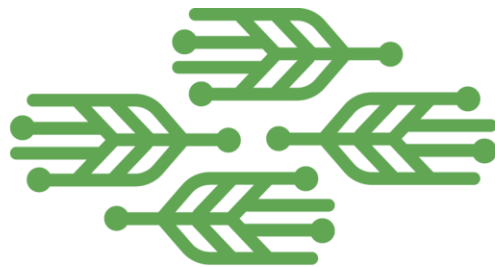


Deliverable 4.1 – WP4: Report on the added value and feasibility of developing
a new standardised e-KRP based on end-user needs



EURAKNOS

*Connecting Thematic Networks as Knowledge Reservoirs towards a European
Agricultural Knowledge Innovation Open Source System*

TASK 4.1: Feasibility and added value of an e-KRP

Summary

The overall aim of EURAKNOS is to connect all the materials, knowledge and platforms of existing Thematic Networks in one EU-wide electronic knowledge reservoir platform (e-KRP) to map the stored knowledge within each network, and to design a common data system to make this knowledge better accessible, findable, interoperable and reusable for the agricultural innovation community in Europe. Deliverable 4.1 is the final report on the evaluation of the added value and feasibility of a new centralised and open-source agricultural innovation e-KRP where all end-user material of all TNs can be found. Based on a desk-top study and a consultation, both end-user types and their needs as well as already existing similar initiatives at both national and international levels were investigated.

More specifically, Task 4.1 categorised relevant end-user types (i.e. farmers, farm advisors, agriculture teachers/trainers and agricultural policymakers) and identified their respective knowledge/information needs before mapping, screening and rating 21 different agriculture-related platforms at international level and 22 platforms at national level. 11 international platforms and 5 national ones were selected for an in-depth study to examine and compare their approaches in terms of functionalities, content, software, and structure. The desk-top study moreover comprised the organisation(s) and/or project behind the platforms and their management, including the normative management, the objective or Why, and was followed by a consultation of representatives of the selected platforms which generated further information on their aims and perceived added value, how the platforms are managed and how success is evaluated as well as on content sources, quality assurance and interoperability with other platforms. The platform offers were then matched to the identified end-user needs, which showed that there are vast differences between how well the existing platforms serve the four end-user types. Building on this analysis as well as on WP2 results and further literature, a feasibility study was carried out for a new centralised and open-source agricultural innovation e-KRP, including a sustainability plan which outlines technological, social, legal, and financial considerations. The concrete added value of such a platform was pointed out from both technical and end-user perspectives, and a set of specific requirements and quantifiable indicators was extracted.

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List of acronyms and abbreviations

AKIS	Agricultural Knowledge and Innovation Systems
API	Application Programming Interface
C&D	Communication and Dissemination
CAP	Common Agricultural Policy
e-KRP	electronic Knowledge Reservoir Platform



EIP-AGRI	Agricultural European Innovation Partnership
EPD	ePrivacy Directive
EU	European Union
GA	Grant Agreement
GDPR	General Data Protection Regulation (EU) 2016/679
ICT	Information and Communications Technology
IP	Intellectual Property
IPR	Intellectual Property Rights
KIP	Knowledge Innovation Panel
KPI	Key Performance Indicator
KR	Knowledge Reservoir
KRP	Knowledge Reservoir Platform
MA	Multi actor
MAA	Multi-actor approach
NGO	Non-Governmental Organisation
NRN	National Rural Network
OG	Operational Group
PDF	Portable Document Format
RN	Rural Network
SDGs	Sustainable Development Goals
SIB	Strategic Innovation Board
SME	Small and Medium-sized Enterprise
TN	Thematic Network
UN	United Nations
URL	Uniform Resource Locator
WP	Work Package



1. Introduction

1.1 General objectives of WP4, “Explore an e-Knowledge Reservoir Platform (e-KRP)”

EURAKNOS aims at strengthening the agricultural knowledge base of the European Union (EU) by co-creating “the network to connect all Thematic Networks”. Thematic Networks (TNs) are bottom-up initiatives for coordinated action in different food and farming sectors that are producing different kinds of material (e.g. practice abstracts, videos, articles, news, etc.) and collecting existing knowledge. They are a new approach under the agricultural European Innovation Partnership (EIP-AGRI) and Horizon 2020, the European Commission’s main funding programme for research and innovation in the period 2014-2020, complementing Operational Groups (OGs) under national rural networks (NRNs). These multi-actor projects bring together people from both science and practice to exchange knowledge, best practices and methodologies, and to create useful, practical outputs for farmers on specific themes, translating existing scientific knowledge into understandable end-user material such as short, informative recommendations and solutions. To date, 29 TNs have been set up (EIP-AGRI, 2016). An example is OK-Net EcoFeed, a multi-actor project that aims at helping organic pig and poultry farmers achieve the goal of 100% use of organic and regional feed¹.

At the core of Work Package (WP) 4 is the design and development of an electronic knowledge reservoir platform (e-KRP) that will allow access to content produced by TNs. The main objective of WP4, as set forth in the project description, is to explore the feasibility and added value of developing a new e-KRP for a standardised open-source database system, based on end-user needs. In particular, WP4 will collect the information of the TNs and selected OGs, based on the outcomes of WP2 and WP3, and develop a data management strategy based on case studies for an open-source web-based, user-friendly database which is oriented towards the needs of the farmers, foresters and advisors. Studying the feasibility of such an agricultural innovation knowledge e-infrastructure, and thereby taking into account useful findings from various TNs, is central to developing a blueprint. It requires identifying relevant end users and their needs to then match them to the design of the e-KRP. Also within the frame of WP4, a business plan will be set up to guide the exploitation of such a central knowledge reservoir (KR) database that will connect all KRs in agricultural and forestry practice available at several levels in Europe while a prototype running on selected case studies serves to interlink TNs in an EU-wide open-source e-KRP.

1.2 Specific objectives of Task 4.1, “Feasibility and added value of an e-KRP”

There are many agriculture-related platform initiatives at both the national and international levels that provide a range of data objects in various formats and types. However, there is a scarcity of systematic platform evaluation processes. Such assessment/evaluation efforts are necessary for finding out what is already available, what kinds of problems, challenges and gaps exist, and, finally, whether there is room for further efforts in this context. WP2 and WP3 have focused on the mapping and evaluation of TN KRs rather than more general agricultural platforms, similar to the platform that EURAKNOS aspires to develop. Likewise, a systematic assessment of end-user types targeted by existing platforms, as well as of their needs in terms of knowledge/information was missing before Task 4.1 which, in close cooperation with Task 2.2, focuses on the needs of farmers, foresters and advisors for a common EU-wide agricultural innovation knowledge open-source system (e-KRP).

Thus, the first step is to identify and categorise targeted end-user types as well as their knowledge needs. Next, Task 4.1 investigates existing similar initiatives at the national and international levels, such as open-source databases related to agriculture and forestry, e.g. Rural Networks (RNs) and open-source KRs from

¹ <https://ok-net-ecofeed.eu/>

international databases (e.g. OECD, FAO), as set out in the project description and Grant Agreement. Consequently, criteria for the selection of the initiatives include the provision of agricultural/farming knowledge (criterion 2b) and the main target group being farmers/practitioners (criterion 4). Even though, from a user experience point of view, it could also be of interest and relevance to investigate best cases among IT platforms in general, the focus will be on agriculture/farming platforms because this is the domain that EURAKNOS focuses upon. D3.2 will provide descriptions of project cases – not necessarily from the domain of agriculture – that have also opted for the technology solutions adopted in EURAKNOS. Additional criteria are based on the identified common end-user needs (see section 3.2.1). The purpose is to get an idea of what is still missing, and hence of the potential added value(s) of a new centralised and open-source e-KRP for farmers, foresters, and advisors, as well as to determine such a platform's feasibility.

In this context, research undertaken in Task 4.1 has focused on the following main research question:

What is the added value of a new, centralised agricultural e-KRP (from end-user and technical point of view), and how could such an effort become feasible?

More specific objectives and related research sub-questions are:

#	Objective	Questions
1	End-user categorisation: Identification of relevant end-user types and needs.	Which are the end-user types targeted in EURAKNOS, and which are their needs? In which dimensions do they differ or overlap?
2	Platform mapping and analysis: Deriving success factors and best practices for the design/development and management of an agricultural innovation e-KRP from the mapping of existing similar initiatives and in-depth desk-top study and consultation of selected national and international platforms.	What kinds of platform-related initiatives (i.e. knowledge platforms related to agriculture/farming and forestry) do already exist at the national and international levels? What kinds of content, formats and functionalities do they provide, and how do they work (i.e. software, structure, and platform management)? Which are their target groups and purpose or rationale (their Why)? What are the challenges and success factors for these platforms? In which dimensions (e.g. data structuring and delivery of content/information and content to end users) do they take a homogenous/heterogenous approach?
3	Matching: Evaluating how well existing platform offers meet the identified end-user needs in terms of knowledge acquisition.	How well are end users served by the current offers? Which end-user needs are met by the agricultural knowledge platforms under study? What lessons can be learned for the design and development of the e-KRP?
4	Feasibility study: Assessing the feasibility (including sustainability) of a new centralised and open-source agricultural e-KRP and determining its concrete (potential) added value, from both end-user and technical point of view.	Why is a new centralised and open-source agricultural innovation platform needed? What is the added value from end-user point of view and from a technical perspective? Which available technology solutions can sufficiently support the development of the EURAKNOS e-KRP? How can (technological, social, legal, and financial) sustainability be ensured?

The outcomes of this Task will indicate which end users the project should address and will help the Project Consortium make decisions about the design of the future e-KRP in WP3, either combining best practices from existing initiatives or going one step further compared to existing platforms.

2. Methodology

2.1 Methodology overview

To assess the feasibility and added value of developing a new centralised and open-source agricultural e-KRP based on end-user needs, this report builds on other Deliverables written in the framework of the EURAKNOS project, especially within WP2, “**Compile and evaluate EIP-AGRI KR (TNs) outputs**”, which



focused on collecting information on TNs that are already implemented (Bodin et al., 2019; Marois et al., 2019; Mosquera-Losada et al., 2019; Pascal et al., 2019). Based on a desk-top study and face-to-face interviews with representatives of 28 TNs, Marois et al. (2019) evaluated the format and design of KRs within current and past TNs and linked H2020 multi-actor (MA) projects and OGs in view of linking them to open-data sources used by the European Commission and different national and international databases. Additional existing literature on which this report draws includes the CASA report on best practices from SWG SCAR AKIS members (Chourot & Pascal, 2018), the OK-Net Arable report on best methods for learning and knowledge exchange (Ortolani & Micheloni, 2016) and the reflection paper “Agricultural knowledge and innovation systems in transition” (EU SCAR, 2012; EU SCAR AKIS, 2019).

While WP2 analysed different aspects from data storages methodologies to the multi-actor approach (MAA), based on the existing materials, practices and outcomes of running TNs, from the point of view of communication and dissemination (C&D) professionals, this deliverable will focus on KR end users, their needs, and how they interact with similar existing initiatives other than TNs. In the first phase, relevant end-user types and their knowledge needs were mapped as were similar agriculture-related knowledge platforms at the national and international levels. Selection criteria were defined based on common end-user needs to determine those platforms that meet most of the end-user needs, hence serving as the best templates for the EURAKNOS e-KRP. The second phase consisted of consulting the representatives (hosts/administrators/ coordinators) of these platforms via email, for which a concise questionnaire was developed. Finally, the results from the desk-top study and consultation were brought together in the matching of existing offers to the identified end-user needs in the third phase. Based on the findings as well as drawing on further literature, a feasibility study of a new centralised and open-source agricultural innovation e-KRP was conducted, including the elaboration of a technology framework and a sustainability plan as well as the description of such a platform’s concrete added value from both end-user and technical point of view. The overall methodology which underlies the Task 4.1 investigation, described in more detail in the following sub-sections, is depicted in Figure 1.

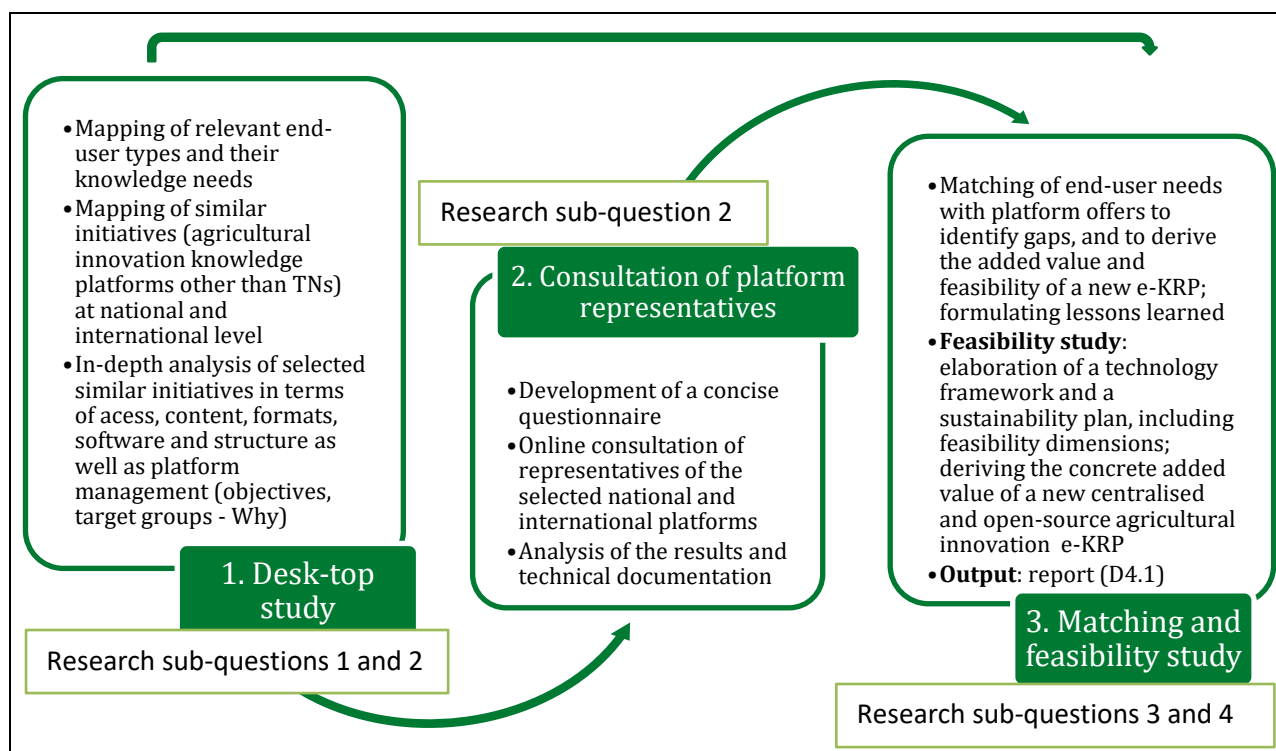


Figure 1: Flow-chart methodology Task 4.1

2.2 Desk-top study – comparative analysis of existing knowledge

A desk-top study was conducted to map both potential end-user groups that represent potential target groups of the e-KRP as well as existing platforms that provide knowledge on agricultural innovation. The collection of these similar initiatives was based on the knowledge and expertise of the authors and other EURAKNOS project partners who were consulted for their opinion on platforms to include at the meeting in Budapest. Further sources include the list of possible platforms in part B of the proposal, Table 1.3d, chapter 7 of the new EU SCAR AKIS report with examples of national platforms (EU SCAR AKIS, 2019) as well as a keyword search via Google Scholar (combinations of the words “agriculture”/“farming” and “knowledge” and/or “platform”: “agriculture knowledge”; “farming knowledge”; “food and farming knowledge”; “farming knowledge platform”; “agriculture platform”, “farming platform”).

Of 21 international platforms identified in total, 11 were selected for a more in-depth study, based on a set of four inclusion criteria: (1) easy access; (2) comprehensive content; (3) diverse output types; and (4) inclusion of farmers as a main target group (see section 3.2.1 for the exact screening criteria).

By means of a desk-top study of the webpages available, the platforms’ objectives and the organisations/projects behind (which is frequently indicated in the section “About” of the respective webpage), the potential end-user types can access relevant information (presence of a search function), whether data is openly accessible and whether there is an intranet for registered users or “members” (i.e. a network on the webpage for sharing information to which a login is required), the languages in which the platform and contents are provided, whether the content is up to date and comprehensive, the types of outputs/resources provided, the target group(s) as well as user involvement and use of social media were investigated (see Annex 1 and 2).

The same was done for national platforms. After screening and rating these similar initiatives, the selected ones were further analysed in terms of their functionalities and outputs (content and structure of metadata on the platform), describing how content is made available to end users, the software and structures employed (i.e. the information architecture) as well as the normative, strategic and operative management (the Why, How, and What of the platforms).

2.3 Consultation of platform representatives

2.2.1 Elaboration of the questionnaire

For the consultation, a concise questionnaire was developed to facilitate the comparison and analysis of the results and to increase the probability of useful (i.e. quick and complete) answers as well as with regard to the main objective of assessing the added value of an e-KRP from end-user point of view. The number of questions was limited to 10 areas, focusing on closed ones with different relevant answer options as well as on short open questions to investigate those aspects on which a personal (and hence subjective) evaluation was desired, or for which is difficult or not possible to gather information by means of a desk-top study only.

The experts were asked to rank the relevant end-user groups (i.e. farmers/practitioners, advisors, teachers/trainers and policymakers, see section 3.1) in terms of their most important target groups (Q1). They could list and rank up to three main goals (Q2), describe how these are achieved and how success is defined and measured, and indicate the quantitative values for different Key Performance Indicators (KPIs) over the last 1-year period (Q3).

Furthermore, the platform representatives were asked how the search options (Q4) and the KR as a whole (5) are evaluated, with an indication of the level of overall satisfaction and the option to provide strong and weak points, including the perceived added value. Q6 inquired about the content sources (answer options; own creation; transferred from external open source; anyone can contribute; other: ...), and Q7 how the quality of the content is checked (completeness of content is checked; reliability/trustworthiness

of the content is checked; completeness and connecting metadata are checked; contents are validated/edited/corrected if necessary; quality control only occasional and not regulated; no control).

Q8 asked whether and how maintenance and sustainability of the platform are ensured and Q9 whether the platform is able to interact with other platforms (answer options: No/Yes – fully automatically; partly automatically; manually; other: ...), and the reason for the interaction (transferring contents from other platforms; transferring contents to other platforms; other: ...). The tenth question about the development stage and plans for the future (open question) was only asked to the national platforms as these are frequently still in an early stage of development. The complete questionnaire is available in Annex 3.

2.2.2 Implementation of the consultation

After approval of the project partners, the final questionnaire was sent to the platform representatives (e.g. administrators and/or coordinators) via email to gain additional information about the platforms that is difficult to obtain through a desk-top study only. For the national platforms, many of which are still in an early stage, on top of asking how they currently operate, information about their plans for the future was collected. The representatives were asked to send back the filled-in questionnaire within two weeks, after which they were reminded, and the deadline was extended for those who did not return it by then by up to two more weeks. In many cases, a direct contact person for the platform was available through the network of the EURAKNOS partner organisations, which both facilitated reaching the right persons and increased the likelihood of getting a response.

In addition, the platform representatives were asked to provide a technical documentation with information about the database design at the back end, employed data storage technologies and data models, schemas and metadata that cannot be collected by simply interacting with the platforms.

2.2.3 Data processing and analysis of the results

In total, nine out of ten international and three of the five national platform representatives returned a completed questionnaire. In the course of a qualitative content analysis, the closed and short open answers were coded into categories that best reflected the answer content. The findings from both the desk-top study and the semi-structured interviews of the platform administrators were synthesised in the matching of end-user needs and platform offers (Tables 21 and 36) as well as in section 4.

3. Evaluation of similar initiatives from user perspective

3.1 Types of end users and their needs

3.1.1 Definition of end-user types and dimensions in which they differ

According to FAO (2011), a key success factor for communication is to select the right audience. Marois et al. (2019) reiterate the importance of taking into account the needs and expectations of the future users in terms of offered functionalities and the expected type of content when designing a KR in order to help users access suitable and interesting content, supporting them in their navigation of the platform. Therefore, the end-user types that were mapped during the WP2 workshop in Budapest (UGent, 2019) were looked at more closely for their relevance as potential target groups of the future EURAKNOS e-KRP. In the context of projects, an end user is defined as a person or group in a position to apply the information or tools that are produced, evaluated or transferred through a project (NERRS, 2015).

For this study, the focus is on farmers as main target group of the e-KRP for the following three reasons:

1. They are the main focus of the knowledge exchange platform (e-KRP). The proposal states that EURAKNOS will explore the development of a multi-actor EU wide open-source system for a multi-actor open source community with emphasis on the end user group: farmers, foresters and advisors, and that the e-KRP will provide readily applicable knowledge for the end-user (farmers, foresters, and advisors) in a local, regional, national and European context.
2. Out of all end users, they are likely the most difficult to reach (FAO, 2017; SCAR, 2017).
3. Reaching farmers and exchanging knowledge with them is a possible prerequisite for implementing innovation strategies on a practical level (EU SCAR, 2012; EU SCAR, 2016; European Commission, 2019).

Three more end-user types, namely advisors, teachers and policymakers, were selected based on their function as information source for farmers or otherwise close relation to farmers, e.g. through their decision-making power. In almost all European countries, research, extension and educational organisations play a major role in the agricultural knowledge and innovation system (AKIS) that is governed through a sectoral (agricultural) policy. Kernecker et al. (2016) conducted surveys (face-to-face or telephone interviews) with 271 farmers in France, Germany, Greece, Spain, Serbia, the Netherlands, and the UK who were selected according to their cropping system (arable crops, open field vegetables, tree fruits, and vineyards) and farm size class (<2, 2-10, 11-50, 51-100, 101-200, 201-500, >500 ha) to generate a heterogeneous sampling stratification. Across Europe, farmers rank private advice (independent from companies), other farmers, and agri-tech providers as the most important sources of information (Kernecker et al., 2016). Similarly, Zondag et al. (2015) carried out a survey among 2,205 farmers under the age of 40 in all EU Member States including the United Kingdom (UK) via phone, email and/or web-based questionnaire. For these young European farmers, agricultural consultants/advisors and farmers' associations are the most important information source (Zondag et al., 2015).

More than 90% of the TNs surveyed within the frame of WP2 (26 face-to-face interviews with TN representatives and 17 online surveys were completed) consider farmers as potential end users, followed by advisors and farmers' associations (Bodin et al., 2019). Pascal et al. (2019) investigated 28 past, ongoing and newly approved TNs by means of a desk-top study as well as written and oral surveys (28 TN coordinators were interviewed, and 16 also completed the online survey) to map best practices and methodologies for the multi-actor approach. While TNs also consider farmers' associations, policymakers, researchers and facilitators as important end-user groups, Pascal et al. (2019) note that advisors and farmers are underrepresented regarding the main types of actors engaged in TNs, with 50 % of the TNs not being oriented towards the needs of farmers and foresters. Partners are mostly from Western Europe. Those who participate in TN project activities are mainly innovators and early adopters whereas reaching the early majority also contributes to the success of a project. Depending on the topic of the TN, the relevant authorities (e.g. for water, plant protection etc.) should also be involved (Pascal et al., 2019).

3.1.1.1 Farmers and foresters

Farmers and foresters in Europe (in the following only referred to as farmers) are both the main target group of the e-KRP and, at the same time, rely on other farmers as main source of information (Kernecker et al., 2016; Zondag et al., 2015). They are part of the broad user group of "value chain actors" that includes all actors in the agricultural value chain (i.e. processors, traders, input suppliers, and allied industries) and can be further categorised according to the criteria in Table 1.

Table 1: Categorisation of farmers

Farming system	Mosquera-Losada et al. (2019) distinguish between precision farming, mixed farming, conservation agriculture, conventional, low input, and organic farming systems.
Farm organisation/management	<ul style="list-style-type: none"> • Mosquera-Losada et al. (2019) differentiate between commercial farm, business or company, research farm, charitable farm/NGO, public farm, and cooperative farming. • EU SCAR (2012) distinguishes between professional/full-time and part-time farming.

Geographic location	Focus on Europe – possible to further discern the region according to topographic conditions, e.g. lowland and mountain, coastal, plain; rural, peri-urban, urban (Mosquera-Losada et al., 2019)
Farm size	EUROSTAT and FAO (Davidova et al., 2012) define small farms as measuring less than 5 ha of farmland area.
Age group	Zondag et al. (2015), in line with the European Commission (2016), define farmers under 40 years as young farmers.
Gender	Men, women

3.1.1.2 Farmers' associations

Farmers' associations are part of the broader end-user group of networks which also includes EIP-AGRI OGs, regional networks, national rural networks, and environmental organisations/NGOs. Following other farmers, farmers' associations are a main information source of more than 80% of young European farmers (Zondag et al., 2015). Producers' associations and cooperatives often provide inputs as well as input-related technical advice, contributing to the flow of knowledge and information (EU SCAR, 2012). Furthermore, through connecting farmers faced with similar challenges, networks can foster peer-to-peer learning and knowledge exchange among farmers. Next to professional agricultural extension, networks foster knowledge exchange and sharing of solutions among their members through facilitation. However, as farmers' associations are essentially composed of individual farmers and farm advisors as main sources of information of farmers, farmers' associations will not be considered as a separate unit in the further investigation.

3.1.1.3 Farm advisors

Farm advisors or agricultural consultants as central intermediaries between research and practice (i.e. uptake of results) are in daily contact with farmers and represent an important source of information, providing advice and facilitation activities that include new practices and learning by doing as well as brokering activities such as information about innovation (EU SCAR, 2016; Pascal et al., 2019; Zondag et al., 2015). Further differentiation criteria are indicated in Table 2.

Table 2: Categorisation of farm advisors

Form of organisation and financing	EU SCAR (2016) distinguishes between public and private systems (e.g. commercial advisory organisations), farmer-based organisations, and civil society organisations/NGO service providers.
Focus area	Stage of the value chain – farming/food production; processing; distribution; marketing Further differentiation possible (see 3.1.1.1 for the different farming systems)
Clients	Examples: individual farmers, cooperatives, farmers' associations, landowners, conservation organisations and/or public bodies
Geographic area covered	Diversity of structures, organisations and governance between and within countries (EU SCAR, 2012)

3.1.1.4 Education & research

Besides farmers themselves and advice/extension, education and training are means by which science can become practice (EU SCAR, 2016). While this group of end users also includes researchers, and students, focus will be on teachers/trainers as knowledge brokers between science and (future) farmers. It is assumed that researchers, while also representing important actors with regard to knowledge transfer, do not need additional KRs to find information related to their research on the web. Agricultural teachers/trainers can be further differentiated by the categories in Table 3.

Table 3: Categorisation of agricultural teachers/trainers

Type of organisation	Examples: public/private schools, technical schools, adult and business education programmes, colleges, universities, state-run training programmes for farmers
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Thematic focus	<ul style="list-style-type: none"> • Subjects taught • Specialisation, e.g. on organic farming • Type of knowledge: theoretical vs. applied sciences
Geographic area	Europe (different regions have different curricula and focus on different sources of agriculture education)
Level of experience	Novice vs. experienced

3.1.1.5 Policy

This group includes policymakers and administrations that are part of the policy and institutional environment (EU, national and regional systems of governance). The focus will be on agricultural policymakers whose decisions regarding rules, funding and networks directly influence farmers and the wider innovation environment, including advisors (EU SCAR, 2016). Differentiation criteria are summarised in Table 4.

Table 4: Categorisation of agricultural policymakers

Type of policymakers	<ul style="list-style-type: none"> • Politicians (e.g. national agricultural minister, European Commissioner, Member of the European Parliament, Agriculture and Rural Development Committee) • Civil servant (e.g. DG AGRI, civil servant in national ministries and agencies)
Policy area	
Political/party affiliation	
Geographic area	EU/Europe, national state level, local – specific regions/municipalities

3.1.1.6 Media

The media and journalists (professional journals and increasingly websites) are important for the exchange of information and ideas in the farming community. The mass media shapes societal discourses around food and mobilises consumers' attitudes in terms of food safety, values, alternative food networks and new production and consumption patterns. The media is also a potentially effective tool for disseminating information on agri-food innovations developed by research and development (R&D) activities (EU SCAR, 2012). However, the media will not be included as an end-user group in the further analysis since the EURAKNOS e-KRP is focusing on farmers as end users who get their knowledge either directly from the platform or from other users specialised in farming, such as farm advisors and agriculture teachers. While they might be worth considering with regard to promotion of the platform, they will not make use of the content in terms of applying it, either directly to practice or to teaching, advising or policymaking.

3.1.1.7 Non-governmental organisations

Non-governmental organisations (NGOs) represent another potential user group that, according to EU SCAR (2012), plays a growing role in innovation. While often providing ideas and motivation, helping develop the market and capacity to innovate, and suited to act as knowledge brokers, NGOs will be excluded since they generally do not interact directly with farmers as the main target group and do not represent an information source of practitioners.

3.1.1.8 Consumers

Likewise, consumers as potential end users (including eco-tourists and the wider public/citizens), according to EU SCAR (2012) increasingly recognised as active players in innovation, will not be included since they are not consulted by farmers as a main source of knowledge. Besides, they are not the target in terms of uptake of results.

The end-user groups that will be included in the further assessment are depicted in Figure 2, with farmers as the main target group of the EURAKNOS e-KRP in the centre. As stated above, farmers' associations consist of farm advisors and farmers, and hence can be integrated in the two other user groups. The differentiation criteria identified for the different end-user groups are summarised in Table 5.

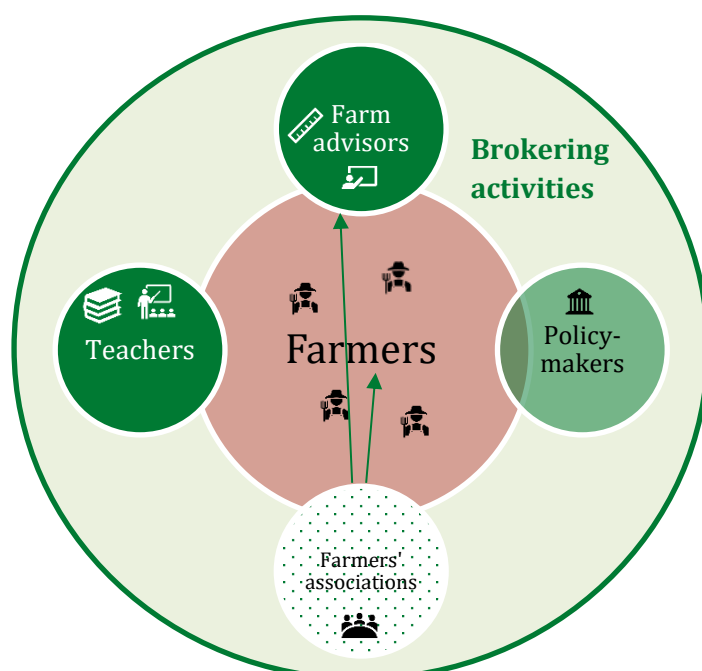


Figure 2: Map of potential e-KRP user groups

Table 5: Overview categorisation of the selected end-user groups

Farmers	Farm advisors	Agriculture teachers	Agricultural policymakers
Farming systems	Focus area	Thematic focus	Policy area
Organisation/management	Form of organisation and financing	Type of organisation	Type of policymakers
Geographic location	Geographic area	Geographic area	Geographic area
Size (small farms: less than 5 ha)	Clients	Level of experience	Political/party affiliation
Age group (young farmers: under 40 years)			
Gender (men, women)			

3.1.2 Identification of user needs in terms of knowledge acquisition and implications for the EURAKNOS e-KRP

The Food and Agriculture Organization of the United Nations (FAO, 2011) advises communicators to adapt their message to the audience. Therefore, the needs of the selected user types were identified, as well as the type of content that is best suited for each end user group.

3.1.2.1 Farmers

EU SCAR (2012) point out the need to develop tailored “advice products” that meet the needs of different types of farmers as well as the challenge to provide equal access to AKIS, support services and extension systems. Zondag et al. (2015) carried out a survey among 2,205 farmers under the age of 40 (i.e. young farmers) in all 28 EU Member States (1,518 questionnaires completed via phone, 657 via web, and 30 via email). Access to new and useful knowledge constitutes one of the general needs of young farmers in the EU. Young farmers in the EU primarily need specific technological knowledge necessary for the farm. They

also need knowledge to develop a farm strategy as well as entrepreneurial skills, knowledge on resource and nature management, marketing skills, skills related to animal welfare as well as knowledge of foreign languages (Zondag et al., 2015).

Looking for and reading information on the web, interactive knowledge sources such as agricultural training, individual advice and farmers' journals are the most widely preferred knowledge sources. A lack of time is considered the main barrier to obtaining information by more than 60% of the young farmers interviewed by Zondag et al. (2015). Other barriers include too many different sources, language, costs, and a lack of knowledge where to find the relevant information (Zondag et al., 2015).

In conclusion, farmers need knowledge that is up to date and tailor-made, i.e. adapted to their context and specific needs (e.g. practice abstracts, videos, factsheets and newsletters). Information provided should be understandable and actionable (i.e. concrete and practical/applicable) in order to address the demand for technological, context-specific knowledge. The flexibility of tailor-made solutions allows the translation of knowledge to a very specific context. The success of solutions should have been proven/demonstrated in the field. As a lack of time is a major barrier for farmers to the acquisition of knowledge, the EURAKNOS e-KRP should be easily accessible (i.e. easy to find, available in different languages, providing open access documents) to reduce the amount of time spent on searching for the right information.

3.1.2.2 Farm advisors

Farm advisors or agricultural consultants assist individual farmers and/or groups of farmers in structural, financial and managerial issues. Advisory services should be able to meet the farmers' knowledge needs, share information, facilitate connections among actors, promote learning and dissemination, and explain theoretical knowledge in practical terms. Providing specific, local solutions for specific business and technical problems requires rather tailor-made knowledge (EU SCAR, 2016).

In terms of the e-KRP, this means that farm advisors need comprehensive, up-to-date knowledge about recent policy and sector developments that can be transferred to farmers. Advisors for organic farmers for instance need information about the new regulation governing organic production and trade, and the implications for practice. Adjusted formats that are also relevant for farmers themselves include practice abstracts, newsletters, factsheets, press releases, and videos.

3.1.2.3 Agriculture teachers/trainers

Because different types of farmers need different kinds of knowledge and learning methods (also see 3.1.2.1), it is important to adapt training programmes and other forms of knowledge transfer to farmers' needs, competences and preferred learning methods. Thus, for agriculture teachers, the resources provided on the platform should be adapted to the target group (e.g. university students, farmer students/vocational training). Courses and content should align with the practitioners' current needs. For students to obtain the required basic knowledge, teachers need up-to-date knowledge on scientific results as well as practice, and they should learn and train the skills needed for managing participatory processes (EU SCAR, 2016). The suitability of educational programmes moreover depends on context-specific factors such as the institutional environment, the availability of resources, and the opportunities and threats perceived by the farmer (Kernecker et al., 2016).

Accordingly, the e-KRP should provide transferable knowledge and information. Besides practice abstracts and factsheets, impactful examples include training modules, courses, teacher's guides and resource packs² to prepare and equip students in their role as farmers or to become future farmers.

² Example: https://ec.europa.eu/agriculture/sites/agriculture/files/teachers-pack/material/1-1-teachers-guide_en.pdf

3.1.2.4 Agricultural policymakers

Knowledge and information targeting policymakers needs to be generalised, evidence-based, up to date, relevant to their area and implementable. To build trust, advice should be solid and transparent, showing that the government is making well-informed and considerate decisions. Interdisciplinary, comprehensive expertise, adaptability (responding to new, wicked questions), inclusiveness of different perspectives, and effectiveness (impact on actual decision- and policy-making processes) are important (OECD, 2017). Standardised knowledge complies with technical standards (i.e. established norms or requirements for a repeatable technical task) based on the consensus of different parties. A higher level of standardisation, as for instance provided by recent peer-reviewed meta-analyses translated into policy reports with recommendations, enables policymakers to determine relevant topics to allocate grants, to gather new information, and to increase the acceptance rate of new policies (OECD, 2017). Furthermore, knowledge to design new policies (e.g. the Future of CAP) is needed.

