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Report on case study feedback on ask-Valerie.eu

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Dissemination Level

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Executive summary

Introduction
This report presents results from the ask-Valerie.eu tests in case studies (CS). The main aims of the report are to collate and analyse the test results, both to inform further development of ask-Valerie.eu in the project, and to provide a summary of the development process to date. The report was compiled from the analysis of the ask-Valerie.eu Version 4 test carried out in CS in May-June 2017, and supplemented with a commentary from stakeholders drawn from previous tests and documented in CS meeting reports and case study partner (CSP) interviews.

Methods
Three main methods were used to inform the development of ask-Valerie.eu using CSP and CS stakeholder feedback.

1. A series of technical tests and demonstrations of the software (versions 1-4) undertaken in second and third CS meetings with stakeholders, over the duration of the project facilitated by CSPs. This concluded with testing of ask-Valerie.eu Version 4 in summer 2017
2. A series of technical tests with CSPs in project meetings and dedicated workshops facilitated and analysed by Work Package 4
3. Feedback from CSPs from a series of reflective interviews conducted by the WP3 team throughout the project

This report draws largely on data from method one, providing details of results of the Version 4 test. Stakeholder feedback from the second and third CS meetings (method two), supplemented by information from interviews (method three), is also provided.

ask-Valerie.eu development
ask-Valerie.eu has been developed through a series of iterations involving progressive stages of design and development by WP4 and WP5 following feedback from the CSPs and CS stakeholders over the project period. This feedback has prompted significant re-design of the tool, to date there have been four versions of ask-Valerie.eu.

Testing of ask-Valerie.eu Version 4
The aim of the test was to evaluate the usefulness of ask-Valerie.eu by comparing it with a widely used search engine (Google). The CS target stakeholder group for the exercise were advisors and technicians (as these will be the main users of the tool) rather than farmers or forest owners. The purpose of the test was to:

1. Get feedback from the advisors and technicians on how useful the outputs[1] identified by ask-Valerie.eu and Google were in answering their queries.
2. Compare the usefulness of the results identified by ask-Valerie.eu and Google.

Testing of version 4 of ask-Valerie took place in all 10 of the CSs. A total of 22 advisors/ technicians performed and provided feedback on 61 search engine queries using ask-Valerie.eu and Google.

Results and Conclusions
Results are presented for each case study with an analysis of the test record sheets and an overview of CSP and CS stakeholder feedback. The key findings are as follows:

[1] Outputs may include PDFs of documents, webpages, or links to other media e.g. videos or podcasts.

Version 4 test

- Relevance and practicality were the most important criteria in deciding the usability of the snippets and outputs.
- Testers were asked to score snippets on the basis of how useful they were in describing the output, however some sored on the basis relevance to the query.
- The majority of queries performed on ask-Valerie.eu returned snippets and outputs. However, there were some instances where the search returned no results at all. Two-thirds of the queries in ask-Valerie.eu identified at least one useful result. The main reasons that snippets and outputs did not receive a high score from the tester were lack of relevance to the query, or they were not considered to have a practical application.
- All queries performed on Google returned snippets and links to outputs. However, testers could not evaluate some of the google outputs because they had restricted access or had to be purchased. Most of the queries in Google identified at least one useful result. Outputs receiving a low usefulness score from testers were often too commercially orientated, lacking in relevance to the query or had restricted access.
- When comparing the results from both search engines testers found that it was more common for Google to find one or more very useful results that the ask-Valerie.eu did not.

CSP and stakeholder feedback: reflections on the process

Stakeholder involvement in the development of ask-Valerie.eu has provided useful feedback, in particular comments concerning the language and the document base have led to significant improvements whilst issues raised about functionality (searching and ranking) and presentation of results have been progressively addressed in each version. Stakeholders now particularly appreciate the ability to search and access documents in different languages, although they still regard expanding the document base by linking to more national repositories as a priority.

1 Introduction

1.1 Aims

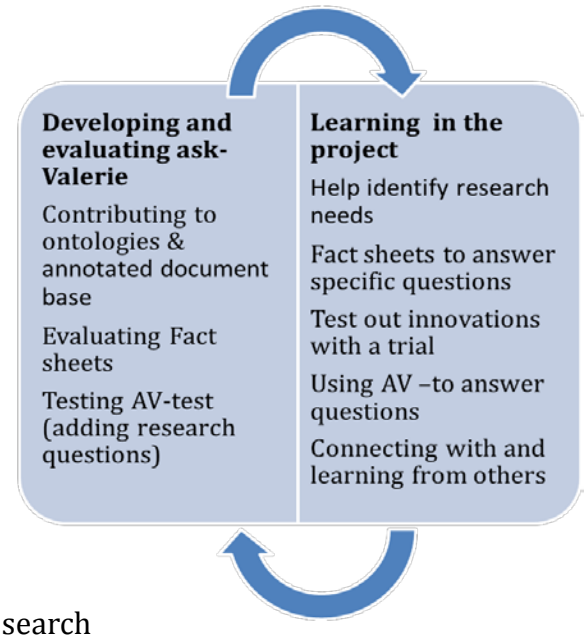
This report presents results from the ask-Valerie.eu tests in case studies (CS). The main aims of the report are to collate and analyse the test results both to inform further development of ask-Valerie.eu in the project and to provide a summary of the development process to date.

This report was compiled from ask-Valerie.eu tests of version 4 carried out in case studies in May-June 2017. The test results are supplemented with a commentary for each case study drawn from previous tests and documented in case study meeting reports, and case study partner (CSP) interviews.

1.2 Context and background to the tests in the case studies

The challenge in VALERIE is to make innovative research output in the agriculture and forestry domains accessible to end-users. The project has developed an approach that consists of three key-elements: an ontology with domain knowledge, a set of documents that have been annotated and meta-annotated, and a smart digital retrieval system (web based) called *ask-Valerie.eu* that is based on a dialogue to represent the interaction between end user and system. This system aims to help the user in formulating his/her question and in answering it in a useful way (Willems et al., 2015)[2]. The development of these three components - the ontology, the annotated document base and *ask-Valerie.eu* - is an iterative process to which partners in VALERIE and stakeholders in the case study contribute. Ten CSs in six countries (Table 1.1) provide the platform for this iterative process. Cases are organised around a particular supply chain, a farming/forestry sector, or a landscape, and so cover different scales and dimensions. A CSP for each CS facilitates and coordinates the stakeholder community. The CSPs and stakeholders have a role in developing these components (Left box of Figure 1.1). This report focuses on their role in evaluating ask-Valerie.eu. Full details of the project methodology can be found in the Description of Work (DoW).

Figure 1.1 Case study interaction in the VALERIE Project



[2] DJM Willems, NJJP Koenderink, JL Top, 2015. From science to practice: bringing innovations to agronomy and forestry. J. Agric. Inf. 6:85-95.

Table 1.1 VALERIE Case studies

Name of CS	CSP and country	Topic	Stakeholders
Catchment scale resource use efficiency	GWCT UK	Sustainable farming at landscape scale	Environment agency, NFU, NGOs, professional nutrient management group, agric. levy boards
Soil management in livestock supply chains	GWCT UK	Sustainable soil management in livestock production	Farmers, advisers, supply chain
Sustainable forest biomass	TAPIO Finland	Sustainable forestry management and smart use of biomass	Researchers, forest owners, forestry organisations, wood ash supply chain
Agroecology: managing plant protection	CETIOM France	Sustainable cereal cultivation	Farmers, technical institutes, agricultural chambers, machinery companies
Innovative arable cropping	ACTA France	Reducing herbicides use in arable crops	Technical institutes, agricultural chambers, farmers, research institutes, storage agencies
Sustainable forest management and ecosystem services	USSE Spain	Improving the economic and environmental performance of forestry in Navarra	Forest owners, municipalities, forest authority and extension service, value chain organisations
Improving milling wheat quality	Cadir Lab Italy	Fertilisation, IPM and fungi control in sustainable milling wheat supply chain	Farmers, wheat-stocking cooperatives, seed companies, pesticide companies, wheat-buying companies
Drip irrigation management in tomatoes and maize	Cadir Lab Italy	Sustainable water and nutrient management	Farmers, cooperative for tomato transformation, public experimental station
Sustainable onion supply chains	DLV Netherlands	Improvement in onion quantity and quality	Farmers, seed companies, packers, exporters, suppliers of fertilizers and pesticides
Sustainable potato supply chains	DLV Poland	Sustainable potato production for the French fry industry	Farmers, processing and exporting industry, suppliers of fertilizers and pesticides, experimental station and research

2 ask-Valerie.eu development: Case Study Partner and stakeholder input

2.1 Method to inform the development of ask-Valerie.eu

Three main methods were used to inform the development of ask-Valerie.eu and provide CSP and CS stakeholder feedback. The first method comprised a series of technical tests and demonstrations of the software undertaken in the CS with stakeholders, over the duration of the project.

Three technical demonstrations/tests were conducted with CS stakeholders (shaded in Table 2.1):

- Demonstration of ask-Valerie.eu Version 2: Winter 2015-2016
- Demonstration and testing of ask-Valerie.eu Version 3: Winter 2016-2017
- Testing of ask-Valerie.eu Version 4: Summer 2017

They were facilitated by CSPs who collected stakeholder feedback (according to standard protocols) and summarised this in CS meeting reports (second and third CS reports). The test of Version 4 was undertaken with a smaller selected group of stakeholders in each CS (the subject of this report). These demonstrations/tests were preceded by earlier CS meetings (kick-off and first meetings) in which the search tool concept was introduced and the views and expectations of the stakeholders were noted.

The second method used to inform the development of ask-Valerie.eu comprised a series of technical tests with CSPs in project meetings and dedicated workshops facilitated and analysed by Work Package (WP) 4. These involved CSPs completing a prepared questionnaire in project meetings, smaller tests in skype mini workshops and remote exercises (shaded in Table 2.2). This was preceded by meetings in which the ontology was constructed and documents were collected with CSPs.

A third method was for the WP3 team to collect feedback in a series of reflective interviews with CSPs throughout the project, and discussion during project meetings and in other project activities (Table 2.3). This feedback was then passed onto WP4, the team developing ask-Valerie.eu.

This report draws largely on data from method one, providing details of Version 4 test. Stakeholder feedback from the second and third CS meetings is also provided (many of the issues raised have been addressed in Version 4). This is supplemented by information from interviews (method three).

Table 2 ask-Valerie.eu test schedule with stakeholders and CSPs

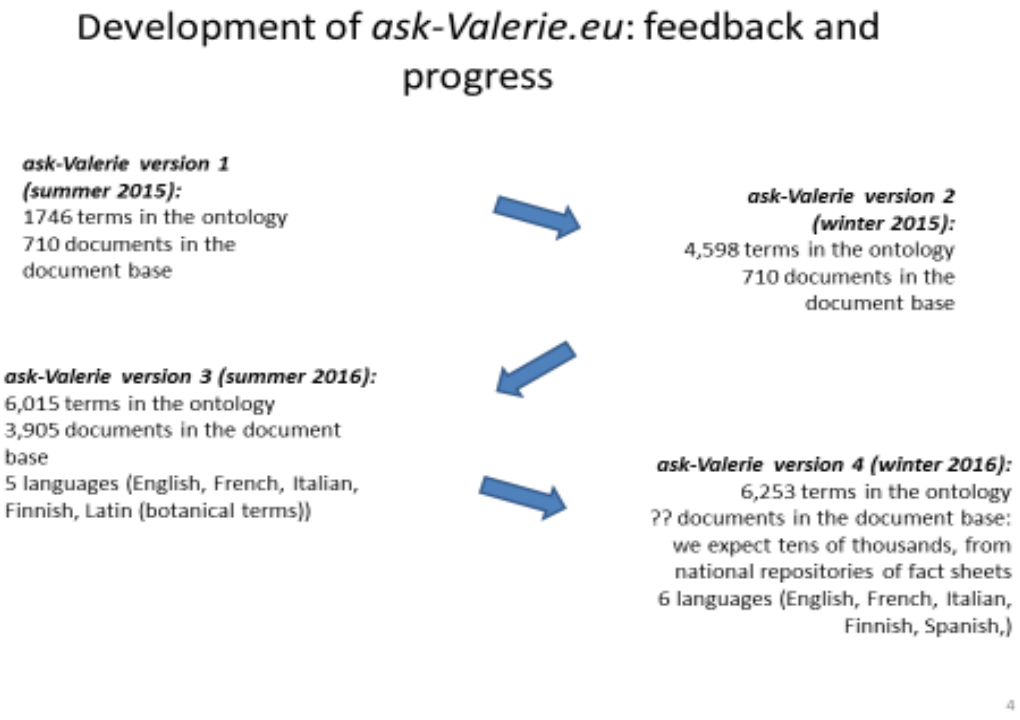
2.1 Stakeholder tests in CS meetings			
ask-Valerie.eu version	**Date**	**Activity**	**Event**
	Spring-summer 2014	ask-Valerie.eu idea introduced ontology terms collected	Kick off meeting
1	Winter/Spring 2015	ask-Valerie.eu idea discussed ontology terms collected	1st CS meeting
2	Winter 2015-2016	**Demonstration of ask-Valerie.eu** Stakeholders responded to a presentation of screen shots of the tool.	2nd CS meeting
3	Winter 2016-2017	**Demonstration of ask-Valerie.eu** and some small group/stakeholder tests. Stakeholders were asked to suggest: • General comments on the functionality • Improvements: 'Like to have', 'must have' features • Improvements to the interactive interface	3rd CS meeting
4	May-June 2017	**Test of ask-Valerie.eu** with selected experts /stakeholders	4th CS meeting
2.2. CSP test in project meetings and dedicated workshops			
	June 2014	Ontology collection and annotated documents	Amsterdam project meeting
	January 2015	Ontology collection and document collection	UK project meeting
1	June 2015	ask-Valerie.eu test Questionnaire completion	Helsinki project meeting
2	October 2015	CSPs listed 10 or more questions to test ask-VALERIE	skype mini workshops with CSP
3	January 2016	ask-Valerie.eu test Questionnaire completion	Turin project meeting
3	March 2016	Excel-file sent to CSP that can be used for testing the document selection and fragment selection process	Remote exercise
4	January 2017	ask-Valerie.eu test Questionnaire completion	Toulouse project

			meeting
2.3. CSP interviews and feedback			
2	Winter 2015-2016	1st round CSP interviews	Telephone and Skype interviews
3	January 2016	WP3 CSP feedback meeting	Turin project meeting
3 & 4	Winter 2016-2017	2nd round CSP interviews	CSP visit & Toulouse project meeting

2.2 ask-Valerie.eu versions and development

ask-Valerie.eu has been developed through a series of iterations involving progressive stages of design and development by WP4 and WP5 following feedback from the CSPs and stakeholders over the project period (as described above). To date there have been four versions of ask-Valerie.eu. Some of the key advancements in each version, in response to the feedback, are shown in Figure 2.1. The tests are described elsewhere but concerned functionality, search outputs with respect to search terms, ranking and snippet features; the user interface (search features, queries, filters), the document base and the type and language of the document.

