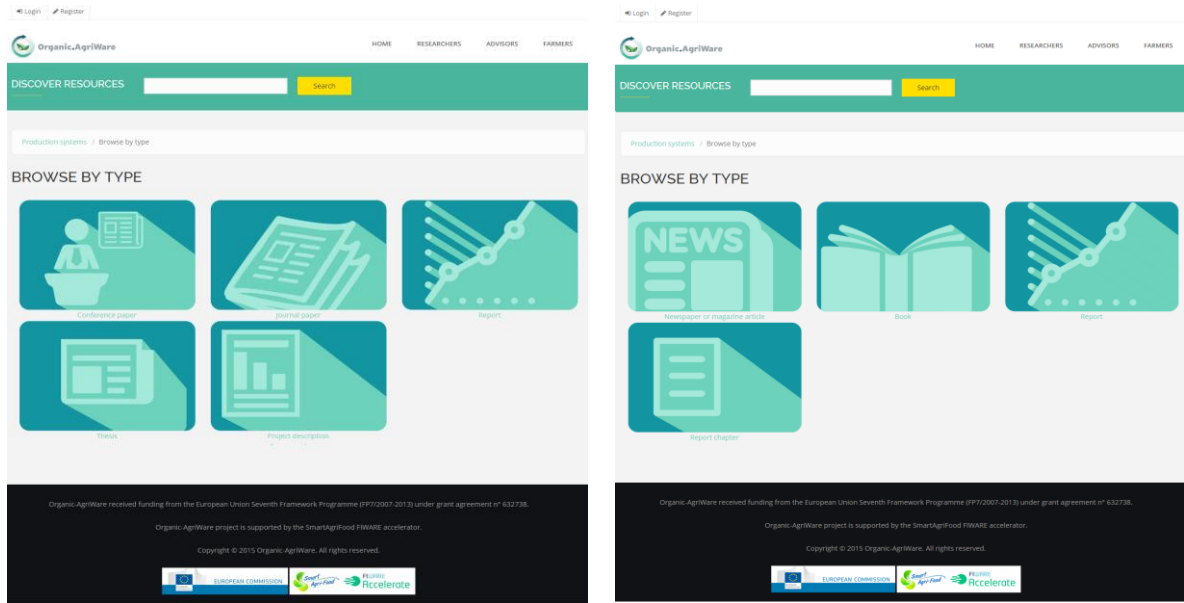**Figure 4.8 Organic-AgriWare browse by categories page**

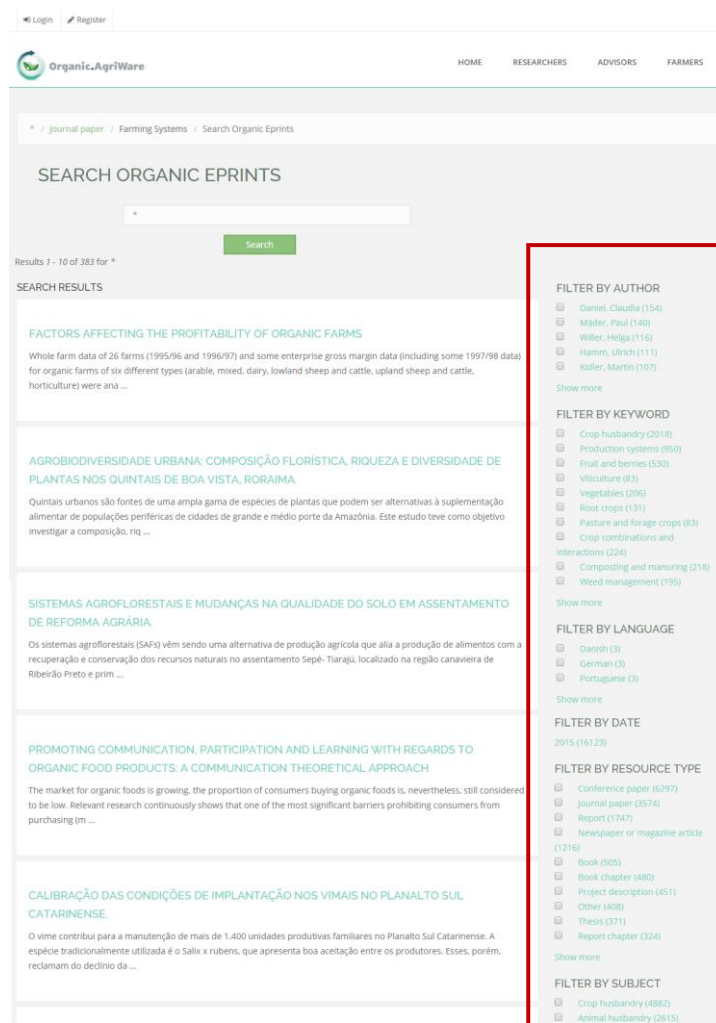**Figure 4.9 Organic-AgriWare browse by type pages: for researchers (left), for advisors/farmers (right)**

Figure 4.10 Facet & filtering features at Organic-AgriWare

4.2.3. Resources Search Page

When a user submits a search from Organic-AgriWare home page using the Search Input Box (fig. 4.4), s/he is redirected to the text search page (fig. 4.11). Search results can be clicked for more details (full metadata information).

From the results page, the user has the option to view the resource by clicking the title of the resource and get more information for the resource (by opening the resource viewer described in the next section). Each result has its own URI that can be accessed directly through the browser. In the sidebar on the right specific filters are provided.

Figure 4.11 Facet & filtering features at Organic-AgriWare (using Search Input Box)

Through the filter sidebar user can add and combine filters in order to better limit the results or remove some of the already applied to broaden the search. The available filters offer the user the ability to specify the results based on:

- Author: filters the results based on author(s)
- Keyword: filters the results based on keyword(s)
- Language: filters the result based on the language of the resource
- Date: filters the result based on the date of the resource
- Resource type: filters the results based on resource type(s)
- Subject: filters the results based on subject(s)
- Provider: filters the results based on who is the provider of the resource

As mentioned before, these filters were selected based on the user requirements and needs identified in the first step of the development process and the classification was based on the most populated categories based on the Organic Eprints classification system.