In terms of the e-KRP, advice should be up to date and in the right format, covering a broad range of knowledge, in order to best serve policymakers. Relevant formats suited to their specific needs include press releases, videos, newsletters and factsheets.

3.1.3 Mapping of the user groups in the dimension of content type

Figure 3 shows where the different end-user types can be located on a continuum from tailor-made solutions on the left end to highly standardised, generalised content on the right. It should be noted that both ends of the spectrum still allow a certain level of flexibility. The identified knowledge needs of the selected end-user groups are summarised in Table 2.

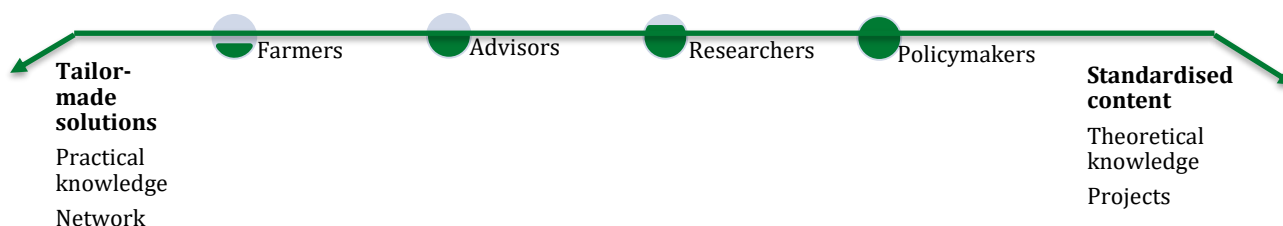


Figure 3: Degrees of content standardisation (adapted from Studnitz et al., 2020; UGent, 2019)

Table 6: Needs of the selected end-user groups

<i>User group</i> Needs	Farmers	Farm advisors	Agriculture teachers	Agricultural policymakers
Type of knowledge	<ul style="list-style-type: none"> Easily accessible Understandable Useful, actionable New 	<ul style="list-style-type: none"> Rather tailor-made Comprehensive Transferable Up to date 	<ul style="list-style-type: none"> Up to date Transferable 	<ul style="list-style-type: none"> Standardised/generalised Evidence based Up to date Implementable
Content	<ul style="list-style-type: none"> Tailored advice Specific technological knowledge necessary for the farm Adapted to their context and needs 	<ul style="list-style-type: none"> Recent policy and sector developments Specific, local solutions for specific business and technical problems 	<ul style="list-style-type: none"> Scientific results & practice Adapted to the target group and practitioners' needs 	<ul style="list-style-type: none"> Relevant to their respective policy area Knowledge to design new policies
Exemplary types of content/formats	<ul style="list-style-type: none"> Online information, e.g. practice abstracts, videos, factsheets, and newsletters Interactive, e.g. agricultural training, 	<ul style="list-style-type: none"> Practice abstracts Newsletters Factsheets Press releases Videos 	<ul style="list-style-type: none"> Practice abstracts Factsheets Training modules Courses Teacher's guides Resource packs 	<ul style="list-style-type: none"> Press releases Videos Newsletters Factsheets Peer-reviewed meta-analyses translated

	individual advice, and farmers' journals			into policy reports with recommendations
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3.2 Platform analysis

This section will set forth the criteria for the selection of already existing platforms that are similar to the e-KRP which EURAKNOS seeks to develop, and that will then be looked into more in depth to come up with lessons and recommendations for the e-KRP in terms of feasibility and added value.

3.2.1 Screening criteria

The selection of similar initiatives that are analysed more in depth took place in three steps:

1. Listing of existing e-KRPs with a thematic focus on agriculture/farming
2. Definition of selection criteria (see below)
3. Screening and rating of the listed initiatives

The focus was on similar initiatives, i.e. electronic knowledge reservoir platforms related to agriculture/farming, rather than on more generic IT platforms because this is the domain to which the efforts within this project relate. The information architecture built in generic IT platforms is entirely different from the one of agricultural knowledge platforms. Platforms only covering knowledge from TNs were likewise excluded as TN KRAs are already extensively covered in WP2 (also see section 1.2 for the specific objectives of Task 4.1).

The following selection criteria were applied:

1. Easy access to platform and content
 - a. Search function/search engine
 - b. Open access to data/documents
 - c. Different languages (English + at least 3 other languages)
2. Comprehensive content
 - a. Up to date
 - b. Thematic focus on agriculture/farming and forestry; wide range of evidence-based theoretical and practical knowledge
3. Diverse types of outputs (resources, tools and formats)
4. Farmers/practitioners as target group

The last criterion stipulates that farmers are a main target group of the platform as they are also the main target group of the e-KRP (see beginning of section 3.1.1 for more specific reasons).

The 21 initiatives that were identified at international level are listed in Table 7 below as well as in Annex 1. 11 out of the 21 international platforms meet at least 6 of the 7 selection (sub-)criteria (shaded green). The platforms' uniform resource locators (URLs) can be found in Annex 1 (inserted in the platforms' titles), which also provides information/explanations on if and how the individual criteria are met.

Table 7: Fulfilment of the screening criteria by the international platforms³

Screening criteria	1a. 15/21	1b. 20/21	1c. 8/21	2a. 18/21	2b. 12/21	3. 13/21	4. 16/21
Platform at international level							
1. Ask-Valerie	X	X	X		X	X	X
2. FarmDemo	X	X	X	X	X	X	X
3. EIP-AGRI	X	X		X	X	?	X
4. Organic Farm Knowledge	X	X	X	X	X	X	X
5. Agroecology Knowledge Hub (FAO)	X	X	X	X		X	X
6. Family Farming Knowledge Platform (FAO)	X	X	X	X		X	X
7. PANORAMA Solutions	X	X		X	X	X	X
8. Access Agriculture	X	X	X	X	X		X
9. Oppla	X	X		X	X	X	X
10. Agrisource	X	X		X	X	X	X
11. Organic Eprints	X	X	X	X	X	X	X

³ X, shaded green: criterion fulfilled; shaded red: not fulfilled; ?: not indicated/not enough information available

12. Sustainable Intensification Platform		X	X		X	X	X
13. SmartChain		X		X	X		X
14. ZENODO	X	X		X	X	X	
15. URGENCI	X	X		X			X
16. Agroknow				X			
17. AGINFRA +		X		X		X	X
18. eROSA	X	X			?		X
19. Agricultural Outlook (OECD/FAO)		X		X			
20. EFSA	X	X		X		?	
21. GODAN		X		X		X	

As shown in Table 7, most international platforms (18 out of 21) fulfil criterion 2a (i.e. comprehensive content which is up to date) while least provide content in four or more languages (English and at least three other languages). The FarmDemo, Organic Farm Knowledge and Organic Eprints platforms fulfil all four criteria (although content wise, they mainly focus on one subject – demonstration farms in the case of FarmDemo and organic farming in the two other cases). With regards to the output types, four platforms mainly provide resources in one format (project and solution profiles in the case of EIP-AGRI and PANORAMA Solutions; OECD-FAO Agricultural Outlook is essentially one Portable Document Format (PDF) document; no documents available in the case of Agroknow). E-Infrastructure Roadmap for Open Science in Agricultural and Food Sciences (e-ROSA) was excluded as it does not make knowledge available itself but only links to other organisations and/or platforms.

Eight of the 21 international e-KRPs identified are available and/or provide the most important resources only in English, five in 2-3 languages, and another eight in more than three languages (criterion 1c; see Figure 4).

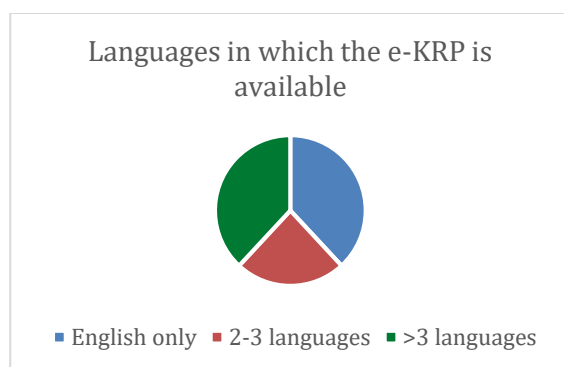


Figure 4: Languages in which international platforms are available

The initiatives that fulfil at least six (sub-)criteria were included in the further mapping and profiling.

3.2.2 Mapping of the international platforms: content, functionalities, architecture and employed technologies

In this section, a comparative investigation of the selected platforms takes place from the end-user perspective. More specifically, the platforms are compared in terms of:

- Content: thematic focus (i.e. main themes/topics covered) and formats/types (see Table 8)
- Access to content: Is user authentication required? What kind of search options/criteria are offered? What language options are made available? (see Table 9)
- Available communication channels enabling interactivity (see Table 10)
- Geographical coverage (i.e. geographical regions that the content focuses upon)
- Adoption of information architecture-related principles, with emphasis on:
 - Employed content/information organisation system, and more specifically:

- *Organisation structures*: What kind of content/information organisation structures have been adopted? How is content classified? (see Table 11)
- *Organisation schemes*: How is content/information grouped and delivered to platform users? (see Table 12)
 - Content/information labeling: Is the employed labelling system contextually relevant? (see Table 12)
 - Navigation system: What kind of navigation options are made available? (see Table 12)
- Metadata (see Table 13)
- Interoperability/connections: Are there links to other platforms? Can the platform share data or “communicate” with other platforms? (see Table 14)

Given that the main goal of investigated platforms is to communicate knowledge to interested parties and stakeholders, they can be regarded as information environments. These environments are delivered to users as web applications enabling access to content/information through appropriately designed and arranged pages. Thus, it is useful to analyse these environments from an information architecture point of view. However, transmission and exchange of knowledge is not just a static process of content and information delivery. To this end, the availability of communication channels that can facilitate interactivity (e.g. discussion forums, intranets, social media) has also been mapped.

Table 8: Thematic focus of provided content and available content formats/types

Platform	Ask-Valerie	FarmDemo	EIP-AGRI	Organic Farm Knowledge	Agroecology Knowledge Hub (FAO)	Family Farming Knowledge Platform (FAO) ⁴	PANORAMA Solutions	Access Agriculture	Oppla ⁵	Agrisource	Organic Eprints
Thematic focus	<ul style="list-style-type: none"> • Agriculture and forestry • Innovation from European research 	Demonstration farms in Europe	Innovation in European agriculture	<ul style="list-style-type: none"> • Organic farming • Themes: crop production and animal husbandry 	Agroecology in different countries	<ul style="list-style-type: none"> • Family farming (worldwide) • Themes: agroecology, forest farming, indigenous peoples, mountain farming, pastoralism, rural women, small family farmers, small-scale fisheries and aquaculture 	Solutions/successful examples for a healthy planet from around the world	Agricultural training (promoting the transition towards sustainable agroecology and organic farming)	EU Repository of nature-based solutions	Open innovations in agriculture	Organic food and farming
Formats/ types of content	<ul style="list-style-type: none"> • HTML • Documents mainly non-editable PDF 	<ul style="list-style-type: none"> • HTML • Possible to download demo design guide as PDF • Map with initiatives/ demo farms in Europe 	<ul style="list-style-type: none"> • HTML • Videos 	<ul style="list-style-type: none"> • HTML (toolbox with short tool descriptions and link to the tool) 	<ul style="list-style-type: none"> • HTML • Possible to download documents as PDF • PDF profiles • Videos 	<ul style="list-style-type: none"> • HTML • Possible to download documents as PDF 	<ul style="list-style-type: none"> • HTML (solution descriptions) • Video on the home-page 	<ul style="list-style-type: none"> • Mainly videos • HTML 	<ul style="list-style-type: none"> • HTML • Products include audio files, datasets, documents, images, infographics, slides, software, spreadsheets and videos 	<ul style="list-style-type: none"> • HTML on specific pages called players, documents, projects and innovations 	<ul style="list-style-type: none"> • HTML • Possible to download documents as PDF

⁴ <http://www.fao.org/agroecology/knowledge/en/>

⁵ <https://oppla.eu/about>



Table 9: Access to content on the international platforms

Platform	Ask-Valerie	FarmDemo	EIP-AGRI	Organic Farm Knowledge	Agroecology Knowledge Hub (FAO)	Family Farming Knowledge Platform (FAO)	PANORAMA Solutions	Access Agriculture	Oppla	Agri-source	Organic Eprints
Search function	Search function with query auto-completion; query editor allows to refine the search, offering more specific keywords related to the topic; language selector	Search (via NEFERTITI website): by country, language, farm type, farm management, demo topics	<ul style="list-style-type: none"> Search for projects, funding, research needs and online resources: full-text search (keywords) Filters: main funding source, geographical location, agricultural sectors, partners categories and/or language; results can be sorted by relevancy, title, type, author, date 	<ul style="list-style-type: none"> Search the toolbox: keywords listed (with the number of documents found for each keyword) Filters: language, type (e.g. calculation tools), theme (e.g. crop production), year or country of origin 	<ul style="list-style-type: none"> AgroecologyLex: free-text search; more search options: year, country, geo/econ regions, type of text Database: free-text search; more search options: type, topic, content language, possible to tick gender-related content 	<ul style="list-style-type: none"> Family FarmingLex: Document search: free text; advanced search: geographical area, country/territory, year (from to), topics, type of text (e.g. policies) Resources: Search in the database: free text; more search options: year, country, regions, main topic, subtopic, type 	<ul style="list-style-type: none"> Search directly for solutions by a keyword Filters: region, ecosystem, theme or challenges 	<ul style="list-style-type: none"> Search by topic (keywords) or language Access via different categories 	<ul style="list-style-type: none"> Search by keyword (free text/ chosen from a categorised list) Case studies can be searched by scale and type AskOppla: users can ask a question and receive answers from the Oppla community after creating an account 	Global search only by keyword or sorted by players, documents, projects or innovations	<ul style="list-style-type: none"> Search by field, keywords, names, dates Comprehensive advanced search⁶ Browse by subject area, research affiliation, year, eprint type, document language, research funders
Languages	English, French, Finnish, Italian, Dutch, Spanish, Polish	English, Czech, Danish, Dutch, Finnish, French, Gaelic, German, Greek, Hungarian, Italian, Latvian, Polish, Portuguese, Romanian,	Website only available in English, but more options in the search	English, Bulgarian, Danish, Dutch, Estonian, French, German, Hungarian, Italian, Latvian, Serbian, Spanish, Swedish (auto-	Arabic, Chinese, English, French, Russian, Spanish	Arabic, Chinese, English, French, Russian, Spanish	English, French, Spanish	<ul style="list-style-type: none"> English, French, Spanish Videos in different local languages Possible to contact web-site 	English	English, French, Italian	English, German; manual in English, Czech, French, Portuguese, Spanish, Turkish (documents in all languages, but English)

⁶ <https://orprints.org/cgi/search/archive/advanced>

Platform	Ask-Valerie	FarmDemo	EIP-AGRI	Organic Farm Knowledge	Agroecology Knowledge Hub (FAO)	Family Farming Knowledge Platform (FAO)	PANORAMA Solutions	Access Agriculture	Oppla	Agr-source	Organic Eprints
		Slovenian, Spanish, Swedish		translations by Google)				hosts for translation into other languages			abstract is encouraged)
Open access to documents?	X	X	X	X	X	X	X	Open access, but registration required to download video/audio files (other resources can be downloaded directly)	Partially open access: possible to tick "free, no licence" or "public/open source"	X	X
Registration/ submission of content		Demonstration farmers and innovation actors can register to showcase their farm and demonstration activities, and to participate and learn.	EU Login of the European Commission (ec.europa.eu)	Intranet for organisations and networks (for internal communication and tracking of tools uploaded to the platform)	<ul style="list-style-type: none"> • Users can submit contributions. • Registration open to all 	<ul style="list-style-type: none"> • Individual users can submit content. • Organisations and institutions can register to become a contributor and/or part of the network. 	<ul style="list-style-type: none"> • Users can submit solutions. • Organisations can join. 	Free registration	Free registration includes access to AskOppla (crowd-sourced enquiry service; membership is free; direct reply via email)	Free registration	<ul style="list-style-type: none"> • Free registration • Registered users can deposit items in the repository.

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Table 10: Available communication channels enabling interactivity

Platform	Ask-Valene	FarmDemo	EIP-AGRI	Organic Farm Knowledge	Agroecology Knowledge Hub (FAO)	Family Farming Knowledge Platform (FAO)	PANORAMA Solutions	AccessAgriculture	Oppla	Agrisource	Organic Eprints
Intranet (registration)	<i>Expected to enable users to share knowledge, experience and views with peers across Europe in the future</i>	Community for demonstration farmers and innovation actors	MYEIP-AGRI	Joint intranet of partners for internal communication and to be able to track all tools which have been uploaded to the platform	Possible to submit content (Join us)	<ul style="list-style-type: none"> FFKP Network helps connect players from the same country/region. Registration open to all Individual users can provide content. Interested entities can register to become a regular contributor. 	<ul style="list-style-type: none"> Login (to save to Favorites) Users can submit solutions (template provided). 	Login/register	<ul style="list-style-type: none"> Ask Oppla: community members help answer each other's questions Oppla Community (networking system) 	Login/join Agrisource	Login/create account (register) to be able to deposit items in the repository
Social media	No sign of social media	Twitter, Facebook, YouTube	Twitter, LinkedIn	Twitter, Facebook	Only general FAO social media channels	Twitter (as well as general FAO social media channels)	Twitter (latest Tweets featured on homepage)	Facebook, Twitter, WhatsApp, LinkedIn, WeChat, AddThis, Share	Twitter, LinkedIn, YouTube	No sign of social media	No sign of social media
Other channels		<ul style="list-style-type: none"> Inventory Events More info (including help) 	Feedback form	Toolbox with calculation tools that allow for rating		<ul style="list-style-type: none"> Newsletter Subscribe to FFKP DGroup (email discussion group for sharing information, knowledge and advice) 	<ul style="list-style-type: none"> RSS feed Newsletter 	Forum with news	Latest news and events featured on the homepage	<ul style="list-style-type: none"> Map to geolocate your Agrisource network Documents allow for rating News & events Newsletter 	Registered users can subscribe to email alerts on new papers.
Contact	Email address only on the project homepage (not on the platform itself)	Address, phone and email address of website contact and publisher	Service Point: phone, email address	Contact persons with affiliation and email address	Email address (Join us)	Email address (Join us)	Email address	Contact persons for Africa, Latin America, Asia and Europe; office contact person for technical matters (phone number and email address)	Email address	Address, email address (at the bottom of the page)	Address, phone, email of archive administrator, partner national editors and national editors

In addition to HTML content which is provided by all platforms (e.g. solutions, tool descriptions etc.), most platforms offer the possibility to download PDF documents and feature videos.

Except for Ask-Valerie, all the platforms provide an intranet for users as well as contact details. Seven of the 11 platforms are linked to social media accounts, with Twitter being the most frequently used channel (used by seven platforms; see Figure 5). Additional “channels” include inventory maps, news and events sections on the platform, a newsletter, feedback forms and the possibility to rate the tools provided on the platform.

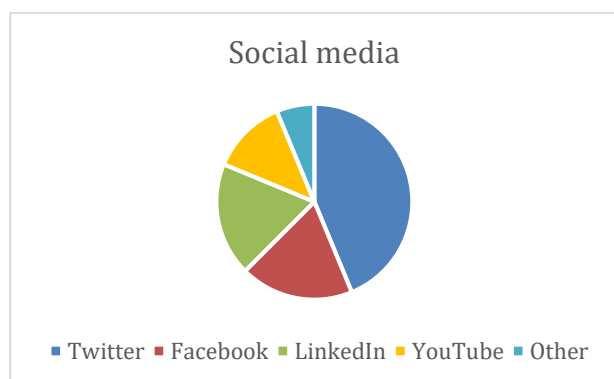


Figure 5: Social media used by the international platforms

The EURAKNOS e-KRP should clearly indicate a contact that users can approach in case of questions. A contact or feedback form and/or scoring system/possibility to rate the contents can help improve the platform-user fit while also actively engaging users. However, it must be followed by an evaluation of the results and further actions to address the comments received. Similarly, social media as another option to increase the interactivity must be regularly updated as the nature of these additional media channels requires feeding in real time, with news-worthy content.

Regarding geographic coverage, Figure 6 shows that the focus of most platforms is worldwide. In the case of Organic Farm Knowledge, the knowledge, solutions and tools provided are mainly relevant for Europe. Similarly, EIP-AGRI, which is part of EU’s growth strategy EU 2020, focuses on Europe (e.g. projects and OGs in Europe), but it is also possible to search for projects worldwide. In the case of FarmDemo, the actors (demo farms) are mainly located in the UK, Germany, Belgium, Poland, Slovenia, Hungary, France, Greece, Netherlands. The remaining platforms provide knowledge from and for the global community. Ask-Valerie provides worldwide research results (e.g. literature from Ethiopia). In the case of PANORAMA Solutions, solutions are mainly located in Europe, Asisa, South Africa, New Zealand, Australia, Central and South America (less in USA and Russia, none in China). Access Agriculture focuses on the Global South. In the case of EU repository Oppla that unites members from around the world, regions include for instance South America as well as different climate and topographic conditions (e.g. boreal, mountains), and it is possible to filter by local to global scale.

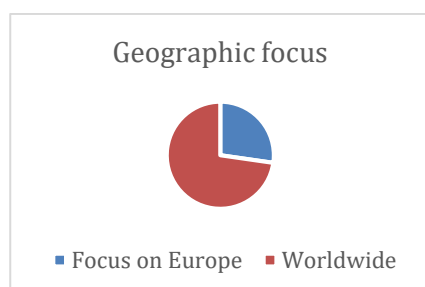


Figure 6: Geographic focus of the international platforms

In general, contents should be as easy to find as possible for end users. While most of the investigated platforms allow users to filter the search results by different categories, in some cases, the search function is rather basic (i.e. keyword/full-text search only). Contents should be as easy to find as possible for end users by offering a user-friendly search engine with basic as well as more advanced search options. To facilitate access to the platform itself, search engine optimisation (SEO) can increase the visibility of the e-KRP.

Except for some products on Oppla, the resources provided are freely accessible. In the case of Oppla, it is possible to exclude commercial products from the search. In the case of Access Agriculture, registration is required to download files.

In two cases, the platforms, search functions and results are available only in English and in two other cases only in three languages. The rest is available in more languages (e.g. the FAO platforms in the six official UN languages, namely: Arabic, Chinese, English, French, Russian and Spanish). As the focus of the e-KRP will be on Europe, the platform and resources provided should be translated into the most commonly spoken languages in Europe, which include Dutch, English, French, German, Italian, Polish, Romanian, Russian, Spanish, and Ukrainian (Amaya, 2018).

In many cases, users can register for free and submit their own content that undergoes a validation check (e.g. from the thematic portal's coordinator before being published on the platform like in the case of PANORAMA Solutions platform; by this way consistency against specific quality standards can be ensured). If users are given the option to submit their own content, it needs to be clear in advance whether a validation check is going to take place.

As mentioned above, all investigated platforms can be considered and treated as **digital information environments**. Apart from content that may be stored in a database lying at the back end, there is also a substantial amount of information conveyed to users through a dedicated website. So, development of interaction-related specifications for the EURAKNOS e-KRP can significantly benefit by reviewing all considered platforms from an information architecture point of view. As Rosenfeld et al. (2015) point out, information architecture is concerned with issues related to the “*shaping of information products and experiences to support usability, findability and understanding*”. Given that, attempting to approach the set of investigated platforms from an Information Architecture perspective will also help to shed light to user interaction and experience issues.

From an information architecture point of view, each information environment (i.e. platform) consists of four tightly intertwined systems, namely:

1. Organisation system;
2. Labelling system;
3. Navigation system; and
4. Search system.

Given that issues related to search functions have been covered earlier, we focus on the other three systems. Before proceeding to a more thorough review of how these systems actually work, as well as what design choices have been made with regard to them, it is important to begin with the two major information architecture approaches that can be employed when designing a digital information environment. These approaches are: (i) the **top-down** approach, and (ii) the **bottom-up** approach. In the former case, presentation of information structure to the user takes place from the top to the bottom of the provided interface. In the case of bottom-up approaches, instead of being dictated “from the above”, the structure of information is embedded in content. More specifically, information structure is conveyed by means of content arrangement and employed tags (Rosenfeld et al., 2015).

In the case of the top-down information architecture approach, which has been adopted by the whole set of investigated platforms, there is a list of questions/heuristics able to be used for the assessment of information structure – related decisions. These questions, provided by Rosenfeld et al. (2015), along with related information structure decisions, are listed below:

- **Q1:** Where am I? (Presence of logo or some other kind of contextual information for creating a “sense of place” to the user).
- **Q2:** How do I search for required information/content? (Access to an embedded search system).
- **Q3:** How do I get around? (Employment of a fit-for-purpose navigation system manifested to the user through appropriately designed menus).
- **Q4:** What is available in the digital information environment? (Use of appropriately designed menus).
- **Q5:** How can I contact representatives of the information environment? (Contact information and/or form).
- **Q6:** How do I engage with representatives of the information environment via popular channels of communication? (Access to information environment – related social media accounts).
- **Q7:** Can I create an account? How do I access it? (Account creation and log in functionalities).
- **Q8:** What is going on in the information environment? (Access to news and calendar of events).

Design solutions that have been adopted by investigated platforms with regard to some of the above issues have already been mentioned (namely, search function availability, account creation/access, access to social media accounts and communication options). The rest are highlighted below. To begin with, platforms make use of specific organisation structures for arranging and presenting information to the user in a way that can reveal relationships and dependencies. For this purpose, hierarchical structures are employed. In most cases, these structures are broad and shallow, rather than narrow and deep. The depth of a hierarchical information organisation structure relates to the **number of nested levels** that are used for representing relationships and dependencies among various pieces of information, whereas the breadth has to do with the **number of available options at each level**. Rosenfeld et al. (2015) provide an illustration of these two hierarchical structure types. This illustration is presented in Figure 7 below.

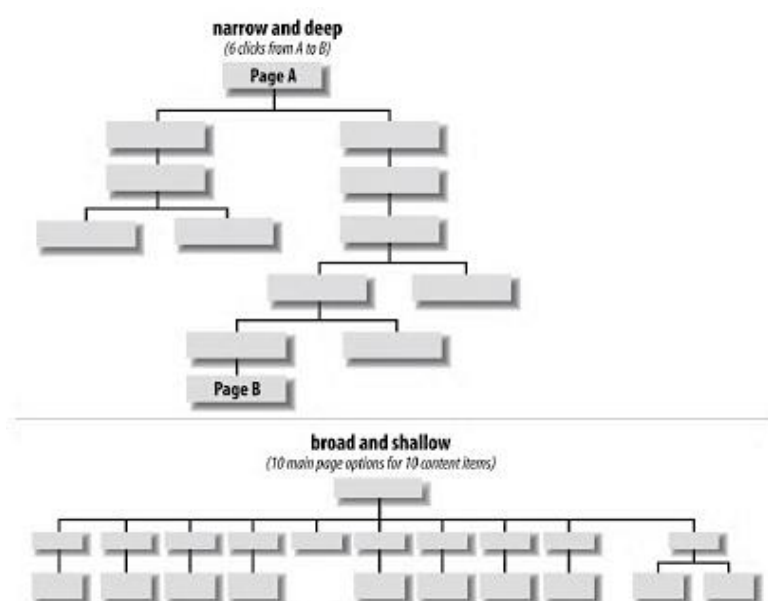


Figure 7: Narrow and deep vs. broad and shallow hierarchical information organization structures (Rosenfeld et al., 2015)

An overview of the hierarchical information organisation structures used by the investigated platforms is made available in Table 11 below.

Table 11: Organisation structure of the international platforms

Platform	Organisation structure
Ask-Valerie	Only Search & About menu points
FarmDemo	Only the followings can be searched: <ul style="list-style-type: none"> • FarmDemoHub: EU-wide inventory of demonstration farms • FarmDemo Networks: TNs of demonstration farms active in your region

	<ul style="list-style-type: none"> • FarmDemo Training Kit: online tools, stories, video tutorials, tips & tricks to improve demonstrations • Video channel 	
EIP-AGRI	<p>Contents are searchable in the following structure:</p> <ul style="list-style-type: none"> • News (news, press, videos, newsletters) • Events • Find projects, funding, research needs, project ideas, people, online resources • Publications (article, brochure, EIP-AGRI document, factsheet, good-practice paper, magazine, report) • Links to related materials 	
Organic Farm Knowledge	<p>Available menus/structure:</p> <ul style="list-style-type: none"> • Search the toolbox • News & events <ul style="list-style-type: none"> ◦ News and news archive ◦ Events ◦ Knowledge sharings • Themes & discussion <ul style="list-style-type: none"> ◦ Crop production ◦ Animal husbandry 	<ul style="list-style-type: none"> • About <ul style="list-style-type: none"> ◦ Partner organisations ◦ Partner projects • Intranet • Contact/site info
Agroecology Knowledge Hub (FAO)	<p>General FAO menus/structure:</p> <ul style="list-style-type: none"> • Home • About FAO • In Action • Countries (Country profiles) • Themes • Media • Publications • Statistics • Partnerships 	<p>Specific structure of the platform:</p> <ul style="list-style-type: none"> • Overview • Knowledge • AgroecologyLex • Database • Join us
Family Farming Knowledge Platform (FAO)	<p>Available FAO general menus/structure:</p> <ul style="list-style-type: none"> • Home • About FAO • In Action • Countries • Themes • Media • Publications • Statistics • Partnerships 	<p>Platform specific structure:</p> <ul style="list-style-type: none"> • Background • FamilyFarmingLex • Resources: Search in the database • Countries & Regions • Themes • Network • Data sources • Join Us
PANORAMA Solutions	<ul style="list-style-type: none"> • Explore <ul style="list-style-type: none"> ◦ All solutions ◦ All building blocks ◦ Thematic communities 	<ul style="list-style-type: none"> • About <ul style="list-style-type: none"> ◦ About PANORAMA ◦ News ◦ Collaborators
Access Agriculture	<p>Menu points:</p> <ul style="list-style-type: none"> • Selectable video categories: cereals; roots, tubers & bananas; vegetables; legumes; fruits & nuts; other crops; livestock; aquaculture; sustainable land management; integrated pest management; mechanisation; business skills; approaches (extension, other, participatory, seed production & dissemination); other (beekeeping, 	<ul style="list-style-type: none"> • About us • Using this site • Other resources • Forum • Impact

	biodiversity conservation, climate change adaptation, food safety, nutrition, organic agriculture, other agricultural practices)	
Oppla	<ul style="list-style-type: none"> • About • Marketplace: Product type <ul style="list-style-type: none"> ○ Audio ○ Consultancy ○ Dataset ○ Document ○ Event ○ Guidance ○ Image ○ Infographic 	<ul style="list-style-type: none"> ○ Slides ○ Software ○ Spreadsheet ○ Training ○ Video • Community • Case studies • Ask Oppla • Contacts
Agrisource	<ul style="list-style-type: none"> • Home • Agrisource project • Platforms • Map • Value chains 	
Organic Eprints	<ul style="list-style-type: none"> • Home • About • Browse • Search • Latest • Help 	

The analysis of the employed organisation structure shows that there are significant differences among the examined platforms. Some platforms, e.g. Ask-Valerie, have a very simple organisation structure that, besides the simple search engine, only contains basic information, while a separate project webpage provides more detailed information. Other platforms, such as the Agroecology Knowledge Hub and the Family Farming Knowledge Platform, both hosted by FAO, show a complex, even complicated structure and include a large amount of information in addition to the content of their knowledge reservoirs. Moreover, several links to other webpages, platforms and information sources are provided. Similarly, the EIP-AGRI website is very complex and full of content, which suggests that users need to know the webpage well, whereas it can prove more difficult for irregular users to find what they are interested in. The FarmDemo platform comprises well-structured contents (Hub, Networks, and Training kit) as well as a separate video channel. Likewise, PANORAMA Solutions provides a very clear structure, focused on the possibility to search for the specific content. The rest of the platforms can be considered as average in terms of the spectrum between simple and complicated information organisation structure.

Except for the organisation structure, part of an information environment's organization system is the employed organisation scheme. According to Rosenfeld et al. (2015), the organisation scheme deals with the logical grouping of provided pieces of information by taking account of sets of characteristics that these information pieces may have in common. There are two types of organization schemes, namely:

1. the **objective organisation schemes** further distinguished into *alphabetical, chronological and geographical schemes*, and
2. the **subjective organisation schemes** distinguished into *topical, task-oriented, metaphor-driven and hybrid schemes*.

Subjective organisation schemes are used for grouping content/information on the basis of subjective classification criteria indicative of semantic relations among information items that fall into the same category. In other words, in the case of subjective organisation schemes no exact information classification criteria exist (as in the case of the objective schemes). All investigated platforms rely upon subjective information organisation schemes with the most popular choices being the topical and task-

oriented schemes. In some cases, the metaphor-driven scheme has also been used. In today's information rich digital environments, there is no single organisation scheme choice. So, a commonly adopted solution has to do with the design of organisation schemes that combine topical, task-oriented and metaphor-driven elements. As Rosenfeld et al. (2015) point out:

- **Topical organisation schemes** are used to organise and group content/information by means of topic/subject.
- **Task-oriented organisation schemes** are used to organise and group content/information with regard to actions/tasks to be executed by users.
- **Metaphor-driven organisation schemes** are used to organise and group content through use of analogies.

The above choices are manifested through specific labelling options. For example, a topical scheme is made evident by use of nouns, as labels, indicative of the subject/topic for grouping a set of pieces of information. In the case of a task-oriented organisation scheme, we can evidence the use of verbs that declare the task/action to which the content/information group relates. Metaphor-driven schemes are mostly manifested through icons of specific meaning to users (e.g. use of a house icon for denoting the "home" page of the information environment). Figures 8 to 11 show the organisation scheme options that have been adopted by the Organic Farm Knowledge, Oppla, Agroecology Knowledge Hub and EIP-AGRI platforms.