Figure 2.1 Development of ask-Valerie.eu



3 Testing of ask-Valerie.eu Version 4

3.1 Introduction

The aim of the test was to evaluate the usefulness of ask-Valerie.eu by comparing it with a commonly available and widely used search engine (Google). The CS target stakeholder group for the exercise were advisors and technicians (as these will be the main users of the tool) rather than farmers or forest owners. The purpose of the test was to:

1. Get feedback from the advisors and technicians on how useful the outputs[3] identified by ask-Valerie.eu and Google were in answering their queries.
2. Compare the usefulness of the results identified by ask-Valerie.eu and Google.

To accomplish these tasks, advisors and technicians were asked to devise 4 queries that they would like to see answered and then use the queries to test ask-Valerie.eu and Google. The result of each test was entered onto a recording sheet. The recoding sheet (See Annex 1) was designed to collect information on:

- How often the advisor/technician uses a search engine to search for information to help with their agricultural or forestry activities.
- The criteria used by the advisor/technician to identify useful query outputs. Here the technician/advisor explains why an output is useful in answering their query.
- The usefulness of the top 5 outputs identified. The advisors/technician evaluated the outputs in terms of:
    - How useful was the 'snippet' in describing the output.
    - How useful was the output.

The advisors were asked to assess the usefulness of each snippet and accompanying output on a scale of 1 to 5, where 1 was not very useful at all and 5 was very useful. The analysis of the testing, presented in Sections 4 through 13, pays particular attention to the query results that were scored highly by the tester (4 and 5) in terms of their usefulness.

3.2 Size of the survey

The CSPs were asked to complete up to 3 tests with advisors/technicians in each of the 10 case studies. The advisors/technicians were encouraged to devise up to 4 queries that were relevant to their own situations. In total 22 tests and 61 queries were undertaken (Table 3.1).

Table 3.1 Completed tests and queries by case study

Case Study	CS code	Total tests	Total queries
Catchment scale resource use efficiency, UK	UK1	3	4
Soil management in livestock supply chains, UK	UK2	1	2
Sustainable forest biomass, Finland	FI	3	5
Agroecology: managing plant protection, France	FR1	3	5
Innovative arable cropping, France	FR2	2	6
Sustainable forest management and ecosystem services, Spain	SP	2	8
Improving milling wheat quality, Italy	IT1	3	12
Drip irrigation management in tomatoes and maize, Italy	IT2	3	12
Sustainable onion supply chains, Netherlands	NL1	1	4
Sustainable potato supply chains, Netherlands	NL2	1	3
Total		**22**	**61**

[3] Outputs include PDFs, webpages, or links to other media e.g. videos or podcasts.

3.3 Undertaking the test with advisors/technicians

3.3.1 Working with the advisor/technician

The draft recording sheet was piloted with the UK CSP. It was found that the most effective way to do the test and complete the recording sheet was for the CSP to sit with the advisor/technician and to work through the first query together. It was found that completing the first query took the most time but once the advisor/technician understood what was required, less time was taken on the remaining queries.

3.3.2 Answering the questions

For the test the technician/advisor entered each query into ask-Valerie.eu and Google and compared the results in terms of how useful the outputs were in providing an answer to their query.

4 Catchment scale resource use efficiency, UK

4.1 Context

The Welland Valley Partnership (WVP) was formed in 2011 with the aim of bringing together stakeholders from the catchment of the River Welland and its tributaries, in order to forge ideas for, and progress, river enhancement activities, for the benefit of the water as a resource for the community and for the benefit of wildlife. The partnership is chaired by the Welland Rivers Trust, with a wide range of stakeholders, from individuals, local authorities and government agencies such as Environment Agency (EA) and Natural England (NE), farming representatives such as the National Farmers Union (NFU) and Country Land and Business Association (CLA), Non-Government Organisations (NGO's) and the local water company Anglian Water (AW). The Partnership is driven in part by the requirements of the Water Framework Directive (WFD) and is supported financially mainly by the by the EA.

The Game and Wildlife Conservation Trust (GWCT) is a partner in the WVP and contributes towards its objectives through the Water Friendly Farming Project (WFF). The project tests to what extent to which the WFD targets can be reached by applying practical evidence-based mitigation measures at the landscape scale and involves three headwater catchments, covering nearly 30km². The Resource Protection Group (WVPRPG) acts as a stakeholder steering group for the case study and comprises:

- 5 local farmers within the Welland Valley.
- GCWT.
- NFU.
- EA.
- NE.
- Agricultural industry advisor.
- Conservation advisor.

This group all met at the VALERIE kick off meeting; since then local farmers have been meeting and discussing ask-Valerie.eu, field trials and demonstration work.

4.2 Test outcomes

The ask-Valerie.eu test was undertaken by 3 advisors/technicians, who conducted 5 queries in English.

4.2.1 Advisor/technician test No. 1

The first tester was not a regular user for search engines and had not used one in the last 30 days to search for information to help with their agricultural activities. The tester performed a single query: *Can Phosphorus and Nitrogen uptake be increased through the use of Mycorrhizal Fungi applied to the seed.* The tester hoped the search would provide: *Up to date science based information to help inform deliver of my project. Sources of practical advice for farmers in the project area would be good.* The tester felt that results provided by ask.Valerie.eu were not particularly useful. The top 5 results received low scores for the usefulness of the snippet and the linked document:

Snippet score 1: The snippet was not relevant to the question.

Output score 1: It did not address the question.

The top 5 results provided by Google tended to score in the mid-range in terms of usefulness of the snippet and the outputs:

Snippet score 4: Very relevant to the question

Output score 3: Good background, informative p*aper but no practical application.*

Output score 2: Too technical to be able to be used in our project work or to be summarised for farmers and advisers.

Query 1 (1 = Not useful at all, 5 = Very useful)

Uk1.1 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	4	3
R2	1	1	3	2
R3	1	1	3	3
R4	1	1	3	3
R5	1	1	3	3
Total score	5	5	16	14

4.2.2 Advisor/technician test No. 2

The second tester has used a search engine to search for information to help with their agricultural activities in the previous 30 days. The tester performed 3 queries but experienced some difficulty with working with ask.Valerie.eu and completing the test. For all the queries the tester was hoping to find practical information which showed how the innovations could be used on the farm.

The first query asked: *What biological inoculants mobilise soil phosphorous?* And useful results were considered to be: *Practical – showing how an innovation can be used on farm. Science based and from a geographical area that is relevant to my farm. The results need to be relevant to my cereals farm and rotation.* Ask-Valerie.eu provided 2 results and neither were considered useful. Google provided more results but they tended score at the lower end of the scale in terms of usefulness of the snippet and output. The results tended to lack detail and relevance to the search query:

Snippet score 2: The snippet appeared to be topic relevant but there was no detail.

Output score 2: The document focussed on irrelevant crops and appeared to be commercially rather than research focussed.

The tester reported that neither search engine identified any useful results that were not identified by the other.

The second query asked: *Can mycorrhizal fungi seed treatment help mobilise phosphorous in maize?* The tester reported that the results produced by ask-Valerie.eu were in French and the tester was unable to evaluate them. The results provided by Google tended to be in the low to mid-range in terms of their usefulness. The tester reported that the results lacked a practical application and were too commercially oriented rather than being research based.

The third query asked: *Can cover crops help with grass weed control?* The top rated snippet was relevant to the query but only 1 output was connected to the top 5 search results provided by ask-Valerie.eu:

Snippet score 4: A good focussed snippet which looked as though the document would be useful.

The tester did not conduct a Google search for this query.

Query 1 (1 = Not useful at all, 5 = Very useful)

UK1.2 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	2	2
R2	1	0	2	3
R3			2	2
R4			2	2
R5			3	0
Total score	2	1	11	9

Query 2

UK1.2 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	In French		4	3
R2			2	2
R3			2	2
R4			2	1
R5			3	2
Total score	0	0	13	10

Query 3

UK2.2 Q3	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	4	0		
R2	2	0		
R3	3	1		
R4	1	0		
R5	3	0		
Total score	13	1	0	0

4.2.3 Advisor/technician test No. 3

The third tester was not a regular user for search engines and had not used one in the last 30 days to search for information to help with their agricultural activities. The tester performed a single query that asked: *Can biological inoculants be used to mobilise phosphorus in an arable rotation?* The tester said that to be useful: *Results need to give practical interpretation of research papers or be based on good practical experience.* ask.Valerie.eu provided a single result for this query and there was no output attached. The top 5 results produced by Google varied in their usefulness. Where outputs were given a low score this was because they lacked relevance to the query or were considered to be too technical:

> *Output score 4: Very good practical document which give good advice and explanation of the issues.*
>
> *Output score 1: I didn't read the detail as it referenced Mountain Ecosystems in the title which did not appear relevant.*

Query 1 (1 = Not useful at all, 5 = Very useful)

UK1.3 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	2	0	3	2
R2			3	1
R3			2	4
R4			2	2
R5			2	2
Total score	2	0	12	11

4.3 Stakeholder and CSP commentary

The stakeholder and CSP commentary draws on the individual CS meeting reports, CPS interviews and a joint CSP interview conducted in Toulouse in January 2017.

4.3.1 Expectations from ask-Valerie.eu

At the kick-off meeting the stakeholders reported that only a small amount of academic research is available to farmers on the internet, not the whole story often, and not in a format which farmers will find useful. It was hoped that the VALERIE project could present such information in a useable format. This would include:

- Tangible results.

- Better information on current research.
- Results which are relevant to farms in the WVP project area.
- Practical application of research topics.
- Investigation and research to help fill identified knowledge gaps.
- Innovative ways approaching CAP Greening requirements.

4.3.2 Stakeholders feedback on ask-Valerie.eu demonstrations/tests (version 2 and 3)

In the second CS meeting the CSP presented an overview of progress on the development of ask-Valerie.eu. It was reported that the stakeholders had a good understanding of the potential of ask-Valerie.eu and they stressed the importance for the outputs to be practically focussed. The use of ontologies was explained and how the terms used in the meetings had fed into the development of the ask-Valerie.eu platform. The stakeholders said that the facility for users to add terminology was a positive feature of ask-Valerie.eu. There was an appreciation of how the research questions developed and refined through the use of the dynamic agenda had feed into the development of the platform.

Stakeholders provided clear feedback on the types of output they would like to see from ask-Valerie.eu. This included brief summaries of technical papers that outline how the research can be practically used to resolve specific problems. There was a good appreciation that this not an easy ask and that on occasion technical papers will have to be used.

In the CSP interviews the CSP mentioned that the stakeholders appreciated the value of revisiting the innovation knowledge needs and research questions, and also testing and reflecting upon the ask-Valerie.eu software program. An early challenge for the VALERIE project was to provide stakeholders with a vision of what the ask-Valerie.eu software program would look like and achieve. It was important that ask-Valerie.eu should keep making progress and improvements as this would help keep the stakeholders engaged. Sometimes it was difficult for the stakeholders to see what advances had been made between different versions of ask-Valerie.eu. The CSP said that it was important that he stakeholders should feel ownership of the project and that their views and opinions were taken into account. A continuing challenge for ask-Valerie.eu is to produce information that can be practically implemented by end users.

The CSP and stakeholders felt that ask-Valerie.eu was likely to be most useful to advisors and technicians rather than farmers as end users:

> *It's a fantastic idea, but the farmers at the end of it don't see themselves as the user of the end tool [ask-Valerie.eu]. And I think we recognised that very early in VALERIE…. Advisers will use it and it will be useful for dissemination.*

5 Soil management in livestock supply chains, UK

5.1 Context

Outdoor pig production systems are increasingly popular in the UK. Outdoor pig enterprises can act as a "*break crop*" in arable rotations and, through their manure, can also provide savings in the use of inorganic fertilizers for the following arable crop. However, outdoor pig production is also often associated with significant environmental issues including soil erosion, nutrient loss and water pollution. The purpose of the CS is to find innovative management practices which will reduce the negative environmental impacts of outdoor pig production as part of arable crop rotations.