When using the faceted search, the selected filters appear in the sidebar on the right, as a ☑ for the filters used. Users can quickly remove a filter by de-selecting the ☑ button in the sidebar

4.2.4. Resource Viewer

In order for more information on a specific resource to be provided, the user has the option to view the resource by clicking the title of the resource. Once clicked, the user has access to all the information available for a specific resource such as description, keywords, resource url (link), author(s), subject, etc (fig. 4.12). By clicking the title or the link of the resource, the user will be forwarded in the resource itself at the webpage of the provider, in this case Organic Eprints.
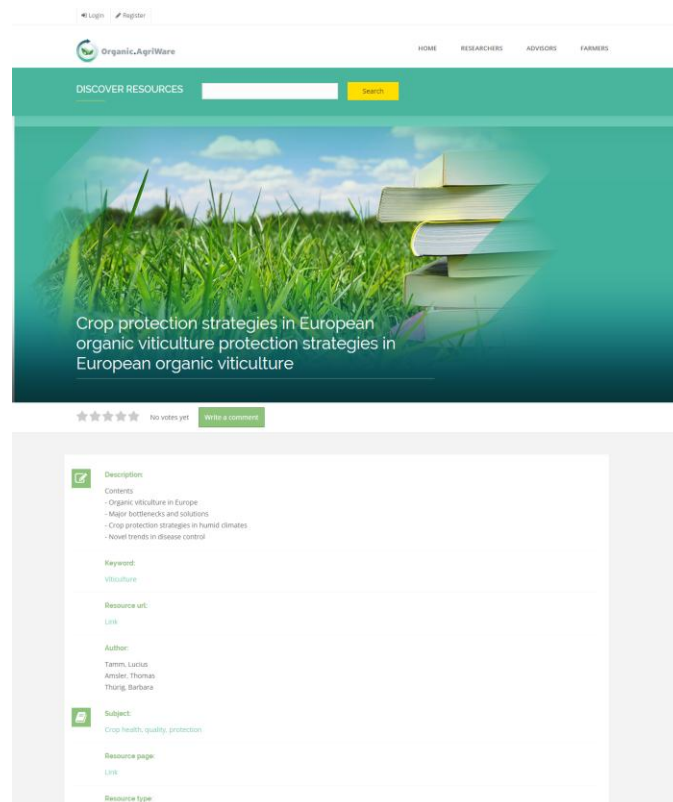
Figure 4.12 Organic-AgriWare resource viewer

4.2.5. Registration page

There are two different types of users, the registered and the un-registered users. Again, both have access to main functions of Organic-AgriWare, but more specialized services are available only to registered users.

For new users a registration page is available through a button in the upper left login menu (fig. 4.13). The information required for the registration includes username, email address, password, name, role and areas of interest.

Figure 4.13 Register page at Organic-AgriWare

The user is then re-directed to Organic-AgriWare's home page, with a message thanking the user for applying to Organic-AgriWare and informing him/her of the procedure that will be followed (fig. 4.14).
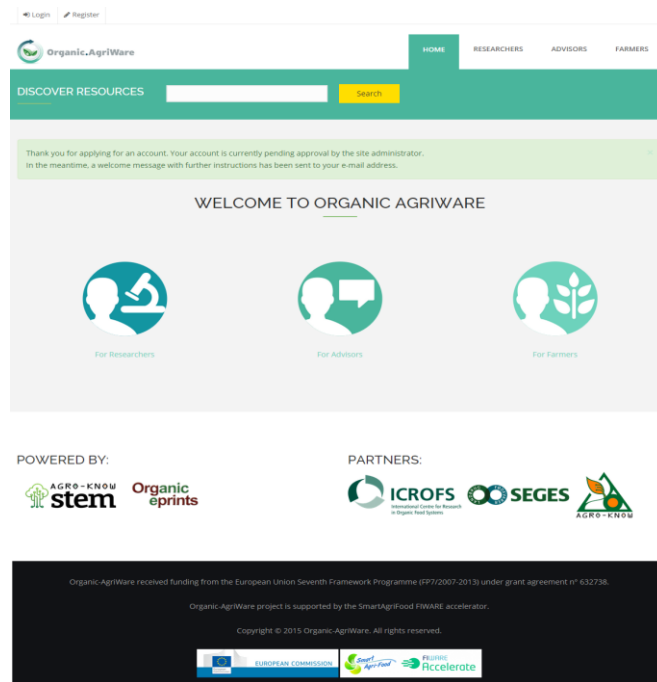
Figure 4.14 "Thank you for applying for an account" message.

An email is sent to the email address that the user has provided where he/she is informed that the application for an account is pending approval (fig. 4.15). Once the application is approved, he/she receives a new email where he/she is informed that the account has been approved and activated, with further instructions on how to proceed.
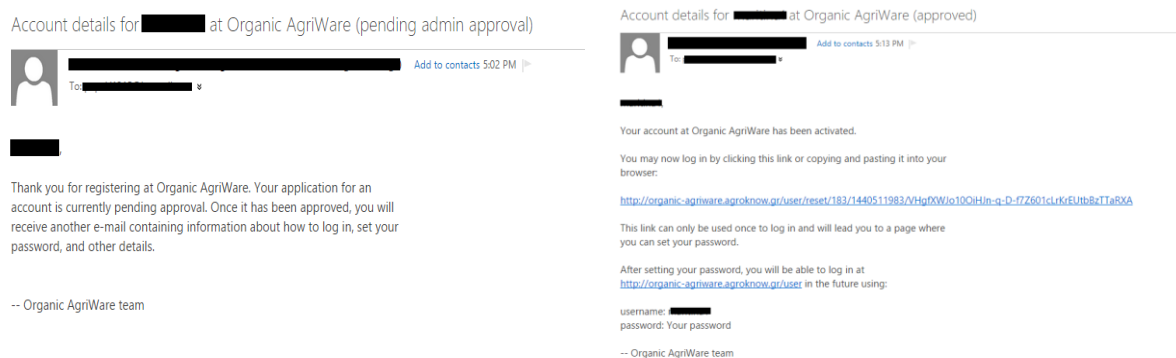
Figure 4.15 Email sent to user informing the account status: pending approval (left), approved (right)