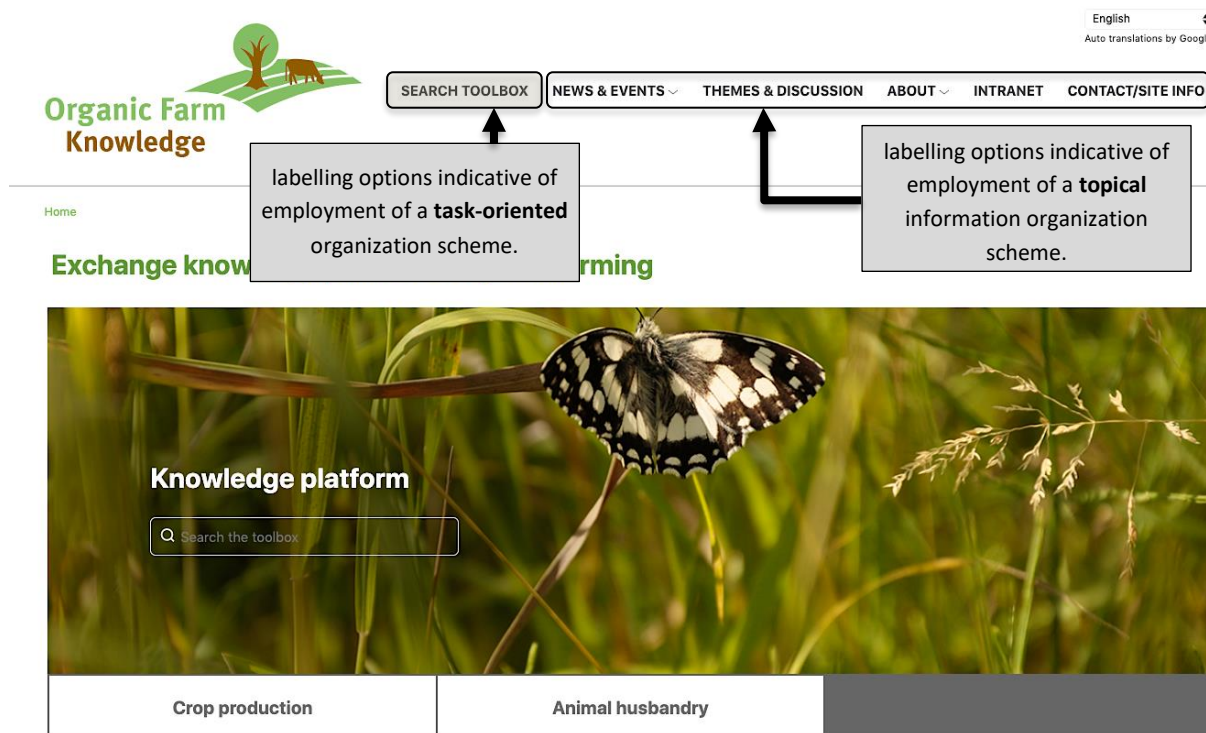


Figure 8: Topical and task-oriented information organisation schemes adoption by the Organic Farm Knowledge platform



Figure 9: Topical and task-oriented information organisation schemes adoption by the Oppla platform

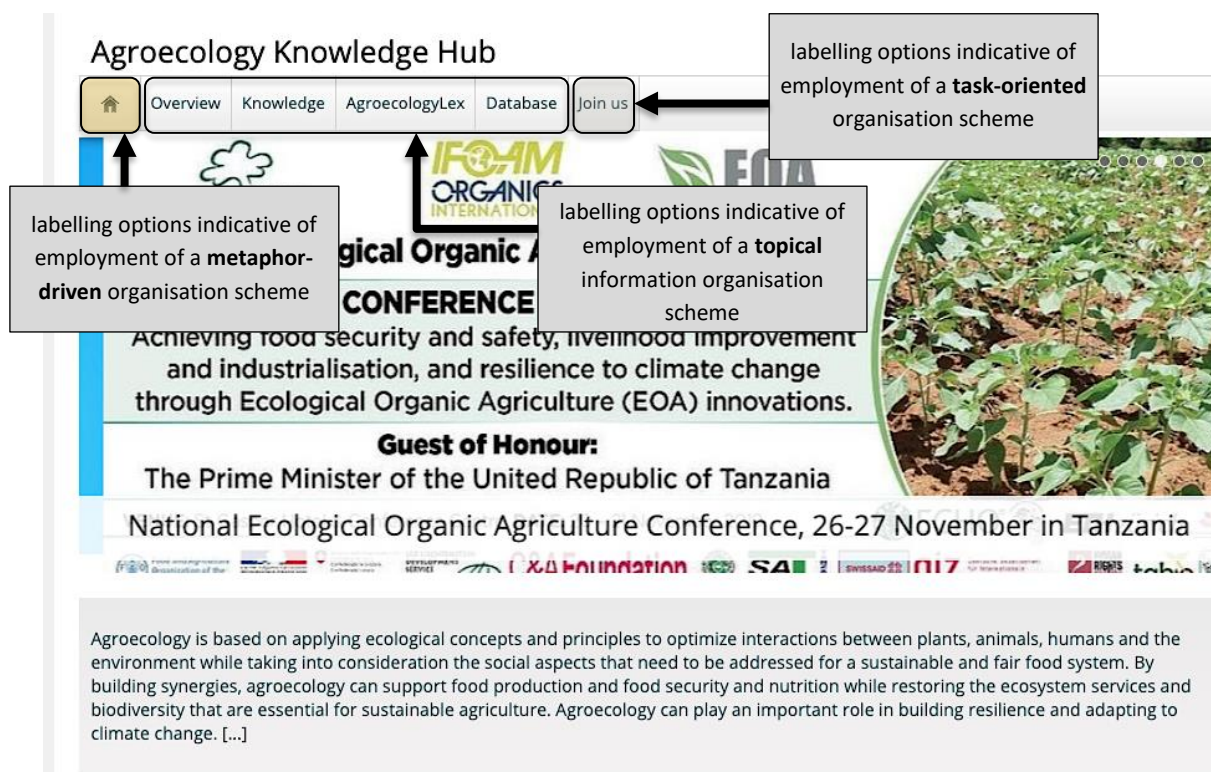


Figure 10: Topical, task-oriented and metaphor-driven information organisation schemes adoption by FAO's Agroecology Knowledge platform

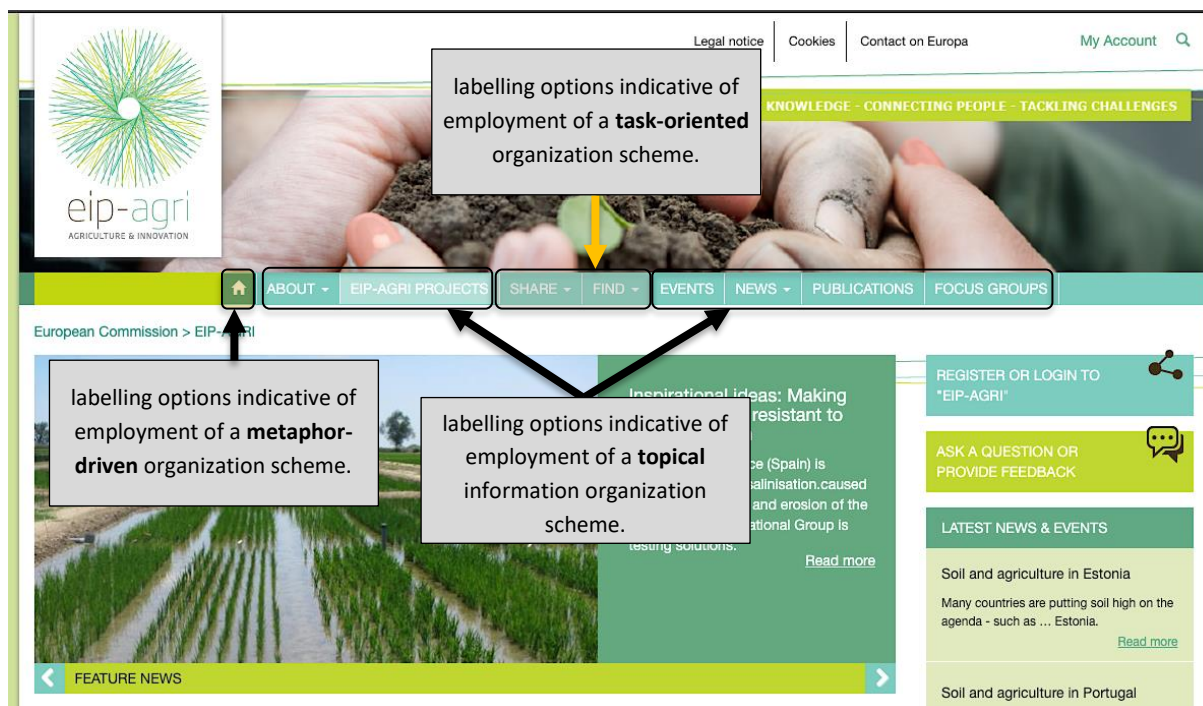


Figure 11: Topical, task-oriented and metaphor-driven information organisation schemes adoption by EIP-AGRI platform

Another issue of increased importance for digital information environments is navigation. It is vital for the user to be aware of the exact location at which they currently are in the information environment. To this end, use of appropriately designed navigation systems is imperative. According to Rosenfeld et al. (2015), there are three navigation system types:

1. the **global navigation system**, which is usually manifested via a navigation bar at the top of each page of the information environment;
2. the **local navigation system**, which serves as a supplement to the global navigation system and facilitates navigation within a confined information system area (e.g. a page); and
3. the **contextual navigation system** enabling access to different information system areas that provide semantically similar content.

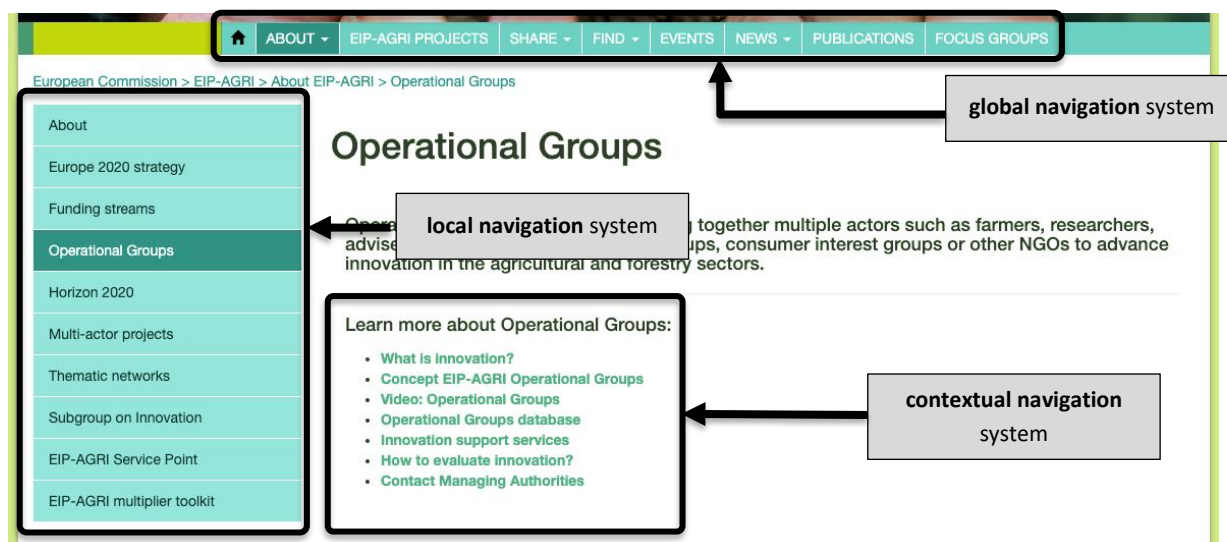


Figure 12: Implementation of global, local and contextual navigation systems in the context of the EIP-AGRI platform

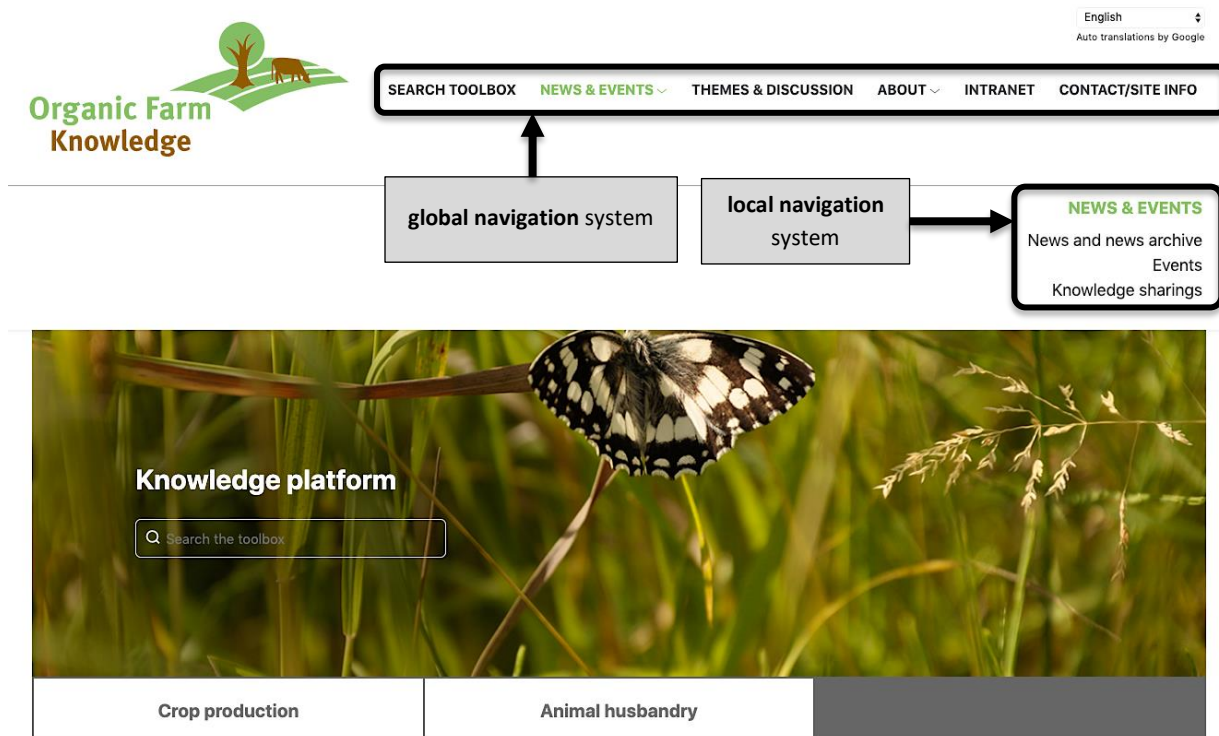


Figure 13: Implementation of global and local navigation systems in the context of the Organic Farm Knowledge platform

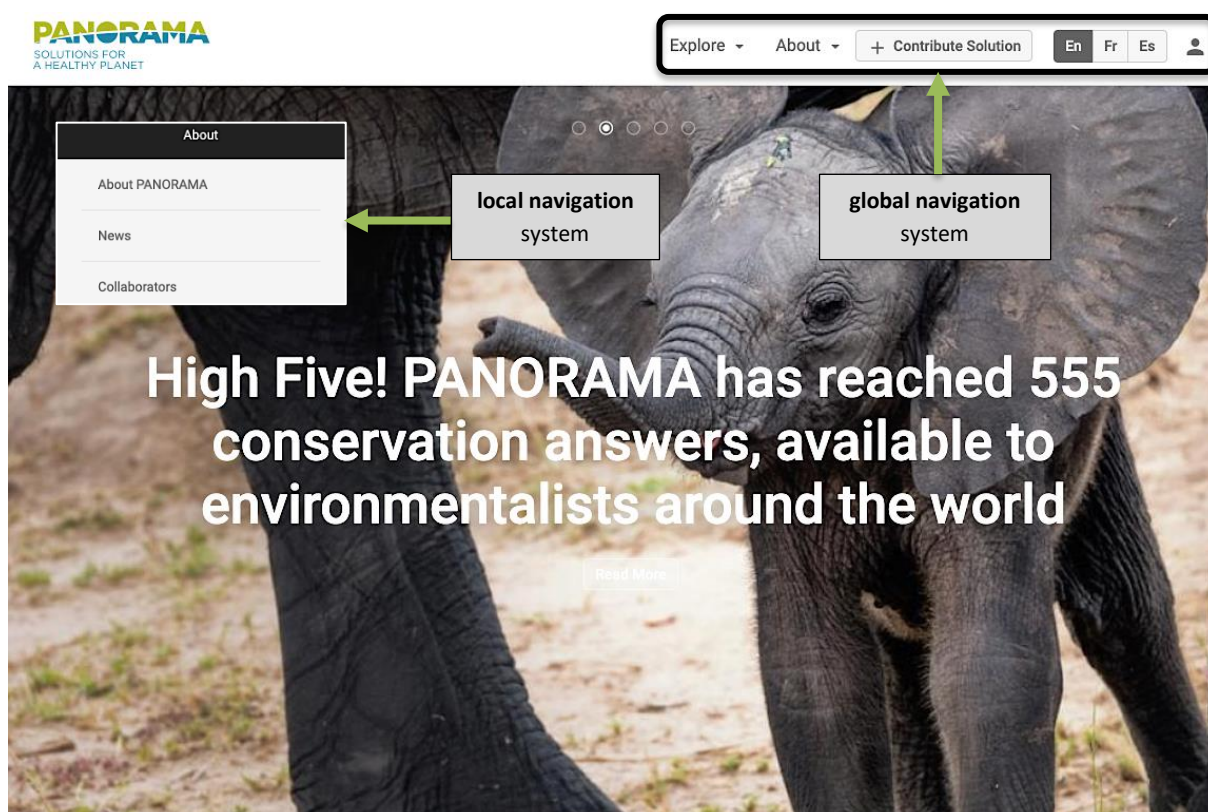


Figure 14: Implementation of global and local navigation systems in the context of the PANORAMA Solutions platform

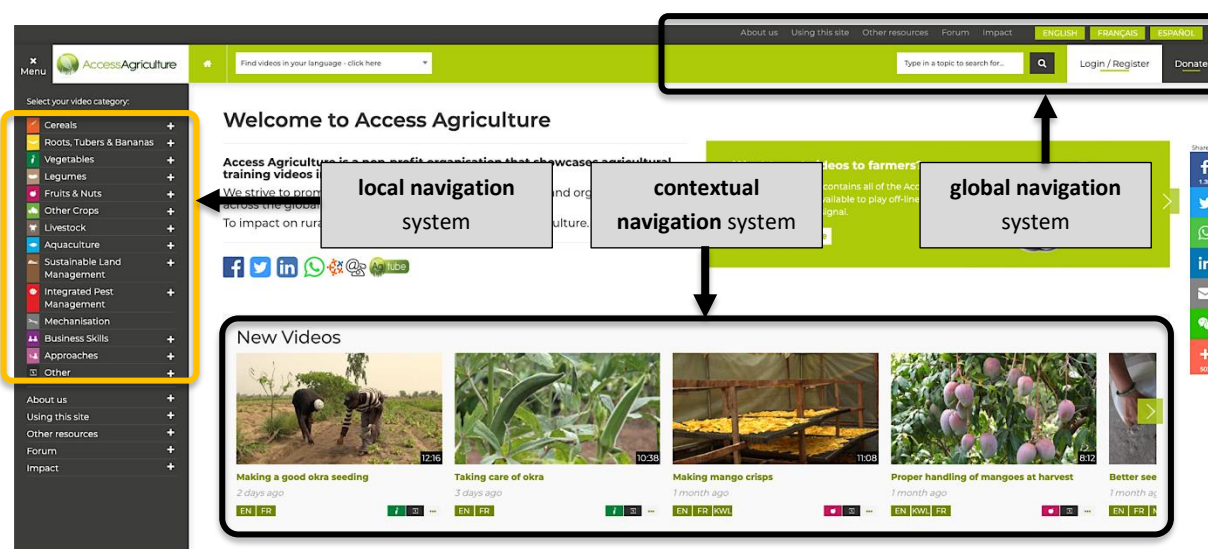


Figure 15: Implementation of global, local and contextual navigation systems in the context of AccessAgriculture

As far as the contextual navigation system is concerned, this can be manifested through use of in-text hyperlinks enabling transition to semantically similar content areas. These three navigation systems have been adopted by almost all cases of investigated platforms. Implementation of global, local and contextual navigation systems by the EIP-AGRI, Organic Farm Knowledge, PANORAMA Solutions and Access Agriculture platforms is shown in Figures 12 to 15 above.

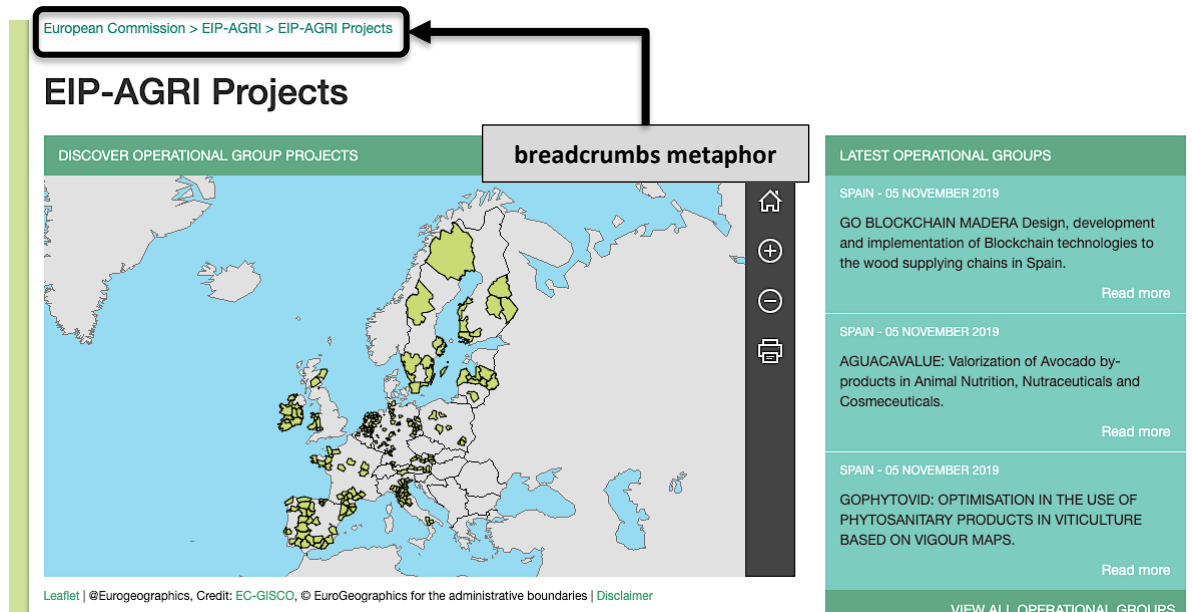


Figure 16: Use of the breadcrumbs metaphor by the EIP-AGRI platform to help users easily identify their current position in the digital information environment

In addition to combined use of global, local and contextual navigation systems, we should also mention the adoption of the “breadcrumbs metaphor”⁷, in some platform cases, to further facilitate navigation in the digital information environment. Figure 16 above illustrates how the breadcrumbs metaphor is used in the context of the EIP-AGRI platform. It is also important to notice the presence of the platform logo on the top left corner of each page of the digital information environment (see Figures 13 to 15 above), a design choice made by all platforms. In some cases, the logo is accompanied by the project’s motto. The

⁷ According to **Wikipedia** (https://en.wikipedia.org/wiki/Breadcrumb_navigation), a **breadcrumb** or **breadcrumb trail** is a graphical control element frequently used as a navigational aid in user interfaces and on web pages. It allows users to keep track and maintain awareness of their location in programs, documents, or websites.

presence of the project logo along with any other project identification-related semantic element helps towards developing a “sense of place” to the user and functions as a complement to employed navigation solutions.

Relevant to the discussion on navigation systems are personalisation- and/or customisation-related functions. Personalisation is about feeding users with content adapted to their own preferences. Tailor-made content provision affects not only the amount of information that the user interacts with, but also the way in which navigation through provided content takes place. Personalisation takes the form of content-related recommendations implemented by specially designed algorithms (e.g. collaborative filtering). Recommendations are provided through a process of matching a user’s preferences with those of “similar” users (with similarity being evaluated based on appropriately defined criteria). Even though many web-based services offer such recommendations, their uptake has not been considered by the investigated agriculture-related platforms. Customisation is about providing users with the flexibility to define themselves the content they want to access. Consequently, content access patterns and navigation can also be adjusted. Given that customisation requires actions and time from the side of the user, it is meaningful in cases of information environments accessed and used upon a frequent basis (e.g. webmail applications). This can be regarded as the reason why customisation-related functionalities have not been popular in the context of (the investigated) agriculture-related platforms.

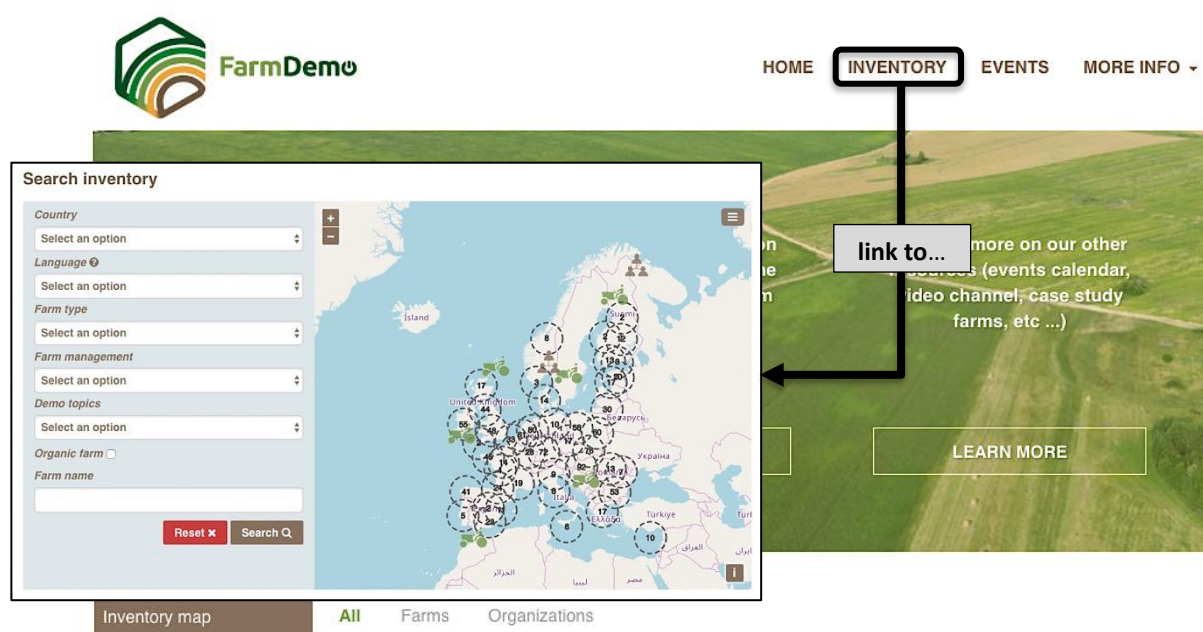


Figure 17: Use of the label “INVENTORY” by the Farm Demo Hub platform for directing users to the project’s database

The **labelling system** represents another system that is tightly associated with navigation-related options. According to Rosenfeld et al. (2015), labels aim to “*communicate information efficiently*”. Labels function as signs for directing users to specific areas within the digital information environment. To this end, they must be relevant to the context of use and meaningful to the user. They should moreover help users to easily identify the information environment’s area in which they find themselves. This is for instance the purpose of page headings (i.e. a specific label type). Labels used by the investigated platforms can be considered as clear, with only a few exceptions. However, no uniform approach exists with regard to employed labelling systems, despite the fact that all platforms relate to the same domain. Examples of labels that have been employed in some cases and are less clear include the “**INVENTORY**” label by the FarmDemoHub, with the aim to link to the project’s database (see Figure 17 above). The “**Knowledge**” and “**AgroecologyLex**” labels, used by FAO’s Agroecology Knowledge Hub, as well as the “**FamilyFarmingLex**” label employed by FAO’s Family Farming Knowledge Platform, are likewise labels with a meaning that is less clear. This also applies to the label “**MARKETPLACE**” that is used in the context of the Oppla platform.

Table 12 summarises the results of the platforms analysis from an information architecture point of view.

Table 12: Evaluation of platforms against information architecture-related criteria

Information architecture-related criteria Platform	Organisation scheme			Navigation system				Labelling system	
	topical	task-oriented	metaphor-driven	global	local	contextual	Personalisation/ customisation	Context-relevant labelling system	Use of page headings
Valerie ⁸	X	X		X	X	X		X	X
FarmDemo	X			X	X	X		X	X
EIP-AGRI	X	X		X	X	X		X	X
Organic Farm Knowledge	X	X		X		X		X	X
Agroecology Knowledge Hub (FAO)	X	X	X	X	X	X		X	X
Family Farming Knowledge Platform (FAO)	X	X	X	X		X		X	X
PANORAMA Solutions	X	X	X	X	X	X		X	X
Access Agriculture	X	X	X	X	X	X		X	X
Oppla	X	X		X		X		X	X
Agrisource	X	X		X		X		X	X
Organic Eprints	X	X		X		X		X	X

The above presented data makes it clear that there are several common design choices given the domain-relatedness of the investigated platforms. In terms of content organisation, a combination of topical and task-oriented schemes is used in almost all platform cases. Almost 40% of investigated platforms make use of visual semantic elements for denoting specific menu options (e.g. use of a house icon to denote the digital information environment's main page). With regard to navigation systems, all platforms use a global navigation system manifested as a menu bar at the top of each page. Similarly, hyperlinks are embedded in pages of the investigated information environment, which allow for dynamic navigation and semantically meaningful association of various content/information items. More than half of the platforms (55%) employ local navigation systems as well, available in the form of submenus, with the aim to facilitate browsing of content at the local page level. Despite their popularity in commercial web applications, personalisation- and/or customisation-related functionalities have not been considered and used by investigated platform. Finally, employed labels lack homogeneity despite the fact that all platforms relate to the same domain. Most differences are focused on the adoption of labels for links to database access interfaces (e.g. “**AgroecologyLex**”, “**FamilyFarmingLex**”, “**INVENTORY**”, “**MARKETPLACE**” and “**KNOWLEDGE**”). Finally, page headings are always present to provide a “sense of place” in the broader information environment.

Table 13: Metadata of the international platforms

Platform	Metadata
Ask-Valerie	<ul style="list-style-type: none"> No metadata policy available Metadata usually not available when downloading a content; only some sources provide metadata
FarmDemo	Metadata available for videos : length, title, short introduction, category, date of creation/upload, number of downloads

⁸ Given that Ask-Valerie is a search engine aimed to be used for searching Agriculture-related content, evaluation has taken place with regard to the respective project (i.e. **Valerie** - <http://www.valerie.eu/>)

Platform	Metadata
EIP-AGRI	<ul style="list-style-type: none"> • <i>Metadata available</i>: title, publication abstract, size, year of publication, publication type, geographical scope; for projects also project type, main funding source, keywords • <i>Detailed metadata available for the searched content</i>: geographical scope, keywords, size, publication abstract, date, type • Different contents have different metadata, e.g. projects: agricultural sectors, founding source, project type, status, start and end date, link to website, partners list, contact details
Organic Farm Knowledge	<ul style="list-style-type: none"> • <i>Metadata connected to the contents</i>: theme, languages, keywords, year of release, country of origin, issuing organization, contact • <i>More details</i>: summary, e-print type, teaser, What problem does the tool address?, Which species should be planted, how should the grassland be organised and what are the zootechnical results?, What solution does the tool offer?, country, type of practice tool, keyword, Agrovoc keywords, subjects, research affiliation, related links, project ID, deposited by, ID code, deposited on, last modified, document language, status • In general, all metadata is complete and correct.
Agroecology Knowledge Hub (FAO)	<div>Extensive structured metadata available for the contents. <i>Metadata available in the AgroecologyLex:</i></div> <ul style="list-style-type: none"> • Original title • Entry into force • Date of consolidation/reprint • Date of original text • Type of text • Available website • FAOLEX number • Date of text • Implements • Implemented by • Repeals • Keywords <div>Metadata available in the Database:</div> <ul style="list-style-type: none"> • Year • Volume • Location/geographical coverage • Country/ies • Full text available at • Content language • Author • Type • Organisation
Family Farming Knowledge Platform (FAO)	<div>Extensive structured metadata available for the contents. Metadata in FamilyFarmingLex:</div> <ul style="list-style-type: none"> • Original title • Entry into force • Date of consolidation/reprint • Date of original text • Type of text • Available web site • FAOLEX No • Date of text • Implements • Implemented by • Repeals • Keywords <div>Metadata available in the Database:</div> <ul style="list-style-type: none"> • Year • ISBN • Volume • Publisher • Location/geographical coverage • Country/ies • Full text available at • Content language • Author • Type • Organisation
PANORAMA Solutions	<ul style="list-style-type: none"> • Available metadata: title, author, organisation, published, last edited, summary, classifications (region, scale of implementation, ecosystem, theme, Sustainable Development Goals, governance type, Aichi targets, location) • For most contents, the same metadata structure is available (some differences).
Access Agriculture	<div>Metadata of videos:</div> <ul style="list-style-type: none"> • Current language

Platform	Metadata
	<ul style="list-style-type: none"> • Duration • Produced by • Produced for • Languages • Share (Facebook, Twitter, LinkedIn, email) • Categories
Oppla	<div> <div> <p>Filters:</p> <ul style="list-style-type: none"> • Scale <ul style="list-style-type: none"> ◦ Global ◦ Continental ◦ Sub-continental ◦ National ◦ Subnational ◦ Local </div> <div> <ul style="list-style-type: none"> • Quality Assurance <ul style="list-style-type: none"> ◦ Scientific peer review ◦ International Standards (eg. ISO) ◦ Accreditation ◦ Professional references ◦ Own QA and testing • License <ul style="list-style-type: none"> ◦ Free, no licence ◦ Public/open source ◦ Commercial </div> </div>
Agrisource	<ul style="list-style-type: none"> • Detailed metadata structure available for Players (presentation, related projects, innovations, related players, documents, news, events, contact, keywords, location), but most fields are empty, and the metadata is very incomplete. • Type as additional metadata for documents, duration for projects, moment of innovation, innovation status and stakes for innovation
Organic Eprints	<p>Archive browsing options</p> <ul style="list-style-type: none"> • Subject Area (Farming Systems; Animal husbandry; Crop husbandry; Soil; Environmental aspects; Food systems; Knowledge management; Values, standards and certification; "Organics" in general) • Research affiliation (Country/Organization/Project) • Year • Eprint Type (Journal paper; Newspaper or magazine article; Working paper; Conference paper, poster, etc.; Submit a paper or a poster to a conference; Proceedings; Report; Report chapter; Book; Book chapter; Thesis; Research Programme description; Organization description; Project description; Research facility description; Data set; Teaching resource; Practice tool; Web product; Video; Audio; Image; Other) • Document Language (English; German; Danish; Bosnian; Bulgarian; Chinese; Croatian; Czech; Dutch; Estonian; Finnish; French; Greek; Hungarian; Italian; Lithuanian; Latvian; Norwegian; Persian; Polish; Portuguese; Romanian; Russian; Spanish; Slovak; Slovenian; Swedish; Turkish; Ukranian; Other language) • Research funders <p>Metadata available per document: EPrint Type; Keywords; Subjects; Research affiliation; Related links; Deposited By; ID Code; Deposited On; Last modified; Document Language; Status; Refereed.</p>

As far as use of metadata is concerned, while in some cases, detailed, extensive metadata is available (e.g. for the contents of the FAO databases and the EIP-AGRI website), there are also other cases, such as Ask-Valerie, at which sources do not provide metadata. It is very important to know what kind of metadata is available for the contents, and to evaluate whether the metadata is complete and correct, because a search engine can work efficiently only if appropriate metadata is available. Yet, a complete, detailed and coherent metadata structure facilitates both the organisation and the discovery of the electronic knowledge and resources provided. Metadata is key to the functionality of the systems holding the content, enabling users to find information by relevant criteria, and to share that information with others (Rilery, 2017).

Generally, the examined platforms provide a wide scale of metadata. However, these metadata usually differ from platform to platform; there are not many common points. The most “typical” ones include the name/title of the document, author, year of production, and size/length. Keywords, which would maximise the usefulness to find appropriate contents, are only provided occasionally. The metadata connected to the contents often cannot be used for searching a specific content (e.g. as a filter).

Another important issue concerns the completeness and correctness of the metadata. In several cases, the available metadata structure is not filled with information, so incompleteness is a frequent phenomenon (e.g. in the case of Agrisource). Metadata policy or proceedings are usually not available on the platforms. However, in some cases, it can be clearly seen that significant efforts were made to control metadata completeness and correctness, and to apply the same metadata structure to all contents (e.g. EIP-AGRI, Organic Farm Knowledge and FAO platforms).

Metadata on the quality and usefulness of a content is generally not available, even though it would be very informative for the users. Organic Farm Knowledge represents a best-practice case regarding the provision of such a quality information.