Key issues raised by the CS stakeholders included:

- Maintaining good soil cover on outdoor pig breeding fields.
- Enhancing buffer strips established to contain soil run off so that they can deliver multiple environmental benefits.
- The benefits that can be gained by the following crops from the presence of an outdoor herd on that site.
- How green cover can be established by undersowing in the previous crop.
- Mitigating possible compaction caused by the presence of an outdoor herd.

The case study lead representing farmers is now Fawley Farms; this business has 17 outdoor pig producers and has a working relationship with Dalehead BQP, the largest pig producer in the UK.

The key stakeholder organisations are:

- Suffolk Farming Wildlife Advisory Group.
- Kings Seeds.
- Fawley Farms.
- 12 outdoor pig producers/herdsmen.
- Dalehead BQP.

5.2 Test outcomes

The ask-Valerie.eu test was performed by a single advisor/technician and 2 queries were conducted in English.

5.2.1 Advisor/technician test 1

The tester had used a search engine up to five times in the previous 30 days to search for information to help with their agricultural activities. The tester conducted 2 queries.

The first query asked for information on: *Methods for preventing soil erosion on outdoor pig sites.* To be useful to the tester the information needed to be: *Up to date and focussed on methods that can be used in conjunction with outdoor pig herds working in a commercial environment*. The tester scored the ask-Valerie and Google snippets and outputs mainly in the mid-range for usefulness. The tester would have liked outputs that were focussed on innovative solutions and more up to date:

> *Output score 3: A great document that has already been circulated to all levy paying pig producers; the issue is there is no innovation and the document is out of date.*

Output score 2: This is an historic document relating to cross compliance; it didn't give any innovative solutions.

The tester reported that neither search engine identified any useful results that were not identified by the other.

The second query asked: *Can cover crops be used to help prevent soil erosion on outdoor pig sites?* To be useful the tester said that the information needed to be: *Up to date and focussed on methods that can be used in conjunction with outdoor pig herds working in a commercial environment.* The Ask-Valerie.eu search identified documents related to the query but the tester was looking for up to date information with a focus on innovative solutions.

Some of the Google outputs were considered not to be relevant to the query and to be out of date:

Output score 2: Not relevant and out of date.

The tester reported that neither search engine identified any useful results that were not identified by the other.

Query 1 (1 = Not useful at all, 5 = Very useful)

UK2.1 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	2	2	4	3
R2	2	2	3	3
R3	3	0	2	2
R4	2	0	1	1
R5	3	3	4	3
Total score	12	7	14	12

Query 2

UK2.1 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	2	2	3	3
R2	2	2	3	3
R3	2	0	3	3
R4	1	1	3	2
R5	1	1	1	1
Total score	8	6	13	12

5.3 Stakeholder and CSP commentary

The stakeholder and CSP commentary draws on the individual CS meeting reports, CSP interviews and a joint CSP interview conducted in Toulouse January 2017.

5.3.1 Expectations from ask-Valerie.eu

Stakeholder expectations were not collected.

5.3.2 Stakeholders feedback on ask-Valerie.eu demonstrations/tests (version 2 and 3)

The CSP noted that it has been difficult to organise meetings to bring the stakeholders together. This has affected the stakeholder feedback on the development of ask-Valerie.eu. In particular the ontology relating to outdoor pig production and arable crop rotations was thought to be less developed in comparison with the other CSs. The CSP suggested that this might have had an impact on the sensitivity of the searches in ask-Valerie.eu. The CSP reported that the tests of the different versions of ask-Valerie.eu had provided mixed results. There was positive feedback on the facilities and functions being developed for ask-Valerie.eu but the search results were often too general or not lacked a practical application. If more time was available it would be useful for the stakeholders to work on building and developing the ontology. Also the CSP thought that the ask-Valerie would need access to a larger number of repositories to be able to be compared favourably with Google.

In the CSP interviews it was pointed out out that the there was a research gap in the innovative practices that the stakeholders had requested information on and so it might be expected that the search engines would struggle to identify useful outputs:

The two innovations that my case studies are looking for, there actually isn't that much information out there. So that's where you have to be flexible

6 Sustainable forest biomass, Finland

6.1 Context

Wood ash is a waste product from biomass power stations. There is a need to understand the potential value of wood ash as a forest fertilizer, and so contribute to the circular economy in Finland. Wood ash fertilizer is already used effectively on peat forest soils in Finland but little is known about the impacts of using it on mineral forest soils. The possibility of using wood ash for road construction is also of interest to the stakeholders.

TAPIO working with the VALERIE project has brought together forest owners and managers, ash producers, ash operators, researchers, developers, and policy-makers to identify innovations in forestry practice in Finland. It was particularly important to get the decision makers to understand the value of wood ash.

6.2 Test outcomes

The ask-Valerie.eu test was conducted by 3 advisors/technicians, who completed 5 queries.

6.2.1 Advisor/technician test No. 1

The first tester is a regular user of search engines to search for information to help with their forestry activities. The tester conducted 2 queries but experienced problems with the first query when searching in Finnish.

The first query in Finnish asked for information about the utilisation of wood ash: *Miten hyötykäytän puutuhkaa*? Ask-Valerie.eu did not provide any results. The top 5 Google results provided useful information:

> *Output score 5: kannattaa hyödyntää – Guidelines from Puutarha.net - sites. The document deals with the utilization of wood ash in the garden*

The tester reported that Google found 1 useful result that ask-Valerie.eu did not find.

The second query asked: *Puutuhkan kierrätys.* Ask-Valerie.eu results did not provide the tester with useful information for this query. The tester reported that the outputs were not relevant in answering the search query:

> *Snippet score: The subject of the document was very far away from wood ash utilization*

The tester reported that some of the Google outputs provided very useful information and were relevant to the search query:

> *Output score 5: The best document about the wood ash fertilizing in Finland*

The tester reported that Google found 1 useful result that ask-Valerie.eu did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

FI1.1 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1			4	4
R2			5	5
R3			5	5
R4			5	5
R5			5	5
Total score	0	0	24	24

Query 2

F!1.1 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	0	1	1
R2	3	0	5	5
R3	1		4	4
R4	1	1	5	5
R5	1		1	1
Total score	7	1	16	16

6.2.2 Advisor/technician test No. 2

The tester had used a search engine to search for information to help with their forestry activities in the previous 30 days. The tester conducted 2 queries in Finnish and English.

The first query in Finnish asked for figures on the need for heat production: *Lämmitystarveluvut.* The tester said that useful results would contain information on: *Annual and monthly numbers for the municipality of Joensuu*. Ask-Valerie.eu did not provide any results for the query. The Google outputs provided some very useful information:

> *Output score 5: The document gives very exact statistics by month and by year.*

The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

The second query in English asked for documents on: *Impacts of wood ash fertilisation of forests*. The tested hoped that the results would provide up to date information. The Ask-Valerie.eu snippets were highly rated but only one document was provided. However, the output provided very useful information:

> *Output score 5: Very complete overview of the environmental impacts.*

The outputs from the top 5 Google results tended to score in the mid-range in terms of usefulness. The tester reported that ask-Valerie.eu found 1 useful result that Google did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

FI1.2 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1			4	5
R2			4	5
R3			3	5
R4			1	4
R5			3	1
Total score	0	0	15	20

Query 2

FI1.2 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	0	1	3
R2	5	0	3	2
R3	5	0	3	3
R4	5	0	4	3
R5	5	5	4	3
Total score	21	5	15	14

6.2.3 Advisor/technician test No. 3

The third tester has used a search engine to search for information to help with their forestry activities in the previous 30 days. The tester attempted to perform single query in Finnish but did not complete the test. The query asked for nutrient content information of wood ash: *Ravinnetietoja tuhkasta*. The tester reported that to be useful the information needed to contain: *Up to date (fresh) knowledge on wood ash.*

Query 1 (1 = Not useful at all, 5 = Very useful)

FI1.3 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	4	4		
R2				
R3				
R4				
R5				
Total score	4	4	0	0

6.3 Stakeholder and CSP commentary

The stakeholder and CSP commentary draws on the individual CS meeting reports.

6.3.1 Expectations from ask-Valerie.eu

Stakeholder expectations were not collected.

6.3.2 Stakeholders feedback on ask-Valerie.eu demonstrations/tests (version 2 and 3)

In the second CS meeting the stakeholders generally liked the idea of ask-Valerie.eu. They liked the fact that when they typed a Finnish search term, documents in other languages would be shown. They also appreciated having access to the original documents where this was possible, they also liked the fragment/snippet as this is better than the Google search result page which just shows one line of text. The stakeholders also had some more specific comments on the visual aspects of ask-Valerie.eu which were fed back to the developers.

In the third CS meeting they discussed the features which worked well and ones that need to be improved. Concerning the former, most of the features worked well and the stakeholders liked access to the science articles. The most positive aspect for them was access to both scientific and practical documents, both in Finnish and in English. Another positive comment was that the database contains relevant documents. Concerning features which need improvement, several detailed functional features were identified. They also said that the system needs many more documents in the Finnish language especially if forest owners were to use it.

The stakeholders also identified missing features and listed these as either 'must have' and 'like to have' features as follows:

- "Must have" feature:
    - Links to existing repositories to expand the document base.
    - Basic "*Google*" search option in case the ask-Valerie.eu system does not recognise the concept (i.e. the concept doesn't exist in the ontology) or the concept does exist and the search doesn't result in any useful answer.
- "*Like to have*" features:
    - Formatting and language issues were listed.
    - A "*like*" button or a "*this is useful*" button. This can be used to rank results so that the most useful documents will pop-up first. The "*like*" or "*dislike*" button can also be connected to the user profile, so that the system learns what type of documents the user is interested in.

Finally the document base was discussed. In terms of what the stakeholders liked or disliked about the type and content of documents, they agreed that this depends on the topic of the question. Some topics are covered very well in ask-Valerie.eu, while other topics are not. The stakeholders were satisfied with the documents related to ash recycling because they are interested in this. Some stakeholders asked if they can start using ask-Valerie.eu already because some documents were found to be very useful.

7 Agroecology: managing plant protection, France

7.1 Context

This case study is concerned with agro-ecological farm management. It draws on an existing project run by the Qualisol cooperative. This cooperative has set up a project funded under the agro-ecological plan for France called CASDAR "*collective mobilization project for the agroecology*". This builds on a previous initiative with 31 interested farmers. Covering the area of a watershed, the project brings together relevant technical partners: two other cooperatives, technical institutes, an agricultural college, a water association and research teams. The project focuses on the thematic priorities for Arable Farming Systems in a water stake territory:

- Reduction in the use of plant protection products (main theme of the project).
- Agro-ecological management of pests and risk-taking.
- Lengthening the rotation and its economic consequences.
- Limiting nitrate leaching and its impact on changes in agricultural techniques.

7.2 Test outcomes

The ask-Valerie.eu test was conducted by 3 advisors/technicians and 5 queries in French were completed.

7.2.1 Advisor/technician test No. 1

The tester had used a search engine more than 10 times in the previous 30 days to search for information to help with their agricultural activities. The tester performed 2 queries in French.

The first query asked for information about combining mechanical weeding and chemical treatments on wheat and sunflower crops: *Comment combiner désherbage mécanique et stratégie bas volume chimique sur du blé de force et tournesol*? The tester reported that the criteria for determining useful results were: *Relevance, reliability of the source and context*. The top 5 results provided by ask-Valerie.eu tended to score in the mid-range in terms of usefulness of the snippet and the outputs. The tester reported that some of outputs identified by the Google search contained useful information. The tester reported that Google found 1 useful result that ask-Valerie.eu did not find.

The second query asked about the optimal seeding rate for a successful wheat-lentil combination: *quelle densité de semis optimale pour une association blé-lentille réussie?* The tester reported that the criteria for useful results were: *Relevance, reliability of the source and context*. The ask-Valerie.eu snippets tended to be scored by the tester towards the lower end of the scale in terms of usability. The top 2 ranked results did not contain an output. The tester reported that some of the Google snippets and outputs contained useful information. The tester reported that Google found 1 useful result that ask-Valerie.eu did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

FR1.1 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	3	3	5	4
R2	2	3	3	4
R3	4	4	3	4
R4	3	3	4	2
R5	2	2	3	4
Total score	14	15	18	18

Query 2

FR1.1 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	3	no document	3	3
R2	2	no document	4	3
R3	2	2	5	3
R4	2	3	4	4
R5	1	1	2	2
Total score	10	6	18	15

7.2.2 Advisor/technician test No. 2

The tester had used a search engine more than 10 times in the previous 30 days to search for information to help with their agricultural activities. The tester conducted 2 queries in French.

The first query asked for information about reducing herbicides in the midi-pyrennes: *reduction herbicide en midi-pyrennes.* The tester was looking for outputs that contained relevant information. Ask-Valerie.eu identified 3 very useful documents. A full comparison with Google was not undertaken but the tester noted that 3 of the Google outputs appeared relevant. The tester reported that both search engines found useful results that the other did not find.

