



**TITLE: Stakeholders Open Collaboration Space**

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# Stakeholders Open Collaboration Space

## 1 Summary

DEMETER aims to lead the Digital Transformation of the European Agrifood sector based on the rapid adoption of advanced technologies, such as Internet of Things, Artificial Intelligence, Big Data, Decision Support (DSS), Benchmarking, Earth Observation, etc., to increase performance in multiple aspects of farming operations, as well as to assure the viability and sustainability of the sector in the long term. It aims to put these digital technologies at the service of farmers using a human-in-the-loop approach that constantly focuses on mixing human knowledge and expertise with digital information. DEMETER focuses on interoperability as the main digital enabler, extending the coverage of interoperability across data, platforms, services, applications, and online intelligence, as well as human knowledge, and the implementation of interoperability by connecting farmers and advisors with providers of ICT solutions and machinery.

DEMETER focuses on the deployment of farmer-centric, interoperable smart farming-IoT (Internet of Things) based platforms, to support the digital transformation of Europe's agri-food sector through the rapid adoption of advanced IoT technologies, data science and smart farming, ensuring its long-term viability and sustainability.

Stakeholders Open Collaboration Space, SOCS, provides a collaboration space which makes a farmer's needs visible to advisors and developers. Following on from the initial steps taken to described spaces for collaboration, exchange of good practices and participation in the co-creation processes, recent discussions and workshops have been held with the Multi-Actor Approach (MAA) team resulting in an improvement to both the look and the features of SOCS.

## 2 SOCS Overview

The DEMETER SOCS is a space dedicated to all stakeholders (farmers, advisors, and suppliers) where they can collaborate, share knowledge and best practices, and participate in the co-creation processes to create new solutions. SOCS focuses on resolving the needs of the farmers using a structured process that converts a need or set of needs into a challenge. A challenge is then resolved through a unique co-creation process, in which farmers, service advisors and providers can select,



together, the most appropriate set of tools, devices, components, data sources, etc., considering the existing ones already deployed (discovered using the DEMETER Enabler Hub) as well as the farmer-defined improvement goals.

SOCS is strongly inspired by an EU initiative to promote social spaces for innovation and follows a set of defined activities for multiple actors implemented through physical meetings, workshops, hackathons, etc., and supported by a dedicated online platform. In DEMETER, the multi-actor approach (MAA) has had an impact on the SOCS design as is shown in the following sections. SOCS is based on well-established technologies, which give a set of basic services and tools to create, share and find content, information, knowledge, experts, and ideas as well as effectively and productively managing collaboration.

### 3 Interaction with MAA

A close collaboration with interested partners has enabled the upgrade from the Alpha to the first Beta release of the SOCS, with the aim that the MAA can strongly influence the DEMETER collaborative space.

The Alpha release was demonstrated to open discussions on:

- The basic services for collaboration and knowledge sharing.
- User needs that SOCS can satisfy resulting in the Needs table below.
- Some of the main user journeys (knowledge sharing, requirement definition, implementation) that SOCS can enable through its basic services resulting in the Journeys table on next page.

Type of user	Needs
Farmers	<ul style="list-style-type: none"><li>• Discuss with someone to define a need more clearly.</li><li>• Find advisory support.</li><li>• Find other farmers with the same needs to join forces.</li><li>• Share successful agricultural experiments.</li><li>• Look for partners.</li><li>• Co-design new solutions.</li></ul>
Advisors	<ul style="list-style-type: none"><li>• Knowledge sharing.</li><li>• Joint events.</li><li>• Access to success stories.</li><li>• Look for collaborators / new clients.</li><li>• Support farmers in expressing a need.</li><li>• Learn about new software/technology.</li><li>• Co-design new solutions.</li></ul>



IT providers	<ul style="list-style-type: none"> <li>• Knowledge sharing.</li> <li>• Joint events.</li> <li>• Access to success stories.</li> <li>• Look for collaborators / new clients.</li> <li>• Meet farmers and support them.</li> <li>• Learn about new software/technology.</li> <li>• Co-design new solutions.</li> </ul>
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Type of need	Journeys
Knowledge sharing	<ul style="list-style-type: none"> <li>• A webinar shared important insights related to DEMETER.</li> <li>• The participating user creates a blog to share the concepts.</li> <li>• The user uploads the webinar materials to the Documents library connecting this resource to the blog entry.</li> <li>• The user tags the two resources for easier searching later.</li> </ul>
Requirement definition	<ul style="list-style-type: none"> <li>• A farmer has a need, but they would like to talk to someone who can help them in expressing their requirements better.</li> <li>• The farmer searches for someone who has “advisory” skill who can help.</li> <li>• The farmer opens a discussion and notifies the advisor.</li> <li>• The discussion allows the enrichment of the requirements.</li> </ul>
Implementation	<ul style="list-style-type: none"> <li>• A developer wants to implement a new solution.</li> <li>• Since they need input on a particular technology, they read the available experiments that have used that technology.</li> <li>• Through the Experiment app they find a contact.</li> <li>• They start a discussion with the contact.</li> </ul>

The interaction continued with some workshops focused on defining:

- A new design of the SOCS aimed at creating more motivation and enhance the gamification rather than technical discussions.
- The SOCS data model, which takes into consideration the DEMETER objectives and the needs/interests that the stakeholders can have with respect to its applications (i.e., organisation, agricultural trial, etc.).
- The co-creation application, through which DEMETER stakeholders can co-design new solutions based on the farmers’ needs.