The user follows the link provided in order to reset the password for the account created (fig. 4.16) and then he/she is re-directed to his/her account page where he/she can edit information in the account. The user can then continue using the Organic-AgriWare application.
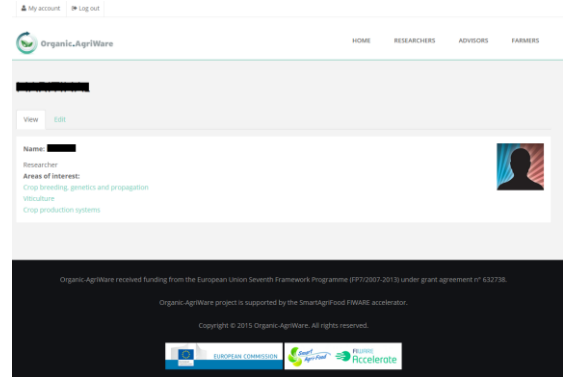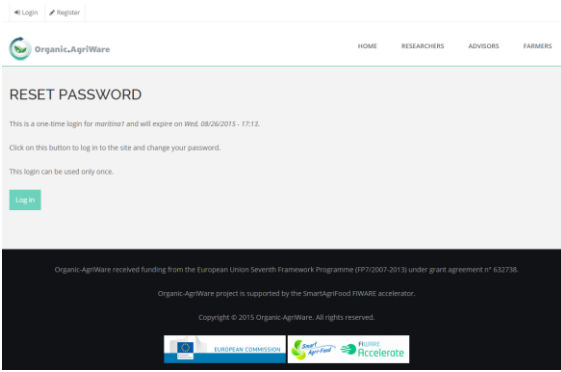
Figure 4.16 Reset password page (left), My account page (right)

5. Annex A: Testing results

In order to check the interconnection between the FIWARE components we made some RestFull requests from FIWARE offered testing environment and also from our Organic-AgriWare environment.

5.1.   1st Test Bed

1st Test Bed took place at orion.lab.fi-ware.org testing environment and tested the Context Broker and CEP components.

5.1.1. Testing Organic-AgriWare environment

In order to check the Orion Context Broker that is running on 192.168.111.132 ip we send some post requests with the user ip , the search term string and a number of days that a user has to login and also get requests in order to get the stored results . In similar way we made some requests to CEP. Also we made the configuration of CEP via the web tool proton that is offered at 192.168.111.133:8080/ProtonOnWebServerAdmin .

5.1.2. Testing lab.fi-ware.org offered environment

In order to test the fiware lab environment we made also some RestFull requests as made in Organic-AgriWare environment and as described at https://forge.fiware.org/plugins/mediawiki/wiki/fiware/index.php/Publish/Subscribe_Broker_-_Orion_Context_Broker_-_User_and_Programmers_Guide#Example_Case

5.1.3. Use Case of CRUD operations on Context Broker

The results from GET , POST , PUT request and the corresponding responses are presented below:

GET Request
curl orion.lab.fi-ware.org:1026/ngsi10/contextEntities/urn:smartsantander:testbed:357 -X GET -s -S --header 'Content-Type: application/json' \
    --header 'Accept: application/json' --header "X-Auth-Token: $AUTH_TOKEN" | python -mjson.tool

```
{
  "contextElement": {
    "attributes": [
      {
        "name": "TimeInstant",
        "type": "urn:x-ogc:def:trs:IDAS:1.0:ISO8601",
        "value": "2015-05-28T14:46:59.000000Z"
      },
      {
        "metadatas": [
          {
            "name": "code",
```

```
          "type": "",
          "value": "dB"
        }
      ],
      "name": "sound",
      "type": "urn:x-ogc:def:phenomenon:IDAS:1.0:sound",
      "value": "58"
    },
    {
      "metadatas": [
        {
      "name": "code",
          "type": "",
          "value": "%"
        }
      ],
      "name": "batteryCharge",
      "type": "urn:x-ogc:def:phenomenon:IDAS:1.0:batteryCharge",
      "value": "66"
    },
    {
      "metadatas": [
        {
          "name": "code",
          "type": "",
          "value": "deg"
        }
      ],
      "name": "Latitud",
      "type": "urn:x-ogc:def:phenomenon:IDAS:1.0:latitude",
      "value": "43.46323"
    },
    {
      "metadatas": [
        {
          "name": "code",
          "type": "",
          "value": "deg"
        }
      ],
      "name": "Longitud",
      "type": "urn:x-ogc:def:phenomenon:IDAS:1.0:longitude",
      "value": "-3.80882"
    }
  ],
  "id": "urn:smartsantander:testbed:357",
  "isPattern": "false",
  "type": "santander:soundacc"
},
"statusCode": {
  "code": "200",
```

```
        "reasonPhrase": "OK"
    }
}
```

curl orion.lab.fi-ware.org:1026/ngsi10/contextEntities/urn:smartsantander:testbed:3332 -X GET -s -S
--header 'Content-Type: application/json' \
    --header 'Accept: application/json' --header "X-Auth-Token: $AUTH_TOKEN" | python -
mjson.tool

curl orion.lab.fi-ware.org:1026/ngsi10/contextEntities/urn:smartsantander:testbed:3332 -X GET -s -S
--header 'Content-Type: application/json' \
    --header 'Accept: application/json' --header "X-Auth-Token: $AUTH_TOKEN" | python -
mjson.tool

```
 {
   "contextElement": {
     "attributes": [
       {
         "name": "TimeInstant",
         "type": "urn:x-ogc:def:trs:IDAS:1.0:ISO8601",
         "value": "2015-04-08T11:29:29.000000Z"
       },
       {
         "metadatas": [
           {
             "name": "code",
             "type": "",
             "value": "vph"
           }
         ],
         "name": "trafficIntensity",
         "type": "urn:x-ogc:def:phenomenon:IDAS:1.0:trafficIntensity",
         "value": "2"
       },
       {
         "metadatas": [
           {
 "name": "code",
             "type": "",
             "value": "%"
           }
         ],
         "name": "occupancy",
         "type": "urn:x-ogc:def:phenomenon:SmartS:1.0:occupancy",
         "value": "1.28"
```

```
            },
            {
              "metadatas": [
                {
                  "name": "code",
                  "type": "",
                  "value": "deg"
                }
              ],
              "name": "Latitud",
              "type": "urn:x-ogc:def:phenomenon:IDAS:1.0:latitude",
              "value": "43.46555"
            },
            {
          "metadatas": [
                {
                  "name": "code",
                  "type": "",
                  "value": "deg"
                }
              ],
              "name": "Longitud",
              "type": "urn:x-ogc:def:phenomenon:IDAS:1.0:longitude",
              "value": "-3.83383"
            }
        ],
        "id": "urn:smartsantander:testbed:3332",
        "isPattern": "false",
        "type": "santander:traffic"
    },
    "statusCode": {
      "code": "200",
      "reasonPhrase": "OK"
    }
}
```