The second query asked: *association de culture blé lentilles.* Ask-Valerie.eu provided some very useful snippets but the documents identified were not particularly useful according to the tester. Ask-Valerie.eu did not find 2 of the documents. Google provided some very useful snippets and one of the outputs was considered to be very useful. The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

The Query 1 (1 = Not useful at all, 5 = Very useful)

FR1.2 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	4	5	2	
R2	3	5		
R3	3	5		
R4	4	3		
R5				
Total score	14	18	2	0

Query 2

FR1.2 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	no document	3	5
R2	4	2	5	2
R3	5	2	5	3
R4	5	1	5	4
R5	5	no document	3	2
Total score	20	5	21	16

7.2.3 Advisor/technician test No. 3

The tester had used a search engine to search for information to help with their agricultural activities in the previous 30 days. The tester attempted 4 queries in French but had difficulty implementing the test and completed 1 query comparison.

The first query asked for information about mechanical weed control for chickpeas: *Désherbage mécanique pois chiches.* The most important criteria for determining the usefulness of the output were relevance and source. The top 5 Ask-Valerie.eu snippets and documents were not considered by the tester to be particularly useful. The tester reported that the Google search identified a useful output that contained relevant information about weed control and chickpeas. The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

FR1.3 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	4	3
R2	2	2	1	2
R3	1	2	3	3
R4	1	1	4	4
R5	1	1	3	2
Total score	6	7	15	14

7.3 Stakeholder and CSP commentary

The stakeholder and CSP commentary draws on the individual CS meeting reports and a joint CSP interview conducted in Toulouse January 2017.

7.3.1 Expectations from ask-Valerie.eu

Stakeholders expectations were not collected.

7.3.2 Stakeholders feedback on ask-Valerie.eu demonstrations/tests (version 2 and 3)

According to feedback in the second CS meeting, all the stakeholders found the idea of ask-Valerie.eu interesting and very ambitious. All the participants are ready to test and to feedback but it was not considered appropriate for farmers and advisors because the interface and the documents are in English, and most of the documents are scientific articles. Nevertheless, the CSP reported that the tool is very appropriate for agricultural project managers, technical officers who work with advisors, and agriculture/agronomy students. English is not a problem for these users. They would be very interested by finding results of European projects and in accessing the English summary of scientific articles.

With respect to functionality, interface and content the functions broader, narrower and related terms are appreciated because they allow a complete search. The stakeholders questioned whether the search could take them to websites as well as to PDF documents. Some stakeholders asked if it is possible to have a translation in different languages of the short abstract under the document and to have the name and the contact of document authors. The stakeholders suggested that the step on the interface where the user "*introduces himself*" (profession, field size, farm type…), could happen after keying in the key words for the search, then the results could be ranked according to the user.

Comments on functionality at the third CS meeting feedback were:

- There are some interesting documents but there were also some very general (i.e. non agronomic) documents found
- For some searches, very surprising results emerged, which did not answer the question
- There are not many plant diseases in the ontology nor words concerning the economical aspect (gross margin, etc.) which are an important dimension for the farmer

Suggestions for improvement for the user (interface for search and results representation) included the possibility to make a search within general themes (e.g. "*fertilisation*", "*irrigation*", etc.) before doing an advanced search. It could also be interesting to have the possibility to choose the type of document (technical vs scientific document). Another possibility instead of choosing the document type is to create a "*farmer environment*" with technical documents only as results and a "*farm adviser environment*" with both technical and scientific documents as results.

8 Innovative arable cropping, France

8.1 Context

The arable farmers in the Berry region from central France (departments of Indre and Cher) grow mainly rapeseed, wheat and barley winter. Their farms are between 100 to 500 hectares on various soil types but principally on superficial calcareous clay. Despite progress in crop genetics, the average yields have not increased for over 20 years.

Since 2005, some farmers meet in a group with their advisor to find solutions to maintain the economic viability and sustainability of their farming systems. For these farmers who are keen to move towards more efficient systems, in economic terms and productivity, improving soil quality is the primary objective.

Short rotations have been identified as the first weak point, responsible for recurrent weed problems. To tackle them, farmers have gradually shifted towards simplified tillage in terms of number of operations and working depth. However, this simplified tillage is not always beneficial to the structural qualities of the soil.

A slight crop diversification to extend the intensive, high input production systems based on a short rotation of rapeseed, wheat and winter barley, took place in the last ten years. Farmers introduced various crops: sunflower, corn, durum wheat, and legumes mixed in the crop or between crops.

In summary, the group of farmers coordinated by the advisor aim to develop new techniques and investigate alternative approaches that reduce the impact of farming on the environment and improve soil properties. Amongst them:

- Improving the quality of oilseed rape drilling and autumn growth in order to better withstand autumn weed and disease threats, and limit spring nitrogen input
- Direct seeding in permanent cover: e.g. oilseed rape sown together with cover crops, then direct seeding of wheat under cover of clover or alfalfa

Group discussions, regular meetings and on farm testing have been undertaken since 2005. The group expanded in 2013 with the introduction of a new project called "*SYPPRE*". For this project, a dozen farmers meet 3 to 4 times a year to elaborate innovative cropping systems.

8.2 Test outcomes

The ask-Valerie.eu test was conducted by 2 advisors/technicians, who completed 3 queries each. The 3 queries were first specified in English (Test No. 1) and then in French (Test No. 2).

8.2.1 Advisor/technician test No. 1

The tester had used a search engine more than 10 times in the previous 30 days to search for information to help with their forestry activities. The tester conducted 3 queries in English.

The first query asked: *How to associate leguminous crops with oilseed rape*? The tester wanted the search to find technically orientated information. The search identified outputs in English and French. Both ask-Valerie and Google produced some useful snippets and documents. The tester reported that both search engines found useful results that the other did not find.

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The second query asked: *How to evaluate the properties of agricultural soils in the field?* The tester was looking for outputs that were preferably in French: *not too old >year 2000, technical documents of in field evaluation method preferred. Illustrations and photos would be appreciated.* The Ask-Valerie.eu search did not identify useful snippets and some of the documents were not found. Google provided useful snippets but the outputs tended to be too scientific, difficult to understand and insufficiently focused on in field evaluation.

The third query asked: *What does influence the end of dormancy of weeds seeds?* The snippets from Ask-Valerie.eu were useful and the documents were relevant to the query. Two documents could not be found:

> *Snippet score 5: In French. Key words and summary description seem relevant.*
>
> *Output score 5: Good technical information on main French weeds and impact of different types of soils tillage on dormancy.*

The Google snippets were useful but none of the top 5 outputs were given a score for usefulness greater than 2.

> *Output score 2: General document about seed dormancy. Nothing about weed seeds.*

The tester reported that ask-Valerie.eu found 1 useful result that Google did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

FR2.1 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	3	2	4	4
R2	5	3	4	4
R3	2	2	4	2
R4	2	3	2	1
R5	2	1	1	1
Total score	14	11	15	12

Query 2

FR2.1 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	2	1	4	2
R2	1	1	2	1
R3	1	1	4	1
R4	1	1	4	3
R5	1	1	4	2
Total score	6	5	18	9

Query 3 (1 = Not useful at all, 5 = Very useful)

FR2.1 Q3	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	4	4	5	2
R2	3	5	3	2
R3	4	4	5	2
R4	5	0	5	1
R5	4	0	5	2
Total score	20	13	23	9

8.2.2 Advisor/technician test No. 2

The tester had used a search engine more than 10 times in the previous 30 days to search for information to help with their forestry activities. The tester conducted 3 queries in French.

The first query asked: *Comment planter du colza en association avec des légumineuses?* The tester wanted the search to find technically orientated information. The Ask-Valerie.eu snippets did not seem to the tester to correspond closely to the query:

> *Snippet score 1: Do not seem to correspond to the query. Deal with chemical weeding.*

The tester reported that some of the Google snippets and outputs more closely reflected the intention of the query:

> *Snippet score 5: Title and summary deal exactly with the query.*

Output score 5: Video with technical information from France Agricole. Good content that responds to the query.

The tester reported that Google found 5 useful results that ask-Valerie.eu did not find.

The second query asked: *Comment évaluer les propriétés physiques des sols agricoles au champ?* The tester wanted to identify: Simple technical documents, query deal with in field evaluation method. The tester reported that Ask-Valerie.eu search did not identify useful snippets and the documents were not focussed on in field evaluation. Google provided some useful snippets and outputs but the outputs tended to be too scientific, difficult to understand and insufficiently focused on in field evaluation.

Output score 3: Complete paper (more than 50 pages) that describes soil physical properties measured in the laboratory mainly, but adapted mainly to soil scientists. Hard to read. And do not deal with agricultural soils specifically.

The third query asked: *Qu'est-ce qui influence la fin de la dormance des graines des adventices?* The snippets from Ask-Valerie.eu were useful and the documents were relevant to the query. Three documents could not be found.

The Google snippets were considered by the tester to be as useful as ask-Valerie.eu. But the test also reported that the Google search did identify one very useful technically orientated output:

Output score 5: Technical information. Good information from technical institute Arvalis.

The tester reported that Google found 1 useful result that ask-Valerie.eu did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

FR2.2 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	3	5	5
R2	1	1	5	4
R3	1	3	5	5
R4	1	1	5	5
R5	2	4	5	3
Total score	6	12	25	22

Query 2

FR2.2 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	5	3
R2	1	2	5	4
R3	1	2	3	4
R4	1	2	4	1
R5	1	2	2	2
Total score	5	9	19	14

Query 3

FR2.2 Q3	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	4	3	4	3
R2	3	3	3	3
R3	5	1	5	5
R4	5	1	1	1
R5	5	1	1	1
Total score	22	9	14	13

8.3 Stakeholder and CSP commentary

The stakeholder and CSP commentary draws on the individual CS meeting reports and a joint CSP interview conducted in Toulouse January 2017.

8.3.1 Expectations from ask-Valerie.eu

In the kick off meeting the farmers discussed the limitations of information sources on the internet; they made some general observations about using information on the internet and on the relevance and usefulness of the VALERIE project for them as summarized here:

- The results of the queries show too much irrelevant information. It is time consuming to find what you seek.
- Profusion of "*pamphlets*" on specific, specialized topics
- Techniques characterized as "*innovation*", it is showed only what "*works*", the "*exceptional*" success stories. Yet, it is very useful to show what did not work.
- Documents found (e.g. report, scientific article) are too long, too scientific.
- Difficulty to adapt the general information to specific context (farmers' situation)
- Participatory internet sites (e.g. agricultural forums, Wikipedia) raise the question of the validity of the information because nothing is checked. We must be careful to exceptional cases that cannot be generalized.

They followed this up meeting with some questions to the CSP about the VALERIE project and ask-Valerie.eu:

- Does VALERIE offer other sources of information than on innovation? Will we have access to more general agronomic information?
- Is VALERIE restricted to deliver documents from European research projects?
- Will VALERIE provide validated information? Will there be a consortium of scientists who will validate the information disseminated?
- Will VALERIE be able to find sources in video format such as testimonies of farmers sharing practical expertise? The information coming from a peer is "more meaningful" and credible.
- Will VALERIE be able to sort relevant sources on the entire internet?

With respect to the farmers' need for information from ask-Valerie.eu, this group of farmers are already well connected to information, although they note this is not typical. Also for them the value added from the tool would be access to European documents if technical references from other countries are accessible.

> *"In our context, our stakeholders … already have access to very innovative projects. … they know the technical Institutes website to grab the information that is useful for them. So they already have access. It is not the case and the rest of France, it is not representative at all. They are very isolated, farmers, may find ask.Valerie.eu more useful for sure". CSP*

8.3.2 Stakeholders feedback on ask-Valerie.eu demonstrations/tests (version 2 and 3)

Opportunities for feedback from the farmers have been limited because the tool has only very recently been available in French, prior to this it was inaccessible to farmers. However the CSP, colleagues and technical experts have tested the tool and viewed the demonstration. For version 2 the CSP noted they were still unable to find relevant answers saying "*when you write the question of farmers on a very specific subject you can't find it*". This is the case for English and in French language. They attribute this to poor ontology development saying "*With the ontology we realise now that there are some weaknesses. We realise now how crucial the ontology is*."

9 Sustainable forest management and ecosystem services, Navarra and Basque Country, Spain

9.1 Context

In many parts of the Pyrenees sustainable forest management had declined in recent decades. Forest ownership is often characterized by small and fragmented plots which are a barrier to economically viable forest management practices and the maintenance and enhancement of biodiversity and ecosystem services. There is an opportunity for forest owners to achieve sustainable management through joint forest management planning. However, a major barrier in the planning process is a lack of empirical data on the physical characteristics of the forest which can be used to inform management. Light Detection and Ranging (LiDAR) technology has the potential to provide much of the required information.

The VALERIE project has brought together a wide range of stakeholders, including individual forest landowners, the local authority, technical staff and forest engineers from the Navarra Forestry Society (Foresna), technical staff from the Mediterranean regional office of the European Forest Institute (Efimed) and the Government of Navarre's technicians and officers responsible for the Roncal area. Meetings have been carried out with forest owners to identify their problems and to show them the proposed innovation. There are also regular meetings with the Government of Navarre´s technicians and officers.

9.2 Test outcomes

The ask-Valerie.eu test was conducted by 2 advisors/technicians, who completed 8 queries (4 in English and 4 in Spanish).

9.2.1 Advisor/technician test No. 1

The tester had used a search engine more than 10 times to search for information to help with their forestry activities in the previous 30 days. The tester conducted 4 queries in English.