Table 14: Interoperability of the international platforms

Platform	Interoperability/connections
Ask-Valerie	<ul style="list-style-type: none"> • Contents only linked to an external webpage; not kept in the system • Very limited number of sources • <i>Frequent problem:</i> searched content not available anymore online
FarmDemo	Links to the websites of the collaborating projects NEFERTITI, AgriDemo-F2F and PLAID (only search option via Nefertiti)
EIP-AGRI	<ul style="list-style-type: none"> • Links to external websites, e.g. of several H2020 projects, on the homepage • Ask-valerie.eu is offered as a search option.
Organic Farm Knowledge	<ul style="list-style-type: none"> • Links are currently being built • Directly linked to the online archive Organic Eprints
Agroecology Knowledge Hub (FAO)	<ul style="list-style-type: none"> • <i>Links to other FAO information systems:</i> FAOSTAT, SDG indicators, AMIS, Food and Agriculture Microdata Catalogue • Many related links to FAO and outer sources, e.g. Access Agriculture • Most of the contents are available on an external website.
Family Farming Knowledge Platform (FAO)	<ul style="list-style-type: none"> • <i>Links to other data sources:</i> FAOSTAT, FAO CountryStat, FAO Fisheries & Aquaculture – Statistics, FAO Forestry statistics, FAO Aquastat, FAO World Programme for the Census of Agriculture (WCA), FAO Smallholders data portrait, FAO Gender and Land Rights Database, FAO Rural Income Generating Activities (RIGA) Database, World Bank Living Standards Measurement Study (LSMS) Datasets, World Bank Open Data, IFAD Rural Poverty Portal • Many related links to FAO and outer sources • Most of the contents are available on an external website.
PANORAMA Solutions	Connects over 200 solution providers who represent NGOs, government institutions, academia, international organisations, foundations and the private sector
Access Agriculture	<ul style="list-style-type: none"> • <i>Other resources:</i> links to extension platforms, apps, publications, university theses, other video platforms • Link to AgTube (social media platform to upload and share video clips in any language) • <i>Cooperation with the following platforms:</i> <ul style="list-style-type: none"> • African Forum for Agricultural Advisory Services • Agricultural Extension in South Asia (AESAs) • Agricultural Transition • Campesino a Campesino • CTA – Technical Centre for Agricultural and Rural Co-operation ACP-EU • e-agriculture • Family Farming Knowledge Platform • Food Plant Solutions

Platform	Interoperability/connections
	<ul style="list-style-type: none"> • Global Forum for Rural Advisory Services (GFRAS) • LEISA – Farming Matters • Infonet BioVision • Inter-Réseaux Développement Rural • Modernizing Extension and Advisory Systems • Practical Answers • Rainforest Alliance • Red Latinoamericana de Servicios de Extensión Rural • Sustainable Agriculture Network • Technologies and practices for small agricultural producers (TECA) • Tropical Agriculture Platform
Oppla	Over 60 universities, research institutes, agencies and enterprises are contributing to Oppla as part of a joint activity between the OPERAs and OpenNESS projects (links to all contributors).
Agrisource	<ul style="list-style-type: none"> • Link to EIT Climate-KIC (one of the platform builders) on top of the website • <i>Platforms</i>: links to other “platforms who change agriculture”: FAO Agroecology and Family Farming Knowledge Hubs, WOCAT, URGENCI, SMARTAKIS; national platforms: AGRIFIND, GECO, Wine Observatory of Hérault, OSAE, L’Atelier Paysan
Organic Eprints	<ul style="list-style-type: none"> • Content is stored in database maintained by supporting organisations (namely, International Centre for Research in Organic Food Systems and Research Institute of Organic Agriculture). • Links to: <ul style="list-style-type: none"> ◦ website of University of Southampton (developers of EPrints software); ◦ website of ICROFS (supporting organisation); and ◦ website of FiBL (supporting organisation).

The different platforms also offer a wide range of solutions in terms of interoperability. While some systems provide only a link to an external source after searching for a specific content (e.g. Ask-Valerie, Farm Demo and Organic Farm Knowledge), others, e.g. the FAO platforms, provide contents mostly from their own source. It is a typical and frequent problem that, in case of external sources, the searched content is often not available.

Likewise, there are differences regarding the number of sources offered by the examined platforms, e.g. Ask-Valerie offers only a few external sources whereas Organic Farm Knowledge uses only one source, i.e. Organic Eprints. On the other hand, EIP-AGRI provides access to many different sources (mostly Horizon 2020 projects). Similarly, the FAO platforms use numerous different FAO and external sources. PANORAMA Solutions has numerous external, independent regular and occasional content providers, Access Agriculture assembles a wide range of specific cooperating platforms, and Oppla cooperates with 60 universities, research institutes, agencies and enterprises. There is also interoperability among the 11 analysed platforms: EIP-AGRI offers Ask-Valerie as a search option, Organic Farm Knowledge interacts fully automatically with Organic Eprints and Agrisource links to the FAO platforms.

Apart from focusing on user-related aspects, investigation of selected platforms takes also place with regard to: (i) the tools and technologies that have been used for development of platforms, and (ii) the employed data models. Investigation has focused on Content Management System, JavaScript libraries, web server and programming language. Tools and technologies used for the development of platforms have been identified with the help of:

- **BuiltWith**⁹: a web tool used for tracking website technologies like *widgets, analytics, frameworks, content management systems, advertisers, content delivery networks, web standards and web servers*.

⁹<https://builtwith.com/>

- **Whatruns**¹⁰: a web tool made available in the form of a free Google Chrome browser extension that helps to identify the technologies used in a website.

Analysis results are presented in Table 15 below.

To begin with, a Content Management System (CMS) is a software application providing a suite of tools for facilitating creation and management of a website's content. Employed CMSs are Drupal¹¹ (used in 36% of cases), TYPO3¹² (used with a rate of 27%) and Joomla!¹³ (used only in the case of Valerie platform). No information about employed CMS is made available in the case of FarmDemo, Agrisource and Organic Eprints platforms. All CMS solutions are open source.

Table 15: Technologies and tools used for the development of the websites of investigated platforms

	Content Management System	JavaScript Libraries	Programming Language	Web Server
Valerie	Joomla!	jQuery	PHP	Apache
FarmDemo	N.A.	jQuery	PHP	Apache
EIP-AGRI	Drupal	jQuery	N.A.	N.A.
Organic Farm Knowledge	TYPO3	N.A.	N.A.	Apache
Agroecology Knowledge Hub (FAO)	TYPO3	jQuery	PHP	Varnish, Apache
Family Farming Knowledge Platform (FAO)	TYPO3	jQuery	PHP	Varnish, Apache
PANORAMA Solutions	Drupal	jQuery	N.A.	Apache
Access Agriculture	Drupal	jQuery	PHP	Apache
Oppla	Drupal	jQuery	N.A.	Apache
Agrisource	N.A.	jQuery	N.A.	nginx
Organic Eprints	N.A.	jQuery	Perl	Apache

As far as use of JavaScript libraries is concerned, jQuery¹⁴ is the only considered solution. According to Wikipedia¹⁵ (citing Khan Academy's post entitled "*What's a JS library?*")¹⁶, JavaScript libraries are libraries of ready-to-use JavaScript code allowing for easier and more efficient development of JavaScript-based applications. According to W3Schools¹⁷, jQuery is a lightweight JavaScript library offering built-in methods for executing tasks requiring JavaScript code. The jQuery library includes the following features: (i) HTML/DOM manipulation, (ii) CSS manipulation, (iii) HTML event methods, (iv) effects and animations, (v) AJAX, and (vi) utilities.

With regard to programming language, and PHP¹⁸ has been adopted by 10 out of 11 platform cases (91%) with the only exception of the Organic Eprints platform (use of Perl). As mentioned in the tekshapers.com website¹⁹, PHP programming language is "*most widely used for website and web application development. It is a general purpose, server-side scripting language which runs on a web server and which is designed for making dynamic pages and applications.*"

¹⁰ <https://www.whatruns.com/>

¹¹ <https://www.drupal.org/>

¹² <https://typo3.com/>

¹³ <https://www.joomla.org/>

¹⁴ <https://jquery.com/>

¹⁵ https://en.wikipedia.org/wiki/JavaScript_library#cite_note-1

¹⁶ <https://www.khanacademy.org/computing/computer-programming/html-css-js/using-js-libraries-in-your-webpage/a/whats-a-js-library>

¹⁷ https://www.w3schools.com/jquery/jquery_intro.asp

¹⁸ <https://www.php.net/>

¹⁹ <https://tekshapers.com/blog/Why-PHP-is-Good-Choice-for-Web-Development>

Finally, Apache is the most popular Web server choice for storing, processing and delivering web pages to clients (adopted in 90% of platform cases). According to its official website²⁰, the “*Apache HTTP Server Project is an effort to develop and maintain an open-source HTTP server for modern operating systems including UNIX and Windows. The goal of this project is to provide a secure, efficient and extensible server that provides HTTP services in sync with the current HTTP standards.*” Varnish Cache (used in combination with an Apache Web server by FAO’s Agroecology Knowledge Hub and Family Farming Knowledge Platform) is “*a web application accelerator*” that can be installed “*in front of any server that speaks HTTP and configure it to cache the contents*”. Nginx²¹, adopted by Agrisource, is a free and open-source Web server software solution.

Finally, by taking account of the fact that investigated platforms of international organisations relate to the domain of Agriculture, it is useful to investigate the structure of the databases for storing agricultural data. Such an investigation and analysis require to draw upon conceptual models providing details about domain-related entities and their relations. However, this kind of documentation is not easy to be freely found on the web. Given that, representatives of the organisations that have developed and maintain the investigated platforms were contacted and asked to provide relevant documentation. As an outcome of this request, database design – related documents have been provided for NEFERTITI, Organic Eprints, Oppla and Valerie. After a thorough study of provided documents, it has been concluded that only input from NEFERTITI and Organic Eprints appeared to be of some relevance to the scope of EURAKNOS. As a further comment, it can be said that some database models provide not only descriptions of how data is structured but also interaction-related details (e.g. user roles, session-related details, etc.). In the case of the Organic Eprints database, the core entity is “tool” which is associated with “tool creators”, “tool country”, “tool subjects”, “tool theme”, “tool type”, “tool document”, “tool document language”, “tool rating” and “tool keywords”. This modelling decision can be useful for EURAKNOS and be regarded as a point of reference when modelling properties of TN outputs. As far as NEFERTITI is concerned, entities that have been identified to be relevant to EURAKNOS-related conceptual modelling are “users” and “farm” with “users” being associated with “role”, “country” and “language”. A conclusion that can be drawn from the above relates to the importance of adequately modelling content language given that data needs to be available in different languages. The language aspect is also core to the design of Valerie ontology, where synonyms of ontology terms are provided in a range of languages.

3.2.3 Platform management

The Golden Circle model represents the three management levels (i.e. normative, strategic and operative management) of an organisation or system (see Figure 18). It starts with the “Why” (i.e. the vision, mission, values, intention and/or goals). Moving outwards, the “How” describes the process(es) and strategies to realise the Why, connecting it with the “What”, i.e. the impacts, outputs, outcomes, tangible products, services or processes offered (Lewrick et al., 2017). Table 16 shows the Why, How and What of the international platforms.

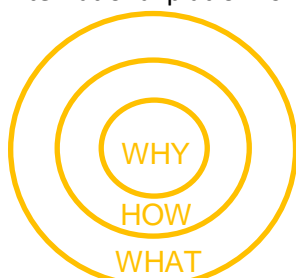


Figure 18: Golden Circle

As shown in Table 16, the investigated farming e-KRPs pursue two main objectives:

²⁰ <https://httpd.apache.org/>

²¹ <https://www.nginx.com/>

- Fostering networking and exchange among the users (highlighted in turquoise); and
- Providing access to relevant knowledge and information (highlighted in yellow).

All platforms except for the Family Farming Knowledge Platform aim at boosting interaction and exchange among users, reflected in the following intentions: “facilitating interactions, communication and dissemination”, “increasing connectivity”, “connecting actors”, “enhancing peer-to-peer learning”, “enabling cross-sectoral learning”, “promoting partnerships” and/or “simplifying sharing of knowledge or experience”. FarmDemo and the Agroecology Knowledge Hub are exclusively dedicated to this purpose whereas the rest of the platforms (n=9) also explicitly describe providing or opening access to knowledge, information, exemplary solutions and tools as a core objective. This includes helping users to find or obtain suitable materials and bringing information and resources to users.

Table 16: Why of the international platforms

Platform	Why (vision/purpose of the platform)
Ask-Valerie ²²	<ul style="list-style-type: none"> • Facilitating interactions between researchers and practitioners • Bringing new knowledge into the process
FarmDemo ²³	<ul style="list-style-type: none"> • Enhancing peer-to-peer learning • Increasing the connectivity between actors involved in on-farm demonstrations as a tool to boost innovation uptake
EIP-AGRI ²⁴	<ul style="list-style-type: none"> • Contributing to the EU’s strategy “Europe 2020” for smart, sustainable and inclusive growth through fostering competitive and sustainable farming that “achieves more and better from less”, and to ensuring a steady supply of food, feed and biomaterials • Connecting innovation actors to speed up innovation • Providing a one-stop-shop for agricultural innovation
Organic Farm Knowledge ²⁵	<ul style="list-style-type: none"> • Helping improve production by providing access to tools and resources • Serving as a virtual meeting place for cross-border learning
Agroecology Knowledge Hub (FAO) ^{26,27}	<ul style="list-style-type: none"> • Supporting transitions from conventional agriculture to agroecological approaches • Promoting inter-sectoral partnerships and South-South Cooperation on agroecology (i.e. the “integration of science, practices and social processes”) by fostering participatory exchange of experiences and knowledge across territories, countries and regions • Supporting relevant stakeholders through knowledge exchange and transfer
Family Farming Knowledge Platform (FAO) ²⁸	<ul style="list-style-type: none"> • Identifying opportunities and gaps to promote a shift towards more equal and balanced development • Better informing and providing knowledge-based assistance to policymakers, family farmers’ organisations, development experts and stakeholders in the field and at grassroots level
PANORAMA Solutions ²⁹	<ul style="list-style-type: none"> • Documenting and promoting examples of inspiring, replicable solutions across a range of conservation and sustainable development topics • Enabling cross-sectoral learning and inspiration
Access Agriculture ³⁰	<ul style="list-style-type: none"> • <i>Vision</i>: improved livelihoods of rural communities through sustainable agricultural practices and entrepreneurship • <i>Mission</i>: promoting innovations in sustainable agriculture and rural enterprises through capacity development and South-South exchange of quality farmer-to-farmer training videos in local languages

²² https://www.ask-valerie.eu/#/en_EN/about

²³ <https://farmdemo.eu/doc/project>

²⁴ <https://ec.europa.eu/eip/agriculture/en/about>

²⁵ <https://organic-farmknowledge.org/about>

²⁶ <http://www.fao.org/agroecology/knowledge/en/>

²⁷ <http://www.fao.org/agroecology/policies-legislations/en/>

²⁸ <https://www.accessagriculture.org/>

²⁹ <https://panorama.solutions/en/about-panorama-solutions-healthy-planet>

³⁰ <https://www.accessagriculture.org/>

Platform	Why (vision/purpose of the platform)
	<ul style="list-style-type: none"> Why: helping agricultural advisory services find/develop suitable training materials to respond to farmers' diverse demands for advice
Oppla ³¹	<ul style="list-style-type: none"> Simplifying how we share, obtain, and create knowledge to better manage the environment
Agrisource ³²	<ul style="list-style-type: none"> Encouraging the transition to a more resilient agriculture as main criteria for success (objectives: mitigating greenhouse gas emissions, adapting to climate change) Opening access to knowledge/information as a key feature for successful transitions Promoting relevant, efficient sharing of experience Bringing the best information and resources directly to farmers and agricultural producers as primary targets
Organic Eprints ³³	<ul style="list-style-type: none"> Facilitating the communication about organic research Improving the dissemination and impact of research findings Documenting the research effort

Closely related to the Why, the platforms draw on two main strategies to achieve their goals, as shown in Table 17:

- Providing access to relevant information (highlighted in yellow); and
- Promoting knowledge sharing, exchange and networking (highlighted in rose).

All 11 platforms function as a knowledge reservoir. Users can browse the platforms and access and discover resources, e.g. via the search function and different categories.

The second most widely employed strategy is functioning as a network. Except for Ask-Valerie, which only functions as a knowledge reservoir, all platforms provide an intranet or forum for the user community to share knowledge and experiences, innovations and solutions while other platforms, rather than stimulating networking among the users themselves, allow users to submit solutions directly to the platform administrators or coordinators who will then review it before uploading it.

Table 17: How of the international platforms

Platform	How (processes, strategies)
Ask-Valerie ³⁴	<ul style="list-style-type: none"> Helps users find relevant agriculture and forestry information Makes innovation from European research accessible to end users (farmers, foresters and advisors)
FarmDemo ³⁵	<ul style="list-style-type: none"> FarmDemo presents agricultural demonstration activities across Europe. Users can browse the EU-wide inventory of demonstration farms, register on the Hub to showcase their farm and demonstration activities, discover demonstration farm networks active in their region, find online tools, stories and video tutorials, and explore tips and tricks to improve their demonstrations. Demo farmers and innovation actors can join the community.
EIP-AGRI ³⁶	<ul style="list-style-type: none"> Brings together innovation actors (farmers, advisors, researchers, businesses, NGOs etc.) in agriculture and forestry at EU level Users can voice research needs, discover funding opportunities for innovation projects, look for partners, and share innovative project ideas and practices as well as information about research and innovation projects by filling in e-forms. EIP-AGRI Service Point facilitates networking activities and enhances communication, knowledge sharing and exchange through conferences, Focus Groups, workshops, seminars and publications.

³¹ <https://oppla.eu/about>

³² https://www.agrisource.org/en/7_24/5c332ea507c805cd14cf4363/projet-agrisource.html

³³ <https://orgprints.org/about.html>

³⁴ https://www.ask-valerie.eu/#/en_EN/about

³⁵ <https://farmdemo.eu/doc/project>

³⁶ <https://ec.europa.eu/eip/agriculture/en/about>

Platform	How (processes, strategies)
Organic Farm Knowledge ³⁷	<ul style="list-style-type: none"> Provides access to a wide range of tools and resources about organic farming that can help improve production Promotes knowledge exchange among farmers, farm advisors and scientists
Agroecology Knowledge Hub (FAO) ^{38,39}	<ul style="list-style-type: none"> Highlights and shares relevant knowledge on agroecology and provides updates on current states of knowledge (databases are constantly updated) Engages civil society organisations, farmers and farmers' organisations, governments, academia and researchers Interested users can submit relevant content on agroecology and/or information about themselves and their work. To be published, submitted content must meet content requirements and be relevant for agroecology, factual, notable, verifiable with cited sources, neutrally presented.
Family Farming Knowledge Platform (FAO) ⁴⁰	<ul style="list-style-type: none"> Gathers, integrates and systematises existing digitised quality information on family farming from all over the world Individual users can submit content. Interested entities can register to become a regular contributor. Individual users and interested entities can register to become part of the network.
PANORAMA Solutions ⁴¹	<ul style="list-style-type: none"> Promotes examples of inspiring, replicable solutions across a range of conservation and development topics Practitioners can share and reflect on their experiences, increase recognition for successful work and learn with their peers how similar challenges have been addressed around the world.
Access Agriculture ⁴²	<ul style="list-style-type: none"> Hosts training videos for agricultural advisory services in developing countries Supports online viewing, downloading, and physical distribution of quality agricultural training videos in 14 categories Users can find and download videos, audio files and related written material for most videos which they can access by category. Users can register/log in.
Oppla ⁴³	<ul style="list-style-type: none"> Provides a knowledge marketplace Users can join the community.
Agrisource ⁴⁴	<ul style="list-style-type: none"> Navigates at the crossroad of knowledge and network Farmers, businesses, research laboratories, governments, associations, think tanks etc. create pages for their organisation, projects they contribute to, knowledge and experience they consider useful to share with the community. Users can upload documents that also contribute to knowledge sharing (short description, possibility for rating from community). Relational mapping: links between profiles enable the Agrisource engine to create a virtual map showing the networks of Players and Innovation. Specialised social network to share news, events and debates with the whole community
Organic Eprints ⁴⁵	<ul style="list-style-type: none"> Providing open access to electronic documents related to research in organic food and farming Offering information on organisations, projects and facilities in the context of organic farming research Designed to facilitate international use and cooperation

³⁷ <https://organic-farmknowledge.org/about>

³⁸ <http://www.fao.org/agroecology/knowledge/en/>

³⁹ <http://www.fao.org/agroecology/policies-legislations/en/>

⁴⁰ <https://www.accessagriculture.org/>

⁴¹ <https://panorama.solutions/en/about-panorama-solutions-healthy-planet>

⁴² <https://www.accessagriculture.org/>

⁴³ <https://oppla.eu/about>

⁴⁴ https://www.agrisource.org/en/7_24/5c332ea507c805cd14cf4363/projet-agrisource.html

⁴⁵ <https://orgprints.org/about.html>

Regarding the What of the selected international platforms (see Table 18), the actual resources provided, while different in focus, cover a broad range of formats which were already described in section 3.2.2. Therefore, the focus here will be on the organisations and/or projects behind the platforms.

As indicated in Table 18, the platforms Ask-Valerie, FarmDemo, EIP-AGRI, Organic Farm Knowledge, Oppla, and Agrisource all receive funding from the EU or European institutes, with most of them having been built within the framework of EU projects under Horizon 2020. The Agroecology Knowledge Hub and the Family Farming Knowledge Platform are hosted by FAO while many other platforms are joined initiatives established and/or maintained by different parties. The partnership initiative PANORAMA Solutions for instance was jointly implemented by different international organisations, including UN Environment, and received funding from three agencies. Access Agriculture represents a non-profit organisation and collaborates with many communication professionals worldwide. Organic Eprints is a joint initiative by ICROFS and FiBL, assisted by many national editors.

Table 18: What of the international platforms (organisations and/or projects behind)

Platform	What (organisations and/or projects behind)
Ask-Valerie ⁴⁶	<ul style="list-style-type: none"> • Launched by European research project VALERIE • <i>Planned to enable end users to share knowledge, experience and views with their peers across Europe in the future</i>
FarmDemo ⁴⁷	<p>Collaboration of 3 European projects that are funded under the EU's framework programme for research and innovation Horizon 2020 and bring together 45 regional hubs of demo farmers and innovation actors (advisors, cooperatives, NGOs, industry, education, researchers, and policymakers):</p> <ul style="list-style-type: none"> • AgriDemo-F2F and PLAID develop a geo-referenced online inventory of demonstration farms and build an online FarmDemo-Hub community. • NEFERTITI establishes 10 interactive TNs covering 3 main agricultural sectors: animal production, arable farming, and horticultural production.
EIP-AGRI ⁴⁸	<ul style="list-style-type: none"> • Interactive website as “one-stop-shop for agricultural innovation” • Professional team supports the network run by the European Commission (DG AGRI) with the help of the EIP-AGRI Service Point • <i>Key building blocks:</i> project-based OGs funded under the Rural Development Programmes, and multi-actor projects and TNs supported by the H2020 Programme • <i>Future functionalities for OGs and European funds managing authorities once the programmes start</i>
Organic Farm Knowledge ⁴⁹	<ul style="list-style-type: none"> • Set up by the International Centre for Research in Organic Food Systems (ICROFS) in the framework of the OK-Net Arable project; currently developed further by EU project OK-Net EcoFeed • Both projects are coordinated by IFOAM EU and funded under Horizon 2020. • A board in which all current partners are represented oversees strategic development and quality criteria, securing maintenance and continuity. • <i>Cooperation with other projects that are expected to join and expand the knowledge available on the platform</i>
Agroecology Knowledge Hub (FAO) ^{50,51}	<ul style="list-style-type: none"> • AgroecologyLex: developed by FAO with FAOLEX, the worldwide largest database on policies and legislation related to agriculture and renewable natural resources; specialised on legal frameworks, policies and programmes concerning agroecology in different countries • FAO reserves the right to review, edit and adapt submissions.

⁴⁶ https://www.ask-valerie.eu/#/en_EN/about

⁴⁷ <https://farmdemo.eu/doc/project>

⁴⁸ <https://ec.europa.eu/eip/agriculture/en/about>

⁴⁹ <https://organic-farmknowledge.org/about>

⁵⁰ <http://www.fao.org/agroecology/knowledge/en/>

⁵¹ <http://www.fao.org/agroecology/policies-legislations/en/>

Platform	What (organisations and/or projects behind)
Family Farming Knowledge Platform (FAO) ⁵²	<ul style="list-style-type: none"> Hosted by FAO FamilyFarmingLex: database developed with FAOLEX, a comprehensive and up-to-date legislative electronic collection of national laws and regulations on food, agriculture and renewable natural resources Active collaboration of contributors including governments, United Nations (UN) agencies, farmers' organisations, research centres and academia Single access point for updated international, regional and national information related to family farming
PANORAMA Solutions ⁵³	<ul style="list-style-type: none"> Partnership initiative to which different thematic disciplines and communities, represented through portals, contribute. Jointly implemented by international organisations GIZ, IUCN, UN Environment, GRID-Arendal, Rare, IFOAM – Organics International and UNDP Development partners: BMU, GEF, Global project Mainstreaming Ecosystem-based Adaptation: EbA Solutions 558 PANORAMA Solutions, 464 solution providers <i>Additional themes and new partners are welcome as PANORAMA evolves.</i>
Access Agriculture ⁵⁴	<ul style="list-style-type: none"> Non-profit, authoritative organisation that showcases agricultural training videos in local languages Collaboration with more than 200 communication professionals worldwide to develop local language versions, and to mass multiply and disseminate the videos
Oppla ⁵⁵	<p>Open EU Repository of NBS; joint activity of OPERAs and OpenNESS projects, funded by the European Commission's FP7 Programme, to which over 60 universities, research institutes, agencies and enterprises are contributing; membership is free and includes access to the following services:</p> <ul style="list-style-type: none"> Ask Oppla: crowd-sourced enquiry service Oppla marketplace: "knowledge supermarket" Oppla community: "easy-to-use system for networking"
Agrisource ⁵⁶	<ul style="list-style-type: none"> Project carried out by the French research organisations INRA and CIRAD, and funded by the European Climate-KIC Open online agriculture knowledge source Administration team; diverse content provided by worldwide community Player pages for entities that contribute to solving the problematics of climate change in agriculture (short description of the Player's activity, personal newsfeed, contact form, geolocation, relational information – relations to other Players/ Projects) Project profile for time-limited initiatives that result in Players leading specific actions, e.g. a European research project or a local initiative from farmers Innovation pages: created by players and projects for techniques, solutions, experiments and ideas from the agricultural community
Organic Eprints	<ul style="list-style-type: none"> Developed and operated since 2002 by the International Centre for Research in Organic Food Systems (ICROFS) Research Institute of Organic Agriculture (FiBL) joined the project in 2003 as first international partner with editorial responsibilities for the German language region and responsibility for the German language version of Organic Eprints Additional national editors (currently in 26 countries) assist in reviewing new eprints

As the EURAKNOS e-KRP will also be built as part of an EU project, next to defining clear objectives and strategies/processes (Why, How), it is important to guarantee long-term maintenance through allocating appropriate resources and funding (What).

⁵² <https://www.accessagriculture.org/>

⁵³ <https://panorama.solutions/en/about-panorama-solutions-healthy-planet>

⁵⁴ <https://www.accessagriculture.org/>

⁵⁵ <https://oppla.eu/about>

⁵⁶ https://www.agrisource.org/en/7_24/5c332ea507c805cd14cf4363/projet-agrisource.html

3.2.4 Results from the consultation of platform representatives

In this section, the results from the consultation of the platform representatives (hosts, administrators and/or coordinators of the international platforms) are presented. Nine out of 11 platform representatives contacted responded to the consultation (see Annex 5.1-5.9 for the completed questionnaires).

Most of these nine international platforms target farmers and farm advisors (most important target group for four platforms, respectively), whereas less target policymakers (in first or second place for four platforms in total) and teachers/trainers (in first or second place for three platforms in total; see Figure 19). Family Farming Knowledge Platform and Organic Eprints mention that in addition to the predefined target groups, they also target research and academia. For Organic Eprints, researchers, students and administrators are even the main target group.

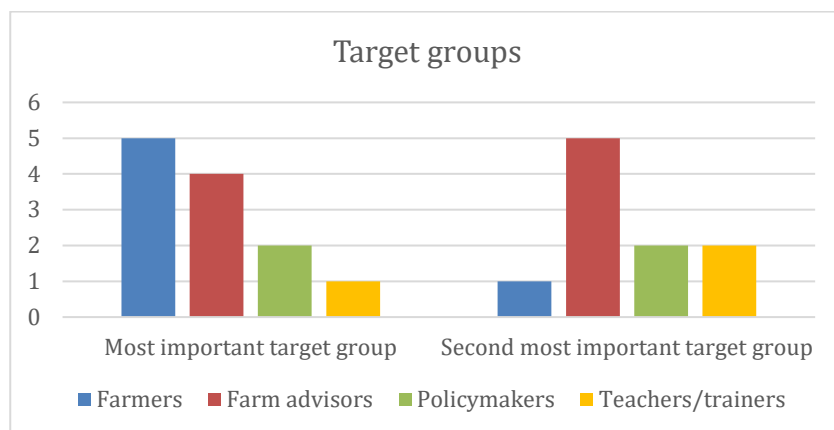


Figure 19: Most important and second most important target groups of the international platforms

Regarding the main goals, in line with the Why identified by means of the desk-top study, the international platforms focus on fostering knowledge sharing/exchange and networking among the users (8 platforms) as well as on providing or improving access to relevant knowledge and information (7 platforms). Six platforms (EIP-AGRI, Organic Farm Knowledge, Family Farming Knowledge Platform, Oppla, Agrisource and Organic Eprints) consider both objectives as their main goals.

In order to evaluate the platform's success, all international platforms measure at least one key performance indicator (KPI). EIP-AGRI measures all six predefined KPIs (as well as others, e.g. the time users spend on the page). Organic Farm Knowledge measures five (plus the number of followers on social media), Family Farming Knowledge Platform four and FarmDemo three of the indicated KPIs. The other international platforms measure less than three KPIs.

The most frequently measured KPI is the number of contents, which varies quite significantly. FarmDemo features 992 farms, 176 actors and 249 events. EIP-AGRI provides 4,254 contents, Organic Farm Knowledge 196 tools and 60 news items. Agroecology Knowledge Hub counts 1,313 contents for the database and 160 in the case of AgroecologyLex. Oppla gathers over 500 products and 250 case studies. Agrisource showcases 585 players, 122 projects, 84 documents and 68 innovations (as of December 2019). Organic Eprints counts 1,808 contents for the last 1-year period. Likewise, the number of visits, measured by seven platforms, varies. FarmDemo counts 16,744 visits from 10/2018-01/2019, EIP-AGRI 187,524 visits from 10/2018-09/2019, Organic Farm Knowledge 12,900 since 01/2019, Agroecology Knowledge Hub 115,000 from 10/2018-10/2019, Oppla 40,000+ yearly visits and Agrisource 16,959 users and 17,536 sessions from 01-10/2019.

Only two international platforms measure success in terms of user satisfaction with the platform and/or contents. EIP-AGRI conducted a web user survey and users of Organic Farm Knowledge can rate the content of the platform. Four platforms are considering user feedback: EIP-AGRI via the web user survey; users of Organic Farm Knowledge can comment on the content of the platform (with DISQUS, Facebook and Twitter); Agroecology Knowledge Hub provides a dedicated email address where users can provide

feedback and suggestions; and Family Farming Knowledge Platform receives feedback via emails and surveys.

Figure 20 shows the frequency with which the international platforms measure predefined KPIs.

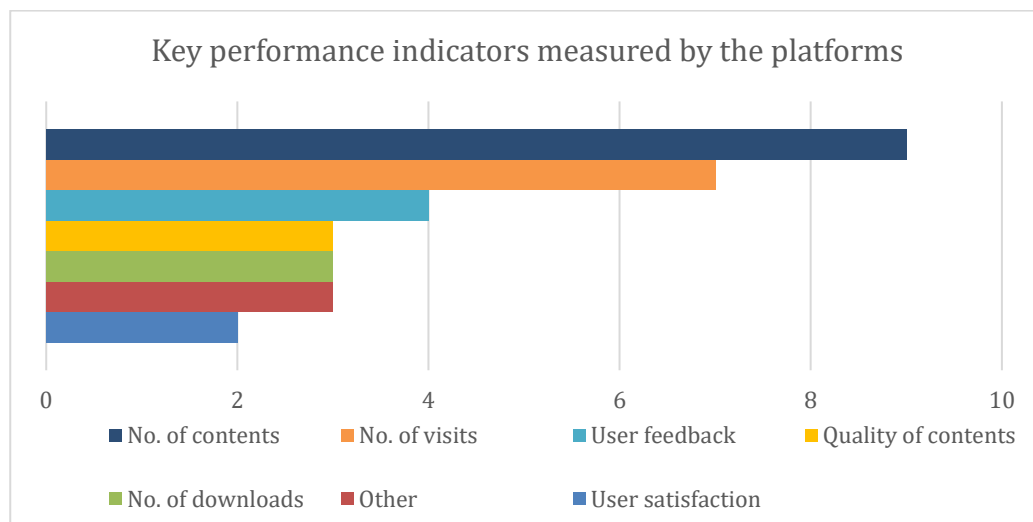


Figure 20: Key performance indicators measured by the platforms

In addition to KPIs, some platform representatives elaborated how they reach their goals:

- EIP-AGRI considers website development as part of the overall communication strategy, which is translated into yearly communication action plans that are monitored and evaluated. The results from a web user survey were used to further improve the website.
- Organic Farm Knowledge has no clear definition of success, nor a framework to measure it. Goals are considered reached if there is a high number of quality contents (tools) and visitors on the platform, and if the content is intensively shared/discussed on social media.
- For the Agroecology Knowledge Hub, the Agroecology team is evaluating content and effectiveness of the platform. So far, goals have been reached, but no survey on user satisfaction has been conducted. While the quality of contents is not measurable, contents are technically cleared by the Agroecology team.
- Next to the number of visits, the Family Farming Knowledge Platform considers synergies created and user feedback provided through periodic surveys as most reliable performance indicators.
- Oppla views success as engaging and expanding the community, increasing the number of case studies and products from around the world and generating income and supporting employment.
- For Agrisource, success means complementarity of action between (i) a powerful online tool for knowledge sharing and matchmaking, and (ii) a direct field animation provided by the networks of players involved. They measure success through audiences and contents added to the online platform, and the connection with actual networks of farmers, researchers and professionals in the field.

In general, the platform representatives evaluate the international platforms positive, but also identify certain weaknesses, such as the need to expand content and add languages in the case of Ask-Valerie. EIP-AGRI states that it “has come a long way since 2013 and now scores as one of the top results in search engines”. It gathers a lot of content, most of which is user generated. Since launching in 2016, the success of Oppla has exceeded all expectations. The SME has grown in strength, employing new staff, becoming financially self-sufficient and supporting European relations with other regions, most recently Latin America. Agrisource has the potential to become a powerful tool for collaboration for climate action. Its unique features have raised very positive feedback from its users and visitors. However, it is key to the success of such an online device to be supported by field networks and animation. In the current situation, the project team has not yet succeeded in involving a community of practitioners. Organic Eprints is

described as “an amazing tool that has survived since 2002 with only basic funding and through the enthusiastic work of many voluntary national editors”. It provides open access to thousands of documents and enables users to request a copy of those with restricted access.

Strong points include the quantity and quality of the content (open source, user generated, relevant for users, variety of data, available in different languages, specific information based on research), the quality of the search function as well as unique features (e.g. relational mapping in the case of Agrisource). Similarly, weak points include the quantity and quality of the content (e.g. lack of content; low number of documents accessed and thematic domains covered by ontology and document base; too many pages; not everything in the database is publicly available) and the search function (e.g. ranking algorithm and query editor to be improved) as well as interoperability (e.g. integration with existing knowledge platforms and social media in the case of EIP-AGRI). Organic Eprints acknowledges the effort it takes to upload papers (no batch upload possible).

With regards to the search options provided, most platform representatives are partly satisfied and consider the users partly satisfied (Ask-Valerie, EIP-AGRI, Organic Farm Knowledge, Oppla, Agrisource and Organic Eprints). Only FarmDemo is fully satisfied, and only Agroecology Knowledge Hub is not satisfied.

Strong points mentioned by the platform representatives are rather platform-specific and include an efficient search function, a multi-language search facility and contents, the quality and quantity of database and the possibility to search within all fields and to save a good search. Ask-Valerie for instance is based on a domain ontology which enables interactive tuning of the query and offering of suggestions (related terms and hierarchical terms, i.e. parent or child terms) to tailor the query to user needs, thus increasing the relevance of hits. Text snippets from retrieved docs are offered and ranked. In the case of Agrisource, the “all-in-one” search engine is simple to use, and therefore very accessible. Multiple entry points are available to the users, including the classic search engine, geographical mapping of players and projects, and relational mapping of the platform’s contents which is a unique feature of Agrisource.