POST

```
(curl orion.lab.fi-ware.org:1026/ngsi10/contextEntities/$ID -X POST -s -S --header 'Content-Type:
application/json' --header 'Accept: application/json' \
    --header "X-Auth-Token: $AUTH_TOKEN" -d @- | python -mjson.tool) <<EOF
{
  "attributes" : [
    {
    "name" : "city_location",
    "type" : "city",
    "value" : "Athens"
    },
```

```
  {
    "name" : "temperature",
    "type" : "float",
    "value" : "23.8"
  }
 ]
}
EOF
```

Response

```
{
   "contextResponses": [
     {
       "attributes": [
         {
            "name": "city_location",
            "type": "city",
            "value": ""
         },
         {
            "name": "temperature",
            "type": "float",
            "value": ""
         }
       ],
       "statusCode": {
          "code": "200",
          "reasonPhrase": "OK"
       }
     }
   ],
   "id": "MyEntity-9849263877",
   "isPattern": "false",
   "type": ""
}
```

Update

```
(curl orion.lab.fi-ware.org:1026/ngsi10/contextEntities/$ID/attributes/temperature -X PUT -s -S --
header 'Content-Type: application/json' \
    --header 'Accept: application/json' --header "X-Auth-Token: $AUTH_TOKEN" -d @- | python -
mjson.tool) <<EOF
{
 "value": "23.4"
}
EOF
```

Response

```
{
   "code": "200",
   "reasonPhrase": "OK"
}
```

5.1.4. Results from testing the context aware GE

In our test case we requested to get censored content **results** with restful requests to the server and the response format was as we expected. The **response time** from requests with GET (restful verb) was good .

5.1.5. Use Case of CRUD operations on CEP GE

The CEP GE adds smart to our application by situation processing .A situation in our organic agriware environment is a documents suggestion web application based on data like geolocation ,user profile, search analytics. So a possible configuration for our case would be as below:

Export of CEP configuration json file

```
{
  "epn":{
    "events":[
      {
        "name":"testEvent",
        "createdDate":"Fri May 29 2015",
        "createdBy":"Agroknow",
        "attributes":[
          {
            "name":"Certainty",
            "type":"Double",
            "defaultValue":"1",
            "dimension":0,
            "description":"The certainty that this event happen (value between 0 to 1)"
          },
          {
            "name":"OccurrenceTime",
            "type":"Date",
            "dimension":0,
            "description":"No value means it equals the event detection time, other option is to use
one of the defined distribution functions with parameters"
          },
          {
            "name":"ExpirationTime",
```

```
            "type":"Date",
            "dimension":0,
            "description":"Only till this time the cost and certainty parameters of the event are
valid, and only till this time a proactive action is considered"
          },
          {
            "name":"Cost",
            "type":"Double",
            "dimension":0,
            "description":"The cost of this event occurrence. Negative if this is an opportunity"
          },
          {
            "name":"Duration",
            "type":"Double",
            "defaultValue":"0",
            "dimension":0,
            "description":"Used in case the this event occur within an interval"
          },
          {
            "name":"Advisor id",
            "type":"Integer",
            "dimension":"0"
          }
        ]
      },
      {
        "name":"advisorReport",
        "createdDate":"Fri May 29 2015",
        "attributes":[
          {
            "name":"Title",
            "type":"Double",
            "defaultValue":"1",
            "dimension":0,
            "description":"The certainty that this event happen (value between 0 to 1)"
          },
          {
            "name":"OccurrenceTime",
            "type":"Date",
            "dimension":0,
            "description":"No value means it equals the event detection time, other option is to use
one of the defined distribution functions with parameters"
          },
          {
            "name":"ExpirationTime",
            "type":"Date",
            "dimension":0,
            "description":"Only till this time the cost and certainty parameters of the event are
valid, and only till this time a proactive action is considered"
          },
          {
```

```
          "name":"Cost",
          "type":"Double",
          "dimension":0,
          "description":"The cost of this event occurrence. Negative if this is an opportunity"
        },
        {
          "name":"Duration",
          "type":"Double",
          "defaultValue":"0",
          "dimension":0,
          "description":"Used in case the this event occur within an interval"
        }
      ]
    },
    {
      "name":"visitApp",
      "createdDate":"Fri May 29 2015",
      "attributes":[
        {
          "name":"UserID",
          "type":"Integer",
          "dimension":0,
          "description":"The certainty that this event happen (value between 0 to 1)"
        },
        {
          "name":"Duration",
          "type":"Double",
          "defaultValue":"0",
          "dimension":0,
          "description":"Used in case the this event occur within an interval"
        },
        {
          "name":"longitude",
          "type":"Double",
          "dimension":0
        },
        {
          "name":"latitude",
          "type":"Double",
          "dimension":0
        },
        {
          "name":"temperature",
          "type":"Double",
          "dimension":0
        },
        {
          "name":"type",
          "type":"String",
          "dimension":0
        },
```

```
      {
        "name":"Timestamp",
        "type":"Date",
        "dimension":0
      }
    ]
  },
  {
    "name":"keywordSearch",
    "createdDate":"Fri May 29 2015",
    "attributes":[
      {
        "name":"Id",
        "type":"Integer",
        "dimension":0,
        "description":"The certainty that this event happen (value between 0 to 1)"
      },
      {
        "name":"UserId",
        "type":"Integer",
        "dimension":0,
        "description":"No value means it equals the event detection time, other option is to use
one of the defined distribution functions with parameters"
      },
      {
        "name":"macAdress",
        "type":"String",
        "dimension":0
      },
      {
        "name":"KeywordsSearched",
        "type":"String",
        "dimension":0
      },
      {
        "name":"ReturnedTitlesID",
        "type":"String",
        "dimension":0
      },
      {
        "name":"Timestamp",
        "type":"Date",
        "dimension":0
      }
    ]
  }
],
"epas":[
  {
    "name":"keywordIdentification",
    "description":"When farmer search for content the identified keywords are send.",
```

```json
        "createdDate":"Fri May 29 2015",
        "epaType":"All",
        "context":"NonStoping",
        "inputEvents":[
          {
            "name":"keywordSearch",
            "alias":"null",
            "filterExpression":"null",
            "consumptionPolicy":"Consume",
            "instanceSelectionPolicy":"First"
          }
        ],
        "computedVariables":[

        ],
        "assertion":"identify_keywords",
        "evaluationPolicy":"Immediate",
        "cardinalityPolicy":"Unrestricted",
        "internalSegmentation":[

        ],
        "derivedEvents":[
          {
            "name":"keywordSearch",
            "condition":"identidied_keywords",
            "reportParticipants":false,
            "expressions":{

            }
          }
        ],
        "derivedActions":[

        ]
      },
      {
        "name":"geolocationIdentification",
        "createdDate":"Fri May 29 2015",
        "epaType":"Sequence",
        "context":"NonStoping",
        "inputEvents":[
          {
            "name":"visitApp",
            "consumptionPolicy":"Consume",
            "instanceSelectionPolicy":"First"
          }
        ],
        "computedVariables":[

        ],
        "evaluationPolicy":"Immediate",
```

```json
        "cardinalityPolicy":"Single",
        "internalSegmentation":[

        ],
        "derivedEvents":[

        ],
        "derivedActions":[

        ]
     }
   ],
   "contexts":{
     "temporal":[
        {
          "name":"NonStoping",
          "description":"Waits events to be occured",
          "createdDate":"Fri May 29 2015",
          "type":"TemporalInterval",
          "atStartup":true,
          "neverEnding":true,
          "initiators":[

          ],
          "terminators":[

          ]
        }
     ],
     "segmentation":[

     ],
     "composite":[

     ]
   },
   "consumers":[
     {
       "name":"testConsumer",
       "createdDate":"Fri May 29 2015",
       "type":"Rest",
       "properties":[
          {
            "name":"URL"
          },
          {
            "name":"contentType",
            "value":"text/plain"
          },
          {
            "name":"formatter",
```

```
      "value":"tag"
    },
    {
      "name":"delimiter",
      "value":";"
    },
    {
      "name":"tagDataSeparator",
      "value":"="
    },
    {
      "name":"dateFormat"
    }
  ],
  "events":[
    {
      "name":"visitApp"
    },
    {
      "name":"keywordSearch"
    }
  ],
  "actions":[

  ]
  }
],
"producers":[
  {
    "name":"input",
    "createdDate":"Fri May 29 2015",
    "type":"Rest",
    "properties":[
      {
        "name":"URL",
        "value":"organicAgriware.eu"
      },
      {
        "name":"contentType",
        "value":"text/plain"
      },
      {
        "name":"sendingDelay",
        "value":"undefined"
      },
      {
        "name":"pollingInterval"
      },
      {
        "name":"pollingMode",
        "value":"BATCH"
```

```
        },
        {
          "name":"formatter",
          "value":"tag"
        },
        {
          "name":"delimiter",
          "value":";"
        },
        {
          "name":"tagDataSeparator",
          "value":"="
        },
        {
          "name":"dateFormat"
        }
      ],
      "events":[

      ]
    }
  ],
  "actions":[

  ],
  "name":"agri"
  }
}
```