### 3.1 The SOCS Design Workshop

Following a redesign of layout from SOCS Alpha release, a SOCS Design Workshop was arranged to collect feedback from the participants on the new design. The workshop made use of the Mural online whiteboard to allow the participants to collaborate on producing the feedback. The participants were encouraged to write comments and feedback about the new wireframe on the Mural board and then to categorise each entry into *"positive"*, *"a necessary change"*, *"a new feature"*, or *"an unanswered question"*.

The main feedback about the new design was to create motivation through a clear menu and to use a clear layout and new colour also to be in-line with DEMETER brand. This came up with the following change requests with respect to the SOCS first version: Order of items in menu updated, help icon added to top bar, Breadcrumbs added, Trending changed to Popular, Share link added, Search updated to 'Search Discussions', Filter button added to search.

### 3.2 SOCS Entities' Definition

The design of the DEMETER SOCS' applications must take into consideration the DEMETER objectives and the needs/interests that the stakeholders (farmers, advisors, and IT providers) can have with respect to a digital collaboration space.

For this reason, another workshop was organised, also hosted on Mural, and involving participants who could give alternative views for the different types of stakeholders in the SOCS platform. The workshop included similar exercises to discuss the applications and their data structures.

The workshop's results defined the most crucial SOCS entities:

- Specific attributes for the DEMETER organisations were identified and it was recommended that the organisation catalogue should highlight the difference between an IT/Research organisation and a Farm.
- The user in SOCS can be part of many different stakeholder groups including Farm, Software providers, Industry, and Research and consequently can have different interests and needs with respect to the SOCS, but also different competences and skills.
- Content categories were investigated, specifically with respect to user skills, DEMETER components, Multi-actor approach, and Agriculture technology.
- Specific characteristics were identified for the agricultural trials, used to describe DEMETER pilots and successful agricultural cases.



As an output of this SOCS Data workshop, detailed information and findings in relation to these exercises was collected. The goal was to share with the audience important aspects of the SOCS applications and functionalities and look at them from different user perspectives.

### **3.3 The Co-Creation Application**

One of the main functionalities offered by the SOCS is, undoubtedly, gathering and addressing farmers' needs according to a co-creation process. Through this process, farmers' needs can be better elicited, through the collaboration tools and thanks to the help of other users (i.e., advisors). A need expressed by a farmer is analysed and can evolve into a challenge which represents an area of interest requiring new solutions or approaches. The creation of a challenge aims to involve stakeholders in the creation of solutions (ideas) that represent their contributions to the requests expressed through the challenge. The result of the challenge is the selection of the idea that best matches the challenge and the elaboration of the optimal solution, relying on the resources present in the DEH. The DEH centralises the full description of all the components, devices, services, data sources, platforms etc., that are accessible for deployment.

Building on this broad vision, a human-centred design (HCD) approach will be utilised for the development, to create the best possible value for the users. HCD is a process that involves constant feedback loops from users, iteration cycles and extensive user research with empathy being at the core. Throughout the design process, HCD requires the designers to diverge and converge several times to come up with an innovative solution. Going really big and broad during the ideation phase helps the designers to come up with a range of all possible solutions. This constant converging and diverging cycle would enable designers to come up with a highly innovative and sustainable market-ready solution that caters to the users' needs and desires.

The Human-Centred Design process consists of three phases:

1. Inspiration: about understanding the stakeholders' needs and challenges. It is important to remove any pre-conceptions at this early stage to allow a wide variety of solutions to be discovered.
2. Ideation: once the initial research and findings have been formulated, co-creation workshops are used to create potential solutions with the stakeholders. All stakeholders are encouraged to contribute ideas to promote the multi-directional flow of knowledge and information.



3. Implementation: the implementation of a prototype. This prototype will then be tested with the end users and multiple iterations can occur.

Phase 1 will kick off the human-centred design approach by consolidating all the research insights that have been made throughout the entire project (the inspiration phase). Based on these insights, a product vision, user personas, as well as user stories will be developed (ideation stage). Next, a wireframe mock-up will be designed to build the basis for the alpha version development (implementation phase). This wireframe mock-up will contain the barebone features for the co-creation feature of the SOCS platform.

In phase 2, the development of the alpha version of the co-creation feature will be kicked off. Further user research will be conducted to gather more information from potential users of the SOCS platform (inspiration). These insights will then be translated into new user stories (ideation), and subsequently be implemented in the alpha version (implementation). This iterative loop resembles a continuous process that will be repeated multiple times.