The first query asked for information about: *Biological control agents against Thaumetopoea pityocampa.* The tester reported that useful query results would include: *Technical update documents in English with scientific information*. The Ask-Valerie.eu search did not identify any useful documents. The tester reported that the Google search provided some useful snippets and outputs:

> *Snippet score 4: Keywords are in the title and summary. The subject is clear in the title.*
>
> *Output score 4: Interesting technical information with illustrations and scientific references.*

The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

The second query asked for information about forest management plans. Useful results would include*: Technical update documents in English with information about how to do forest management plan*. The Ask-Valerie.eu search provided documents that the tester found to be useful:

> *Output score 4: Interesting information about management plans for forest owners. How and why in good to have a forest management plan.*

The Google search also provided useful outputs:

Output score 4: Interesting information about how to do a forest management plan.

The tester reported that both search engines found useful results that the other did not find.

The third query asked: *What is Lidar*? Useful results would include: *Technical update documents in English with relevant information*. The Ask-Valerie.eu search did not identify any documents. Google identified some snippets and outputs that we considered to be useful by the tester:

Output score 4: Good and extended technical information about Lidar.

The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

The fourth query asked for information about: *Forest harvesting methods*.
Useful results were considered to be: Useful results would include: *Technical update documents in English with relevant information*. The Ask-Valerie.eu search did not identify any particularly useful documents. The tester reported that the Google search provided some useful snippets and outputs:

Output score 4: Short document with general information about harvesting methods.

The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

SP1.1 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	4	2
R2	1	1	4	4
R3	1	1	4	2
R4	1	1	4	4
R5	1	1	3	3
Total score	5	5	19	15

Query 2

SP1.1 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	4	4
R2	3	2	3	3
R3	3	2	4	4
R4	4	4	2	2
R5	5	3	4	4
Total score	16	12	17	17

Query 3

SP1.1 Q3	AV Snip	AV Doc	Goo Snip	Goo Doc
R1			4	3
R2			4	4
R3			3	3
R4			3	3
R5			3	4
Total score	0	0	17	17

Query 4

SP1.1 Q4	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	2	2	4	4
R2	1	1	4	3
R3	1	1	3	3
R4	1	1	4	4
R5	1	1	3	2
Total score	6	6	18	16

9.2.2 Advisor/technician test No. 2

The tester had used a search engine between 6 and 10 times to search for information to help with their forestry activities in the previous 30 days. The tester conducted 4 queries in Spanish.

The first query asked: *Resalveo de conversion.* The tester reported that useful results would include: *Technical documents in Spanish preferred. Illustrations would be appreciated*. The Ask-Valerie.eu search did not identify any documents. Google identified some snippets and outputs that we considered to be useful by the tester:

Output score 4: Technical and long document with lot of information in Spanish.

The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

The second query asked for information about on radiata pine: *Selvicultura del Pinus radiate.* The tester reported that useful results would include: *Technical documents in Spanish preferred with elaborated information*. The Ask-Valerie.eu search did not identify any documents. Google identified some snippets and outputs that we considered to be useful by the tester:

> *Output score 4: Technical and scientific document in Spanish related with the query and with good illustrations.*

The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

The third query asked for information about the life cycle of the pine weevil: *Ciclo de vida de hylobius abietis*. The tester reported that useful results would include: *Technical update documents in Spanish preferred with scientific information*. The Ask-Valerie.eu search did not identify any documents. Google identified some snippets and outputs that we considered to be useful by the tester:

> *Output score 4: Scientific information related with the query and in Spanish.*

The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

The fourth query asked for information about eucalyptus fertilisation: *Fertilización forestal en plantaciones del género eucalyptus*. The tester reported that useful results would include: *Technical update documents in Spanish preferred with scientific information*. The Ask-Valerie.eu search did not identify any documents. Google identified some snippets and outputs that we considered to be useful by the tester:

> *Output score 4: General document with scientific information related with the query, very useful and interesting.*

The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

SP1.2 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1			3	3
R2			4	4
R3			3	3
R4			4	4
R5			5	5
Total score	0	0	19	19

Query 2

SP1.2 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	2	3
R2	1	1	4	4
R3	1	1	4	4
R4	1	1	3	4
R5	1	1	4	4
Total score	5	5	17	19

Query 3

SP1.2 Q3	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	3	4
R2	1	1	4	4
R3	1	1	2	2
R4	1	1	4	4
R5	1	1	3	3
Total score	5	5	16	17

Query 4

	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	3	3
R2	1	1	3	3
R3	1	1	4	4
R4	1	1	4	4
R5	1	1	3	3
Total score	5	5	17	17

9.3 Stakeholder and CSP commentary

The stakeholder and CSP commentary draws on the individual CS meeting reports, and a CSP interview conducted in Bilbao December 2016

9.3.1 Expectations from ask-Valerie.eu

In the kick off meeting the stakeholders welcomed the opportunity to take part in the VALERIE project. It was appreciated that there was a need to develop the ontology so that ask.Valerie.eu could become a useful search engine to identify research on forest management planning and the innovative concept of Forestry Societies. The creation of a Forestry Society in the SC would help stakeholders to engage with the project and contribute to the building the ontology. Developing the ontology using terms provided by the stakeholders could help ask-Valerie.eu to identify practical and user orientated output. The CSP noted that some of the stakeholders expectations for positive forest management outcomes required political actions and that ask-Valerie.eu was perhaps more suited to identifying technical/logistical and scientific innovations.

9.3.2 Stakeholders feedback on ask-Valerie.eu demonstrations/tests (version 2 and 3)

In the second CS meetings stakeholders received a presentation that outlined the key features of ask-Valerie.eu and an illustration of how the search facility operated. The stakeholders understood the potential of ask-Valerie.eu and how it might help them. When using ask-Valerie.eu it would be important to distinguish between questions that are purely technical/logistical and those that need a political answer. Stakeholders said that it was very important that the ask-Valerie.eu platform should:

- Have a Spanish language version. Many of the stakeholders would be reluctant to use an English only version.
- Be kept up to date and include newly emerging innovations. It would be useful to have a facility for users to update and upload information to the system in a similar way to Wikipedia.
- Cover broader forestry topics as well.

As part of the 3rd CS meeting ask.Valerie.eu was tested with 3 groups of stakeholders:

- Technical managers from the Government of Navarra.
- Officials of the Roncal Forest Owners Group.
- Staff from Forensa, Efimed and USSE.

A demonstration of the facilities of ask-Valerie.eu was followed by a "*hands-on*" testing of the software. This involved the creation and entry of search queries based on questions identified by stakeholders. A record was made of any unexpected behaviour of the software. The documents identified by the software, in response to the search questions, were evaluated in terms of their relevance to the question being asked.

In the CSP interview it was reported the creation of a Spanish language version of ask-Valerie.eu was considered to be a major improvement. It was reported that there had been improvements in the way the search terms were organised which made it easier to compose questions:

> *Now it is in Spanish they can understand them. The first one was English and it did not work well, because they did not understand anything.*
>
> *The Spanish translation, the amount of documents, the improvement in terms of the composed names. Before the words were separated but*

now they are together in the ontology and it makes sense because otherwise the system was recognising funny words.

It was reported that searches did produce useful and relevant documents.There were also some weaknesses with the ontology and the search terms. It was reported that Ask-Valerie.eu required further development to include plant species and diseases that were relevant to the forestry sector.

… because there are some comments like if you pass a list of 500 species to be included, and for you to be useful you need this list of species to be there… To be useful for my stakeholders we need that. (Meeting 4).

Stakeholders recognised that the number of documents had been increased since the previous version but there were requests that the document base should be increased and frequently updated. It was felt, by some stakeholders, that the technical nature of many of the documents located on ask-Valerie.eu meant that the software was better suited to forestry advisers and technicians than forest owners. It was suggested that there is a need for further interpretation of the documents identified by searches on ask-Valerie.eu and that quite often the information was not suitable for dissemination to some stakeholder groups who had specific research needs.

The idea that an interactive stakeholder community could be developed and based around the ask-Valerie.eu facility was generally well received. However, some of the stakeholders felt that resources should be focused on improving the functionality and document content of ask-Valerie.eu before attention was turned to developing its interactive function.

Some of the stakeholders made suggestions for features they would like to see on ask-Valerie.eu. These included:

- Greater use of fact sheets.
- Fact sheets that are designed and presented in a video format.
- Documents to be presented in a “Wikipedia like” format where words and phrases have hyperlinks to more detailed documents located in the document base.
- Have a facility where you could hover the mouse over the term and a list of synonyms or other information about the term is revealed. This might be possible in terms of the synonyms because they should be available in the ROC+. This would also give people clues in searching for more documents.
- The presentation of a summary or abstract so that readers can quickly determine the relevance of the document.
- Have a glossary of the different terms so people can see what they mean. This would be helpful for the very technical documents.

10 Improving milling wheat quality, Italy

10.1 Context

Problems with the quality of the local bread wheat production are increasing for many farmers. This is firstly due to the continuous drop of prices of the global and local market. Secondly, the national authorities have reduced the number of available and permitted pesticides to prevent environmental and health issues. Moreover, atypical weather conditions during the growing season increases the stress on plants while it is developing important tissues and nutrients. Furthermore , the customer and therefore the industry are more interested in alternative ways of farming, especially if they help reduce the use of chemicals.

The VALERIE project has brought together farmers, co-operatives offering storage facilities, millers of various sizes and capacity, seed and pesticides companies (retailers and producers).

10.2 Test outcomes

The ask-Valerie.eu test was conducted with three advisors/technicians who completed a total of 12 queries.

10.2.1 Advisor/technician test No. 1

The tester had used a search engine more than 10 times to search for information to help with their agricultural activities in the previous 30 days. The tester conducted 4 queries. In all the queries the tester reported that relevance was the most important criterion in assessing the usefulness of the output.

The first query in Italian asked for information about the effects of water stress in soft wheat. The tester reported that the top 5 results for Ask-Valerie.eu contained a useful document but other results varied in their usefulness:

> *Output score 4: The document is very interesting and useful.*
>
> *Output score 1: The Document includes information about Quinoa and not about wheat.*

The google search also identified useful documents. The tester reported that both search engines found useful results that the other did not find.

The second query in English asked for information about the effects of water stress in soft wheat. The Ask-Valerie.eu in English identified the same snippets and documents as in the first query. The tester Google search in English identified some very snippets and outputs:

> *Snippet score 5: The first sentence gives us two important element that are related to the query and helps us considering other point of view.*
>
> *Output score 5: Very relevant and giving more information about fertilization influence*

The tester reported that Google found 5 useful results that ask-Valerie.eu did not find.

The third query in Italian asked for information about weed management in soft wheat: *Gestione infestanti frumento tenero.* The tester reported that both Ask-Valerie.eu and Google provided useful outputs. The Ask-Valerie.eu search identified a very useful output but also 2 documents that were considered by the tester to be not useful at all:

Output score 5: The document is a PowerPoint presentation of a field trial conducted in Emilia Romagna. It is relevant enough to the query.

The Google search also identified a number of useful outputs:

Output score 4: Quite interesting document but once more, it is more related to organic farming. For this reason, we ranked it 4 instead of 5.

Output score 4: The result is commercial based (Sumitomo) but they give a lot of information about the topic.

The tester reported that Google found 5 useful results that ask-Valerie.eu did not find.

The fourth query in Italian asked for information about a wheat pest. The Ask-Valerie.eu search provided 2 results and neither were considered particularly useful by the tester. The tester reported that the Google search provided some useful snippets and outputs:

Snippet score 4: By the title and the description we found the key word and the content of the article

Output score 5: The document is very interesting and related to our region.

The tester reported that Google found 5 useful results that ask-Valerie.eu did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

IT1.1 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	2	3	2	4
R2	3	4	2	2
R3	1	1	3	3
R4	2	3	3	3
R5	1	2	2	3
Total score	9	13	12	15

Query 2

IT1.1 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	2	3	5	5
R2	3	4	4	0
R3	1	1	5	5
R4	2	3	5	5
R5	1	2	5	5
Total score	9	13	24	20

Query 3

IT1.1 Q3	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	4	1	4	4
R2	4	5	3	3
R3	2	2	3	4
R4	3	2	4	4
R5	1	1	4	4
Total score	14	11	18	19

Query 4

IT1.1 Q4	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	3	5
R2	2	3	3	3
R3			5	5
R4			4	4
R5			4	5
Total score	3	4	19	22

10.2.2 Advisor/technician test No. 2

The tester had used a search engine between 6 and 10 times to search for information to help with their agricultural activities in the previous 30 days. The tester conducted 4 queries in Italian. In all the queries the tester reported that relevance was the most important criterion in assessing the usefulness of the output.

The first query asked for information concerning the recognition of fungal damage on soft wheat: *Riconoscimento danni da funghi frumento tenero*. The Ask-Valerie.eu results included a document that as considered to be useful by the tester:

Output score 3: The document gives information on disease management. We can see some pictures of wheat disease.