5.1.6. Results from testing the CEP GE

The web interface for the creation of CEP configuration used very easily and with an user friendly interface .The situation / event driven approach is very helpfull to achieve our goal to suggest documents from organic eprints repository based also on sensors.

5.2.   2st Test Bed

The 2st Test Bed took place at organic-agriware environment and tested the Context Broker and CEP components .

Post
curl 192.168.111.132:1026/v1/updateContext -d @testModel.json -s -S --header 'Content-Type: application/json' --header 'Accept: application/json' --header "X-Auth-Token: $token"

testModel.json file

{"contextElements": [
{
"type": "UserTrack",
"isPattern": "false",
"id": "9999",
"attributes": [
{
"name": "ip",
"type": "string",
"value": "1.1.1.1"
},
{
"name": "searchterm",
"type": "string",
"value": "test"
},
{
"name": "login_days",
"type": "integer",
"value": "2"
}
]
}
],
"updateAction": "APPEND"
}

Response

{
"contextResponses" : [
{
"contextElement" : {
"type" : "UserTrack",
"isPattern" : "false",
"id" : "9999",
"attributes" : [
{
"name" : "ip",
"type" : "string",
"value" : ""
},
{
"name" : "searchterm",
"type" : "string",
"value" : ""
},
{
"name" : "login_days",
"type" : "integer",
"value" : ""
}

```
]
},
"statusCode" : {
"code" : "200",
"reasonPhrase" : "OK"
}
}
```

5.2.1. Check CEP

curl 192.168.111.133:8080/ProtonOnWebServerAdmin/resources/definitions -X GET -s -S --header 'Content-Type: application/json'

Response

```
[
{
"name": "/opt/repositories/tomcat10/DoSAttack.json",
"url": "/ProtonOnWebServerAdmin/resources/definitions/DoSAttack"
},
{
"name": "/opt/repositories/tomcat10/DoSAttack2.json",
"url": "/ProtonOnWebServerAdmin/resources/definitions/DoSAttack2"
},
{
"name": "/opt/repositories/tomcat10/OrganicRecom.jsonOLD",
"url": "/ProtonOnWebServerAdmin/resources/definitions/OrganicRecom"
},
{
"name": "/opt/repositories/tomcat10/OrganicRecom.json",
"url": "/ProtonOnWebServerAdmin/resources/definitions/OrganicRecom"
}
]
```

POST to CEP
(curl 192.168.111.133:8080/ProtonOnWebServer/rest/events -d @postCEP1.json -s -S --header 'Content-Type: application/json' --header "X-Auth-Token: fzwBaqyoYuebvkp8tkzkSZ3gXhSuPu");

File contents postCEP1.json:

```
{"Name":"Recomend","UserID":"1","Date":"2015"."Keyword":"search1","Keyword1":"tommatoes"}
{"Name":"Input","UserID":"1","Keywords":"potatoes"}
```

5.2.2. Data Publishing

Use Case

A published repository for organic eprints metadata.