Needs for improvement regarding the search options provided include conformity with evolving user needs in the case of the EIP-AGRI project database and a higher level of intuitiveness in the cases of Agroecology Knowledge Hub and Agrisource. Organic Eprints acknowledges that the simple search may be too simple while the advanced search might too complicated.

Table 19 shows the added value of the international platforms as indicated by the representatives, relating to the functioning of the platform as a knowledge reservoir and/or network.

Table 19: Added value of the international platforms

Platform	Added value
FarmDemo	Demonstration of knowledge and best practices to farms, networks and regions outside the project
EIP-AGRI	<ul style="list-style-type: none"> • Builds on growing and consolidating offline community • Creates links between relevant policy fields • Bridges research and practice as well as policy
Organic Farm Knowledge	<ul style="list-style-type: none"> • Only EU-wide knowledge reservoir for organic farming • Brings together the knowledge around organic farming practices scattered across countries in one platform, facilitating access for farmers in all countries
Agroecology Knowledge Hub (FAO)	<ul style="list-style-type: none"> • FAO website dedicated to agroecology • Important tool to spread knowledge on agroecology among policymakers • Reaches many countries • Most of the static content is translated into the 6 UN official languages.
Oppla	<ul style="list-style-type: none"> • Supports EU-funded environmental research achieving real benefits for society • Enables scientists, policymakers, businesses and the public to access information in ways not previously possible that non-specialists can engage with

Platform	Added value
	<ul style="list-style-type: none"> Content is free and open, following the principles of co-creation and crowdsourcing
Agrisource	<ul style="list-style-type: none"> Open and intuitive access to a representation of the existing collaborations between players, including common topics which could lead to new collaborations Major tool for open dissemination of project results and benchmarking of ongoing initiatives
Organic Eprints	<ul style="list-style-type: none"> Facilitates finding organic publications (excluding those about organic chemistry) Lots of “grey” literature which might be difficult to find otherwise Permanent links to documents Dissemination aimed at end users, but based on research

Most platforms consider their unique content that is made easily accessible as major added value. Regarding content sources, the content of five platforms stems from own creation and/or was transferred from external open sources. Six platforms allow users to contribute contents (see Table 20 and Figure 21).

Table 20: Content sources of the international platforms

Platform	Content sources
Ask-Valerie	<ul style="list-style-type: none"> Mostly transferred from external open source Some own creation (originally anyone could contribute)
FarmDemo	<ul style="list-style-type: none"> Own creation Other (FarmDemo Hub)
EIP-AGRI	<ul style="list-style-type: none"> Own creation Anyone can contribute: depends on the type of contents – some content types are open to contributions from all website visitors, others only for registered users, and some are own contribution or shared from other databases Transfer from existing databases
Organic Farm Knowledge	<ul style="list-style-type: none"> Own creation Anyone can contribute Working together with H2020 TNs and multi-actor projects (see list here) that provide content for the platform
Agroecology Knowledge Hub (FAO)	<ul style="list-style-type: none"> Own creation (development of pages, content on static pages) Database and policy database based on external sources Anyone can contribute (people can share content with the organisation and upload of material in database after evaluation)
Family Farming Knowledge Platform (FAO)	Transferred from external open source
Oppla	Anyone can contribute
Agrisource	Anyone can contribute
Organic Eprints	Anyone can contribute

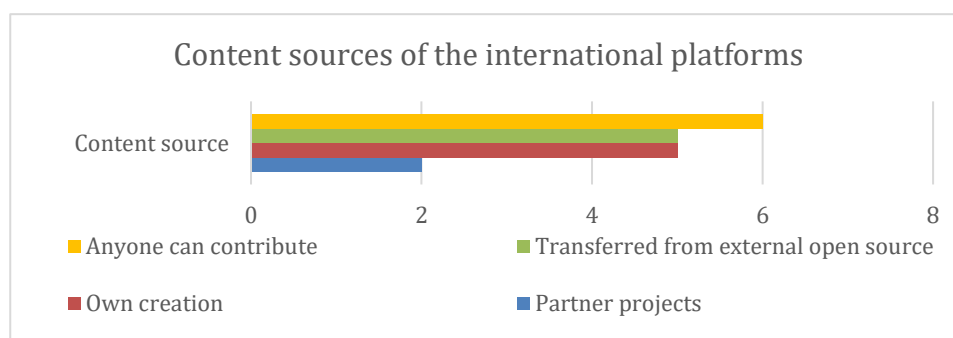


Figure 21: Content sources of the international platforms

Figure 22 shows the frequency with which the international platforms validate the content quality. Except for Agrisource, all have certain measures/procedures in place to ensure the content provided is of high quality, in particular if users themselves are contributing contents. Most (6) platforms check the completeness of the content and connecting metadata, five platforms validate and edit/correct contents if needed and four platforms check the reliability/trustworthiness of the source. In the case of Agrisource, the quality control so far relies on the good will of the users who would send an email to flag illicit contents to the administrators.

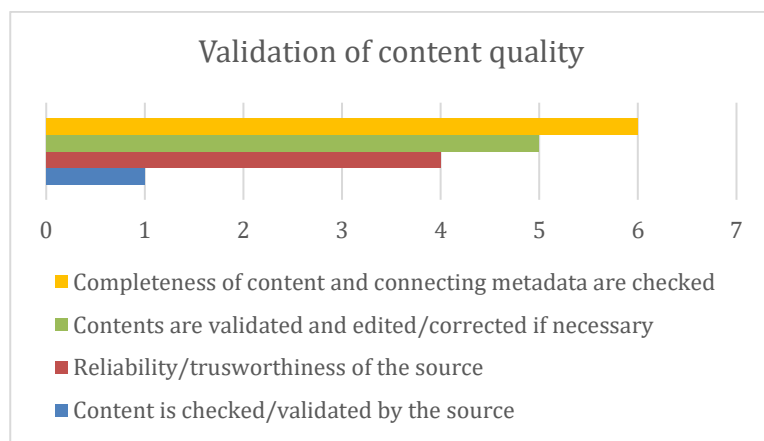


Figure 22: Validation of content quality

Maintenance and sustainability are generally ensured by the responsible organisation, by means of dedicated resources to web management, technical development and maintenance (annual contracts with external service providers in the case of EIP-AGRI), and in some cases partly by means of funding through collaborating H2020 projects (Organic Farm Knowledge and Agrisource) or a foundation trust fund (Agroecology Knowledge Hub). Oppla has grown into a sustainable SME. The business model for Oppla combines grant funding with paid-for services made available to projects and organisations on demand (membership of Oppla and access to its content will always remain free of charge).

As shown in Figure 23, all platforms except Agrisource interact with other platforms. Five platforms can fully automatically interact with other platforms, four partly automatically and one manually. In four cases, the reason for the interaction is transferring contents from and to other platforms. Three other platforms only transfer contents from other platforms.

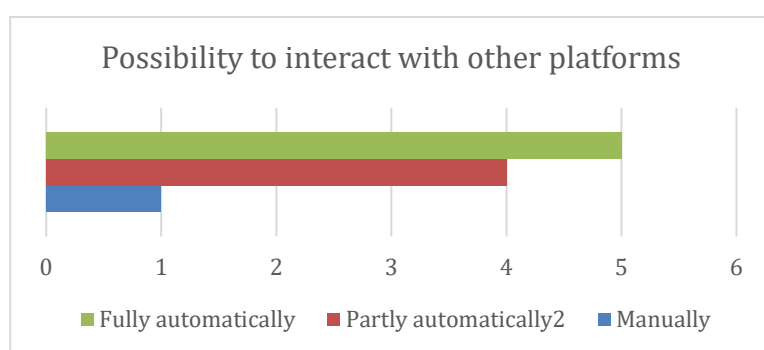


Figure 23: Interoperability of the international platforms

In the future, Ask-Valerie will monitor the number of visits and downloads in the future (now only number of documents) and aims to expand the number of documents accessed to ensure that most users will find what they need, as well as the ontology, with a separate category of agri-technical innovations (solutions to practical problems), and to prioritise documents (in ranking) that include these problem-solution pairs. All TN contents are to be added soon. Similarly, in the case of Organic Farm Knowledge, other themes besides arable cropping still need to be filled with material. The original Oppla platform, which has been in development since 2016, will shortly be replaced with a new and improved version that will include

functionality enabling other platforms to integrate more closely with Oppla and each other, helping to drive forward the concept of nature-based solutions to benefit societies across Europe and around the world. Agrisource might promote and connect with other platforms, more dedicated to specific topics.

3.2.5 Matching of user needs and international platform offers

Based on the findings from the desk-top study of the 11 international platforms and the consultation of platform representatives, it was evaluated if the offers provided by the platforms meet the needs of the selected user groups for specific functionalities and materials defined in section 3.1.2 (see Table 21).

- The information provided by Ask-Valerie is not very recent and the searched contents are not always available. Frequently, the content is already removed from the link displayed. Therefore, it only meets the users' needs "more or less". Apart from that, Ask-Valerie provides useful information in a standardised format.
- In the case of FarmDemo, the contents are up to date and useful, in an easily understandable format, but the topic and format only fulfil the needs of farmers, whereas they are less useful for other user groups.
- The EIP-AGRI webpage offers contents under different menu points, which makes finding a specific material rather difficult for end users. Up-to-date information that may be used by all categories of users is available, but it is not exactly what the users need.
- Organic Farm Knowledge provides updated, practical information especially for farmers and advisors. However, the usefulness of these contents seems to be limited to teachers and for policymakers.
- The Agroecology Knowledge Hub (FAO) offers a broad range of contents that can be used by farmers, advisors, teachers and policymakers. Comprising a collection of legal frameworks, policies and programmes, the contents may even be most suitable for the latter group. While practitioners can also find contents interesting for them, the contents seem to be more valuable for advisors and teachers who may more easily search for interesting information among a big amount of contents. For farmers, this information is more difficult to find. Furthermore, the geographical coverage is worldwide, and many of the contents are not applicable to European users, yet farmers need the knowledge to be tailored to their context.
- The Family Farming Knowledge Platform (FAO) offers a great variety of different kinds of material that are up to date and of a high quality. The platform puts a lot of effort in operating and maintaining the information base. Every user group can find the type of content that suits them best. Nevertheless, for unexperienced users, it can be difficult to find the right answers to their specific questions.
- On Oppla, every user can find what is useful for them. The contents are standardised, hence every user group can find their preferred type. The contents of PANORAMA Solutions are very specific, standardised and easy to search, yet their usefulness is limited in the case of farmers as the main target group. Similarly, in the case of Agrisource, there are many standardised contents with a limited usability.
- In contrast, Access Agriculture is easy to access and provides easy-to-use videos, but the geographical focus is on developing countries, thus cannot be considered useful for European farmers, advisors, teachers and policymakers.

Table 21 shows that overall, most platforms meet the needs of farmers, in particular Organic Farm Knowledge, PANORAMA Solutions and FarmDemo, although none of the international platforms meets the practitioners' needs entirely. FarmDemo seems to only address the needs of farmers, not of the other three end-user groups. The two FAO platforms best meet the needs of policymakers who are simultaneously their most important target group. Apart from these two platforms as well as EIP-AGRI and Organic Farm Knowledge, policymakers do not appear to be very well served by the offers of the international platforms, thus might have potential as a target group of the EURAKNOS e-KRP.

Table 21: Matching of end-user needs and offers of the international platforms⁵⁷

Platform	Ask-Valerie	FarmDemo	EIP-AGRI	Organic Farm Knowledge	Agroecology Knowledge Hub (FAO)	Family Farming Knowledge Platform (FAO)	PANORAMA Solutions	Access Agriculture	Oppla	Agrisource
User needs										
<i>European farmers</i>										
Tailor-made, actionable knowledge	X	XX	X	XX	X	X	X	X	XX	X
Easy access to content	X	XX	X	XX	X	X	XX	XX	X	X
<i>European farm advisors</i>										
Rather tailor-made, comprehensive, transferable, up-to-date knowledge about recent policy and sector developments	OX	O	X	X	XX	XX	O	X	XX	X
Specific, local solutions for specific business and technical problems	X	XX	X	X	X	XX	X	X	XX	X
<i>Agricultural teachers/trainers</i>										
Broad range of transferable knowledge	XX	XX	X	X	XX	XXX	X	X	XX	X
Up-to-date knowledge on scientific results as well as practice, adapted to the target group and practitioners' needs	X	O	X	X	XXX	XXX	X	X	XX	X
Exemplary impactful formats?	X	O	XX	X	XX	XX	X	XX	X	X
<i>Agricultural policymakers</i>										
Standardised/generalised, evidence-based content	X	O	XX	XX	XXX	XXX	X	X	XX	X
Up to date knowledge to design new policies	OX	O	X	X	XXX	XXX	O	O	X	O
Implementable, relevant to their respective policy area	O	O	X	X	X	XX	X	O	X	X

⁵⁷ XXX: end-user needs are fully met by the platform offers; XX: needs are fulfilled; X: needs are partly fulfilled; O: not fulfilled

3.3.1 Screening and rating of national platforms

The mapping of national platforms produced 22 initiatives (see list in Annex 2 and Table 22), five of which were studied more in depth. Only selection criterion 1c (language) was adapted in accordance with the purpose of national platforms, i.e. providing knowledge/materials to target groups in the specific country. The platform and/or contents should be available in the respective national language plus English.

Table 22: Fulfilment of the screening criteria⁵⁸

Platform at national and/or regional level	1a. 11/22	1b. 9/22	1c. 11/22	2a. 11/22	2b. 18/22	3. 12/22	4. 15/22
1. BIOEAST (CEE countries)	X	X	?	X	X	X	?
2. AHDB (UK)	X	X	X	X	X	X	X
3. Estonian Rural Network		X	X	?	X	X	X
4. Food and Farming Futures (UK)	X	X	X	X	X	X	X
5. TITRIS (Lithuania)	X	X	X	X	X	X	X
6. CICYT (Spain)	X	?		?	?	?	
7. SIGPAC (Spain)	X	?		?	X		?
8. INIA (Spain)				X	X	X	
9. BD Avicole (France)				?	?	?	X
10. API-AGRO (France)		X	X		X	X	X
11. AGRIFIND (France)		?		X	X	X	X
12. L'atelier paysan (France)	X		X	X	X	X	X
13. JoinData (Netherlands)		?	X	X	?	?	X
14. PastureBase Ireland	?		X	?	X	?	X
15. Teagasc NMP Online (Ireland)	?		X	?	X	X	X
16. ConnectEd (Ireland)	?		X	X	X	?	X
17. BLE Project search (Germany)	X	X		X	X		?
18. Netzwerk Ländliche Räume (Germany)	X	X	?	?	X	?	X
19. FISA (Germany)	X	X	X	?	X		?
20. Rural Cat (Spain)		?		X	X	X	X
21. AgroSens (Serbia)				?	?	?	X
22. EIP-AGRI Hungary	X	?	?	?	X	X	?

As shown in Table 22, most of the identified national platforms (18 out of 22) fulfil criterion 2b (i.e. thematic focus on agriculture/farming and broad range of knowledge) while only a few (9) platforms fulfil criterion 1b (i.e. open access to data/documents). Two of the five selected ones are from and for the UK; the three others (BIOEAST, ERN and TITRIS) are Central and Eastern Europe-based.

Content wise, there are great differences among the five examined national platforms. While TITRIS provides only three (not updated) contents to download, BIOEAST has several on offer. Food and Farming Futures (FFF), Estonian Rural Network, and in particular the Agriculture and Horticulture Development Board (AHDB) provide many different types of content, ranging from political declarations, conference and workshop materials in the case of BIOEAST to technical, research and learning materials in the case of FFF to significant databases on ERN. In the case of AHDB, up-to-date market information and different tools such as calculators can be found. Besides the most common PDF format, there are many video (MP4), picture (JPEG), text (DOC), and data table (XLS) contents on the five national platforms.

As for the international platforms, the initiatives that fulfil at least six (sub-)criteria were included in the further mapping and profiling.

⁵⁸ X, shaded green: criterion fulfilled; shaded red: not fulfilled; ?: not indicated/not enough information available

3.3.2 Mapping of the national platforms: content and functionalities

All reviewed national platforms enable users to access their contents without registration (see Table 25). However, there is no information on quality of the contents available on the investigated national platforms.

All platforms except TITRIS use social media (Facebook, Twitter and/or LinkedIn, AHDB also YouTube, see Table 25). No other channels have been detected, except for different kinds of events (e.g. conferences) and podcasts. Usually, an email address is available to contact the portals. BIOEAST, AHDB and ERN provide numerous contact persons with different expertise. Direct contact is moreover possible via social media, and TITRIS also provides an online chat function (see Table 25).

According to background information provided by the system administrators, ERN is an earlier construction. This could be the reason why there is no search function on the platform. Other platforms usually provide a keyword-based search function, partially with simple filters. In contrast, FFF comprises a very advanced search engine with many possibilities to find the exact content of interest the user is looking for in the very extended library.

The national platforms are generally available in English. In addition, some of them are also available in the respective national language. ERN provides a slightly different content in English as not all the contents are translated from Estonian (see Table 26).

All reviewed national platforms provide open access to the stored documents while only FFF enables external users to upload contents. However, in the case of some platforms, registration is possible for newsletters or content alerts (see Table 26). The registration makes it possible for the platform administrators to contact their users.

Table 23: Content provided by the selected national platforms

Platform	BIOEAST	AHDB	ERN	Food and Farming Futures	TITRIS
Content	<ul style="list-style-type: none"> • Other • Political declarations • Position papers • Roadmap • Studies • Vision paper • News 	<p>Huge amount of contents: news, newsletters, podcasts, articles, studies, books, analyses, strategies, learning materials, tools (e.g. Calculators), databases, events, market information, videos etc.</p> <ul style="list-style-type: none"> • Brexit-related collection: <ul style="list-style-type: none"> ◦ Horizon reports ◦ News ◦ Further information ◦ Tools ◦ Podcasts ◦ No-deal Brexit sector summaries ◦ No-deal Brexit case studies • Markets and prices <ul style="list-style-type: none"> ◦ Beef and Lamb ◦ Cereals and Oilseeds ◦ Dairy ◦ Pork ◦ Potatoes ◦ Retail and consumer insight ◦ AgriMarket Outlook • Knowledge Library 	<ul style="list-style-type: none"> • Publications, photo gallery, video gallery • Database of relevant RDP project examples • Database of local action groups • Events • Estonian site: many FADN-related information, studies, calculators and databases • Nordic-Baltic Leader Cooperation Award materials 	<ul style="list-style-type: none"> • Technical & business info • Research outputs, • Open learning materials • Organisations, • News items • Events 	<p>Limited number of contents (3), studies, innovation methodology in separated topics:</p> <ul style="list-style-type: none"> • Crop production • Livestock farming • Organic Farming, Agro-environmental protection • Forestry • Agricultural Economics, Business • Occupational Safety • Accounting, data accounting • Training, knowledge transfer methods • Rural development • Water management • Land use planning • Gardening • Vegetable growing • Other

Table 24: Formats/types of content provided by the national platforms

Platform	BIOEAST	AHDB	ERN	Food and Farming Futures	TITRIS
Formats/ types of content	<ul style="list-style-type: none"> • Contents generally in PDF • Sources of contents typically BIOEAST and related V4 events 	<p>Mostly PDF, DOC and video contents</p>	<ul style="list-style-type: none"> • Publications: PDF • Videos: MP4 • Picture gallery: JPEG • Project descriptions: DOC 	<p>Possible formats:</p> <ul style="list-style-type: none"> • Documents, e.g.: <ul style="list-style-type: none"> ◦ Portable Document Format files (PDF) ◦ Word-processed documents, e.g. DOC ◦ Presentation documents, e.g. PPT & PPS file types ◦ Spreadsheet files, e.g. XLS • Images, diagrams & photos, e.g. compressed raster image file, e.g. JPEG; GIF; PNG • Database applications, e.g. MDB • Mark-up & text files, e.g. <ul style="list-style-type: none"> ◦ Entire web page mark-up (HTM; HTML; XHTML) ◦ Structured data files (XML) ◦ Raw text files (TXT, CSV) 	<ul style="list-style-type: none"> • The providers of data are scientific institutions, farms, and other specialised producers. • PDF or Word form • Most of the contents in Lithuanian, and also translated to English

				<ul style="list-style-type: none"> • Sound files & audio-visual media files, e.g. <ul style="list-style-type: none"> ◦ Downloadable compressed audio file, e.g. mid; MP3; MP4; AVI ◦ Downloadable compressed video files, e.g. FLY; SWF; AVI; MOV; MP4; MPG; WMV; 3GP; RM • Some other bundled packages, e.g. ZIP archives • Streaming audio source links • Streaming video source links 	
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Table 25: Interactivity/channels of the national platforms

Platform	BIOEAST	AHDB	ERN	Food and Farming Futures	TITRIS
Intranet (registration)	Registration possible, but not needed to access contents	No intranet; no registration needed	Registration possible but not needed	Subscription is possible for newsletter & conference alerts. Registered users can: <ul style="list-style-type: none"> • Tag an item of interest • Comment on contents • Get alerts on new items of interest 	No registration needed
Social media	Twitter, LinkedIn	Facebook, Twitter, LinkedIn, YouTube	Facebook	Facebook, Twitter	No sign of social media on the platform
Other channels	Conferences, workshops	Conferences, events, podcasts			Online chat function
Contact	Email addresses for all contact persons available; direct communication via Twitter and LinkedIn possible	Email, phone of the centre, to offices, to managers to press centre, Brexit expert, etc.	Address, phone number, info email address, contact persons with email addresses	Email addresses of editor & administrator	Phone, address, email

Table 26: Access to content

Platform	BIOEAST	AHDB	ERN	Food and Farming Futures	TITRIS
Search function	Simple keyword search (no filters)	<ul style="list-style-type: none"> • Keyword general search • Filters by menu points • Filters for knowledge library, events and news (by sector, topic, keywords, etc.) 	No	Very advanced keyword search & filter	Keyword search; filter by: title, innovation type, subfield, EU funding
Languages	English	English, Welsh	Estonian, English (different, limited content)	English	English, Lithuanian
Open access to documents?	Yes, open to anyone	Free access to all contents	All contents available without registration	All contents available without registration	All contents available without registration
Registration/ submission of content	Registration possible, but submission of contents not possible for users	Subscription for Horizon reports, receiving updates by sectors	Registration not possible	<ul style="list-style-type: none"> • Registration possible for additional functions • Submission of contents possible in a very regulated and guided way 	<ul style="list-style-type: none"> • Registration for the newsletter possible • No submission of contents possible

FFF, TITRIS and BIOEAST have a clear and easy-to-understand internal structure whereas ERN appears to be very difficult, outdated and not very well organised. AHDB provides many different kind of contents and a rather complex structure, yet the content is well structured and easy to find, also for inexperienced users (see Table 27).

Table 27: Internal structure of the selected platforms

Platform	Internal structure	
BIOEAST	<ul style="list-style-type: none"> BIOEAST (about, partners) Governance Communication 	<ul style="list-style-type: none"> Contacts Events National Biohubs
AHDB	<ul style="list-style-type: none"> Brexit Marketing Markets and prices Knowledge library Tools 	<ul style="list-style-type: none"> Events News About AHDB Contact us
ERN	<ul style="list-style-type: none"> Agricultural research centre Leader cooperation awards Rural Network Leader 2016-2020 Leader 2009-2015 	<ul style="list-style-type: none"> Fisheries Groups Network 2009-2015 Events Publications Photo gallery Video gallery
Food and Farming Futures	<ul style="list-style-type: none"> Home Search Browse Events 	<ul style="list-style-type: none"> Guidelines Contact Us Subscribe
TITRIS	<ul style="list-style-type: none"> About Us Contacts Newsletter subscription 	<ul style="list-style-type: none"> Useful links Applied Innovation Research Repository

With regard to architecture of information in websites of investigated national rural networks, results of performed analysis are presented in Table 28 below. As far as organisation schemes are concerned, it can be concluded that all in all website cases there has been adoption of topical elements. In some cases (60% of investigated national rural networks), there is a combined use of topical and task-oriented elements. Only BIOEAST and ERN make exclusive use of topical organisation schemes. User navigation is based upon employment of global navigation systems (in all website cases) supplemented by local navigation systems in 80% of cases (the TITRIS NRN website does not make use of a local navigation system). All websites adopt also the contextual navigation system approach by providing in-text links directing to semantically similar webpages. Navigation is also supported by use of headings in each webpage. Yet, labels (menu labels or page headings) are not always unambiguous. Finally, no personalisation-/customisation-related options have been considered.

Table 28: Evaluation of national platforms against information architecture-related criteria

Information architecture-related criteria Platform	Organisation scheme			Navigation system				Labelling system	
	topical	task-oriented	metaphor-driven	global	local	contextual	Personalisation/customisation	Context-relevant labelling system	Use of page headings
BIOEAST	X			X	X	X		X	X
AHDB	X	X		X	X	X			X
ERN	X			X	X	X			X
Food and Farming Futures	X	X		X	X	X		X	X
TITRIS	X	X		X		X			X

Regarding metadata use, ERN is technically out of date, only using metadata for project documents. All other reviewed national platforms have an established metadata structure, which is complete for most of the contents. However, not all this information can be used during the search. FFF, the technically most advanced platform, provides a well-structured, user-friendly metadata structure that is also used for the search function. AHDB is special in that this system only stores very limited and basic metadata, yet it is fully used as filters. Despite this relative simplicity, the provided metadata can support an effective search function that is easy to use for even unexperienced users. Table 28 shows which metadata is available or the national platforms.

Table 29: Metadata of the national platforms

Platform	Metadata
BIOEAST	<ul style="list-style-type: none"> • Download • File Size • File Count • Create Date • Last Updated <p>This information is available for each content (except news) and complete.</p>
AHDB	<ul style="list-style-type: none"> • Not many metadata • Usually topic, sector and tags
ERN	<ul style="list-style-type: none"> • Only for project examples: Project title, measure, theme, local action group, name of the beneficiary, county, type of document • No metadata for other contents!
Food and Farming Futures	<p>Well structured, detailed, complete metadata and copyright information available for all contents:</p> <ul style="list-style-type: none"> • URL • Year • Authors • Permalink • Uploading organisation • Source organisation • Medium of interaction • Format <ul style="list-style-type: none"> • Material type • Structure • Educational context • Intended end user role • Language • Created • Modified • Category • Tags
TITRIS	Area, subarea, year, contacts, keywords, technology readiness level, effect

Similar to the international platforms, the national platforms might only store a link to an external source in the system, but most typically they store the content, which is usually created internally or by regular partners. The problem of an external content not being available anymore exists also in the case of national platforms. Frequently, platforms transfer contents from external websites, i.e. not only providing a link, but the content is stored in the system. BIOEAST publishes news on its Twitter channel from where they are automatically transferred to the main webpage (see Table 29).

Table 30: Interoperability of the national platforms

Platform	Interoperability/connections
BIOEAST	No interoperability with any other platforms, only with the BIOEAST Twitter channel, from where news are transferred automatically
AHDB	Very complex webpage structure with interaction among sub-pages
ERN	Transfer of contents to other websites
Food and Farming Futures	Gathers contents from external websites, many of which are available via a link to the external source (in the case of learning materials, the content is frequently not available anymore)
TITRIS	No interoperability; only links provided

As shown in Table 30, the national platforms have a similar purpose than international ones: providing information and knowledge to the actors of agriculture and food production. However, there are slight differences. BIOEAST focuses on governmental bodies and seeks to provide an innovation framework in a

specific region (i.e. CEE countries). AHDB's vision is about inspiring farmers, growers and industry to succeed rather than about disseminating information.

In terms of technologies that have been employed for the development of NRN websites, few information is available with regard to employed Content Management Systems. By being based on website cases for which this piece of information is available (i.e. BIOEAST and AHDB NRN websites), we can conclude that tools differ from those employed for website development of international organisations (WordPress and Orchard instead of Drupal and TYPO3). However, both WordPress⁵⁹ and Orchard⁶⁰ CMSs are open source. With regard to JavaScript libraries, jQuery is a solution adopted for the development of all NRN websites. In addition, PHP and ASP.NET are the two programming languages that have been used, with the former being employed in 60% of website cases and the latter in 40% of cases. This distribution is also observed with respect to the Web Server that has been employed (Apache has been used in 60% of website cases and IIS⁶¹ in 40%). Websites that use the ASP.NET programming language are those for which the IIS server is also employed⁶². Results of analysis for website development technologies are shown in Table 31 below.

Table 31: Technologies and tools used for the development of the websites of national platforms

	Content Management System	JavaScript Libraries	Programming Language	Web Server
BIOEAST	WordPress	jQuery	PHP	Apache
AHDB	Orchard	jQuery	ASP.NET	IIS
ERN	N.A.	jQuery	PHP	Apache
Food and Farming Futures	N.A.	jQuery	ASP.NET	IIS
TITRIS	N.A.	jQuery	PHP	Apache

Table 32: Why of the national platforms

Platform	Why (vision/purpose of the platform)
BIOEAST ⁶³	<ul style="list-style-type: none"> Offering a shared strategic research and innovation framework for working towards sustainable bioeconomies in CEE countries Macro-regional perspective and EU cooperation for implementing in an effective and efficient way tailored actions that are conducive to safe, secure and sustainable development for all
AHDB ⁶⁴	Inspiring farmers, growers and industry to succeed in a rapidly changing world
ERN ⁶⁵	Facilitating flexible, open-minded and gradual development, with bottom-up initiatives based on needs and developed through cooperative activity among rural actors
Food and Farming Futures ⁶⁶	Independent, collaborative news and information source for farming and food providing free access to authoritative research and technology transfer publications
TITRIS	Collecting, publicising & compiling non-commercial research and innovations created in practice that increase the sustainability of agricultural production

The How of the national platforms likewise resembles the How of the international initiatives. The main way of reaching the goals is providing relevant information to end users. The national platforms function as a knowledge reservoir where users can browse and access resources classified by different categories, most often via the search function. As an organisation, BIOEAST also creates political level commitments and organises expert meetings and workshops to realise its vision.

⁵⁹ <https://wordpress.org/>

⁶⁰ <https://www.orchardcore.net/>

⁶¹ <https://www.iis.net/>

⁶² This finding is not a matter of coincidence, because IIS is a server built to operate on the Microsoft .NET platform.

⁶³ <http://www.bioeast.eu/>

⁶⁴ <https://ahdb.org.uk/about-ahdb>

⁶⁵ <https://maainfo.ee/index.php?page=3363&>

⁶⁶ <https://www.foodandfarmingfutures.co.uk/Library/About.aspx>

Functioning as a network is not typical in the case of national platforms. They generally do not offer intranet or forum for the user community to share knowledge and experiences, and also do not provide the possibility to upload contents (except for FFF; see Table 31).

Table 33: How of the national platforms

Platform	How (processes, strategies)
BIOEAST	Develops a Strategic Research and Innovation Agenda as a shared strategic research and innovation framework for working towards the development of a sustainable bioeconomy in the Central and Eastern European (CEE) countries, next to political level commitments, expert level meetings and workshops
AHDB	Equips the industry with easy-to-use, practical know-how
ERN ⁶⁷	<ul style="list-style-type: none"> Seeks and publishes examples of best practice Actively promotes the exchange of knowledge and experience throughout Estonia
Food and Farming Futures ⁶⁸	<ul style="list-style-type: none"> Brings free access to authoritative research and technology transfer publications Incorporates OpenFields, an internet based “library” designed to meet practitioner and student demand for knowledge that supports and stimulates the development of land-based industries
TITRIS	Collects, publicises and compiles data on applied innovation research and results that can contribute to more efficient, sustainable and environmentally friendly farming

Regarding the organisations behind the national platforms, it is often governmental institutions whose financial sources are usually the national budget or a compulsory state levy in the case of AHDB (see Table 32). This is a marked difference to the previously analysed international platforms (except for e.g. the FAO platforms and the EIP-Agri website) which are most often connected to a project (typically Horizon 2020), leading to maintenance and sustainability issues. While the chosen national platforms do not have such a problem regarding maintenance, these systems are often developed gradually, in separate steps, when there is a governmental decision and budget available for it.

Table 34: What of the national platforms (organisations and/or projects behind)

Platform	What (organisations and/or projects behind)
BIOEAST	<ul style="list-style-type: none"> Open initiative started by the Visegrad Group Countries: Czech Republic, Hungary, Poland, Slovakia, and joined by Bulgaria, Croatia, Latvia, Lithuania, Republic of Estonia, Romania, Slovenia Common declaration signed by agricultural ministers Further development in the frame of H2020 BIOEASTsUP project
AHDB ⁶⁹	<ul style="list-style-type: none"> Funded by farmers, growers and others in the supply chain through statutory levies Main AHDB Board members are appointed by the Secretary of State for Defra, acting with Welsh Government Ministers, Scottish Ministers and the relevant Northern Ireland department
ERN	Agricultural Research Centre, Estonian National Rural Network
Food and Farming Futures ⁷⁰	<ul style="list-style-type: none"> Developed from the work of the National Rural Knowledge Exchange, a HEFCE-funded collaboration between 14 universities Supported and hosted by Harper Adams University Small team comprising web developers and content managers is responsible for building and maintaining the online library
TITRIS	<ul style="list-style-type: none"> Part of the project “Gate of Innovations”, the centre for knowledge accumulation, transfer, development of agricultural technologies and their demonstration, financed from the activity “Establishment of EIP action groups and development of their activities” under the measure “Cooperation” of the Lithuanian Rural Development Program 2014-2020 Members of the “Gate of Innovations” project: Lithuanian Agricultural Advisory Service (project supervisor and coordinator); Lithuanian universities, research institute, and experimental farms (project partners)

⁶⁷ <https://maainfo.ee/index.php?page=3363&>

⁶⁸ <https://www.foodandfarmingfutures.co.uk/Library/About.aspx>

⁶⁹ <https://ahdb.org.uk/funding-and-structure>

⁷⁰ <https://www.foodandfarmingfutures.co.uk/Library/About.aspx>

3.3.3 Results from the consultation of platform representatives

In this section, the results from the consultation of the representatives of the national platforms are presented. Three out of five representatives contacted responded to the consultation (see Annex 5.10-5.12 for the completed questionnaires).

Two national platforms mainly target farmers as end users. BIOEAST indicated policymakers as most important target group. All three national platforms target advisors as second most important group. In addition, TITRIS also targets researchers.

All three national platforms, in line with the international ones and the findings from the desk-top study, aim at providing information: BIOEAST aims at disseminating information and increasing awareness and visibility of the organisation. In addition to informing the wider public and potential beneficiaries of rural development policy, increasing stakeholder involvement and stimulating innovation in agriculture, food production, forestry and rural areas, ERN pursues the specific goal of improving the quality of the implementation of the Estonian Rural Development Plan. TITRIS seeks to provide useful information about created and tested innovations from practice and research for practical users as well as about funding opportunities, and to inventory information about innovations, and to provide inform. Thus, networking among users seems to be less relevant for the national platforms, with only ERN seeking to increase stakeholder involvement.

The national platforms achieve their goals by different means: In the case of BIOEAST, a project was established to help upgrade the platform, and a professional communication team to maintain it. However, no KPIs are measured. ERN measures basic qualitative and quantitative indicators (viewers and unique viewers per month/year/period) and gathers feedback from end users (by means of focus groups or NRN board meetings). At the time of the consultation, TITRIS is available for open access only for a few weeks. Any record about innovation it is evaluated very carefully before it is shared. The information is checked by advisors and language specialists. The quality and relevance of the data provided are considered as key factors of a successful use of the platform. At this stage, ranking of records or other ways to measure the success are not available.

In terms of KPIs, both ERN and TITRIS measure the number and quality of contents and the number of visits while ERN also collects user feedbacks (see Figure 24).