The tester also reported that other snippets and documents were not very useful. The Google search provided some useful snippets and outputs:

> *Snippet score 4: The snippet includes the key words of the query.*
>
> *Output score 5: The document is very comprehensive and shows all wheat diseases.*

The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

The second query asked about the water needs of wheat: *Fabbisogno idrico frumento*. The tester reported that Ask-Valerie.eu search did not provide very useful snippets and documents. The tester found some of the Google results quite useful:

> *Snippet score 5: In the snippet we can find the answer to the query.*
>
> *Output score 5: Very comprehensive document on wheat needs.*

The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

The third query asked for information about soft wheat lodging: *Allettamento frumento tenero*. The Ask-Valerie.eu results included a document that as considered to be useful by the tester:

> *Output score 4: Guide for mycotxins magament in wheat and cereals, in which lodging is an agent.*

The tester also reported that other snippets and documents were not very useful. The Google search provided some useful snippets and outputs but they tended to be too general in nature to be scored as very useful by the tester. The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

The fourth query in asked for information on the precision farming of wheat: *Agricoltura di precisione frumento*. One of the documents found by the Ask-Valerie.eu search was considered by the tester to be quite useful. The tester found all of the Google outputs to be useful. The tester reported that Google found 3 useful results that ask-Valerie.eu did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

IT1.2 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	3	3
R2	3	3	4	5
R3	1	1	3	5
R4	1	1	4	0
R5	3	1	2	2
Total score	9	7	16	15

Query 2

It1.2 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	5	5
R2	1	2	5	4
R3	1	1	3	3
R4	1	1	2	2
R5	1	1	3	3
Total score	5	6	18	17

Query 3

IT1.2 Q3	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	3	4	3	3
R2	1	1	4	3
R3	1	1	4	3
R4	1	1	4	3
R5	1	1	2	3
Total score	7	8	17	15

Query 4

IT1.2 Q4	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	3	1	5	4
R2	2	1	4	4
R3	2	2	4	4
R4	3	3	4	4
R5	3	2	3	4
Total score	13	9	20	20

10.2.3 Advisor/technician test No. 3

The tester had used a search engine to search for information to help with their agricultural activities in the previous 30 days. The tester conducted 4 queries. In all the queries the tester reported that relevance was the most important criterion in assessing the output usefulness.

The first query in Italian asked for information concerning the effect of biostimulants on soft wheat: *Effetto dei biostimolanti su frumento tenero*. The outputs from the Ask-Valerie.eu and Google searched tended to be too general of not specifically about wheat receive a high usefulness score from the tester.

The second query in Italian asked for information concerning cover crops and soft wheat. The top 5 outputs provided by Ask-Valerie.eu identified one very useful document according to the tester:

> *Output score 5: The factsheet is very clear and useful.*

The tester reported that the Google search identified 2 very useful outputs:

> *Output score 5: It gives evidence of a farmer using cover crop and sod seeding. Good example to share knowledge.*

The tester reported that ask-Valerie.eu found 1 useful result that Google did not find.

The third query in Italian asked for information concerning fertilization plans for soft wheat: *Piano di concimazione del frumento tenero*. One useful output was identified by Ask-Valerie.eu. The tester did considered the other outputs not to be useful at all:

> *Output score 4: The document is relevant enough for the query. The document gives a good starting point for the query.*

The tester reported that the Google search results provided some useful snippets and outputs:

> *Snippet score 4: It's very clear and answering to the query.*
>
> *Output score 4: It's very clear but it gives commercial information. Nevertheless, it can be applied to any situation.*

The tester reported that ask-Valerie.eu found 1 useful result that Google did not find.

The fourth query in Italian asked for information concerning alternative crops to soft wheat: *Colture alternative al frumento tenero*. The tester reported that the Ask-Valerie.eu snippets and outputs were not very useful in answering the query. The Google search provided snippets and outputs that were considered by the tester to be in medium range in terms of usefulness and too general in coverage to warrant a higher score.

Query 1 (1 = Not useful at all, 5 = Very useful)

IT1.3 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	4	0
R2	2	1	3	3
R3	2	2	4	3
R4	2	2	4	3
R5	1	1	3	3
Total score	8	7	18	12

Query 2

IT1.3 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	4	3	4	5
R2	2	1	4	5
R3	1	1	2	2
R4	3	3	2	2
R5	5	5	1	2
Total score	15	13	13	16

Query 3

IT1.3 Q3	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	4	4	4	4
R2	1	1	3	3
R3	1	1	1	2
R4	1	1	4	3
R5	1	1	2	2
Total score	8	8	14	14

Query 4

IT1.3 Q4	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	2	1	3	3
R2	1	1	3	3
R3	1	1	3	3
R4	1	1	3	3
R5	1	1	3	3
Total score	6	5	15	15

10.3 Stakeholder and CSP commentary

The stakeholder and CSP commentary draws on the individual CS meeting reports and a joint CSP interview conducted in Toulouse January 2017.

10.3.1 Expectations from ask-Valerie.eu

With respect to stakeholders' expectations and requirements regarding ask-Valerie.eu, stakeholders involved in the CS meetings were from across the supply-chain. In the kick off meeting stakeholders were asked about their research needs. All the stakeholders were interested in innovations but they wanted to focus on their usability and cost-efficiency. It was generally felt by stakeholders that it will be the advisors, rather than other stakeholders who will use ask-Valerie.eu.

With respect to stakeholders need for information from ask-Valerie.eu it was suggested at the kick off meeting that the greatest innovation need is for a communication method/tool to spread information into the agricultural community, but perhaps not a web tool such as ask-Valerie.eu. An exercise in the first CS meeting identified each stakeholder groups' information needs from ask-Valerie.eu and their current sources of information:

1) Farmers - They want information from ask-Valerie.eu to help them increase their income and improve their crop system (higher yield) and they want to work more efficiently. They currently make limited use of computers. They have a high trust in advisors, technical suppliers and other tools for information e.g. national technical magazines.

2) Storage co-operatives – These are the intermediaries between producers and processors. They need to improve their management of grain lots and operational structures need to be adapted. They currently make limited use of computers. They have a high trust in advisors, technical suppliers and other tools for information e.g. national technical magazines.

3) Advisors from farmer unions - They need more input or tools to provide technical advice. They make good use of computers, but lack time to search for information. They place trust in national technical magazines.

4) Suppliers and sellers - They want to increase the amount of sold products. They make good use of the computer but lack time to search for information. Some of them are able to work in English too.

5) Seed producers. - They make good use of the computer but lack time to search for information. Some of them are able to work in English too and have higher education qualifications.

10.3.2 Stakeholders feedback on ask-Valerie.eu demonstrations/tests (version 2 and 3)

In the second CS meeting, stakeholders were presented with a static screen shot version of ask-Valerie.eu. They understood the potential of ask-Valerie.eu, as the comparison with Google helped them to understand how it will work. However, at this point ask-Valerie.eu was only available in English and there were some negative comments about the language barriers. Also limited searchable words and documents were presented without a title and the summary did not provide enough detail to understand the content.

A summary of the feedback from stakeholders on the ask-Valerie.eu test conducted in the third CS meeting is presented below, this relates to both the wheat and the maize/tomatoes CS:

- Positive aspects:
  - Absence of advertisement.
  - Easy to use and to understand the features.
  - More specific than Google.
  - Appropriate technical level.
  - Certified scientific documents (reliable).
  - Interest about the future potential of VALERIE.

- Negative aspects:
  - Presence of commercial documents.
  - Unable to connect keywords.
  - Incomplete issues.
  - Restricted access to documents (Copyright), document should be public.
  - Absence of chronological order for the search (Date of publication, filter by year).
  - Absence of filters for search.
  - Absence of user categorisation during the search.
  - Technical problems about singular and plural words.
  - Problems about scientific and everyday language words.
  - Yet a prototype (empty box) – See example on barley and fungal disease in wheat -it should include and know all issues and problems (subjects).
  - Problems with ranking functioning.

It would appear that the technicians/advisors were the most critical of ask-Valerie.eu:

> *"Even if it [ask-Valerie.eu] didn't work, we tried to motivate them, and if you listen to the recording there are positive comments, except from the technicians. The technicians were very demanding and they looked in English as well and so they had very bad comments".*

The farmers were more positive:

> *"But the farmers were really curious. But as well they said 'oh it's not ready yet…. But they were motivated, and I think they are expecting that at the end of this year ask.Valerie functions, I'm sure".*

> *"Yes, the last meeting [was particularly difficult]. Because we were showing them something that was not ready yet. It was like driving the prototype of a car and the car doesn't start. It is like a metaphor for the car, this is a beautiful Ferrari, but without wheels".*

11 Drip irrigation management in tomatoes and maize, Italy

11.1 Context

In the territory, the availability of water for agricultural use is not high and not evenly distributed. High productive crops, asmmaize and processing tomato, requires a large amount of water is required, especially during the hottest season, when rainfall is scarce or showery and evapotranspiration is high. In order to combat this , farmers are adopting alternative techniques, such as drip-irrigation with the intent to improve water efficiency, without reducing yield and quality.

A drip irrigation system is commonly associated with greenhouses or horticultural crops, not with field crops. However during the last decades, in many parts of the world with a shortage of water, this system is spreading and it is seen as the most sustainable way to use water efficiently. Nevertheless, it requires special machines, a lot of plastic materials, and time and labour for setting-up. For this reason, innovations and solutions are still required to reduce costs and increase yields and quality.

The stakeholders for the VALERIE project include members from the whole supply chain:

- Farmers – 8 members.
- Irrigation system suppliers - 2 members.
- Processers - 2 members.
- Cooperatives – 3 members.
- Seed and pesticide companies – 2 members.
- Technicians – 3 members.

11.2 Test outcomes

The ask-Valerie.eu test was conducted with three advisors/technicians who completed a total of 12 queries.

11.2.1 Advisor/technician test No. 1

The tester had used a search engine between 6 and 10 times to search for information to help with their agricultural activities in the previous 30 days. The tester conducted 4 queries in Italian. The tester reported that relevance was the most important criterion in assessing the usefulness of the outputs.

The first query asked for information about urea in processing tomatoes: *Urea nel Pomodoro da industria.* The tester reported that the Ask-Valerie.eu snippets and outputs were not very useful in answering the query. All the the documents identified were bulletins which did not provide the tester with the information to answer the query. The Google search provided some useful snippets and outputs:

> *Snippet score 4: Snippet + title contain both key words of the query. We understand there will be a table of nitrogen use.*

> *Output score 4: The document is a brochure about a trial on tomato and bell pepper. We can see the fertilisation plan and understand when Urea was used and how. This is a good example.*

The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

The second query asked for information about tomato disease control: *Difesa Pomodoro*. The tester reported that useful results would include: *A list of the principal tomato pathogens, including photos and descriptions of them. Moreover I'd like to receive some information about the control of the tomato diseases.* The tester reported that Ask-Valerie.eu and Google searches provided some useful snippets and outputs. The tester reported that Google found 5 useful results that ask-Valerie.eu did not find.

The third query asked for information about monitoring Cotton bollworm in tomatoes: *Monitoraggio nottua gialla Pomodoro*. The tester reported that Ask-Valerie.eu search provided some a snippets and but the outputs did not contain enough ingormation about the oest to be scored highly in terms of usefulness:

> *Snippet score 5: The snippet contains all key words of the query and also, it contains the latin name of the pest, which was not written in the query.*

The tester reported that Google provided some useful snippets and outputs:

> *Snippet score 5: The snippet contains all keywords and has three sentences that describe what the pest is and that is important to monitor.*
>
> *Output score 4: General description on the pest with some reference to the monitoring activity.*

The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

The fourth Italian asked for information about tomato fertilization: *Concimazione Pomodoro*. The tester reported that Ask-Valerie.eu and Google searched did not provide the information required to fully answer the query. The Google search identified one useful output, while the other outputs were not particularly relevant to the query. The tester reported that Google found 1 useful result that ask-Valerie.eu did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

IT2.1 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	2	1	4	4
R2	2	1	3	3
R3	1	1	3	3
R4	2	1	4	4
R5	1	1	3	3
Total score	8	5	*17*	*17*

Query 2

IT2.1 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	4	4
R2	1	1	5	5
R3	3	4	4	4
R4	1	1	4	4
R5	4	4	5	5
Total score	10	11	22	22

Query 3

IT2.1 Q3	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	3	2	5	4
R2	2	3	3	3
R3	2	3	4	4
R4	2	2	4	4
R5	5	3	4	3
Total score	14	13	20	18

Query 4

IT2.1 Q4	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	2	2	4	4
R2	2	1	2	3
R3	2	2	2	2
R4	2	3	2	2
R5	2	3	2	2
Total score	10	11	12	13

11.2.2 Advisor/technician test No. 2

The tester had used a search engine more than 10 times to search for information to help with their agricultural activities in the previous 30 days. The tester conducted 4 queries in Italian. The tester reported that relevance was the most important criterion in assessing the usefulness of the outputs.

The first query asked for information about Maize water management: *Gestione dell'irrigazione del mais*. One of the documents found by the Ask-Valerie.eu search was considered by the tester to be quite useful. The tester found all of the Google snippets outputs to be useful:

> *Snippet score 5: The snippet describe maize water needs and includes both keywords of the search.*
>
> *Output score 5: The article is from Informatore Agrario and it's very interesting and useful.*

The tester reported that Google found 2 useful results that ask-Valerie.eu did not find.

The second query asked for information about aflatoxins and maize irrigation: *Aflatossine e irrigazione del mais*. Two of the documents found by the Ask-Valerie.eu search were considered by the tester to be quite useful bt did not contain sufficient information to answer the query. The tester found all of the Google snippets outputs to be useful:

> *Snippet score 5: The snippets contains all the keywords and it tackles the concept of the query.*
>
> *Output score 5: It's relevant to the query and we can find good elements.*

The tester reported that Google found 5 useful results that ask-Valerie.eu did not find.