Steps followed

Created a repository oe-prints
Filled the form fields in order to describe the repository .

Results from testing the data publishing interface

A very friendly user interface with simplicity and with appropriate fields to reach our goal of publishing the metadata. Following is a record in json format as published for the Organic-eprints repository:

Published record url:
https://data.lab.fiware.org/dataset/628af65b-b316-4989-bab9-7127f4a41afe/resource/24512e45-c042-4a2e-a705-b51e46b8411f/download/oaiorgprints.org1000.json
Published record content:

```
{
  "languageBlocks": {
    "en": {
      "abstract": "Examines the potential of organic foods in European markets, focusing on consumer demand for organic foods and the possibilities for market expansion.. Aims to assess potential sales, to identify the factors determining buying propensity, and to identify the main market barriers. Identifies the types of consumers who purchase organic foods, classifying them according to socio-economic and demographic characteristics. Elucidates the motives for purchasing and the willingness to pay. Identifies the main market barriers and bottlenecks,  and examins the potential for future expansion.",
      "title": "Market potential for organic foods in Europe",
      "keyword": [
        "Consumer issues"
      ]
    }
  },
  "set": "ORGEPRINTS",
  "controlled": {
    "type": [
      {
        "source": "dcterms",
        "value": "Journal paper"
      },
      {
        "source": "dcterms",
        "value": "NonPeerReviewed"
      }
    ]
  },
  "expressions": [
    {
      "manifestations": [
        {
```

```json
      "manifestationType": "fullText",
      "items": [
        {
          "isBroken": false,
          "url": "http://orgprints.org/100/1/market_potentials.pdf"
        }
      ],
      "format": [
        "application/pdf"
      ]
    },
    {
      "manifestationType": "landingPage",
      "items": [
        {
          "isBroken": false,
          "url": "http://orgprints.org/100/"
        }
      ]
    }
  ],
  "fullCitation": [
    "Wier, Mette and Calverley, Carmen   (2002) Market potential for organic foods in Europe.   British Food
Journal, 104 (1), pp. 45-62."
  ],
  "publisher": [
    {
      "date": "2002"
    }
  ]
  }
],
"creator": [
  {
    "name": "Wier, Mette",
    "type": "person"
  },
  {
    "name": "Calverley, Carmen",
    "type": "person"
  }
]
}
```

6. Annex B: Interviews and online survey questionnaires

6.1. Problem validation interviews and online survey questionnaires

Problem validation interviews – Researchers (http://goo.gl/6A4Bfi**)**

Online Survey on Improving the access to research data and publications in Organic Agriculture

We would like to understand the issues that the organic agriculture community faces regarding the better discovery, dissemination and sharing of scientific knowledge and its combination with other types of information (e.g. sensor data etc.)

* Required

Which of the following describes better the type of the organization that you are working for? *

- ○ Research Center or Research Institute
- ○ University
- ○ Private Research Institution
- ○ Non-Profit Research Organization
- ○ Other:

In which thematic areas are you active? *

- ☐ Crop production
- ☐ Sustainable agriculture
- ☐ Organic agriculture
- ☐ Agricultural engineering
- ☐ Environmental Engineering
- ☐ Environmental Sciences
- ☐ Climate Change, Environment and Resource Efficiency
- ☐ Natural sciences (e.g. Biology, Chemistry)
- ☐ Natural Resources Management
- ☐ Biodiversity
- ☐ Water Quality Research
- ☐ Food Science
- ☐ Animal husbandry
- ☐ Other:

What is your role in your research team? *

- ○ Professor
- ○ Senior Researcher (post-doctoral)
- ○ Junior Researcher (PhD student)
- ○ Scientific Associate
- ○ Technical assistant
- ○ Other:

Please indicate here the type of information that you are usually interested in. *

- ☐ Scientific publications
- ☐ Conference proceedings
- ☐ Farmers' magazines
- ☐ Geospatial data
- ☐ Statistical data
- ☐ Laboratory data
- ☐ Field data (e.g. sensor data, measurements data)
- ☐ Weather data
- ☐ Best practices (e.g. per topic, per region etc.)
- ☐ Plant disease alerts
- ☐ Trade data (e.g. products prices)
- ☐ Other:

Are you currently participating in any research projects? *

- ☐ No
- ☐ EU-funded: Seventh Framework Programme (FP7)
- ☐ Eu-funded: Lifelong Learning Programme (LLP)
- ☐ EU-funded: Erasmus+
- ☐ EU-funded: Horizon 2020
- ☐ National project
- ☐ Other:

If you are participating in research projects, what are your responsibilities? *

If you are not participating in any research projects, please choose "none".

- ☐ None
- ☐ Project coordinator
- ☐ Leader of a dissemination & exploitation work package
- ☐ Leader of a technical work package
- ☐ Leader of another work package
- ☐ Partner (not leader of any work package)
- ☐ Other:

Do you have access to adequate systems to support the dissemination of the multi-institutional research project outcomes? *

- ○ I do not have access / I do not know
- ○ University repository
- ○ Research institute repository
- ○ Thematic aggregator (that serves and collects other multiple repositories, e.g. Agris, http://agris.fao.org/)
- ○ Subject specific repository (e.g. Organic Eprints)
- ○ Other:

Do you have a specific Licensing Policy for your research data and metadata? *

- ☐ Horizon 2020 Open Access Policy (http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf)
- ☐ Internal Business Use
- ☐ University/Research institute specific licensing policy
- ☐ Personal Use (non-commercial)
- ☐ Licensing fees (third party, administration, data processing fees)
- ☐ I do not know
- ☐ Other:

Which of the following are the most important problems for discovering, sharing and disseminating your research outcomes (research data and publications)? *