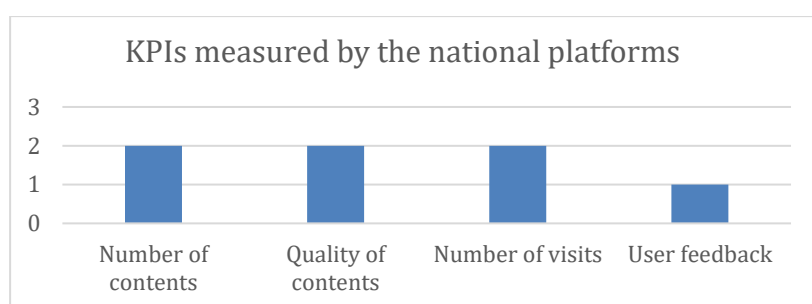


Figure 24: KPIs measured by the national platforms

ERN published a total of 165 news-post on LEADER and 446 events organised by LEADER LAGs in 2018. The website has a separate subsection of the Innovation Network that, by the end of 2016, provided 278 news-post and 628 events information. Usually, all the news/events taken from official sources such as universities, European Commission, EIP-AGRI Service Point, Farmers Union, LEADER Local Action groups, Ministries, Paying Agency etc. are (re-)posted. The ERN platform had a total of 4.6 million viewers and 735,000 unique viewers (excluding repeat viewers) in 2014-2018. The number of viewers in 2017 has quadrupled compared to 2015 and remains at the same level in 2018. User feedback mostly stems from focus groups and NRN board meetings.

Overall, the ERN platform is evaluated positively: The webpage works properly, is simple and efficient. At the moment, BIOEAST is a basic information platform. Similarly, TITRIS is described as a very “young”

system without a possibility to get user feedback, which makes evaluation difficult. In the case of the ERN platform, there is a need to create additional functions that allow for the use on any device. It uses HTML, CSS, and partially JavaScript to optimise a website to the user's screen. The search option is seen as weak, still unable to integrate short videos, animations or documents in any format in a post.

As “all in one” platform, ERN is well-known to end users as the place to find all information on topics such as agriculture and rural development. Further strong points include latest local and EU newsletters (translated into Estonian), an easily navigated events calendar with all events across Estonia, EU and Europe, the latest news regarding coming calls for applications (RDP, Horizon2020, InterReg f.e). In the case of TITRIS, only reviewed information is publicised that was evaluated by specialists of LAAS (innovations' evaluators). Data is published if the information is deemed relevant.

Table 33 shows the added value of ERN and TITRIS as indicated by the platform representatives, relating to the quality of the content, including content sources, and the function of the platform as a network in the case of ERN.

Table 35: Added value of the national platforms

Added value	
ERN	<ul style="list-style-type: none"> • Homepage as networking instrument • Clients are trained how to register to local events organised by the NRN, and how to find latest newsletters. • Indication who from NRN is responsible for what topics on maainfo.ee
TITRIS	All records must have the element of efficiency and very easy-understood arguments why this information promotes the sustainability of farms.

BIOEAST does not evaluate the platform's search options. ERN is partly satisfied with the search options provided and thinks that end users are likewise partly satisfied. Weak points identified include the outdated platform and the functionality of search options. Subsections on certain topics have been created to simplify the latter, and social media channels are used to focus and disseminate some important information published on the webpage. On the other hand, the ERN platform is considered as a strong and efficient database supporting end users with all necessary information concerning each topic with a newsletter, translated EC materials, organised events, presentations, video links etc.

TITRIS is partly satisfied with the search options provided, acknowledging the need to ensure that data providers specify keywords. Keywords can be edited by the system administrator. The later evaluator of innovations should answer if keywords comply with the information provided.

Regarding content sources, all three national platforms create contents themselves (e.g. in the frame of projects). Likewise, all three platforms transfer content from external open sources. Two platforms allow users to submit content. ERN also includes official input from the Ministry or the European Commission (see Figure 25 for the different sources of content).

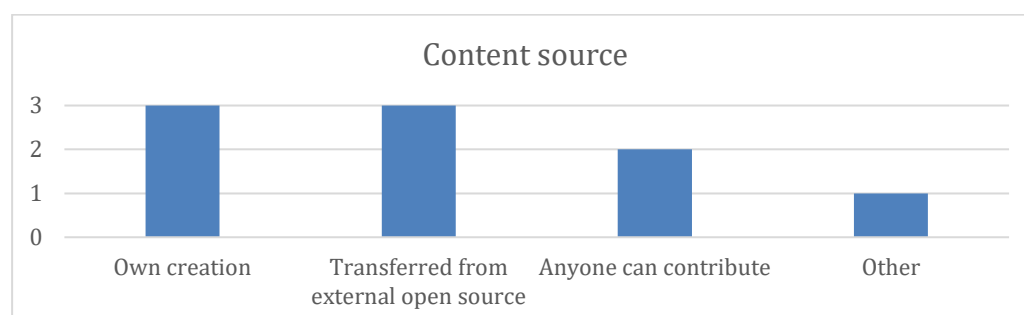


Figure 25: Content sources of the national platforms

All three national platforms validate and edit/correct contents if necessary. Two platforms, respectively, check the reliability/trustworthiness and completeness of the content (see Figure 26).

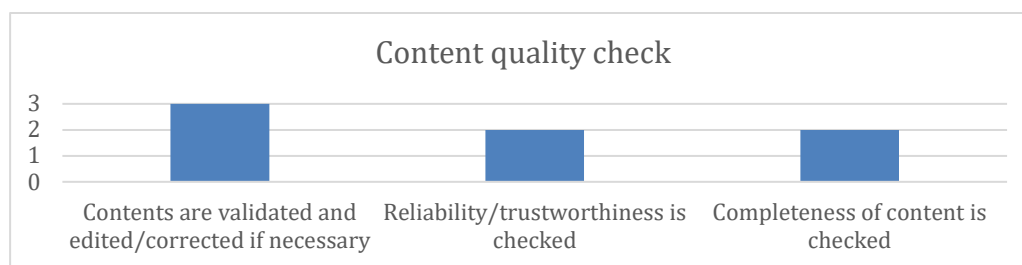


Figure 26: Content quality check of the national platforms

In the case of the BIOEAST platform, a project ensures maintenance and sustainability. ERN's sustainability is partly ensured by assistance from the support service provider in the case of need. TITRIS has obligations for their Innovation support service.

Two national platforms (BIOEAST and TITRIS) do not interact with other platforms (yet) while the ERN platform interacts partly automatically with other platforms to transfer contents to other platforms.

Since most national platforms identified appear to be in an early stage of development, the platform representatives were also asked explicitly for their plans for the future. BIOEAST intends to create a stakeholder database and a dynamic stakeholder search engine. ERN plans to restart the webpage when there is enough budget, either recovering it in terms of new needs and preferences or transferring the whole content to new, more modern platform. TITRIS seeks to transcend the first step of its official introduction and enable users to assess the platform in the near future (0.6-1 year). Plans for the next year concern the number of records (platform entries), the development of the platform itself, the provision of services, etc. Maintaining it is a challenge as it is a new activity for the representatives, who so far lack experience and are still not sure how it will be accepted by researchers and farmers. The platform will be introduced to researchers, and they will be invited to cooperate with TITRIS in the coming year. Further ideas include an e-library, an online national and international farm visit catalogue, information about national partners' involvement in international projects, and a dictionary of innovations.

3.3.4 Matching of user needs and national platform offers

Drawing on the findings from both the desk-top study and the consultation, the offers provided by the national platforms were rated against the needs of the four selected end-user groups for specific functionalities and materials, as defined in section 3.1.2 (Table 34).

All national platforms except ERN have a search engine. While very basic (simple keyword search, to be further developed) in the case of BIOEAST, the other three platforms provide more advanced search functions with filters. All provide open access to all contents (without registration) as well as contact information. All except TITRIS additionally make use of social media, and all except BIOEAST are also available in the national language.

- AHDB, while not offering an intranet, provides a simple search function as well as a huge amount of content that is also specific to farmers' needs/problems (e.g. advice for livestock farmers affected by flooding), including impactful formats such as checklists, calculators and webinars.
- Likewise, FFF offers many different kinds of format/types of content, from research outputs to technical and business information and open learning materials such as toolkits, guides, schematic diagrams and "Future Skills" examples. However, while AHDB in general is more practitioner- and less policy-focused, FFF also provides extensive policy information, e.g. under the subject "Rural policy & development". Except for the BIOEAST platform that focuses on policymakers as most important target group, similar to the international platforms, policymakers seem to be less targeted than the other end-user groups. FFF can be seen as the national platform best serving all end-user groups.

- With a database of relevant Rural Development Programme (RDP) project examples from 2007-2013, many of which are only available in Estonian, a calendar and archive with international events, mostly PDF publications and promoting transnational cooperation, ERN seems less useful for practitioners and less relevant for local contexts.
- TITRIS, providing both scientific and practical innovation types as well as links to other support services and more information on EU innovations, is rather difficult to assess as the user-friendly platform is still in an early stage.

Table 36: Matching of end-user needs and offers of the national platforms⁷¹

User needs	Platform	BIOEAST (CEE countries)	AHDB (UK)	Estonian Rural Network	Food and Farming Futures (UK)	TITRIS (Lithuania)
<i>European farmers</i>						
Tailor-made, actionable knowledge		X	XXX	O-X	XXX	
Easy access to content		O-X	XX	O-X	XXX	
<i>European farm advisors</i>						
Rather tailor-made, comprehensive, transferable, up-to-date knowledge about recent policy and sector developments			XXX	O-X	XXX	
Specific, local solutions for specific business and technical problems			XXX	O-X	XXX	
<i>Agricultural teachers/trainers</i>						
Broad range of transferable knowledge			XXX	X	XXX	
Up-to-date knowledge on scientific results as well as practice, adapted to the target group and practitioners' needs			XXX	O-X	XXX	
Exemplary impactful formats?			XXX	O-X	XXX	
<i>Agricultural policymakers</i>						
Standardised/generalised, evidence-based content					XXX	
Up to date knowledge to design new policies				O	XXX	
Implementable, relevant to their respective policy area				O-X	XXX	

⁷¹ XXX: end-user needs are fully met by the platform offers; XX: needs are fulfilled; X: needs are partly fulfilled; O: not fulfilled

4. Feasibility study for a new centralised and open-source agricultural innovation knowledge reservoir platform

4.1 Lessons learnt from the process of mapping and analysing agriculture-related platforms at both international and national levels

Agriculture and forestry are increasingly becoming data and knowledge intensive, with the future EU Common Agricultural Policy (CAP) highlighting the importance of digitalisation. Strategic approaches to ICT in agriculture and rural areas will likewise be key to the future of agriculture and rural areas. Within such a context, platform-related technologies can play a catalytic role to the dissemination of knowledge (Chourot & Pascal, 2018; Palczynski et al., in press). Task 4.1 (**“Feasibility and added value of an e-KRP”**) has focused on a research process for mapping and analysing agriculture-related platforms available at both the international and national levels. Research has been performed with the aim to identify and document similarities and differences in the structure and delivery of content and information to the targeted audiences. The platform analysis has been executed as part of a desk-top study and based on a list of criteria (namely, thematic focus of content provided, issues related to content search and access, communication channels available, content-related geographic coverage, metadata used, connections with other platforms and structure of data) aiming to help draw insights in both front- and back-end design decisions. The desk-top research has been followed by a session of consultations with platform representatives, which have allowed to acquire further knowledge about the targeted end-user types, KPIs employed for measuring the impact of the platform, the platform’s added value, content sources, methods for assessing the quality of content, and connections with other platform initiatives.

The mapping of similar initiatives showed that there is a large number of agriculture-related platforms at both national and international levels. The results of the analysis performed indicate that there are differences in the type and format of the content available, the information architecture principles upon which user experience has been designed, search functionalities, and the employed metadata schemas. Despite the fact that all platforms relate to the domain of Agriculture, differences have been observed in terms of the user groups that have been targeted. For instance, there are platforms that target governmental bodies, whereas others have targeted farmers and practitioners. It also needs to be stressed that there is limited or no availability of the data models that have been employed for the needs of data structuring. What has been made evident from the limited amount of information obtained with regard to this important design-related aspect is that no common design patterns exist and that tailor-made solutions have been employed by each initiative. In addition, there is no clue about the compliance of existing platform initiatives with open data standards and the FAIR data principles. The results that have been obtained are in line with the findings of Marois et al. (2019), who also report a diversity in the approaches adopted by TNs with regard to IT structures, formats and contents, as well as a dependency of these approaches on the actors involved, the theme, sector, target audience, and countries.

The main goal and added value of the platforms that have been analysed relate to their function as a KR and/or network, providing access to relevant content and engaging users in knowledge exchange. Likewise, as made evident from the analysis of TNs performed in WP2, provision of relevant, quality content is a critical success factor (Bodin et al., 2019) with the employment of a Multi-Actor Approach (MAA) being considered as a requisite for content development (Pascal et al., 2019). To maximise impact, Marois et al. (2019) advise that content should be relevant to users, as well as understandable and easily accessible, which is consistent with findings in user needs in this report. However, despite the large number of existing Agriculture-related platforms, the analysis performed has shown that the content provided by most of the platforms does not meet the needs of all the end-user types targeted in EURAKNOS. Finally, the number of content items available on the platform is important as well. So, given

that the quality and relevance of data have been revealed as key factors for the adoption and use of a platform, quality control and validation of content need to be ensured.

4.2 Feasibility study for a new centralised and open-source agricultural innovation knowledge reservoir platform

The aim of this section is to present a study on the feasibility for the EURAKNOS e-KRP. As illustrated in Figure 27 below, in the context of EURAKNOS, feasibility is conceptualised as requirement for:

- providing **justification for the need** to develop a new, centralised platform enabling access to data objects made available by TNs;
- investigating **available technology solutions** able to sufficiently support the development of the EURAKNOS e-KRP; and
- developing a **plan for making the proposed e-KRP solution sustainable** beyond the project's lifecycle.

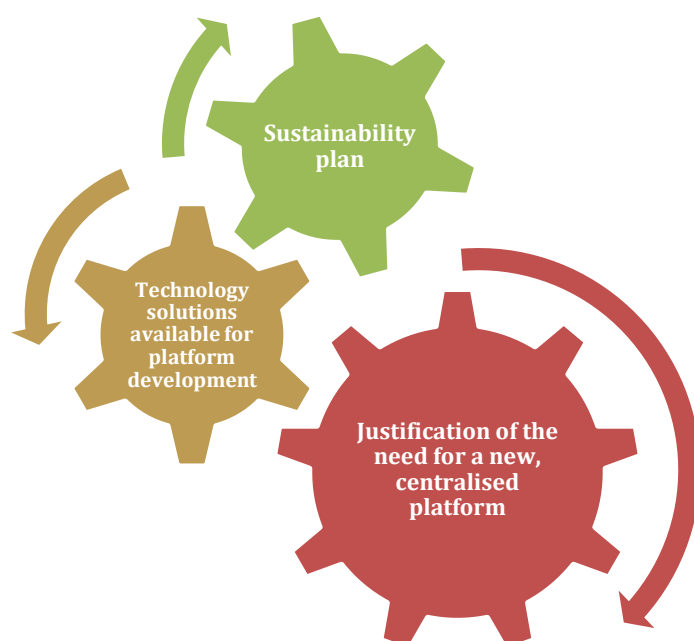


Figure 27: Conceptualisation of the feasibility study for the EURAKNOS e-KRP

4.2.1 Justification for the need to develop a new, centralised platform

Research and analysis that have taken place in Task 4.1, together with the results obtained from WP2, have helped to develop a body of evidence with regards to the content and services provided by international and national agriculture-related platform initiatives and KRs of TNs, as well as design choices on methods and patterns for content and service delivery. Even though all KR platforms analysed target stakeholders of a specific domain, who are characterised by a particular set of needs, there is great heterogeneity in the back- and front-end designs that have been developed and used. In other words, there are considerable differences in data structuring, the attained levels of user-friendliness and the ways in which content and services are delivered to the user in the context of existing platforms, most of which do not score high on user-friendliness. Thus, attention to the element of user-friendliness fortifies the justification for a centralised e-KRP. Additionally, the dispersion of data in a large number of data repositories makes the search, identification, and retrieval of information and content required a difficult endeavour.

These evidence-based assertions serve as a basis for justifying the need for the EURAKNOS e-KRP, a platform that will enable centralised access to digital content, available by TNs, in a range of types and

formats. Data storage will take place in accordance with a thorough data model, provided as part of a robust solution architecture, clearly illustrating data entities and their interdependencies. Content will be delivered and displayed in an information rich context enabled by the use of an extensive metadata set. On top of that, interface design will be based on design patterns building upon the user experience paradigm of information systems valued by the targeted end-user types. Deliverable 3.2 (“**Report on HIKR design**”) provides details about the EURAKNOS data model, the solution architecture, as well as the rationale for the technologies employed.

4.2.2 Available technology solutions

With regards to the **technology framework** for implementing the EURAKNOS e-KRP, there is a range of options to consider for developing the required technology stack. The goal of EURAKNOS is to provide a state-of-the-art platform emphasising the core principles of findability and accessibility of digital content by both human and machine agents. Therefore, the development of the e-KRP will be based on open-source technologies that can facilitate compliance with the guidelines for FAIR data (Wilkinson et al., 2016). Existing metadata schemas (e.g. schema.org) will be exploited for creating the EURAKNOS Application Profile (i.e. the set of metadata required for storing TN-related data on the EURAKNOS repository). The EURAKNOS Application Programming Interface (API) will serve as the gate for the “communication” of the e-KRP with other repositories. All e-KRP development- and deployment-related details are documented in Deliverable 4.3 (“**EURAKNOS e-KRP documentation and guide**”).

4.2.3 Sustainability plan

A final aspect of the e-KRP feasibility study is associated with the **sustainability** of the technological infrastructure; in other words, the parameters that need to be considered to facilitate the existence of the platform and the provision of services after the end of EURAKNOS. According to the Cambridge Online Dictionary⁷², sustainability is defined as “*the quality of being able to continue over a period of time*”. In the software engineering context and, more specifically, from the perspective of software application deployment and use, sustainability is related to the capacity to “*maintain and evolve a software system with minimized environmental impact, a sufficient economic balance, and social responsibility.*” (Penzstadler, 2013). This definition is in line with Elkington’s conceptualisation of sustainability as a framework comprising three main pillars, namely the economic, environmental, and social pillars (Elkington, 1994).

Maintenance is inextricably linked to a software system’s sustainability and in direct relation with the technology solutions adopted for the system’s development. Thus, technology-related considerations need to be a core dimension of a sustainability framework and plan. Moreover, environment-related aspects can be part of the social dimension of a sustainability framework. Given the above, the plan for making EURAKNOS e-KRP sustainable is built on a four-dimensional framework. More specifically, the EURAKNOS sustainability framework, shown in Figure 28 below, comprises four dimensions. These are the: (i) technological, (ii) social, (iii) legal, and (iv) financial dimensions.

⁷² <https://dictionary.cambridge.org/>

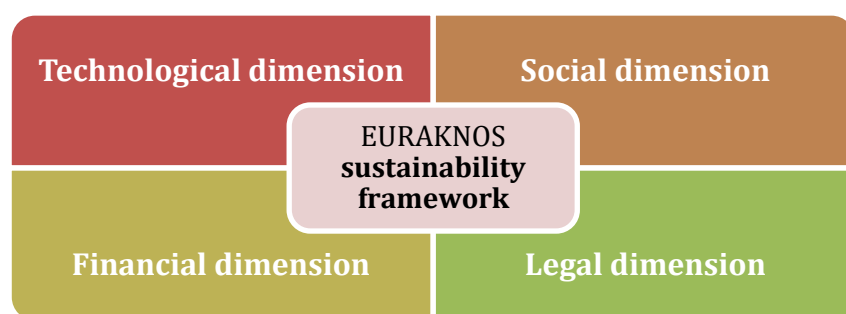


Figure 28: EURAKNOS sustainability framework

The **EURAKNOS sustainability plan** provides recommendations and directions for solutions associated with each of the framework's dimensions. These recommendations and solutions are presented in detail below.

4.2.3.1 Technological dimension

The development of the EURAKNOS e-KRP will be based on open-source technologies that have been adopted and used in the context of well-known European projects and have large and vibrant communities built around them. The detailed design- and development-related documentation that will be made available by EURAKNOS, together with the detailed and up-to-date information available from the official portals of the employed technology solutions, may guarantee the feasibility of the e-KRP maintenance beyond the project's lifecycle regardless of the technology support team.

4.2.3.2 Social dimension

EURAKNOS aspires to facilitate open access to agriculture-related knowledge to the community of all the end-user types targeted. The digital content provided through the EURAKNOS e-KRP will need to be relevant, of high quality, and up to date to ensure uptake by all stakeholders. Access needs to be easy, to any interested party, and the delivery of services and content should be continuous and robust. Moreover, apart from issues of service quality and content provision, a clear framework of data exploitation needs to be established. In this way, it will become feasible to avoid malpractices and data misuse. Consequently, there is a direct relation between the sustainability framework's social dimension and the technical and legal dimensions. The need to allocate financial resources to ensure the viability of the e-KRP makes also evident an indirect relation between the social and financial dimensions.

The environmental aspect of sustainability is part of the framework's social dimension. It is an aspect concerned with the energy footprint of the technological equipment used. So, a sustainable solution needs also to be environmentally friendly. One of the measures that can be taken to meet this goal is to make use of last generation technological equipment of low energy consumption. In this case, financial investments may have to be made regarding equipment upgrade or replacement. Thus, the indirect relation between the social and financial dimension is highlighted again.

As noted by Pascal et al. (2019), a post-project phase is needed to evaluate the outcome and uptake of results by the end users, as is further reflection on how to evaluate this, and which type of evaluation methodologies and indicators should be used. The e-KRP will offer a solution to this challenge, creating added value for the TNs by providing a common platform, multiplying the C&D channels, increasing their visibility and impacts and fostering the uptake of their results by end users (Bodin et al., 2019).

4.2.3.3 Legal dimension

The legal dimension of the EURAKNOS sustainability framework and plan relates to: (i) ensuring the provision of TN-related data under the licensing terms that have been applied upon their creation to the extent, and if applicable, a license on the TN-related data delivered by the relevant TNs will be negotiated,

allowing for the use of and integration in the e-KRP; and (ii) issues of copyrighting the EURAKNOS e-KRP solution, to ensure the Intellectual Property Rights (IPR) of the work undertaken by the organisations involved in its design and development.

Exploitation of the e-KRP

A clear business model will be put in place by governing the exploitation of the e-KRP. While the e-KRP should enable open access to documents wherever possible, the Horizon 2020 rules for IPR must be taken into account throughout the project lifecycle (Palczynski et al., in press; The European IPR Helpdesk, n.d.). Since within EURAKNOS several partners are involved in fostering project results, chances are high that the e-KRP will be qualified as a joint Result of the Project to which the provisions of Art. 26.2 of the Grant Agreement will apply. EURAKNOS will ensure open access to agricultural knowledge and, at the same time, will contribute to the establishment of good practices of data objects use through a well-framed context for data provision and exploitation. To achieve this goal, existing licensing schemes will be taken into consideration. Creative Commons⁷³ provides specific licensing conditions (i.e. sets of conditions to be applied to outputs of intellectual work) and types (i.e. copyright licenses) for facilitating the sharing of creative and academic work. The Creative Commons licensing framework will be considered for the needs of copyrighting the EURAKNOS e-KRP solution and, thus, establishing the Intellectual property Rights of the consortium organisations involved in the platform's design and development.

Cookies policy

In May 2018, the General Data Protection Regulation (GDPR) 2016/679, a set of data protection rules for all companies operating in the EU that entered into application (European Parliament & Council, 2016). The storage of data will be anonymised.

The GDPR specifically discusses the use of data gathered through cookies. Cookies are small text files that a website you visit will place on your device as you are browsing. Your web browser processes and stores these cookies. Cookies are a useful way to carry data, e.g. about language preferences when browsing on a particular website, from one session to another or from one website to another related website. By carrying this data cookies prevent internet servers from having to retrieve this data every time a person revisits a particular website, without the user being required to log into the website. This allows websites to load more efficiently upon revisits. Cookies, insofar as they are used to identify users, qualify as personal data and are therefore subject to the GDPR (European Data Protection Supervisor, 2009).

The ePrivacy Directive (EPD), also known as the “cookie law”, was passed in 2002 and amended in 2009. It requires websites to present a cookie consent pop-up. It supplements (and sometimes overrides) the GDPR, addressing crucial aspects about the confidentiality of electronic communications and the tracking of Internet users more broadly. To comply with the regulations governing cookies under the GDPR and the ePrivacy Directive, a website must:

- Receive users' consent **before** it uses any cookies **except** strictly necessary cookies.
- Provide accurate and specific information about the data each cookie tracks and its purpose in plain language before consent is received.
- Register and store consent received from users.
- Allow users to access the provided service even if they refuse to allow the use of certain cookies
- Make it as easy for users to withdraw their consent (European Data Protection Supervisor, 2009).

4.2.3.4 Financial dimension

The financial dimension relates to decisions and choices for a viable and sustainable **business plan**; in other words, a business plan that will allow and ensure the operation of the platform beyond the

⁷³ <https://creativecommons.org/>

EURAKNOS project's lifecycle. Despite the importance and proliferation of online platforms in the last years, there is no consensus on how to define a platform and which the distinctive characteristics of a platform are. In addition to that, there is no single way to classify platforms. According to Kilhoffer et al. (2017), platforms are web-based applications used for the sharing or trading of goods or services by users, on a temporary or permanent basis, for a price or free of charge. Regarding platform types, the European Parliament (2017) differentiates between commercial and non-commercial platforms. In this context, and given the non-material nature of the commodities (i.e. data objects having the form of digital files) available (i.e. shared), the EURAKNOS e-KRP can be considered as a non-commercial platform oriented towards service provision.

A well-developed and balanced business plan needs to consider the costs for the resources required to maintain the technological infrastructure (i.e. hardware) and software, update the digital content, and keep the web application running. Resources can be distinguished into human labour as well as storage capacity and processing power required for the provision of the service which, in turn, have implications for the number and technical features of the computer systems that need to be used. Therefore, cost analysis needs to consider both personnel salaries and hardware/software maintenance costs.

The **technology support staff** required for the provision of services and maintenance issues needs to include the roles of **database administrator**, **system administrator**, **software developer** and **help desk technician**. The responsibilities of the database administrator⁷⁴ are the investigation and execution of modifications to database software to adequately meet user needs, the maintenance of the integrity and performance of the database, the optimal data storage and data security, as well as user training issues. The average hourly rate of a database administrator is €21.46/hour, meaning that the monthly salary comes up to approximately €3,780⁷⁵.

The system administrator is responsible for the physical and logical servers. System administrators manage the operating systems and related tools, as well as take care of troubleshooting and system security issues⁷⁶. The average hourly rate of a system administrator is €22/h, meaning that the monthly salary comes up to approximately €3,870⁷⁷.

The software developer has, among others, the responsibility for maintaining, expanding, and scaling up the service provided so as to cover demand, as well as of keeping track of emerging technologies and industry trends and applying them into operations and activities⁷⁸. Given the need to provide up-to-date content, the software developer will also be in charge of keeping track of evolutions in the domain of Thematic Networks and building pipelines for the integration of TN data into the EURAKNOS repository. The average hourly rate of a software developer is €25.75/h, meaning that the monthly salary comes up to approximately €4,530⁷⁹.

As far as the help desk technician is concerned, the main duties of this role⁸⁰ are to serve as the contact point for users seeking technical assistance (e.g. over a call or email), perform remote troubleshooting through diagnostic techniques and pertinent questions, and determine the best solution based on the

⁷⁴ <https://www.thebalancecareers.com/database-administrator-job-description-salary-and-skills-2061775>

⁷⁵ The calculations provided are based on database administrator hourly rate estimates made available at [https://www.payscale.com/research/US/Job=Database_Administrator_\(DBA\)/Salary](https://www.payscale.com/research/US/Job=Database_Administrator_(DBA)/Salary), and by considering an 8-hour working day, as well as a Person Month of 22 working days.

⁷⁶ <http://www.heimmanagement.com/blog/2014/05/server-related-job-roles/>

⁷⁷ The calculations provided are based on software developer hourly rate estimates made available at https://www.payscale.com/research/US/Job=Systems_Administrator/Salary, and by considering an 8-hour working day, as well as a Person Month of 22 working days.

⁷⁸ <https://resources.workable.com/web-developer-job-description#>

⁷⁹ The calculations provided are based on software developer hourly rate estimates made available at https://www.payscale.com/research/US/Job=Software_Developer/Salary, and by considering an 8-hour working day, as well as a Person Month of 22 working days.

⁸⁰ <https://resources.workable.com/it-help-desk-technician-job-description>

issue and details provided. The average hourly rate of a helpdesk technician is €15.65/h, meaning that the monthly salary comes up to approximately €2,750⁸¹.

Table 37 below summarises the job descriptions and hourly rates/salaries of the personnel required for providing and maintaining the EURAKNOS platform-related services.

Table 37: Description of personnel roles involved in the provision and maintenance of e-KRP – related services, average hourly rates and monthly salaries

Role name	Role description	Average hourly rate	Average monthly salary
Database administrator	Investigation and execution of modifications to database software to adequately meet user needs. Maintenance of the integrity and performance of the database. Responsibility for optimal data storage and data security, as well as user training issues.	€21.46	€3,780
System administrator	Responsible for the physical and logical servers. Manages the operating systems and related tools, as well as takes care of troubleshooting and system security issues.	€22	€3,870
Software developer	Responsible for maintaining, expanding, and scaling up the service to cover demand. Keeps track of emerging technologies and trends and applies them into operations and activities. Keeps track of evolvments in the domain of Thematic Networks and builds pipelines for the integration of data in the EURAKNOS repository.	€25.75	€4,530
Help desk technician	Contact point for users seeking technical assistance (e.g. over a call or email). Remote troubleshooting through diagnostic techniques and pertinent questions. Determination of the best solution based on the issue and details provided.	€15.65	€2,750

Requirements in **storage capacity** and **processing power** needed for service provision are proportional to the volume of data stored and the number of users to be served. Given the fact that both the data volume and number of users will be escalating over time, requirements in data storage capacity and processing power will have to be re-adjusted through the consideration of either vertical or horizontal scaling solutions. In addition to that, costs will have to be estimated on the basis of the scenario that will be selected for provision of the e-KRP services after the EURAKNOS project completion. However, hardware operation and maintenance costs will have to be considered. More specifically, in the case of using own servers, the monthly cost (per server) for moderate server usage (server specifications: 32GB RAM + 2x500 GB SSD) may come up to €28.00 per month⁸². As far as maintenance is concerned, costs for a medium-sized server (e.g. a server with 6 virtual CPUs + 16GB RAM) can come up to €120 per month. It needs to be noted, that the costs of server operation and maintenance may significantly change as a result of changes in hardware-related specifications (which, in turn, can be imposed by an increase in the volume of data stored and/or the number of users served).

⁸¹ The calculations provided are based on help desk technician hourly rate estimates made available at https://www.payscale.com/research/US/Job=Help_Desk_Technician/Hourly_Rate, and by considering an 8-hour working day, as well as a Person Month of 22 working days.

⁸² <https://www.servermania.com/kb/articles/how-much-does-a-server-cost-for-a-small-business/>

Given the above, there are three different scenarios to consider regarding the further hosting of the e-KRP and provision of platform-related services (i.e. beyond the end of the project):

Scenario 1: In-house hosting of the e-KRP by a consortium or third-party organisation

In this case, responsibility of the hosting of the e-KRP and further provision of platform-related services and content is undertaken by either a consortium or third-party organisation, which is responsible for providing all the necessary human- and infrastructure-related resources.

Table 38 below provides an overview of the types of resources that need to be allocated by the organisation in charge, as well as related costs.

Table 38: Types of resources required and associated costs in the case of the in-house hosting and service provision scenario

Type or resource required	Resource name/description	Associated cost
Human labour	Database administrator	€3,780 per month
	System administrator	€3,870 per month
	Software developer	€4,530 per month
	Help desk technician	€2,750 per month
Infrastructure	Server operation	€28.00 per month and per server
	Server maintenance	€120 per month and per server

A model for monetisation of the services provided will have to be employed for covering the costs stated above. Given the non-profit character of the services provided and the non-profit nature of the organisation that may be in charge (e.g. a university), the following alternatives can be considered:

- Adoption of the “**freemium model**”: All basic platform features and services (with the access to content being on top of these) are provided for free. Yet, some additional features able to enhance the overall user experience (e.g. personalisation of services) are made available under a fee paid on a regular basis. The fee can be determined on the kind and number of additional features that the user would like to have access to.
- Adoption of a “**crowdfunding**” solution: Given the aspiration of the EURAKNOS to connect TNs, funding could be received from the dissemination budget of future TNs who would be interested in making outputs public through the e-KRP. By charging a fee for the use of services, platform overheads would be feasible to be covered.

Scenario 2: Outsourced e-KRP hosting and service provision

In the case of scenario 2, platform-related services and content keep being made available under the auspices of a consortium or third-party organisation. The technology infrastructure required is made available by a hosting services provider. In the context of such a scenario, shared hosting, virtual private hosting, dedicated hosting, and cloud hosting constitute a list of outsourced hosting solutions to consider. Table 39 below provides an overview of these solutions together with a real-life metaphor for better comprehending each case.

Table 39: Cloud-based hosting and service provision options to consider for the EURAKNOS e-KRP after project completion

Solution option	Details
Shared hosting	Description
	<ul style="list-style-type: none"> • Most popular option. • The application is hosted on a server together with hundreds/thousands of other applications. • Each customer has to share space and resources (e.g. CPU time, memory and disk space).

Solution option	Details				
	<ul style="list-style-type: none">• Cost range: €3.70 to €9.20 per month.				
	<table><tr><th>Advantages</th><th>Disadvantages</th></tr><tr><td><ul style="list-style-type: none">• Cheap.• Beginner-friendly.• Server security, upgrade, and maintenance are managed by the hosting service provider.</td><td><ul style="list-style-type: none">• Service provision can be slow; page load times may suffer.• Data security is not guaranteed.• Lack of server control/performance.• Difficult to scale due to limited storage and bandwidth.</td></tr></table>	Advantages	Disadvantages	<ul style="list-style-type: none">• Cheap.• Beginner-friendly.• Server security, upgrade, and maintenance are managed by the hosting service provider.	<ul style="list-style-type: none">• Service provision can be slow; page load times may suffer.• Data security is not guaranteed.• Lack of server control/performance.• Difficult to scale due to limited storage and bandwidth.
	Advantages	Disadvantages			
	<ul style="list-style-type: none">• Cheap.• Beginner-friendly.• Server security, upgrade, and maintenance are managed by the hosting service provider.	<ul style="list-style-type: none">• Service provision can be slow; page load times may suffer.• Data security is not guaranteed.• Lack of server control/performance.• Difficult to scale due to limited storage and bandwidth.			
Best suited to... Small-sized websites and applications with minimal traffic, such as blogs and personal sites.					
Like living in... <i>an apartment building</i> Residents have their own apartment, but they share resources like the elevators and stairwells, the car parking lot, etc.					
Virtual private hosting	Description <ul style="list-style-type: none">• Server-related resources are shared among a limited number of applications.• The server is partitioned into a number of virtualised server environments (virtual machines).• Resources provided are baseline, but are usually guaranteed.• Cost range: €18.50 to €92.70 per month.				
	<table><tr><th>Advantages</th><th>disadvantages</th></tr><tr><td><ul style="list-style-type: none">• More affordable solution than buying and maintaining a server.• Security is guaranteed.• More resources are allocated than in the case of the shared hosting option.• Root server access.• Scalability.</td><td><ul style="list-style-type: none">• Some hosting service providers oversell their resources.• More expensive solution than the shared hosting option.• Configurations may be more difficult.</td></tr></table>	Advantages	disadvantages	<ul style="list-style-type: none">• More affordable solution than buying and maintaining a server.• Security is guaranteed.• More resources are allocated than in the case of the shared hosting option.• Root server access.• Scalability.	<ul style="list-style-type: none">• Some hosting service providers oversell their resources.• More expensive solution than the shared hosting option.• Configurations may be more difficult.
	Advantages	disadvantages			
	<ul style="list-style-type: none">• More affordable solution than buying and maintaining a server.• Security is guaranteed.• More resources are allocated than in the case of the shared hosting option.• Root server access.• Scalability.	<ul style="list-style-type: none">• Some hosting service providers oversell their resources.• More expensive solution than the shared hosting option.• Configurations may be more difficult.			
Best suited to... Cases in which more dedicated resources and control are required (in comparison to those offered in the shared hosting option) over the hosting environment.					
Like living in... <i>a condo</i> The building is shared by residents and each resident is responsible for maintaining his/her own property, as well as for making any repairs needed. Residents are fewer and they can also get their own, specially allocated, car parking space.					
Dedicated hosting	Description <ul style="list-style-type: none">• Application stored in a single physical server dedicated to own use.• Full access to server resources; configuration to specifications required.• High performance and higher level of security.• Cost range: €74 to €463 per month.				
	<table><tr><th>Advantages</th><th>Disadvantages</th></tr><tr><td><ul style="list-style-type: none">• Full access to server settings; potential for complete customisation.• Full access to server resources.• Great server performance and security.• 24/7 support.</td><td><ul style="list-style-type: none">• Expensive solution.• Skilled technical staff is needed to maintain and optimise the server.• The client is responsible for its server; in case of problems, the client needs to have the resources to fix them.</td></tr></table>	Advantages	Disadvantages	<ul style="list-style-type: none">• Full access to server settings; potential for complete customisation.• Full access to server resources.• Great server performance and security.• 24/7 support.	<ul style="list-style-type: none">• Expensive solution.• Skilled technical staff is needed to maintain and optimise the server.• The client is responsible for its server; in case of problems, the client needs to have the resources to fix them.
	Advantages	Disadvantages			
	<ul style="list-style-type: none">• Full access to server settings; potential for complete customisation.• Full access to server resources.• Great server performance and security.• 24/7 support.	<ul style="list-style-type: none">• Expensive solution.• Skilled technical staff is needed to maintain and optimise the server.• The client is responsible for its server; in case of problems, the client needs to have the resources to fix them.			
Best suited to... Large organisations and high traffic applications that receive over 500,000 visitors per month; need for skilled technical staff able to maintain the server.					
Like living in... <i>your own house</i> The only resident. There is potential to make use of the property in any way. However, the resident of the house is the only person in charge of the maintenance and security of the property.					