The third query asked for information about the use of trichogramma brassicae: *Uso di trichogramma brassicae*. The tester reported that both search engines provided useful results. Ask-Valerie.eu provided some useful snippets and documents:

> *Snippet score 4: The snippet is short and clear. It's easy to understand that it's related.*
>
> *Output score 5: The article gives important information about the use of the parasitoid.*

Google provided some useful snippets and outputs:

> *Snippet score 4: The snippet consists in one sentence that explain what the video is about.*
>
> *Output score 5: The webpage contains a video and some description. It is very useful.*

The tester reported that both search engines found useful results that the other did not find.

The fourth query asked for information about fertigation plans for maize: *Piano di fertirrigazione del mais*. The tester reported that Ask-Valerie.eu provided some useful outputs but some of the information was more concerned with irrigation than fertigation:

> *Output score : The document is useful but is more related to irrigation than fertigation*

Google provided some useful snippets and outputs:

> *Snippet score 4: In the snippet we have a reference to the price of the technique.*

Output score 5: The webpage has a lot of content and it explain how to fertigate in details.

The tester reported that Google found 3 useful results that ask-Valerie.eu did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

IT2.2 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	3	3	5	4
R2	2	2	4	4
R3	1	1	4	3
R4	2	2	4	5
R5	1	1	4	5
Total score	9	9	21	21

Query 2

IT2.2 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	4	5
R2	2	3	5	5
R3	1	1	5	4
R4	1	2	4	4
R5	3	3	4	4
Total score	8	10	22	22

Query 3

IT2.2 Q3	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	4	5	4	5
R2	4	5	4	5
R3	4	5	4	5
R4	2	3	4	3
R5	2	3	4	4
Total score	16	21	20	22

Query 4

IT2.2 Q4	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	2	2	5	5
R2	2	2	5	5
R3	4	4	4	5
R4	4	3	4	4
R5	3	3	4	5
Total score	15	14	22	24

11.2.3 Advisor/technician test No. 3

The tester had used a search engine to search for information to help with their agricultural activities in the previous 30 days. The tester conducted 4 queries in Italian. The tester reported that relevance was the most important criterion in assessing the usefulness of the outputs.

The first query asked for information about daily evapotranspiration of processing tomatoes: *Evapotraspirazione giornaliera del pomodoro da industria.* One of the documents found by the Ask-Valerie.eu search was considered by the tester to be quite useful. The tester found all of the Google snippets outputs to be useful:

Snippet score 5: The snippet contains all keywords and it's quite clear.

Output score 5: It's a scientific publication, very useful for the query.

The tester reported that Google found 3 useful results that ask-Valerie.eu did not find.

The second query asked for information about kalium and calcium for processing tomatoes: *Potassio e calcio per il Pomodoro da industria*. The tester reported that one of the documents found by the Ask-Valerie.eu search was very useful and interesting. The tester found all of the Google snippets outputs to be useful although there was some concern about the commercial nature of some of the outputs:

Snippet score 5: The snippet is very clear and it starts with a very good sentence.

Output score 5: Very good and complete. Even if it is commercial, we must accept and recognize the technical level.

The tester reported that both search engines found useful results that the other did not find.

The third query asked for information about early blight management in tomatoes: *Controllo alternaria Pomodoro*. The tester reported that both search engines provided useful snippets and results and that both search engines found useful results that the other did not find.

The fourth query asked for information about weed management in organic maize: *Controllo infestanti mais biologico*. All of the Ask-Valerie.eu search results related to non-organic and were not considered useful in answering the query by the tester. Google provided some useful snippets and outputs, but the tester notes that some of the snippets were difficult to interpret:

> *Snippet score 3: The snippet includes two sentences which don't help the reader to understand if the content is related.*
>
> *Output score 5: Despite the description available in the snippet, the document is quite good and based on field trials located in our region!*

The tester reported that Google found 3 useful results that ask-Valerie.eu did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

IT2.3 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	3	no document	5	5
R2	3	3	5	4
R3	1	1	3	4
R4	1	1	3	4
R5	1	1	4	5
Total score	9	6	20	22

Query 2

IT2.3 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	4	5	5	4
R2	1	1	5	5
R3	2	1	4	4
R4	1	1	4	4
R5	1	1	5	5
Total score	9	9	23	22

Query 3

IT2.3 Q3	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	4	5
R2	1	1	4	5
R3	4	4	5	4
R4	1	1	4	2
R5	4	3	4	4
Total score	11	10	21	20

Query 4

IT2.3 Q4	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	4	4
R2	1	1	5	4
R3	1	1	3	5
R4	1	1	2	3
R5	2	1	5	4
Total score	6	5	19	20

11.3 Stakeholder and CSP commentary

The stakeholder and CSP commentary draws on the individual CS meeting reports and a joint CSP interview conducted in Toulouse January 2017.

11.3.1 Expectations from ask-Valerie.eu

With respect to stakeholders' expectations and requirements regarding ask-Valerie.eu, stakeholders stated in the kick of meeting that they did not expect specific innovations from the VALERIE project, rather they argued more than once that they needed pragmatic solutions that were usable in their territory.

With respect to stakeholders need for information from ask-Valerie, an exercise in the first CS meeting identified each stakeholders group's information needs from ask-Valerie.eu and their current sources of information:

1) Farmers - They want information from ask-Valerie.eu to help them increase their income and improve their crop system (higher yield) and they want to work more efficiently. They currently make limited use of computers. They have a high trust in advisors, technical suppliers and other tools for information e.g. national technical magazines

2) Cooperatives and producers' organizations (PO). Maize: They need to improve the method of grain drying and try to sort mycotoxin-contaminated lots. Tomato: they want to increase the yield of their associates. They currently make intermediate use of computers. They have a high trust in advisors, technical suppliers and other tools for information e.g. national technical magazines.

3) Advisors from farmer unions - They need more input or tools to provide technical advice. They make good use of computers but lack time to search for information. They place trust in national technical magazines

4) 4) Suppliers of drip irrigation tools. They want to increase their income and keep selling irrigation tools. They make good use of computers but lack time to search for information. Some of them are able to work in English too.

5) Variety and pesticide producers. Interested in following innovations and research needs of the whole community, from farmers to processers. They make good use of computers but lack time to search for information. Some of them are able to work in English too and have higher education qualifications

11.3.2 Stakeholders feedback on ask-Valerie.eu demonstrations/tests (version 2 and 3)

In the second CS meeting, stakeholders were presented with a static screenshot version of ask-Valerie.eu. Stakeholders understood the potential of ask-Valerie.eu, as the comparison with Google helped them figure out how it will work. They could not try it by themselves as they were just presented with screenshots. Looking at the presented screenshots language was still seen as the main barrier for ask-Valerie.eu and also there were a lot of missing keywords. The comments from the third meeting are summarised in the section above.

12 Sustainable onion supply chains, Netherlands

12.1 Context

Onions are an important crop for arable farmers in the clay regions of The Netherlands: the South West of The Netherlands and the 'Flevo polders'. The total acreage of onions in The Netherlands is approximately 20,000 ha. Over the last few years the onion growers are facing serious problems concerning the quality of their product. It is a growing concern for the whole chain: approximately 85% of the Dutch produce (900,000 tons on average) is exported. The (international) market is asking for optimal product quality, grown in a sustainable way. The major issues for the onion value chain:

- The damage of soil born fungi and nematodes is growing over the last years.
- Control of air borne fungi. Especially the control of Botrytis spp. Is a problem.
- Optimal fertilizer strategies. There is a relation between varieties, optimal N-rate and quality of the unions.
- Monitoring of product quality. New innovative nondestructive methods to determine the internal quality of onions at the end of the growing season would be of great help.
- Carbon footprint of the onion crop.

The CS stakeholder community convened for the VALERIE project comprises:

- Farmers, onion growers.
- Buyers
- Packers
- Exporters
- DLV Plant
- Frugiventa, branch organisation for onion traders/exporters.

12.2 Test outcomes

The ask-Valerie.eu test was facilitated by the CSP working with 2 advisors/technicians who completed a total of 4 queries between them in English.

12.2.1 Advisor/technician test No. 1

The testers had used a search engine more than 10 times to search for information to help with their agricultural activities in the previous 30 days. The tester conducted 4 queries.

The first query asked for information on: *How long can we wait with fighting Peronospora destructor in the onion crop*? Relevant and reliable data were reported to be important criateia in determining the usefulness of the search engine outputs: *I would like to know what the ideal circumstances are for the infection and growth chances of downy mildew in onions. Therefore I need some data from a reliable source.* The testers reported that both search engines provided useful results. Ask-Valerie.eu provided some useful snippets and documents:

> *Snippet score 4: The snippet is short and powerful, that is a plus. The snippet seems not to give much information about the life cycle of the fungus.*
>
> *Output score 5: Very nice document with a lot of side information. Practical to use!*

Google provided some useful snippets and outputs:

> *Snippet score 5: Some information in the snippet about the damage which mildew can cause is triggering me to find some solutions on this site. One word pair: 'Optimal conditions' made me think that the snippet was very good.*

> *Output score 4: Professional looking site. Even with some disease cycles and some graphs to learn about the disease some more. The document is from 2015, which is quite young.*

The testers reported that both search engines found useful results that the other did not find.

The second query asked for information on: *When do we have to apply trace elements to an onion crop*? To be useful to the testers the information had to reliable and comprehensive: *The source must be reliable and the context must be comprehensive*. Ask-Valerie.eu provided some useful snippets but the documents were behind a paywall and the testers were not prepared to pay for the information. Google provided some useful snippets but the outputs tend to be given a low score by the testers as the information lacked relevance.

The third query asked for information on: *the influence of Puccinia striiformis var. striiformis on the yield of winter wheat.* The testers wanted to find out: *I would like to know how many kg of yield we can loose on the fungi Puccinia striiformis var. striiformis.* The testers reported that both search engines provided useful results. Ask-Valerie.eu provided some very useful snippets and documents:

> *Snippet score 5: Disease challenging in winter wheat. Hopeful!*

> *Output score 5: From the Dutch institution PPO. Interesting document. Especially because it is an investigation, so we can see very good how the disease can influence the yield.*

Google provided some very useful snippets and outputs:

> *Snippet score 5: The document seems to be complete, because it is an investigation. The Snippet shows also some information about some tables, which can be interesting to show some results about losses of winter wheat due to this disease.*

> *Output score 5: Very Interesting document with a lot of good information. Relatively young (2006) and from a good source.*

The testers reported that both search engines found useful results that the other did not find.

The fourth query asked for information on: *The effect of Potassium on the quality of the onion crop*. The testers wanted to know: *the influence of Potassium to the yield and quality of the onion crop. This should be substantiated with some theory*. Ask-valerie.eu did not provide useful search results and the testers reported a lack of relevance:

> *Snippet score 1: The snippet is not about onions and not about potassium, that is not interesting enough to click on.*

> *Output score 1: The document is only related to organic matter. Nothing about onions in relation to Potassium.*

Google provided some very useful snippets and outputs:

> *Snippet score 5: Potassium is in the snippet related to yield and quality. That are the criteria's we would like to know.*
>
> *Output score 5: The information is from the international potash institute, seems to be a reliable source. The information is about an investigation and therefore very useful.*

The testers reported that Google found 2 useful results that ask-Valerie.eu did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

NL1.1 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	3	3	4	3
R2	4	5	4	3
R3	1	1	5	4
R4	1	1	1	1
R5	5	3	2	2
Total score	14	13	16	13

Query 2

NL1.1 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	4	1	5	3
R2	3	1	4	2
R3	2	1	4	2
R4	3	1	2	2
R5	1	1	2	2
Total score	13	5	17	11

Query 3

NL1.1 Q3	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	4	3	5	3
R2	5	5	5	3
R3	5	5	3	4
R4	2	1	5	2
R5	5	5	5	5
Total score	21	19	23	17

Query 4

NL1.1 Q4	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	5	3
R2	1	1	5	3
R3	1	1	5	5
R4	1	1	5	5
R5	1	1	3	3
Total score	5	5	23	19

12.3 Stakeholder and CSP commentary

The stakeholder and CSP commentary draws on the individual CS meeting reports and a joint CSP interview conducted in Toulouse January 2017.

12.3.1 Expectations from ask-Valerie.eu

There was no opportunity to discuss expectations.

12.3.2 Stakeholders feedback on ask-Valerie.eu demonstrations/tests (version 2 and 3)

In the second meeting the CSP reported that the stakeholders understand the potential and they gave positive feedback on the functionality of the tool. Attendants liked the way they can search, and the possibility to add things to the system is seen as an interesting feature of the system (documents, links, new terms). They appreciated the fact that the ontologies will become available in all languages so one can search in the your own language. They suggested publishing the abstract instead of parts of the document (fragments/snippets) that contain the search terms. At this moment (version 2) there is only a limited number of documents available, for a limited number of topics.

In the CSP interview it was reported that the usability of ask-Valerie.eu would improve as the number of documents increased. It was important that the developers should upload all relevant documents from the EC Research Programmes.