- ☐ It is difficult for me to find scientific publications about the organic agriculture topic of my interest.
- ☐ It is time consuming to discover and filter the scientific publications that are related to a specific organic agriculture topic.
- ☐ It is difficult for me to find information (weather data, soil data), specified for my region and research project.
- ☐ It is difficult for me to get access to best practices from other locations in my region.
- ☐ It is difficult for me to find and to download the field measurements (raw data) for a specific organic agriculture topic.
- ☐ It is difficult for me to find and to download the processed data (e.g. graphs) for a specific organic agriculture topic.
- ☐ It is difficult for me to discover, track, monitor and share the scientific publications and research data of the researchers of my team or my research project or my institution.
- ☐ It is difficult for me to find the scientific publications that researchers of my team or my project or institution are working on (draft versions of the publications) early enough.
- ☐ There is a lack of expertise within my research team or my institution to support the requirements of depositing and storing publications and research data (and metadata) in an institutional repository (Epsilon of SLU), a subject specific repository (Organic Eprints) or a thematic aggregator (AGRIS).
- ☐ It is difficult for me to discover all the appropriate dissemination channels for scientific publications, datasets and research activities of my research project or my institution (expose the research project outcomes to the end users: e.g. researchers, advisors and farmers).
- ☐ It is time consuming to continuously disseminate the research publications and the research outcomes of my research project.

If you had an application that automatically discovers, tracks, monitors and combines research outcomes (publications, research data etc.) and practical information (best practices, weather data etc.) in organic agriculture topics, which of these services would you use? *

- ☐ … to search and find all the publications relevant for the organic agriculture topic of my research activity (research project).
- ☐ … to search and find scientific publications based on the researchers' names.
- ☐ … to have a functionality for the users (researchers, advisors, farmers) to be updated when researchers start working on a publication or on a experiment.
- ☐ … to discover automatically if the researchers work on a publication or experiment related to my research activities by looking on social media (blog, Twitter, Facebook).
- ☐ … to discover automatically if other researchers have presented or published something through their Slideshare profile.
- ☐ … to be automatically connected with institutional and subject specific repositories.
- ☐ … to have an automatic dissemination of the research project outcomes to all relevant channels.
- ☐ … to include a dynamic updated list of all the research project outcomes in the project website.
- ☐ … to get access to raw data (e.g. field measurements, weather information) for a specific organic agriculture research topic.
- ☐ … to get access to processed data for a specific organic agriculture research topic.
- ☐ … to find easily recommended scientific publications, best practices and practical information based on keywords.
- ☐ … to have a personalized service with specific agriculture information (weather data, scientific publications) for my case and my location.
- ☐ … to store my data (weather and soil data) locally in my pc etc.
- ☐ … to get recommendations for the most appropriate widgets (applications) that fit to my case, in order to get access to specific organic agriculture information specific for my needs.
- ☐ Other:

If you want to stay informed and updated on the development of this application, please provide your email:

(The online survey and your e-mail will only be used for informational purposes regarding the application and not for any other promotional or advertising purposes.)

[Submit]

Never submit passwords through Google Forms.

Problem validation interviews – Farmers/Advisors (http://goo.gl/SH4lw9)

Online Survey on Improving the access to research data and publications in Organic Agriculture.

We would like to understand the issues that the organic agriculture community faces regarding the better discovery, dissemination and sharing of scientific knowledge and its combination with other types of information (e.g. sensor data etc.)

* Required

Which of the following describes better the type of the organization that you are working for? *

- ○ Public Research Institution (University etc.)
- ○ Private Company
- ○ Non-profit Organization
- ○ Certification Body
- ○ Governmental Agecny
- ○ Business Association / Cooperative
- ○ Chamber of Commerce
- ○ I do not work for an organization
- ○ Other: _____

In which thematic areas are you active? *

- ☐ Crop production
- ☐ Sustainable agriculture
- ☐ Organic agriculture
- ☐ Agricultural engineering
- ☐ Environmental Engineering
- ☐ Environmental Sciences
- ☐ Climate Change, Environment and Resource Efficiency
- ☐ Natural sciences (e.g. Biology, Chemistry)
- ☐ Natural Resources Management
- ☐ Biodiversity
- ☐ Water Quality Research
- ☐ Food Science
- ☐ Animal husbandry
- ☐ Other: _____

What is your role in your team? *

- ○ Administrative staff
- ○ Farmer Advisor
- ○ Agricultural Extensive Officer
- ○ Farmer
- ○ Other: _____

Please indicate here the type of information that you are usually interested in. *

- ☐ Scientific publications
- ☐ Conference proceedings
- ☐ Farmers' magazines
- ☐ Geospatial data
- ☐ Statistical data
- ☐ Laboratory data
- ☐ Field data (e.g. sensor data, measurements data)
- ☐ Weather data
- ☐ Best practices (e.g. per topic, per region etc.)
- ☐ Plant disease alerts
- ☐ Trade data (e.g. products prices)
- ☐ Other: _____

Are you currently participating in any research projects? *

- ☐ No
- ☐ EU-funded: Seventh Framework Programme (FP7)
- ☐ Eu-funded: Lifelong Learning Programme (LLP)
- ☐ EU-funded: Erasmus+
- ☐ EU-funded: Horizon 2020
- ☐ National project
- ☐ Other: _____

If you are participating in research projects, what are your responsibilities? *
If you are not participating in any research projects, please choose "none".

- ☐ None
- ☐ Project coordinator
- ☐ Leader of a dissemination & exploitation work package
- ☐ Leader of a technical work package
- ☐ Leader of another work package
- ☐ Partner (not leader of any work package)
- ☐ Other: _____

Which of the following are the most important problems for discovering and sharing research outcomes (research data and publications)? *

- ☐ It is difficult for me to find scientific publications about the organic agriculture topic of my interest.
- ☐ It is time consuming to discover and filter the scientific publications that are related to a specific organic agriculture topic.
- ☐ It is difficult for me to find information (weather data, soil data), specified for my region and research project.
- ☐ It is difficult for me to get access to best practices from other locations in my region.
- ☐ It is difficult for me to find and to download the field measurements (raw data) for a specific organic agriculture topic.
- ☐ It is difficult for me to find and to download the processed data (e.g. graphs) for a specific organic agriculture topic.
- ☐ It is difficult for me to discover, track and monitor the scientific publications and research data of the researchers of my research project or my institution.
- ☐ It is difficult for me to find the scientific publications that researchers of my project or institution are working on (draft versions of the publications) early enough.
- ☐ Other: _____