Solution option	Details		
Cloud hosting	Description <ul style="list-style-type: none">• Application stored in a single physical server dedicated to own use.• Server resources are not shared by other applications; there are full access rights to server resources; resources can be configured to match nay demand.• High performance and high level of security.• Cost range: €28 and above usually charged on a per-user basis		
	<table><tr><td>Advantages<ul style="list-style-type: none">• Reliable; the application is hosted in data centres made up of hundreds of servers with multiple redundancies.• Scalability and flexibility.• Cost efficiency; costs are paid only with regard to resources used.</td><td>Disadvantages<ul style="list-style-type: none">• Advanced knowledge is needed.• Not an easy solution to set up and start using, even for software developers.• A potentially insecure solution given that resources are shared.</td></tr></table>	Advantages <ul style="list-style-type: none">• Reliable; the application is hosted in data centres made up of hundreds of servers with multiple redundancies.• Scalability and flexibility.• Cost efficiency; costs are paid only with regard to resources used.	Disadvantages <ul style="list-style-type: none">• Advanced knowledge is needed.• Not an easy solution to set up and start using, even for software developers.• A potentially insecure solution given that resources are shared.
	Advantages <ul style="list-style-type: none">• Reliable; the application is hosted in data centres made up of hundreds of servers with multiple redundancies.• Scalability and flexibility.• Cost efficiency; costs are paid only with regard to resources used.	Disadvantages <ul style="list-style-type: none">• Advanced knowledge is needed.• Not an easy solution to set up and start using, even for software developers.• A potentially insecure solution given that resources are shared.	
	Best suited to... <p>Organisations of any size given the cost-efficiency of the option. However, in cases of lack of sufficient technical expertise, it may not be the optimal solution.</p>		
Like living in... <p><i>Airbnb</i></p> <p>You share the property with the owner and other guests – if there are any other guests at all– and when you are ready to move on you can stay at another property listed in Airbnb.</p>			

All costs mentioned in Table 39 above have to do with infrastructure-related operation and maintenance costs. In the case of shared hosting, virtual private hosting, and cloud hosting, the organisation in charge of e-KRP service and content provision will still need to cover the database administrator's, the software developer's and the help desk technician's salaries. Regarding the dedicated hosting solution, the salary of the system administrator would also need to be covered. These costs may be covered by considering the "freemium model" or "crowdfunding" solutions mentioned in Scenario 1.

Scenario 3: Hosting the e-KRP in data centers of the European Commission

Given the fact that the stack of technologies to be used for the e-KRP development are based on open-source frameworks and are also favoured by the European Commission (i.e. solutions to be employed have also been exploited in the context of other European projects), a viable sustainability solution could be to have the e-KRP hosted in EC data centers. In this case, operation- and maintenance-related costs related to both human labour and equipment would be covered by EU funds.

Taking into account the range of existing scenario options and given the fact that discussions on the future of EURAKNOS e-KRP are currently in progress, a fully-fledged business plan will be provided in Deliverable 4.3 ("EURAKNOS e-KRP documentation and guide").

4.3 Added value of the EURAKNOS e-KRP

The added value of the work for developing and deploying the EURAKNOS e-KRP can be considered from both technical and end-user perspectives.

4.3.1 Added value from technical perspective

From **technical point of view**, EURAKNOS aims to:

- Provide a set of **guidelines** and **recommendations** on how to **structure data**. More specifically, the data model described in Deliverable 3.2 ("**Report on HIKR design**") can serve as a point of reference for the development of future TNs' data models. The intention is to provide a data model as a baseline approach to data structuring that, at the same time, can be extended to better address the modelling needs of future TNs.
- Enable access of external applications to data through a dedicated **Application Programming Interface (API)**. The EURAKNOS API is documented in Deliverable 4.2 ("**API documentation**").



Efficient data access will be enabled by the EURAKNOS Application Profile, i.e. the set of metadata elements that are going to be used for the efficient description of TN-related data. The development of the EURAKNOS Application Profile, also described in Deliverable 4.2, will be based on existing and widely adopted metadata schemas (e.g. schema.org).

- Provide a **system architecture** that is developed by taking consideration of a stack of state-of-the-art technologies for both the EURAKNOS platform's front- and back-end. The technologies to be employed are in full compliance with open data standards and the FAIR data principles as well as adopted by many other European projects and initiatives. The architecture of the e-KRP may serve as a point of reference for future TNs when considering design-related options and technologies for the needs of development of their own KRs.
- Provide a set of **recommendations** and **guidelines** for the design of the user interaction and experience, as well as for formatting the layout of the information/content delivered.

4.3.2 Added value from end-user perspective

From the **perspective of the end user**, the EURAKNOS e-KRP will:

- Allow access to a centralised repository of digital content made available by a number of TNs. The e-KRP will make the knowledge, best practices, instruments, materials, methodologies and tools available from all EU H2020 TNs accessible to the farming and rural communities by congregating all information in one place. Thus, access of end users to relevant information will be enhanced by adequately addressing the problem of knowledge resources dispersion. The e-KRP's main added value will relate to the provision of a common, centralised knowledge repository able to be used by a range of end users who will not have to look for solutions in many different places, and hence facilitate joint approaches to agricultural problems solution (Palczynski et al., in press).
- Facilitate a well-structured delivery of content and information by taking into consideration the interaction needs and preferences of the targeted end-user types.
- Significantly contribute to the design and development of educational/training programs by making available a wide range of quality content able to be accessed and retrieved by students and educators.

4.3.3 Set of specific requirements and indicators

Of the KPIs that were queried during the consultation, most international platforms measure the number of contents, followed by the number of visits, while less collect user feedback and/or measure the number of downloads and the quality of the content. Of the national platforms, most measure the number and quality of contents as well as the number of visits whereas only one platform collects user feedback (see sections 3.2.4 and 3.3.3).

Proefstation voor de Groenteteelt VZW (PSKW) and Agricultural University of Athens (AUA) are in a first phase of setting up questionnaires with end users, expecting some final results later in 2020. The majority of the 45 respondents are advisors (47%; all interviewed by AUA) while 16% are growers (most of them interviewed by PSKW). The remaining respondents belong to the following groups: industry, research, students, teachers, policymakers, and others. Most respondents are Belgian nationals (mainly interviewed by PSKW); 11% are Greek (all of them interviewed by AUA); the rest come from Bulgaria, the Netherlands, Lithuania, Germany, Spain, Switzerland, Latvia, Estonia, Ireland, Austria, Poland, Hungary, Ukraine and Russia. 28% belong to the age group 40-50; 25% are 50-60 years old and 16% 30-40. The majority (64%) are male; 31% are female. Most respondents (27 out of 45, or 60%) would like to be informed about new project results via **newsletter**, 20 through the **website** of research stations, and 19 during meetings and study days. 13 respondents want to be informed through technical articles or magazines. Social media (especially Facebook and LinkedIn) represent further sources of information to learn about new project results (see Figure 29 below).

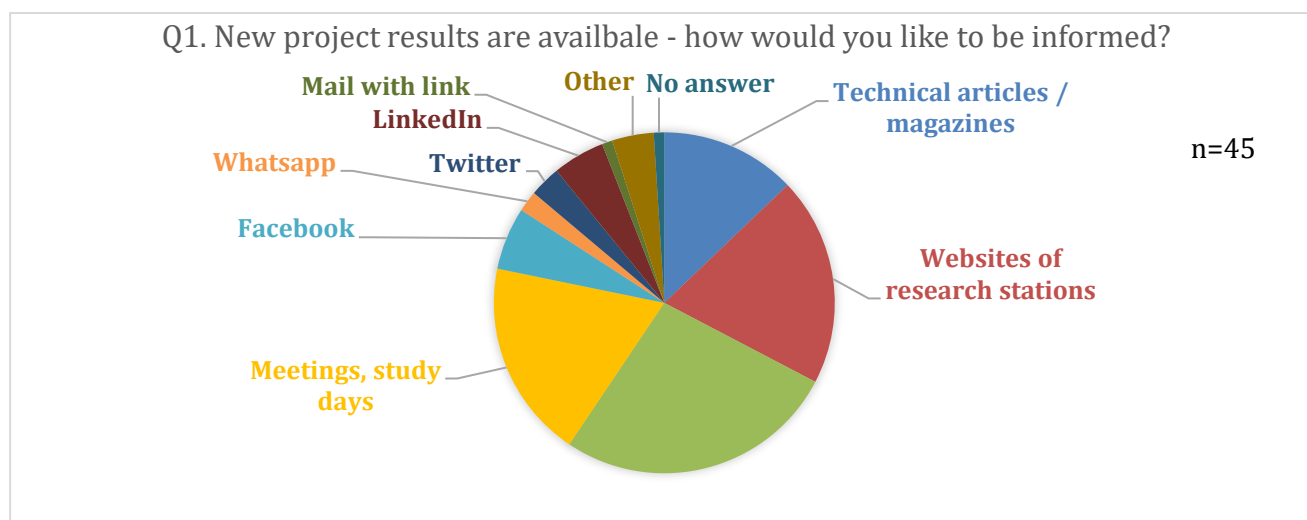


Figure 29: Responses to the question of how end users would like to be informed about new project results

The highest number of respondents (31 out of 45, or 69%) use **search engines** to obtain the information they need. Of similar importance are, with 67%, the websites of research stations (see Figure 30 below). This again underscores the need for making information easily accessible and available via the web.



Figure 30: Responses to the question of where end users search for required information

The questionnaire that was used by AUA for the advisor survey that took place at the European Forum for Agricultural and Rural Advisory Services (EUFRAS) meeting was built upon the initial questionnaire version drafted by PSKW but contains additional questions about preferred types and formats of content. Together with the results from WP2, the first set of data from these end-user surveys formed the basis of further quantifiable requirements and indicators beyond common KPIs, which are described below and relate to (i) the types of data, and (ii) formats of data objects that will be made available by the e-KRP, as well as (iii) its (potential) impact.

4.3.3.1 Types of data/content that will be made available by the e-KRP

Content needs to be adapted to the local conditions (language) and end users' level of expertise (Marois et al., 2019). 55.8% of the end users surveyed by AUA (mostly advisors with a frequency of 68.1%) search for information in English, and more than 42% in their native language. Studnitz et al. (2020) provide recommendations for an ideal TN KR, based on 28 finalised and ongoing TNs (D2.1, D2.2, D2.3 and D2.4), the EURAKNOS Budapest workshop with 32 participants from the Knowledge Innovation Panel (D2.5; UGent, 2019), and nine TN reports. The quantitative indicators developed by Studnitz et al. (2020) were combined with the first set of results from the advisor survey at the EUFRAS meeting in the following **quantifiable indicators** of the types of data/content that will be made available by the e-KRP:

- Content: number of topics/themes covered; number of scope-related materials; number of problem-solving materials; type of content (e.g. scientific, practical)

- Access to content: number of local languages per output; number of search options and kind of information delivered as part of the display of search results (categories, e.g. data type, short textual description of the provided result item)
- Channels and interactivity: number of interactions on the platform; user analytics; number of linkages of the website with social media; number of user-friendly functionalities (e.g. possibility to add members to the community); number of channels used to reach a specific end-user group (e.g. podcasts)
- Sustainability: number of linkages to networks and to external data repositories; number of months that the website with the TN outputs stays available after the project end; budget allocated to dissemination and number of planned dissemination activities, including post project
- MAA: number of key actors involved; number of end users involved in the different phases of the project lifecycle; number of evaluations performed in the post-execution phase; number and users of chat forums; number of participants in digital networks; number of disciplines involved in TN consortium in conceptualisation phase; number of disciplines involved in TN activities during the project; equal distribution in consortium between partners in different European regions; number of linkages with OGs, national and local initiatives with end-user involvement

4.3.3.2 Formats of data objects that will be made available by the e-KRP

Formats relate to the employed data and content form (e.g. digital data, pictures, videos, articles). Marois et al. (2019) note a great diversity of formats used by the TN KRs, with PDF, HTML and different types of videos as the most common ones. They recommend a high level of visual and interactive output formats, with a focus on videos of best practices/cases with co-created content and international showcases of new information. Furthermore, knowledge should be provided in tailored formats, specific to user profiles. 20 of the 31 end users interviewed by AUA would opt for being provided content/information based on their profile and history of interactions. Building on this survey as well as on D2.1 (Mosquera-Losada et al., 2019) and D2.6 (Studnitz et al., 2020), quantitative indicators with regards to formats are:

- Kinds of content/information: number of technical contents, innovative practices, best practices, education/training material, guidelines, information material, and methodologies
- Formats of data objects/kinds of digital content: number of different output formats, e.g. practice abstracts, factsheets, press releases, research articles, reviews, and technical articles number of images, presentations (slideshows), videos, text and audio files

4.3.3.3 Impact

The following quantitative **impact indicators** provided by Studnitz et al. (2020), based on mind mapping by EURAKNOS partners, can be used to evaluate the probability of impact of the e-KRP:

- TN content: number of key disciplines involved during the project's life cycle; easily understandable language, terminology oriented to practitioners; number of materials produced with practice-oriented content; availability of content in a range of languages
- TN content storage: number of user-friendly functionalities; user analytics; number of linkages with social media; budget for website after the lifespan of the project; number of months that the website is available after the project lifespan; number of linkages to external data repositories; compatibility with the FAIR data principles; open access; end users' usage of TN outputs per period (e.g. classical citation)
- TN C&D: number of training modules; number of local languages in which TN outputs are produced; number of events organised, newsletters produced, target audience reached, number of hits on the website etc.; interactive publication list which counts number of downloads for each material; number of webinars
- TN MAA: number of key actors involved; equal distribution between actors from different European regions; equal representation of different fields of expertise and sectors

4.4 Concluding remarks, limitations of the analysis and outlook

This report contains an overview of existing initiatives at both the national and international levels that make knowledge on agricultural innovation available to end users, which makes them similar to the platform EURAKNOS aims to develop. After analysing selected platforms more in depth, their representatives were contacted for more information, thereby validating the findings from the desk-top study. The results from both the desk-top study and the consultation were considered and combined in the matching of the identified user needs with the platform offers. In addition, a feasibility study was conducted for a new centralised and open-source agricultural e-KRP and its added value was described, drawing on the lessons from the investigation in this Task as well as in related WPs.

Because of the limited time and resources, end-user needs were only investigated by means of a desk-top research, whereas a consultation of representative end users might have generated additional insights. As another possible limitation, the platform representatives were only sent an electronic questionnaire. Face-to-face interviews could potentially have provided additional information, e.g. through further inquiring, but were not feasible within the given timeframe. However, it allowed respondents to research and include supplementary data and technical details that might not be readily at hand during an interview.

With the collection of platforms being mostly based on the knowledge and expertise of the project partners, one can assume that there are many more national platforms that were not identified and included in the mapping, such as the KRs of the National Rural Networks (NRNs), most of which are expected to have their own KR. The selection of agriculture-related knowledge platforms was solely based on the information gathered by the desk-top study, which could have resulted in a bias (e.g. if a platform is only in an early stage of development and not much information is available yet online). In this way, a reduced number of only five out of 22 national platforms was included in the in-depth study, which was deemed acceptable since EURAKNOS aims at creating an e-KRP at European rather than national level, with resources generated by EU projects. Many national platforms are very (country-)specific and for the most part only available in the country language and frequently do not provide a search function.

Very little input was made available regarding the data models used by existing platforms. Therefore, no sound conclusions could be drawn with regards to data structuring. However, the adoption of a fit-for-purpose solution by each platform initiative could be concluded, and study outcomes and insights into which software and solutions are most widely used across both international and national platforms can further inform and support the decisions on the e-KRP design in WP3. Based on the uniform format decided in WP3, Task 4.2 will be dedicated to designing and developing a prototype e-KRP for the main data repository which will be upgradable and scalable to meet future demands.

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Annex 1—Mapping of international platforms



D4.1 – Report on the added value and feasibility

Evaluation criteria Platform	Short description of the platform & project/organisation	4. Target group(s)	Objective(s)	1c. Language	1a. Search function	2b. Comprehensive agricultural knowledge 3. Types of outputs/resources	1b. Open access of data? Intranet?	2a. Up to date?	User involvement	Use of social media?
1. <u>Ask-Valerie</u>	Launched by European research project VALERIE to help users find relevant information on agriculture & forestry, making innovation from European research accessible	Farmers, foresters & advisors	Facilitating interactions between researchers & practitioners; injecting new knowledge into the process	English, French, Finnish, Italian, Dutch, Spanish, Polish	Search for a question (key words provided when starting to type in the first letters; query editor, e.g. farm+ climate, possible to add terms; language selector)	Different kinds of documents (articles, assessments, project reports...)	Yes, open access of search & documents; no registration needed, no intranet/forum	"Results up to date", but © 2017; many results from 2008	No scoring system; no possibility to comment/reply	No; no links
2. <u>FarmDemo platform</u>	Collaboration of 3 European projects funded under Horizon 2020 that aim to enhance peer-to-peer learning and focus on farm demonstration as a tool to boost innovation uptake: AgriDemo-F2F, PLAID & NEFERITTI	European commercial demonstration farms, actors involved in on-farm demonstrations; TNs bringing together 45 regional hubs of demo-farmers & innovation actors (advisors, cooperatives, NGOs, industry, education, researchers & policymakers)	Enhancing peer-to-peer learning and focus on farm demonstration as a tool to boost innovation uptake	English, Czech, Danish, Dutch, Finnish, French, Gaelic, German, Greek, Hungarian, Italian, Latvian, Polish, Portuguese, Romanian, Slovenian, Spanish, Swedish	Search via <u>Nefertiti</u> (→ Visit the FarmDemo Networks): networks (e.g. grassland & carbon sequestration); farm type (search inventory: by country, language, farm type, farm management, demo topics); demo activities: main categories plant production, animal husbandry, unrelated topics; possible to tick organic farm	FarmDemoHub: EU-wide inventory of demonstration farms; FarmDemo Networks: TNs of demonstration farms active in your region; FarmDemo Training Kit: online tools, stories, video tutorials, tips & tricks to improve demonstrations; video channel (on-farm demonstrations in action across Europe)	Open access to videos & demo farm websites; possibility to join for demonstration farmers & innovation actors (questionnaire; registration to showcase your farm & demonstration activities/participate & learn)	New & older videos; events	No scoring system; FarmDemo hub site info: address, call centre, information phone, contact form	YouTube/ video channel; the 3 different projects AgriDemo, PLAID, NEFERITTI use Twitter & Facebook (& YouTube for PLAID, YouTube & LinkedIn for NEFERITTI)
3. <u>EIP-AGRI website</u>	European Innovation Partnership for Agricultural Productivity and Sustainability; One-stop-shop for agricultural innovation in Europe	Innovation actors: farmers, advisors, researchers, businesses, NGOs & others in agriculture & forestry, at EU level	Strengthening R&I & supporting European Innovation Partnerships as new interactive approach to innovation; fostering competitive & sustainable farming & forestry that 'achieves more & better from less'; ensuring a steady supply of food, feed & biomaterials, developing its work in harmony with the essential natural resources on which farming depends	English only, but more options in the search	Search for projects: fulltext search, keywords, main funding source, geographical location, agricultural sectors, partners categories, language Funding: Active: search for different target groups, agricultural sectors, geographical scope, keywords, type of funding, fulltext search; Archived: geographical scope, target group, keywords (options) Research needs: title, keywords, geographical scope, language Online resources: title, keywords, language, sort by title, order Asc/Desc, items/page	Projects: innovation actions & research projects (short descriptions/profiles, practice summary where applicable) Funding: short description of calls (keywords, programme institution, website, eligibility criteria, opening/closing dates) Research needs: short descriptions, e.g. Research need from Focus group... Online resources: title, short description, link to external website, language(s); areas "Project ideas" & "People" only available to registered users	Yes, open access to documents; My EIP-AGRI; Share: share your innovative projects, project ideas, research needs; register/login	Projects continuously updated/new ones uploaded; recent research needs (from 2019); News: search news, press, videos, newsletter	No scoring system; phone number & email of Service Point at the bottom of the website	Links to Twitter, LinkedIn

D4.1 – Report on the added value and feasibility

4. Organic Farm Knowledge platform	Provides access to a range of tools & resources about organic farming; promotes knowledge exchange; toolbox provides access to resources for organic farmers & advisors selected/created in the framework of the projects OK-Net Arable & OK-Net EcoFeed Recommended tool, most popular tool, latest tool	Farmers, farm advisors, scientists	Increasing productivity & quality in organic farming across Europe; helping improve production; serving as a virtual meeting place for cross-border learning	English, Bulgarian, Danish, Dutch, Estonian, French, German, Hungarian, Italian, Latvian, Serbian, Spanish, Swedish (auto-translation s by Google)	Search the toolbox: possible to filter by language, type, theme, year, country of origin, keywords	Different tools (e.g. SmartSOIL Tool: How cropping management impacts soil C & yields); Themes & discussion: crop production, e.g. arable crops (63 tools); animal husbandry, e.g. animal health (3 tools, latest from 2019 (year of release)); focus on organic farming	Open access documents; intranet for internal communication & to be able to track all tools which have been uploaded to the platform; organisations & networks can join the platform	News & events: news & news archive, events, knowledge sharings (created in the framework of the OK-Net Arable project)	Users can rate & suggest tools & comment; site info: website contact (address, phone, email address)	Links to Facebook, Twitter
5. FAO Agroecology Knowledge Hub	Investing in agroecology through public policies; global dialogue; database as starting point to organise existing knowledge on agroecology (specialised on different legal frameworks, policies & programmes concerning agroecology in different countries)	Policy makers, farmers, researchers & "other relevant stakeholders" We need a farming policy that is just & robust to change the whole food production system	Supporting stakeholders through knowledge exchange & transfer	Arabic, Chinese, English, French, Russian, Spanish	AgroecologyLex: specialised database on legal frameworks, policies & programmes concerning agroecology in different countries): Search in the database: free text; more search options: year, country, geo/econ regions, type of text Database search: freetext; more search options: type, topic, content language, possible to tick gender-related content	Different kinds of resources/ formats (laws, resolutions, decrees, regulations, national programmes, articles, videos, case studies, books...); focus on agroecology	Open access to documents; Join us (submit contribution); network; registration open to all	Yes: "database is a 'living process' that is constantly being updated"; recently published documents (from 2019)	No scoring system; Join us: email address for further info	(FAO: Facebook, flickr, Instagram, LinkedIn, RSS, SlideShare, SoundCloud, Twitter, Weibo, YouTube)
6. FAO Family Farming Knowledge Platform	Gathers digitized quality information on family farming from all over the world	Policy makers & other stakeholders (family farmers' organisations, development experts & stakeholders in the field and at the grassroots level)	Providing a single access point for international, regional & national information related to family farming issues; integrating & systematising existing information to better inform & providing knowledge-based assistance	Arabic, Chinese, English, French, Russian, Spanish	Family Farming Lex (collaboration with FAOLEX): Document search: free text; advanced search: geographical area, country/territory, year (from to), topics, type of text (constitutions, policies, legislation, regulation, international agreements, miscellaneous); no results/findings for list of keywords Resources: Search in the database: Free text; more search options: year, country, geo/econ regions, main topic, sub topic, type	Different kinds of resources/ formats (regional & national laws & regulations & public policies on food, agriculture & renewable natural resources related to family farming , best practices, relevant data & statistics, researches, articles); Resources section: archived publications & multimedia materials; wide range of themes, e.g. agroecology, forest farming; trustworthy data sources (international bodies, e.g. FAOSTAT, World Bank, IFAD)	Open access to documents (resources & related content can be downloaded); Join us: Submit content (for individual users); register to become an FRKP Contributor (for organisations & institutions); register to become part of our Network (for organisations & institutions)	"Updated information"; recently published documents (from 2019); newsletter	No scoring system; Join us: email address for further info	Twitter (FAO: Facebook, flickr, Instagram, LinkedIn, RSS, SlideShare, SoundCloud, Twitter, Weibo, YouTube)
7. PANORA-MA Solutions	Applied solutions from around the globe; partnership promoting	Practitioners (institutions & individuals;	Enabling cross-sectoral, interregional learning,	English, French, Spanish	Explore: all solutions/all Building Blocks/Thematic Communities; thematic access:	Agriculture & biodiversity Solutions as 1 portal (127 Solutions): Full solutions:	Open access to solutions; contribute your	Solutions: date published & last edited; Latest	No scoring system; number of	RSS-Feed



	examples of inspiring, replicable solutions across a range of conservation & development topics (contributions from different thematic disciplines & communities, represented through portals; funding agencies: Federal Ministry for the Environment, Nature Conservation & Nuclear Safety of the Federal Republic of Germany, Global Environment Facility, & Global Project Mainstreaming Ecosystem-based Adaptation: EbA Solutions)	solution providers represent NGOs, government institutions, academia, international organisations, foundations, private sector)	knowledge exchange & upscaling of successes		solutions for (ecosystem, e.g. agro-ecosystem; theme, e.g. climate change); access by challenge, e.g. climate challenges Search directly for solutions (latest keywords provided) in: all solutions/ snapshot solution/ full solution; region (geographic access, e.g. Europe; further differentiation possible); ecosystem; theme; challenges PANDRAMA Explorer: Explore 1489 Building Blocks of 5 Thematic Communities: search building blocks (free text/keywords; region; ecosystem; category—different options to tick)	summary, classifications, location, challenges, beneficiaries, building blocks & how they interact, impacts (environmental, economic & social), story, picture, contributed by, resources; Snapshot solution: summary, classifications, location, impacts, pictures, contributed by; thematic community coordinators: international umbrella organisations jointly implement the platform, e.g. Agriculture & Biodiversity: GIZ, Rare & IFOAM—Organics International (projects Global Project Biodiversity and Ecosystem Services in Agrarian Landscapes & Farming for Biodiversity)	solution: full solution (detailed account)/snapshot solution (short overview); organisations can join the PANDRAMA partnership (contact us)	developments: new solutions; newsletter; news up to date; latest Tweets up to date © 2019	views shown for the different tools; login to save My Favourites; contact (contact us)	
8. Access Agriculture	International NGO showcasing agricultural training videos in support of sustainable agriculture in developing countries—examples of videos (possible to download them/order a DVD copy)	Research institutes, universities, NGOs, extension services, companies, radio stations & farmer-based organisations	Maximum impact in improving opportunities for farmers; enabling access to/ development of suitable training materials	English, French, Spanish; videos in local languages; Contact us for translations into other local languages that are not yet listed	Yes (search by topic, keywords or language; access to videos via categories)	Focus on videos , audio files, related written material for most videos (can be downloaded for free) Other resources: extension platforms, apps, publications, university theses, other video platforms	Open access, but registration needed to download video & audio files; other resources: publications, e.g. books & articles, can be downloaded directly; links to extension platforms, university theses, apps (Android) & other video platforms	New videos, latest news, latest Twitter & Facebook (up to date)	No scoring system; Contact us (email)	Links to Twitter, Facebook, WhatsApp, LinkedIn, WeChat; possible to share via Facebook, Twitter...
9. Oppla	EU repository of nature-based solutions; knowledge marketplace; over 60 universities, research institutes, agencies & enterprises are contributing to Oppla as part of a joint activity between the OPERAs and OpenNESS projects, funded by the European Commission FP7 Programme	People with diverse needs & interests—from science policy & practice; public, private & voluntary sectors; large & small organisations; individuals	Simplifying how we share, obtain & create knowledge to better manage our environment	English	Possible both to enter search terms & to ask Oppla directly after creating an account → will reply via email; need to insert a title & a question; tick if question is for webinar categories; possible to categorise the question	269 case studies: search function (free text/terms, scale, type); marketplace: products (select types: audio, consultancy, dataset, document, event, guidance, image, infographic, slides, software, spreadsheet, training, video; filters: scale (local to global), quality assurance (possible to select scientific peer review, international standards, e.g. ISO, accreditation, professional references, own QA & testing), license	Partially open access: Marketplace: possible to tick "free, no licence" or "public/open source" (vs. commercial); Community: Join/Log in (Join Oppla: Register for free) to get access to Ask Oppla, Oppla	Newsletter, latest news, events, Twitter (latest Tweets featured on homepage) up to date; © 2019	No scoring system; email (at the top of the website), Contacts: email, Twitter, phone, address	Links to Twitter, LinkedIn, YouTube

10. <u>Agrisource</u>	Open-Innovation Platform for Agriculture; project carried out by French research organisations INRA & CIRAD, funded by the European Climate-KIC; content provided by worldwide community	Farmers, advisors, administration representatives, cooperatives, businesses, associations, traders, researchers, distributors, consumers; farmers & agricultural producers as primary targets	Ensuring access to information on mitigating greenhouse gas (GHG) emissions & adapting to climate change as key feature for successful transitions in agricultural circuits	English, French, Italian (many documents in French)	Global search/sorted by players (554)/ documents (80)/projects (121)/ innovations (68); Geolocation of Agrisource network: 439 in Europe, 33 in Africa, 22 in North America, 4 in South America, 22 in Asia/ Australia, 5 in New Zealand	Players (links to e.g. research institutes, e.g. INRA), documents (e.g. reports, guides), projects (presentation, related players, related projects, documents, news, events); innovations (presentation/short description, related players, documents, related projects), news (presentation, related projects, related players), events; platforms include FAO Agroecology Knowledge Hub & Family Farming Knowledge Hub, URGENCI, Smart-AKIS	Marketplace ("knowledge supermarket" with resources), Oppla Community (networking with other members worldwide) Open access (possible to view/download documents, projects, innovations); Join Agrisource (sign in/log in)	News updated, events updated (mostly in France, but also worldwide); some of the "recent projects" outdated, e.g. until 2014, others more recent, e.g. until 2020	No scoring system; Contact at the bottom of the website (address, email)	(EIT Climate-KIC: Facebook, Twitter, LinkedIn, Instagram)
	2. <u>Organic Eprints</u>	International open access archive of electronic documents related to research in organic food & farming; developed & operated by International Centre for Research in Organic Food Systems (ICROFS); Research Institute of Organic Agriculture (FiBL) joined the project as first international partner with editorial responsibilities for the German language region and responsibility for the German language version of Organic Eprints; national editors (currently in 26 countries) assist in reviewing new eprints	Farm advisors, teachers/trainers, farmers, policymakers	<ul style="list-style-type: none">Facilitating the communication about organic researchImproving the dissemination & impact of research findings Documenting the research effort	English, German; manual in English, Czech, French, Portuguese, Spanish, Turkish (documents in all languages, but English abstract is encouraged)	<ul style="list-style-type: none">Browse all eprints in the archive by: subject area; country, organization and project; other browse viewsSearch on homepage: any field; name(s), date(s)Simple search page: any field, keyword(s), name(s), date(s); retrieved records must fulfill any/all conditions; different options to order results Advanced search page: documents, title, authors, editors, summary, date, keyword(s), document language, subjects, research affiliation, funding part, status, refereed, title of publication in which the paper was published, open access to full document, format type, publisher, series name, conference, organization, eprint type (e.g. journal paper), type of presentation (e.g. paper), thesis type, leaders, acronym, start date,	Full-text papers together with bibliographic information, abstracts & other metadata as well as information on organisations, projects & facilities in the context of organic farming research; published & unpublished documents such as scientific papers, theses, reports, book chapters, newspaper articles, videos & project descriptions; criteria for acceptance: relevance of documents to research in organic agriculture & suitable for communication; correct metadata information is correct	Established to promote open access to research results (eprints and metadata freely accessible to all; documents can be downloaded, stored & printed freely, but may not be publically available from other sources—linking to eprint summary pages is encouraged); possible to select open access to full document in the advanced search; as registered users can deposit your papers in the archive & subscribe to email alerts on new papers (free registration)	Up to date; Latest: additions in the last 7 days; email alerts on new papers	No scoring system; contacts: national editors (contact persons for different countries—address, phone number, email, website), archive administrator (ICROFS—contact person, address, phone number, email, website), partner national editors

					end date, total budget, international targeted funding, national targeted funding, other funding, person months, project ID, part/full programme, type of organization, type of facility, type of practice tool, location, research funders, references; retrieved records must fulfill any/all conditions; different options to order results				(FIBL Germany & FIBL Switzerland—contact persons, address, phone number, email, website)	
12. <u>Sustainable Intensification (SI) Platform (SIP)</u>	SIP was a multi-partner research programme, funded by Defra & the Welsh Government, that used study farms to host research on farming systems & land management & created a data platform Integrated farm management (IFM), decision support tools	Researchers, policymakers & other interested parties (farmers, industry experts, environmental organisations, economists, environmental & agricultural stakeholders)	Exploring the opportunities & risks of SI from a range of perspectives & landscape scales across England & Wales; developing ways of funding & conducting collaborative research for applying methods of SI in agriculture; enabling access to the wealth of data collected within the SIP projects	Many different languages (Google translate, select at the bottom of the page)	No	Infographic; SIP Information Sheet; Science, Policy and Practice notes; project reports; papers	Open access to project outputs; SI metrics benchmarking: 1. Match me to similar farms, 2. My farm records (Benchmarking Tool) to compare your SI performance with a set of similar comparative farms; Join the debate - SI discussion forum; share the SIP Information Sheet (sign in)	Platform "now completed"; newsletter, events (in your area)	No scoring system; Get involved: contact (2 contact persons, email address)	Link to Twitter
13. <u>Smart Chain</u>	Project will stimulate demand-driven innovation in short food supply chains (SFSC) using multi-actor approach & an interactive innovation model where all actors involved in the project are working together to make best use of scientific & practical knowledge for the co-creation & diffusion of novel solutions ready to solve practical problems; platform facilitates knowledge, innovative practical solutions & know-how transfer	End-users: small farmers & small food businesses, agricultural cooperatives, farmer & consumer associations	Project: fostering & accelerating the shift towards collaborative short food supply chains, introducing new robust business models & innovative practical solutions that enhance competitiveness & sustainability of the European agri-food system through specific actions & recommendations; platform aims to generate, share and utilize information on suitable innovations; engage stakeholders in the SFSC sector; disseminate SFSC innovation and cooperation events; organise training activities & generating	English, Croatian, Dutch, French, German, Greek, Hungarian, Italian, Spanish (only English works)	No	Focus on short supply chains, 18 case studies (in Europe); innovation hubs (in Europe); innovation inventory "will be available soon"; training activities & materials will be developed (e-learning/training on innovation & solution-based multi-actor workshops); GAIN transition model	SFSC definition & multi-actor approach: links to European Commission & European Parliament websites (e.g. EU Science Hub) where documents can be downloaded; possible to enter the platform via location (in Europe)/ activity, e.g. farmer & cooperative: possible ways to participate in the project, e.g. taking	News from 2019 (only 3 in total), events in 2020 & past events, newsletter © 2019 (up to date); project ongoing (website not yet completed)	No scoring system; Sign up to stay in touch; contact form	Links to Twitter, LinkedIn, ResearchGate