Phase 3 will be devoted to the development phase of the beta version and the test of the alpha version. Depending on the sophistication of the product developed by then, different measures of user research can be undertaken. Hence, the iterative approach that applied to the alpha version will also be applied to the beta version.

## 4 SOCS Beta Release

The Beta release of SOCS is based on the findings from the above workshops.

### 4.1 *The Platform Accessibility and the Enrolment Process*

DEMETER stakeholders are able to access a registration section (managed by the DEMETER Access Control Server) through a link in the DEMETER website. The basic registration consists of a form through which the user is able to provide:

- Name and Surname.
- Email address.

Once the user has filled in the form, their registration inside the DEMETER SOCS is completed by the System Administrator who can assign specific roles.

Using a link in the DEMETER website, registered users are able to access a login section, sign-up as users and start collaborating within the SOCS ecosystem. This



allows them to update their profile and access to the SOCS Home page and to the different applications through the menu.

Initially, all the DEMETER stakeholders will have access to the same workspace which is a space with available applications common to all the users. Next, dedicated workspaces will be created to satisfy specific collaboration interests (i.e., a workspace for each pilot cluster, a workspace for developers, etc.).

#### 4.2 Platform's Roles

Access to the SOCS functionalities uses role management based on the RBAC (Role-Based-Access-Control) paradigm, allowing a certain flexibility in the management of user profiles. The main roles foreseen are:

- **System Administrator:** The person who is responsible for the upkeep, configuration, and reliable operation of the SOCS Platform, installing and configuring software, setting up users' accounts and roles, managing technology tools, monitoring system performance, ensuring security through access controls, and providing technical support.
- **Content Manager:** An expert in a particular area, such as the different agricultural domains, technology, or other specialised fields. Their role is to just act as an honest broker, helping people and organisations to resolve a problem or arrange a deal by talking to all sides, without favouring any but factorising competences and solutions. Besides being a mediator, they will represent an animator of discussions, becoming an innovation booster.
- **Organisation Content Manager:** A specific role for each registered organisation responsible for the updating of all aspects of the organisation and in charge of writing, editing, and proofreading this content. E.g., only certain organisation members will be allowed to add agricultural success stories provided by the selected organisation.
- **SOCS publisher:** This role represents every single user accessing the Platform and using its functionalities; whether they belong to a specific organisation or are individual members. They can access a collaboration workspace where they can collaborate with other users and exploit all platform functionalities. Through the Platform, they can find out about, navigating and using the community, taking advantage of the tools provided to make the most of the potential in a network.

#### 4.3 The SOCS Services





The objective of SOCS is to enable a space dedicated to all stakeholders where they can find services to collaborate, share best practices and contribute to the co-creation processes. The following services are available:

- The *Organisations catalogue* is an application used to define an organisation's main characteristics and offered competencies, described according to a predefined taxonomy for organisations. This catalogue will take into consideration different data models based on the organisation type (Research/Industry or Farm).
- The *Knowledge base services* include online access to information and consultancy services related to different thematic domains. It will be a multimedia library based on two main services:
  - *Wiki*: a collaborative tool to formalise users' knowledge in a structured way, making it available to all SOCS members. For example, a wiki can be used to define DEMETER vocabularies to use to assign categories to the contents that will be created.
  - *Documents*: represents a knowledge base, structured according to partners' needs; where papers and publications related to DEMETER's domain of interest can be found.
- The *Agricultural trials catalogue* is a showcase of successful agricultural cases and DEMETER pilots.
- *Collaboration services* allow all the actors accessing the SOCS Space to connect and interact with all the other individuals and organisations, sharing information in the easiest ways including:
  - *Blog*: an informal way to share and publish different types of content (e.g., news, experiences, observations, opinions, etc.); posts are displayed in reverse chronological order.
  - *Discussion*: This is a dedicated space for informal debate allowing the consideration of a question in open and usually informal debate to examine a particular topic, especially to explore possible solutions.
  - *Events*: This represents a useful way to share information about interesting events, project meetings, etc.
- There are two important cross functional services:
  - *Universal Search*: allows the user to search for specific words, find content by categories or tags or restrict the search to certain resources (e.g., blog).
  - *Notification services*: send a notification to user using the inbox section of the platform or by email account based on user preferences.

## 5 Conclusions



SOCS is a collaboration space aimed at knowledge sharing and co-creation, which is itself evolving through collaboration and the multi-actor approach to co-creation.

The collaboration space is dedicated to all stakeholders whether they be farmers, advisors, researchers, or suppliers. It allows them to collaborate, share knowledge and best practices, and participate in the co-creation processes.

The co-creation process maximises the possibility of re-use of the existing DEMETER building blocks and encourages to creation of new ones to solve real needs identified by the end users, particularly farmers.