13 Sustainable potato supply chains, Netherlands

13.1 Context

The French fry industry in Poland is quite new. The Farm Frites company involved produce French fries in the North of Poland, partly on their own farm, partly from 60 contract growers in the region. Production of high quality potatoes at a low cost price is crucial for this industry, with a lot of competition from other companies. Brown spots caused by TRV and nematodes are a major problem for the growers in the region and the impact is felt across the whole value chain. The factory cannot process potatoes with a higher % brown spots than the norm. Potatoes with a higher percentage are rejected and this represents a big loss for farmers but also a problem for the factory. The interest of the seed potato company is clear, when the problem can't be solved the acreage of the most important variety at this moment, Innovator, will decline. As there are no good alternative varieties for the specific market the whole value chain has a great interest to solve the problem.

The CS stakeholder community convened for the VALERIE project comprised:

- Farmers, growing potatoes for Farm Frites.
- FF Poland, the farm, growing potatoes for the factory.
- FF, the factory, located in Lembork, 50 km East of Slupsk.
- Agrico Poland, potato seed producer.

13.2 Test outcomes

The ask-Valerie.eu test was conducted by a single advisor/technician who conducted 3 queries in English.

13.2.1 Advisor/technician test No. 1

The tester had used a search engine more than 10 times to search for information to help with their agricultural activities in the previous 30 days. The tester conducted 3 queries.

The first query asked for information on the impact of Calcium on potato quality. The tester reported that the results: *Should be about Calcium, date is not too important, neither the source*. Ask-valerie.eu did not provide useful search results and the tester reported a lack of relevance. Google provided some useful snippets and outputs, but the tester noted that the content was behind a paywall:

> *Snippet score 4: abstract gives information and results from research on my search question.*
>
> *Output score 5: Abstract interesting, full document can be bought, 40 €.*

The testers reported that Google found 2 useful results that ask-Valerie.eu did not find.

The second query asked for information on: *What are best practices for late blight control in potatoes.* The tester hoped the search engine results would be*: Up to date/recent, lot of research conducted over the last years (Euroblight project). Should have information about control strategies. Results from research or practice.* Ask-valerie.eu did not provide useful search results and the tester reported a lack of relevance. Google provided some useful snippets and outputs:

> *Snippet score 3: Direct related to my research question.*

Output score 4: Complete, interesting and practical overview of late blight control.

The tester reported that Google found 1 useful result that ask-Valerie.eu did not find.

The third query asked for information on*: Control of Potato cyst nematodes Globodera Rostochiensis Globodera Pallida.* The tester was looking for: *Specific information about these nematodes, symptoms, photo's, control strategies*. The testers reported that both search engines provided useful results. Ask-Valerie.eu provided some useful snippets and documents:

Snippet score 3: Gives information about sampling nematodes, interesting aspect as part of control strategy.

Output score 4: Gives relevant information about how and when to sample PCN.

. Google provided some useful snippets and outputs:

Output score 4: Information was direct related to my question, best document found.

The tester reported that Google found 1 useful result that ask-Valerie.eu did not find.

Query 1 (1 = Not useful at all, 5 = Very useful)

NL2.1 Q1	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	1	1
R2	1	1	5	4
R3	1	1	1	1
R4	1	1	1	1
R5	1	1	5	4
Total score	5	5	13	11

Query 2

NL2.1 Q2	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	1	1	4	2
R2	1	1	4	2
R3	1	1	4	3
R4	1	1	3	4
R5	1	1	4	2
Total score	5	5	19	13

Query 3

NL2.1 Q3	AV Snip	AV Doc	Goo Snip	Goo Doc
R1	3	4	4	3
R2	2	4	3	3
R3	1	1	1	1
R4	2	3	1	1
R5	1	4	3	4
Total score	9	16	12	12

13.3 Stakeholder and CSP commentary

The stakeholder and CSP commentary draws on the individual CS meeting reports and a joint CSP interview conducted in Toulouse January 2017.

13.3.1 Expectations from ask-Valerie.eu

The CSP highlighted the need to demonstrate the added value of ask-Valerie.eu to the stakeholder group which has some high educated people, who know where to find information The CSP described the stakeholder group as critically positive. They found the ambition of ask-Valerie.eu interesting but there was a little scepticism about whether it can do what it promises. These stakeholders actively search for solutions for their problems; if ask-Valerie.eu can help in this search it will be highly appreciated. In terms of the project methodology the CSP noted:

Of course they [stakeholders] are, to a certain extent, willing to contribute to the development of the system that is what they have done so far. But we should realise that the frequency at which we can show progress in VALERIE is not very high. This is no problem as long as we can show significant progress each time we meet them.

13.3.2 Stakeholders feedback on ask-Valerie.eu demonstrations/tests (version 2 and 3)

In the second CS meeting (where it was demonstrated) the stakeholders mainly discussed about the functionalities of ask-Valerie.eu. The feedback was positive, but they agreed that the final judgement will be on the basis of how good the search results are, for them this will be rated against google. The CSP noted that mainly the younger part of the audience was taking part in the discussions. The possibility of adding items, documents, etc. is seen as an interesting functionality. Also they appreciated that by adding new terms and items into the ontology people can contribute to the system. In terms of search results they agreed that if an abstract is available (part of it) it should be presented as first result as it can be used to select the most interesting documents. People do not expect that the solution they look for will be found in this first part of information and that a download of the complete document will be necessary.

In the third meeting (where ask-Valerie.eu was demonstrated and tested) the stakeholders liked the lay out and interface of ask-Valerie.eu and the fact that they can search in their own language, and access documents in other chosen languages. They found the translation of the ontology to be correct. They liked being able to specify search query by adding extra terms.

However they found that there were very few documents in the document base (and very few Polish documents) and noted that Google, which is the bench mark for any search engine, finds many more documents. They also remarked that the ranking of documents did not work well and they suggested that sorting by age would document would be good.

The importance of sending time developing the ontology was highlighted during the CSP interview "*Too late in our project I understood the real importance of the ontology. What amazes me is that there have been many more terms incorporated into the ontology. So there has been a lot of effort apparently in developing the ontology. But too many crucial terms for my case studies are not there*". For this reason he felt that there was little progress made between versions. There was also disappointment that no material was found from past EC Framework Programme projects.

14 Conclusions

14.1 Version 4 test

Testing of version 4 of ask-Valerie took place in all 10 of the CSs. A total of 22 advisors/technicians performed and provided feedback on 61 search engine queries using ask-Valerie.eu and Google. The majority of the advisors/technicians had used a search engine at least 5 times to search for information to help with their agricultural or forestry activities in the previous 30 days. Most advisors/technicians were able to conduct searches on ask.valerie.eu after a short period of instruction from the CSP. However, a small number of advisors/technicians (3) experienced difficulties in performing the test.

A number of board conclusions can be drawn from the analysis of the test results:

- Relevance and practicality were the most important criteria in deciding the usability of the snippets and outputs.
- The majority of queries performed on ask-Valerie.eu returned snippets and outputs. However, there were some instances where the search returned no results at all.
- There appears to have been some confusion among testers on how to score the usefulness of the snippets. The intension of the scoring was to demine how useful was the snippet in describing the output. However, some testers appear to have given snippets a low score because the snippets described outputs that were not relevant to the query.
- Two-thirds of the queries in ask-Valerie.eu identified at least one useful result. The main reasons that snippets and outputs did not receive a high score from the tester was lack of relevance to the query, or they were not considered to have a practical application.
- Testers found that outputs were missing from some of the ask-Valerie.eu snippets and could not be downloaded for evaluation.
- All queries performed on Google returned snippets and links to outputs. However, testers could not evaluate some of the outputs because they had restricted access or had to be purchased.
- Most of the queries in Google identified at least one useful result. Outputs receiving a low usefulness score from testers were often too commercially orientated, lacking in relevance to the query or had restricted access.
- When comparing the results from both search engines testers found that it was more common for Google to find one or more very useful results that the ask-Valerie.eu did not.

14.2 CSP and stakeholder feedback: reflections on the process

Stakeholder involvement in the development of ask-Valerie.eu has provided useful feedback to the developers from potential users. In particular comments concerning the language and the document base have led to significant changes and improvements whilst issues raised about functionality (searching and ranking) and presentation of results have been progressively addressed in each version.

With respect to demonstrations/tests and feedback on earlier versions there was some commonality in comments:

- Stakeholders generally liked the idea of ask-Valerie.eu, they appreciated the ambition of the project. Expectations, where expressed, were mixed and generally reflected the type of user.

- Overall it was felt that advisers rather than farmers would be the most likely users, although it was noted that professional farmers and advisers in potato and onion supply chain CSs would use it, while in France, rather than farmers and advisers, technical experts were identified as the main users. Professional farmers and advisers are already accessing scientific articles/information or using search engines and have the highest expectations of ask-Valerie.eu, using google as a bench mark.
- Stakeholders particularly liked the ability to search and access documents in different languages this facility was introduced following earlier feedback.
- Concerning features which need improvement, several detailed functional features were identified concerning the interface and how the searches are presented (abstracts or snippets), ranked and sorted.
- The main concern throughout has been the number of relevant documents in the database and the search functionality/ability to capture these. A priority has been to link to national repositories to expand the document based in different languages.
- CSPs became aware of the importance of the ontology in the construction of ask-Valerie.eu and attributed some problems in finding documents to poor ontology development. The CSP would have liked to have contributed to the ontology.at every meeting. The CSPs themselves would also have appreciated longer, more in depth technical tests in every project meeting.

From the stakeholder perspectives they have appreciated contributing to the development of the tool and have welcomed improvements and development but there have been some tensions. Whilst they acknowledge their role is important for development, there has been frustration amongst stakeholders when prototypes have not functioned well. There has also been some disappointment when feedback has not been sufficiently addressed between test versions. The CSPs who are the "*face*" of VALERIE in the CS remark that they have to manage the expectations of the stakeholders, and have to demonstrate progress and ultimately deliver the search tool as promised in the kick off meeting. They have managed this through using small groups of stakeholder colleagues or experts who understand that "*I'm not demonstrating ask.Valerie I'm asking you for feedback so we can improve the system*".

15 Annex 1: ask-Valerie.eu Recording Sheet

Case study name:

In the past 30 days how many times have you used a search engine to search for information to help you with your agricultural or forestry activities?

More than 10	
6-10	
1-5	
Have not used a search engine	

Query 1
What was your query? (Enter here)
Define your criteria for useful query results (e.g. Context, Relevance, Date, Source)
Ask-Valerie.eu results
Enter screenshot of the first five results
How useful are the results? Rate the first five results on a scale from 1 to 5 (1 = Not useful at all, 5 = Very useful)
Result 1 Snippet score: Please give the reasons for your score (referring to the criteria you chose above): Was the document found? Enter Yes or No. Document score: Please give the reasons for your score (referring to the criteria you chose above):
Result 2 Snippet score: Please give the reasons for your score (referring to the criteria you chose above): Was the document found? Enter Yes or No. Document score: Please give the reasons for your score (referring to the criteria you chose above):
Result 3 Snippet score: Please give the reasons for your score (referring to the criteria you chose above): Was the document found? Enter Yes or No. Document score: Please give the reasons for your score (referring to the criteria you chose above):
Result 4 Snippet score: Please give the reasons for your score (referring to the criteria you chose above): Was the document found? Enter Yes or No.

Document score:

Please give the reasons for your score (referring to the criteria you chose above):

Result 5

Snippet score:

Please give the reasons for your score (referring to the criteria you chose above):

Was the document found? Enter Yes or No.

Document score:

Please give the reasons for your score (referring to the criteria you chose above):

Google results

Enter screenshot of the first five results

How useful are the results?

Rate the first five results on a scale from 1 to 5 (1 = Not useful at all, 5 = Very useful)

Result 1

Snippet score:

Please give the reasons for your score (referring to the criteria you chose above):

Was the document found? Enter Yes or No.

Document score:

Please give the reasons for your score (referring to the criteria you chose above):

Result 2

Snippet score:

Please give the reasons for your score (referring to the criteria you chose above):

Was the document found? Enter Yes or No.

Document score:

Please give the reasons for your score (referring to the criteria you chose above):

Result 3

Snippet score:

Please give the reasons for your score (referring to the criteria you chose above):

Was the document found? Enter Yes or No.

Document score:

Please give the reasons for your score (referring to the criteria you chose above):

Result 4

Snippet score:

Please give the reasons for your score (referring to the criteria you chose above):

Was the document found? Enter Yes or No.

Document score:

Please give the reasons for your score (referring to the criteria you chose above):

Result 5

Snippet score:

Please give the reasons for your score (referring to the criteria you chose above):

Was the document found? Enter Yes or No.

Document score: ☐ Please give the reasons for your score (referring to the criteria you chose above):
Comparing the search engine results
If one of the two search engines has found one or more very useful results that the other did not find, please identify the search engine and result number.
Search engine: ask-Valerie.eu ☐ Google ☐ Result number ☐
Search engine: ask-Valerie.eu ☐ Google ☐ Result number ☐
If one of the two search engines has found one or more non-useful results that the other did not find, please identify the search engine and result number.
Search engine: ask-Valerie.eu ☐ Google ☐ Result number ☐
Search engine: ask-Valerie.eu ☐ Google ☐ Result number ☐

Query 2
What was your query? (Enter here)
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Snippet score:

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Was the document found? Enter Yes or No.

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Please give the reasons for your score (referring to the criteria you chose above):

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Result number

Search engine: ask-Valerie.eu Google

Result number

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Result number

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Result number

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