If you had an application that automatically discovers, tracks, monitors and combines research outcomes (publications, research data etc.) and practical information (best practices, weather data etc.) in organic agriculture topics, which of these services would you use? *

- ☐ … to search and find all the publications relevant for the organic agriculture topic of my research activity (research project).
- ☐ … to search and find scientific publications based on the researchers' names.
- ☐ … to have a functionality for the users (researchers, advisors, farmers) to be updated when researchers start working on a publication or on a experiment.
- ☐ … to discover automatically if the researchers work on a publication or experiment related to my activities by looking on social media (blog, Twitter, Facebook).
- ☐ … to discover automatically if researchers have presented or published something through their Slideshare profile.
- ☐ … to get access to raw data (e.g. field measurements, weather information) for a specific organic agriculture research topic.
- ☐ … to get access to processed data for a specific organic agriculture research topic.
- ☐ … to find easily recommended scientific publications, best practices and practical information based on keywords.
- ☐ … to have a personalized service with specific organic agriculture information (weather data, scientific publications) for my case and my location.
- ☐ … to store my data (weather and soil data) locally in my pc etc.
- ☐ … to get recommendations for the most appropriate widgets (applications) that fit to my case, in order to get access to specific organic agriculture information specific for my needs.
- ☐ Other: _____

If you want to stay informed and updated on the development of this application, please provide your email:

(The online survey and your e-mail will only be used for informational purposes regarding the application

6.2. Problem validation online survey request email

Kære Projektledere fra Organic RDD 1 & 2

Herunder en mail som beder jer deltage i et spørgeskema vedr. adgang til og formidling af forskningsresultater inden for økologisk jordbrug. Det vil være en stor hjælp for mig/ICROFS, hvis I vil tage jer tid til at besvare det – og I må meget gerne videresende mailen til andre forskere i projektet, eller andre, I tænker kan være interesserede. Dette spørgeskema er dog fortrinsvis rettet mod forskere, mens der er et andet rettet mod rådgivere og landmænd, så dem skal I ikke sende det til.

I am contacting you in order to ask you to participate in an online survey that we are running within Organic-AgriWare, a project which is carried out by ICROFS, Agro-Know and SEGES. Organic-AgriWare is working to develop an online service that will provide researchers, advisors and farmers with context-based access to organic agriculture knowledge, combining this research knowledge and data with other available practical information such as weather data.

The main goal of the online evaluation survey is to examine and capture the needs, problems and requirements of the Organic Agriculture research community for retrieving information, data and knowledge and depositing, sharing and disseminating the research project outcomes. Therefore, online service being developed in the project will aim to provide solutions covering customized needs of the researchers in the organic agriculture science spectrum with regards to better research data management (storing, retrieving, processing, disseminating data) and thus, better dissemination of the scientific knowledge.

I know that your time is valuable, but I would very much appreciate it if you could spend 10 to 15 minutes to provide your feedback to the online survey about your scientific work, your participation in research projects that are relevant to organic agriculture and any problems that you encounter, such as organizing, managing, sharing, publishing your research outcomes and generally accessing the scientific knowledge.

The online survey is ongoing and available here: http://goo.gl/6A4Bfi. Please fill out the survey before June 10[tht], 2015.

Please notify us if you are interested in the results of this online survey by adding your e-mail at the end of the online survey.

Thank you in advance for your contribution.

På forhånd tak for hjælpen

Ilse A. Rasmussen, MSc Agronomy
Organic Eprints coordinator
International Centre for Research in Organic Food Systems, ICROFS
Blichers Allé 20, P.O. Box 50, DK-8830 Tjele, Denmark
Phone: +45.87157992

6.3. Solution validation interviews and online survey questionnaires

Solution validation interviews (https://goo.gl/bgpDmk)

Feedback on the Organic-AgriWare application

Please spend some time to complete the following steps and complete this questionnaire to evaluate the Organic-AgriWare application (http://organic-agriware.agroknow.gr/). Your feedback is valuable to help us build a solution that will benefit the organic agriculture community.

1. Visit http://organic-agriware.agroknow.gr/ to access the application.
2. Navigate through the various user categories, especially focusing on your own, and look for specific resources.
3. Use the search box to search for your topic of interest using related keywords.
4. Use the filters on the right to narrow down the resources based on a specific subject, resource type, keyword and/or author.
5. Click on the resource you are interested in to see more information and click the resource url link to access it.
6. Complete this questionnaire to give us your feedback.

*Required

Organic-AgriWare application

Name *

Organization *

Country *

Job title *

Email

What kind of device did you use to access Organic-AgriWare? *
- Desktop
- Laptop
- Tablet
- Mobile / cellphone

Platform usability, Information, Interaction *

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
1. i find the Organic-AgriWare application easy to learn to operate	○	○	○	○	○
2. I find the Organic-AgriWare application easy to navigate	○	○	○	○	○
3. The Organic-AgriWare application has an attractive appearance	○	○	○	○	○
4. The Organic-AgriWare application creates a positive experience for me	○	○	○	○	○
5. I find Organic-AgriWare application's features useful for my needs	○	○	○	○	○
6. The Organic-AgriWare application provides relevant content/data that is suitable for my needs	○	○	○	○	○
7. The Organic-AgriWare application provides access to all the types of data I need	○	○	○	○	○
8. The Organic-AgriWare application provides my search results quickly	○	○	○	○	○
9. It was easy to find the results that I need	○	○	○	○	○
10. The pre-selected subject and content type categories were useful and helpful for my needs	○	○	○	○	○
11. The pre-selected filters were useful and helpful for my needs	○	○	○	○	○

Should more categories and/or (resource) type(s) be added? If yes, please indicate which and explain why. *

Should some categories and/or (resource) type(s) categories be removed? If yes, please indicate which and explain why. *

Have you tried the "Discover resources" search box using specific keywords? If yes, did you find what you were looking for and how helpful was it? *
- Did not tried it
- Not helpful at all
- Somewhat helpful
- Average
- Helpful
- Very helful

Was there something on the application that did not work or that you did not find? If yes, please indicate what. *

What could we do better to cover YOUR specific needs? *

What should be improved? *

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