14. ZENODO	Open-source repository for open-access research, launched by CERIN, a memory institution for particle physics and partner of the project OpenAIRE; tools for Big Data management	Researchers	training materials on best practices in innovation; build an international community through a SFSC game Ensuring that everyone can join in Open Science; offering a viable and concrete alternative to commercial services	English	Search function on top of the website; possible to sort results by most viewed, best match, most recent, publication date, conference session, journal or version; asc./desc.	Diverse open-access documents including technical notes/tools (e.g. reference calculators), datasets, figures, journal articles, books etc.	advantage of the Innovation Inventory or register/login directly Open access; login/sign up; possible to upload documents after login	Search results up to date (latest publication date December 2019); blog: latest posts from July 2019	Help (FAQ, Features, What's New), contact (address, contact form, Twitter)	Twitter; links to 3,768 communities created & curated by Zenodo users (e.g. Biodiversity Literature Repository) Links to Facebook, Twitter, YouTube
	Focus on community supported agriculture (CSA) as alternative economic approach (Local Solidarity-based Partnerships between Producers & Consumers)	Citizens, small farmers, consumers, activists & concerned political actors at global level	Vision & mission: CSA as a way to contribute to a greater solidarity between urban & rural communities, is equally empowering for both the community & the farmers and offer solutions to common problems facing producers & consumers worldwide.	English, French	Yes: type keywords	CSA resources (material on CSA): handbooks, articles, reference documents (e.g. European CSA Declaration), reference manuals, shared ICT tools, short films on CSA (from worldwide), publications on Urgenci (books, press articles, reviews, audiovisual documents); Experience sharing featuring different projects, e.g. EATINGCRAFT (links to project websites); CSA Map	Open access; shared ICT tools: open source software; Get involved: Join us in connecting initiatives, formalizing CSA hands-on experiences & developing appropriate advocacy work (membership fee)	Newsletter; featured posts on homepage; blog (recent blog & posts & Tweets featured on the homepage up to date, but publications older, e.g. latest books from 2012, latest press articles from 2013)	No scoring system; Contact (at the top & bottom of the website): email, phone, address	
16. Agroknow	Blend of data, computer, agronomy, food & marketing experts (team of consultants set up to help solve problems/date & tech challenges in agriculture & food in a tailor-made manner); FOODAKAI minimises food safety risks in supply chains with sophisticated analytics	Digital innovators in the agri-food industry; companies in the agri-food sector	Empowering digital innovators through custom-made R&D, enabling digital science innovation in agriculture, food & water (infrastructure), software: food safety intelligence as a service for the food sector (delivering data & intelligence)	English	No (Contact us in case of questions)	FOODAKAI partners & clients include research institutes & companies, e.g. INRA, Syngenta (40 global organisations; working with scientists & technology visionaries; harvested, linked & indexed almost 9,000,000 scientific publications on agriculture, food & environment, but no access to them)	No resources; no intranet/forum	Newsletter ©2019	No scoring system; Contact: contact form, info email address & links to social media; Contact us	Links to Instagram, Twitter, Facebook, LinkedIn, Workable
17. AGINFRA +	Exploiting core e-infrastructures (EGLeu, OpenAIRE, EUDAT, D4Science) towards the evolution of the AGINFRA data infrastructure to provide a sustainable channel (developing data infrastructure & pilots, providing specification &	"Adjacent but not fully connected user communities around agriculture & food" (scientific & technological communities that work on	Supporting user-driven design & prototyping of innovative e-infrastructure services & applications (establishing a framework facilitating transparent documentation, exploitation & publication of research assets; identifying requirements of specific	English	Search function on top of website not working, only map.aginfra.eu, see eROSA below; Openaire: results can be filtered by funder, project, publication date, access mode, type, language, community (e.g. Agricultural & Food Sciences), content provider, collected form	Outputs: publications, deliverables, use cases, data journals, webinars; link to Zenodo community: 342 results (deliverables); link to Openaire community: 307,472 results; research communities: agroclimatic & economic modelling, food safety risk assessment, food security	Open access to publications & deliverables; links to use cases, Food Modeling Journal & Viticulture Data Journal; open access to webinar (YouTube video)	News & latest Tweets on the homepage up to date; News: mostly events—presentations of the project at different conferences; newsletter	No scoring system; Contact: About us, contact form; FAQs	Links to Facebook, Twitter, GitHub, SlideShare

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18. eROSA	components allowing rapid & intuitive development of variegating data analysis workflows)	multi-disciplinary & multi-domain problems related to agriculture & food)	scientific & technical communities)	English		(partners: research institutes, e.g. INRA; selected AGINFRA+ Use Cases will illustrate the benefits of applying the Science as a Service approach to pressing research questions from the corresponding research communities)		©2018		
	e-infrastructure roadmap for open science in agricultural & food sciences (foresight approach—building a shared vision of a future sustainable e-infrastructure for research & education in agriculture & making it operable through pragmatic recommendations)	Mainly research & education communities; practitioners & EU policy makers	Providing guidance to EU policies by designing & laying the groundwork for a long-term programme aiming at achieving an e-infrastructure for open science in agriculture that would position Europe as a major global player at the forefront of research and innovation in this area		Explore the data ecosystem (Map of Agri-food, map.aginfra.eu): enter keywords/browse by agri-food discipline, e.g. agri-food education & extension (39 results); Discover: 926 results (sorted by scientific disciplines, e.g. 53 farming practices & systems, geographic coverage (national, global, European, other), data science category, access policy: open/controlled/private, address country, content type: organisation/data point/initiative/facility)	Outputs: bibliometric study (external link), deliverables, presentations, publications of the project, e.g. Final Foresight Roadmap Paper; international advisory board; Map of Agri-food: universities, national agricultural research centres/ institutes, state enterprises, publishers, ministries etc., e.g. FAO (links to organisations vs. publications)	Open access to deliverables & publications (can be downloaded); presentations: can be viewed & link to SlideShare; Map of Agri-food: data export: 422 organisations, 142 initiatives, 304 data points, 58 facilities can be downloaded (Excel files); possible to only view open access results	News: latest from 2018; latest Tweets: only 1 in 2019; newsletter; publications until 2018	No scoring system; Contact form	Twitter, LinkedIn, SlideShare
19. OECD-FAO Agricultural Outlook 2019-2028	Brings together the commodity, policy & country expertise of the Organisation for Economic Co-operation and Development (OECD) & Food & Agriculture Organization (FAO) of the United Nations & input from collaborating member countries	Not indicated (researchers, policymakers)	Providing an annual assessment of prospects for the coming decade of national, regional & global agricultural commodity markets	English, French (website); download OECD-FAO Agricultural Outlook 2019-2028 available in English, French, Spanish; Executive Summary also in Russian, Arab, Chinese	Publication (download) vs. database/search function (only possible to search within the document; search database for commodity/ country/variable); OECD Library; IGO Collection; possible to filter/sort by theme, publication year, content type, country, imprint, author/editor, publication	Focused on market data (database includes detailed commodity information used to prepare projections & main underlying trends in key macro-economic variables & population; detailed meta data for OECD countries; no agronomic knowledge/ information about farming/practice → not relevant for farmers); commodity projections: critical examination by experts from national institutions in collaborating countries & international commodity organisations	Outlook can be downloaded (open access); MyOECD (login/register—select themes that interest you → personal homepage with news, events & documentation related to the selected themes)	News: up to date; Newsroom: top story, key upcoming events; monthly statistics (updated); OECDdirect: free email alerts	No scoring system; Mail; contact us: OECD headquarters (address, phone, fax), centres in Berlin, Mexico City, Tokyo, Washington; stay in touch with social media/newsletters/ send us an email—contact form	(OECD: Facebook, Twitter, YouTube, LinkedIn, Flickr, Instagram, RSS)

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20. <u>European Food Safety Authority</u> (EFSA)	European agency funded by the European Union responsible for risk assessment (science vs. policy; operating independently of European legislative & executive institutions & EU Member States), producing scientific opinions & advice that form the basis for European policies & legislation & communicating risks associated with the food chain	Not indicated (the public)	Source of scientific advice & communication on risks associated with the food chain	English	Search site: results, e.g. for “climate change” in the following categories: <i>Type</i> : events, funding programme, news, others, publications; <i>subject</i> : animal health and welfare, biological hazards, chemical contaminants, corporate, cross-cutting science, emerging risks, GVO, methodology, pesticides, plant health, stakeholders; possible to search for date (from to)	Discover EFSA topics: featured, resources (glossary, factsheets, infographics, videos, conferences), A-Z list; Science: subject areas, support (data, methodology, tools & resources), expertise; publications: EFSA Journal on Wiley; applications (regulated products, claims, processes; food sector area; toolbox) – food safety data vs. information about farming (remit covers food & feed safety, nutrition, animal health & welfare, plant protection, plant health)	Open access to articles & videos; open access to articles in EFSA Journal; Engage: stakeholders, calls for data, consultations, observers, careers, tenders, grants, research platform, fellowship programme	News (by subject, e.g. animal feed; up to date); newsletters & email alerts, calendar updated (events, meetings, webinars etc.)	No scoring system; Contact us: phone, address; Toolbox: ask a question	RSS, Twitter, LinkedIn, YouTube
21. <u>GODAN</u>	Global Open Data for Agriculture & Nutrition: a global partnership advocating for food security – Promoting the proactive sharing of Open Data	Governments, policymakers, international organisations & business	Dealing with the urgent challenge of ensuring world food security; making information about agriculture & nutrition available, accessible & usable	English	NO	Tools, publications; open data success stories: GODAN area: Food security, sustainable production, poverty alleviation, nutrition improvement, business creation; keywords: open data, rights to data, civil society, government data; type: success stories (35), document (24), media (3), case study (2), research (1); F1000: GODAN Gateway open to contributions from across the research community publishes peer-reviewed articles, GODAN's outputs including policy documents, impact reports & discussion papers, posters & slide presentations focused on open agriculture & nutrition; documentary series: Open water, open fields, open farms, open climate, open skies (video, link to website); GODAN toolbox; partner tools	Open access/open data (publications & tools available to download, use & share); Join our network (organisations can join)	News updated; events: only 2 past events; newsletter; some pages under construction, e.g. Partner tools	No scoring system; contact us (address, phone, email)	Links to Facebook, Twitter, LinkedIn, SlideShare, RSS feed, YouTube (open data layer/ website also available as open data)

Annex 2—Mapping of national platforms



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Evaluation criteria National platform	Short description of the platform & project/organisation	4. Target group(s)	Objective(s)	1c. Language	1a. Search function	2b. Comprehensive agricultural knowledge 3. Types of outputs/resources	1b. Open access of data? Intranet?	2a. Up to date?	User involvement	Use of social media?
1. <u>BIOEAST</u>	Central-Eastern European Initiative for Knowledge-based Agriculture, Aquaculture and Forestry in the Bioeconomy (involvement of Central and Eastern European (CEE) countries in the project); developed by Research Institute of Agricultural Economics (NAIKAKI); financed by Ministry of Agriculture	Shared strategic research and innovation framework for Central and Eastern European (CEE) countries	<ul style="list-style-type: none"> Vision: offering a shared strategic research & innovation framework for working towards the development of a sustainable bioeconomy in CEE countries Objectives: developing strategies; cooperating & developing evidence-based policies; identifying common challenges & validating common research areas; providing evidence base; improving skills; developing synergies; increasing visibility 	English	Basic keyword search; no advanced search; no filters	<ul style="list-style-type: none"> Other Political Declarations Position papers Roadmap Studies Vision paper News Contents generally in pdf; sources of contents: BIOEAST and related V4 events	No registration is needed, content available for everyone	Contents up to date	No scoring system (comment / reply possible via Twitter & LinkedIn); possibility to turn on comment feature for each content (not applied at present); email address for all contact persons	Twitter, LinkedIn
2. <u>AHDB (UK)</u>	Agriculture and Horticulture Development Board (AHDB) equips the industry with easy-to-use, practical know-how that they can apply straight away to make better decisions & improve their performance; AHDB is a statutory levy board, funded by farmers, growers & other stakeholders in the supply chain	Industry (more than 100,000 farming & supply chain businesses across the UK)	Inspiring the farmers, growers & industry to succeed in a rapidly changing world	English, Welsh	<ul style="list-style-type: none"> General keyword search Filters by menu points Filters for knowledge library, events & news (by sector, topic, keywords, etc.) 	Huge amount of contents including news, newsletters, podcasts, articles, studies, books, analyses, strategies, learning materials, tools (e.g. calculators), databases, events, market information, videos etc.	Free access to all contents; subscription for Horizon reports, receiving updates by sectors	Up to date	No scoring system; address, email, phone to center, to offices, to managers to press centre, Brexit expert, etc.	Facebook, Twitter, LinkedIn, YouTube
3. <u>Estonian Rural Network</u>	Database of relevant RDP project examples	Membership is informal but involves farmers, bodies representing programme beneficiaries, organisations & authorities engaged in rural development	<ul style="list-style-type: none"> Adding value to the implementation of the Estonian Rural Development Programme (RDP) Facilitating flexible, open-minded, gradual development, with bottom-up initiatives based on needs & developed through 	Estonian, English (different, more limited content)	No search function	<ul style="list-style-type: none"> Publications, photo gallery, video gallery Database of relevant RDP project examples (agriculture and fisheries) Database of local action groups Events Estonian site: many FADN-related information, 	Open for everyone with an interest in rural development	Database of relevant examples: 2007-2013; video gallery for 2007-2013 programming period; photo gallery, events & calendar up to date	Contacts (address, phone number, info email address, contact persons with email addresses)	Facebook (in Estonian site) with nearly 1000 followers



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		including RDP implementation	cooperative activity among rural actors			studies, calculators & databases				
						<ul style="list-style-type: none"> Nordic-Baltic Leader Cooperation Award materials 				
4. Food and farming futures (UK)	National initiative to provide free access to authoritative research & technology transfer publications; independent, collaborative news & information source for farming & food	Practitioners, students (all interested parties)	Providing free access to authoritative research & technology transfer publications	English	<ul style="list-style-type: none"> Advanced keyword search + filter Search for technical & business info, research outputs, open learning materials, organisations, news items, events Browse for subjects/ events 	<ul style="list-style-type: none"> Huge amount of contents Detailed categorisation by topic & type of material Authoritative research & technology transfer publications Incorporates online library OpenFields Uploading contents is possible 	Free access; content available to everyone; subscription possible for newsletter & conference alerts; free registration to tag items of interest, comment on pieces of content & create e-mail alerts	Several contents from the current year; events & calendar up to date; email alert; consultative group will identify & consider funding & governance mechanisms for longer term development	Contact: email addresses of editor & website administration; possible to submit content to the editor	Facebook, Twitter
5. TITRIS (Lithuania)	Applied innovation research & data information system collects, publicises & compiles data on applied innovation research & results that can potentially contribute to more efficient, sustainable & environmentally friendly farming	Agricultural producers	Collecting, publicising & compiling non-commercial research & innovations created in practice to increase efficiency, sustainability & environmental friendliness of farming	Platform available in English & Lithuanian, contents in Lithuanian & also translated into English	Keyword search; filter: title, innovation type (scientific vs. practical), subfield, EU funding (yes/no)	<ul style="list-style-type: none"> Limited number of contents (3), studies, innovation methodology PDF/Word form Data providers: scientific institutions, farms & other specialised producers All data is carefully evaluated by a competent specialist of the Lithuanian Agricultural Advisory Service prior to publicising 	All contents are available without registration.	Launched very recently (November 2019); indication of new documents from 2016 & 2017; newsletter	Online chat function; Innovation support service contact: phone number, address, email address	No sign of social media on the platform
6. CICYT (ES)	Comisión Interministerial de Ciencia y Tecnología (framework programme on high-value tree & cereal production; data collection from 3 Spanish regions); hosted by the Government of the State of Yucatán	Scientific & technological institutions		Spanish	Keyword search; advanced search: institution/category	Scientific and technological institutions	Access/Register: login	?	Possible to send a message; contact (email address, phone)	Links to LinkedIn, Twitter, YouTube
7. SIGPAC (ES)	National platform for agricultural data (geographical information system)	?	Identifying agricultural parcels	Spanish	Search the map for province, municipality, aggregate, zone, polygon, parcel, enclosure (direct, progressive, coordinates)	Map developed according to HTML5, CSS3 & ECMAScript 5 standards; possible to create PDFs to imprint distinct data files	User login: ID declaration, name, CIF/NIF	Map based on European Terrestrial Reference System 1989 (ETRS89), thus not subject to change due to continental drift		No sign of social media

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8. <u>INIA</u> (ES)	National institute of agronomic investigations (framework programme on pig & chestnut production; data collection from four Spanish regions; affiliated with state secretariat of universities, investigation, development & innovation of the Ministry of Science, Innovation & Universities)	Researchers, policy makers	Coordinating & increasing efficiency of agronomic investigation & experimentation	Spanish	No	Library, different publications (e.g. books, monographies)	Intranet	News, newsletter up to date; seminars	Contact (address, phone, fax, email address)	LinkedIn, RSS
9. <u>BD Avicole</u> (FR)	National database combined to innovative ICT tools for all poultry sectors' traceability in France; collective, federative & professional system	Poultry farmers, producers' organisations, hatcheries	Identifying all holders of living poultry on the French territory; increasing productivity & quality & providing new services to the sector	French	?	? (not accessible without registration)	Registration/login required to access the webpage (system available and operational for all involved in the flesh poultry chain, foie gras palmipeds chain & egg-laying chain in France)	?	Help: contact email addresses provided for the different sectors	?
10. <u>API-AGRO</u> (FR)	National platform (France) for exchange of agricultural data and application programming interface (API); agricultural technical institutes (ACTA), Chambers of Agriculture (APCA), GEVES & around 15 private organisations represent thousands of industry actors in France & Europe	Upstream industries, upstream agriculture, agri-food companies, digital agriculture, financial services, professional organisations, public sector, education & research	Interconnecting & bringing together public & private actors around an independent technological platform; developing innovations with the vision of high-performance, responsible agriculture	French, English (offers & login only in French)	No	Agricultural data (arable crops, livestock, market gardening, viticulture, arboriculture, horticulture, agro-industries); use cases (with descriptions, link to website, download PDF)	Possible to view use cases; Join the community: find out the platform's features through the testimonies of users on their daily uses of our services (log in); Cultivating data: disseminate, search & exploit, exchange & share Access the API-AGRO platform: services: users's club, advice	No news available—platform not yet completed?; newsletter	No scoring system; contact at the top & at the bottom of the website	Links to LinkedIn, Twitter, YouTube
11. <u>AGRIFIND</u> (FR)	Application, network of mutual aid that allows farmers & technicians to connect thanks to real-time & geolocalised sharing of observations & practices	Farmers		French	No search function on the website; community: research with personalised filters (cultures, pests, pressures, groups, dates)	Documentation: library of technical files on pests & agronomic advice; indications of diseases; map; community; weather forecast module; dashboard (automatic synthesis of observations, alerts etc.); groups	Community of farmers & technicians; subscription to groups possible	Latest articles up to date (from the current year); newsletter	Possible to identify, compare & request advice; community: possible to comment; contact	Facebook, LinkedIn, Twitter, YouTube
12. <u>L'atelier paysan</u> (FR)	Collective of small-scale farmers, employees & agricultural development organisations gathered together as a cooperative that	Farmers	Collaboratively developing methods & practices to reclaim farming skills and achieve self-sufficiency in relation	English, French	Basic keyword search	Tools: technical drawings & tutorials; training courses; news; videos (link to YouTube channel)	Free download of the app; forum (in French) for registered users	News (in French) up to date; blog: latest posts from 2016;	Contact: telephone, email address; contact	Facebook, Twitter, YouTube, Flickr, RSS

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13. <u>JoinData</u> (NL)	accompanies farmers in the conception & fabrication of machines & buildings adapted to peasant agroecology		to the tools & machinery used in organic farming; supporting farmer-led research & development; disseminating open-source materials for organic farming; leading training sessions to create self-sufficient farming systems; adapting tools to the context in which they are used					newsletter, upcoming training courses up to date	persons in daily life, among the responsible persons, technical team, Grand-Ouest (email, phone number)	
	Non-profit cooperative; data platform working towards a secure and transparent data platform for the Dutch agricultural sector where agricultural entrepreneurs decide who to share data with	Companies, knowledge institutions, agricultural entrepreneurs, data providers & application providers	Active sharing of data within the agricultural sector, thereby encouraging innovations to improve performance in terms of sustainability, profitability & welfare	Dutch, English	No	Overview of data flows from all data sources; data hub to which all suppliers can link up; news, events, background stories	Login/join: open application (send resume & short motivation); authorisation platform JoinData (login for all affiliated suppliers; overview of which data streams running for which projects)	Current: news & events up to date; background stories (data on the farm) up to date	Contact (address, info email address); contact form	LinkedIn, Facebook, Twitter, YouTube, Instagram
14. <u>PastureBase Ireland</u> (IE)	Hosted by Teagasc, supported by Science Foundation Ireland	Farmers		English	Possible to search for a PastureBase Ireland help document or video (basic keyword search)	Map; help documents include videos, factsheets, planners, reports	Registration/login required	No news/ events; latest Tweets up to date; map up to date	Contact form, phone number	Twitter
15. <u>Teagasc NMP Online</u> (IE)	Nutrient Management Planning (NMP) Online tool from Agriculture and Food Development Authority Teagasc (national body providing integrated research, advisory & training services); allows agri-professionals to produce high quality nutrient management plans for farmers by combining their expert knowledge of soil fertility with a range of information sources	Agri-professionals	Assessing the current nutrient balance of Irish farms & devising a fertiliser management programme that will optimise soil fertility & ensure compliance with limits set under Nitrates Regulation	English	Only basic keyword search powered by Google (custom search) on the Teagasc website (teagasc.ie)	Different research publications including magazines, technology updates, conference proceedings; courses; current projects	Sign up for NMP Online: complete & submit ConnectEd application form; annual fee varies depending on the level of use of the system	?	Contact: info email address, telephone & fax, address; staff contact; office locator	Twitter, Facebook, YouTube, LinkedIn
16. <u>ConnectEd</u> (IE)	Initiative of Agriculture and Food Development Authority Teagasc to provide professionals working with the agri-food sector structured access to high quality education programmes & Teagasc knowledge resources	Businesses & professionals working with the agri-food sector	Providing structured access to Teagasc research, education, knowledge resources & online tools	English	Only basic keyword search powered by Google (custom search) on the Teagasc website (teagasc.ie)	Publications: Today's Farm (Teagasc's own magazine) TRResearch (science publication of Teagasc), newsletter, crop report; online tools: NMP Online, eProfitMonitor, Carbon Navigator; webinars (videos, PDF presentations)	Possible to join by filling in an application form; members pay a membership fee; only members have access to the latest knowledge, research &	Professional education training courses up to date (new ones in 2019, 2020), Teagasc newsletter	Contact: email address, telephone, post address	(Teagasc YouTube channel)



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17. <u>BLE Project search</u> (DE)							professional education programmes; possible to watch webinars & download presentations without registration			
	Search for projects in funding programmes of Federal Ministry of Food and Agriculture (BMEL), managed by Federal Agency for Agriculture and Food (BLE, lead partner/ central implementing authority)	Actors interested in research projects along the whole value chain (agriculture, fishery, forestry, food production, nutrition, consumer protection)	Providing professional support of research projects from first advice on supportive interests to administrative processing & expert advice in all project phases, making use of modern software & online procedures & considering sustainability	German (website also available in English, but not the search function)	Keyword search; advanced search: keywords in thematic fields, project status, funding programmes, durations, institutions	Only projects (title, description, duration, institution, thematic fields, funding programmes, keywords, funding code, PDF documents to download, contact) dealing with a broad range of topics/themes (plant production, animal-friendly husbandry, sustainable fishery, organic farming, rural development, EU research BMFF, world nutrition, biodiversity, healthy diets, consumer protection)	Possible to view projects without registration	Possible to select only recent projects (advanced search includes “duration between”)	Contact	Links to Organic Eprints, CORE Organic, CORE Organic II
18. <u>Netzwerk Ländliche Räume</u> (DE)	EIP-AGRI database with German Operational Groups & their projects hosted by Federal Agency for Agriculture and Food (BLE)	Rural areas network: representatives of municipalities, administrations & associations, entrepreneurs, private persons, local action groups, Operational Groups	Improving the living conditions in rural areas, strengthening villages, landscapes & regions, advancing environmental & nature protection; bringing together actors that shape the rural area at events & facilitating exchange	German; all project descriptions also available in English	Search for projects: search terms, (federal) state, project status, keywords, starting date	Operational Groups (OGs) in Germany; videos; DVS magazine	Possible to view Operational Groups & projects without registration	Latest OGs from 2018; news up to date; events: past & planned events, calendar up to date; newsletter	Contact persons with phone numbers & email addresses	No signs of social media
19. <u>EISA</u> (DE)	Information System for Agriculture and Food Research hosted by German Agricultural Research Alliance DAFA – database with research projects & research institutions; shows how the EU, the German Federal Government & the federal Länder are meeting the current challenges of our time with publicly funded research projects & at various levels	People with an interest in research projects & institutions	Providing an overview of research in agricultural & food science, presenting research aims & areas of the Federal Government & the Länder & related research funding of the public sector	English, German	Search terms; extended/ advanced search (sorting: start of funding, relevancy, alphabetically); find projects by information type, project period, subject (animal production, ecology, fisheries & aquaculture, food technology, forestry, interdisciplinary subjects, nutritional science, plant production, socioeconomics), research aims, activity, federal state, continent/country, mandate, legal form,	Only project descriptions and institutions; thematic fields deal with nutrition & consumer protection, global food security, climate change, rural areas, production processes, related risks, environmental protection & resource conservation; information types: project, institution, funding programme, collaborative project, network	Possible to view projects without registration; possible to send research projects via email	New research projects, institutions & joint projects displayed on the homepage	Contact: Federal Office for Agriculture and Food – phone, email	RSS, link to BZL Twitter

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					funding/budget, purpose; find institutions by subjects					
20. <u>Rural Cat (ES)</u>	Virtual agri-food & rural community, innovative project of Administration of the Government of Catalonia & pioneer initiative of the Spanish state (new communication concept via web – information portal, webpage, formation)	Diverse groups of actors involved in the sector with common interests (farmers, ranchers, agri-business, students etc.)	Developing the agri-food & rural sector; becoming a meeting place for communication & debate to resolve everyday questions	Catalan	No	Diverse resources include reports, infographics, technical articles & dossiers etc.	Most documents freely accessible; registration needed for certain functions (registration form)	News, events, calendar/agenda up to date; newsletter (bulletin)	Contact form	Instagram, Twitter, Facebook, YouTube
21. <u>AgroSens (Serbia)</u>	National digital platform for agricultural data; monitoring support in the growth of crops & planning of agricultural activities; developed by BioSense Institute from Novi Sad	Farmers & agricultural companies (Serbian producers) as well as state & local government & scientific & research institutions	Providing support to farmers & agricultural companies in monitoring the growth of crops & planning of the agricultural activities; contributing to digitise agriculture & increase the efficiency & competitiveness of Serbian producers	English	No	Web application designed for comfortable work on a PC, visualisation & in-depth analysis of data; Android application gives instantaneous insight into all data, on the field, allows for a quick & easy input of data to the system; meteo data & analysis of expenses at the level of parcel, crop type & entire property	Access to the system through user profile (basic services free of charge; additional services available to premium users); agricultural holding number needed to sign up	‘What’s new’ from 2017; platform under constant development	Email address	No sign of social media
22. <u>EIP-AGRI Hungary</u>	Hungarian EIP-AGRI webpage with specific Hungarian contents; structure very similar to the original EIP-AGRI webpage (funded by the European Commission)	?	?	English, Hungarian (most content only Hungarian)	Project/innovation search (simple & advanced)	Search for projects (keyword & advanced search); information about Bio-Economy BioEast, link to BIOEAST initiative	Open access to most information; partner portal & some innovations: registration needed; other innovations & projects freely accessible	Most projects & innovations from 2017 & 2018	Contact to EIP-AGRI Hungary Service Point (phone, email); contacts for different regions with names, phone, email	RSS



Annex 3 – Questionnaire for the consultation of agricultural knowledge platform experts

1. Which end users does your platform target? *Please rank the following target groups from 1 (most important end-user group) to 4 (least important).*
 1. Farmers/practitioners
 2. Farm advisors/agricultural consultants
 3. (Agriculture) teachers/trainers
 4. (Agricultural) policymakers
2. What are the main goals you want to achieve with the platform?
 1.
 2.
 3.
3. How do you think these goals are reached?
 How do you define and measure success?
 Do you measure key performance indicators (KPIs)?
 - ☐ No.
 - ☐ **Yes:** *Please indicate which ones, and provide approximate results/values for the last 1-year period:*
 1. Number of contents:
 2. Quality of contents:
 3. Number of visits:
 4. Number of downloads:
 5. User satisfaction with the system:
 6. User satisfaction with the contents:
 7. User feedbacks:
 8. Other:
4. How do you evaluate the search options provided?
 - Overall evaluation (*please underline your answers*):
 - ☐ We are fully – partly – not satisfied
 - ☐ We think that the end users are fully – partly – not satisfied
 - Weak points:
 - Strong points:
5. How do you evaluate your knowledge reservoir platform as a whole? What do you consider as the added value of the system?
 - Overall evaluation:
 - Weak points:
 - Strong points:
 - Added value:
6. What are the sources of the contents?
 - ☐ Own creation
 - ☐ Transferred from external open source
 - ☐ Anyone can contribute (open access).

- ☐ Other:
7. How do you check/validate the quality of the content?
- ☐ The completeness of the content is checked.
 - ☐ The reliability/trustworthiness of the content is checked.
 - ☐ The completeness and connecting metadata are checked.
 - ☐ The contents are validated/edited/corrected if necessary.
 - ☐ Quality control is only occasional and not regulated.
 - ☐ There is no control.
8. Are maintenance and sustainability ensured?
- ☐ Yes, by means of:
 - ☐ Partly, by means of:
 - ☐ No.
9. Can the platform interact with other platforms? (*If yes, please explain how.*)
- Yes,
 - ☐ fully automatically
 - ☐ partly automatically
 - ☐ manually
 - ☐ other:
 - Party,
 - No.
- If yes, what is the reason of the interaction?**
- ☐ Transferring contents from other platforms
 - ☐ Transferring contents to other platforms
 - ☐ Other:

For national platforms only:

10. In which development stage is your platform, and what are your plans for the future?

Thank you!



Annex 4 – Contact email template

Dear Representative of the KR,

For the EU project [EURAKNOS](#), “Connecting Thematic Networks as Knowledge Reservoirs: towards a European Agricultural Knowledge Innovation Open Source System”, I am writing a report on the added value and feasibility of an electronic knowledge reservoir platform that connects different projects. This includes an analysis of existing similar initiatives that provide on-line farming knowledge. Your platform was selected for a more in-depth evaluation as the resources provided are easily accessible, diverse and also directed to farmers themselves.

To include the point of view of the organization/project behind the platform, it would be very helpful if you provide some more information on the aims of the platform, the contents, number of active users and if it can interact with other platforms as well as your personal opinion on challenges and opportunities.

For this, please fill in the questionnaire attached, and send it back to us, if possible within the next two weeks (until 4 November 2019). Please also let us know whether you give your consent to your name being published in the Deliverable, and whether you want to receive the outcomes. Then I will send you the final Deliverable as PDF after the publication.

Thank you very much in advance for your time and contribution!

With best regards,

IFOAM EU (EURAKNOS partner in charge of task 4.1)



Annex 5 – Responses to the questionnaire

5.1 Ask-Valerie

1. Which end users does your platform target? *Please rank the following target groups from 1 (most important end-user group) to 4 (least important).*
 1. **Farm advisors/agricultural consultants**
 2. **Farmers/practitioners**
 3. (Agriculture) teachers/trainers
 4. (Agricultural) policy-makers
2. What are the main goals you want to achieve with the platform: Improve access to technical information for more sustainable management in farming and forestry
3. How do you think these goals are reached? How do you define and measure success?
 We will monitor number of visits and downloads, but this is not currently monitored; now only number of documents
 Do you measure key performance indicators (KPIs)?
 - ☐ No.
 - ☐ **Yes:** *Please indicate which ones, and provide approximate results/values for the last 1-year period:*
 - X Number of contents
 - ☐ Quality of contents:
 - ☐ Number of visits:
 - ☐ Number of downloads:
 - ☐ User satisfaction with the platform:
 - ☐ User satisfaction with the contents:
 - ☐ User feedbacks:
 - ☐ Other:
4. How do you evaluate the search options provided?
 1. Overall evaluation (*please underline your answers*):
 - ☐ We are **partly satisfied**.
 - ☐ We think that the **end users are partly satisfied**.
 2. Strong points:
 - ask-Valerie is based on a domain ontology; this enables interactive tuning of the query, ask-Valerie.eu offering suggestions (related terms and hierarchical terms, i.e . parent or child terms) to tailor the query to user needs. This should give more relevant hits
 - multi-language search facility and contents; set language preference
 - text snippets from retrieved docs are offered and ranked
5. How do you evaluate your knowledge reservoir platform as a whole? What do you consider as the added value of the platform?
 - Overall evaluation: good but content needs to be expanded; more languages could be added (now 7)
 - 1. Weak points: number of documents accessed is approx 80,000 from 50 sources
 This is to be expanded to ensure that most users will find what they need. Only a limited set of thematic domains is now covered by the ontology and the document base. this will be expanded too; the ranking algorithm can be improved.

The query editor can be further improved;

- Strong points: we select quality sources; these are annotated with the help of a domain ontology which expresses current knowledge (it is a ‘knowledge model’); this ensures that a large number of terms and their interrelations are available, enabling better query editing;
- We aim to expand the ontology with a separate category of agri-technical innovations (solutions to practical problems) and prioritise documents (in ranking) that include these problem-solution pairs; this is still challenging.
- Added value:

6. What are the sources of the contents?

- ☐ Own creation (some only)
- ☐ Transferred from external open source (mostly)
- ☐ Anyone can contribute (this was originally developed; but was disabled at some stage because this could lead to the system being blocked.
- ☐ Other: all Thematic Network contents are to be added soon

7. How do you check/validate the quality of the content?

- ☐ The contents are validated and edited/corrected if necessary.
- ☐ The reliability/trustworthiness of the ~~content~~ source is checked (e.g. EU projects, independent advisory platforms; EIP Thematic Networks; Universities).
- ☐ The completeness and connecting metadata are checked.
- ☐ The completeness of the content is checked.
- ☐ Quality control is only occasional and not regulated.
- ☐ There is no control.
- X Other: The content is checked/validated by the source

8. Are maintenance and sustainability of the platform ensured?

- Yes, by means of: Wageningen Data Competence Centre
- Partly, by means of: ask-Valerie.eu is now being integrated in the knowledge platforms being developed under the FAIRShare and NEFERTITI projects.
- No.

9. Can the platform interact with other platforms? *If yes, please explain how.*

- Yes,
 - ☐ fully automatically
 - X partly automatically; With / in NEFERTITI and FAIRshare; also, a widget is active on the EIP platform to forward the search (entered by user in the search box on EIP platform) to ask-Valerie.eu
 - ☐ manually
 - ☐ other:
- Party,
- No.

If yes, what is the reason for the interaction?

- X Transferring contents from other platforms
- X Transferring contents to other platforms, for example interacting with FAIRshare: digital advisory tools (DATs) by FAIRshare will be added to the ontology and annotated in the ask-Valerie document base ; FAIRshare will use the search results by ask-Valerie.eu.
- ☐ Other:



5.2 FarmDemo

1. Which end users does your platform target? *Please rank the following target groups from 1 (most important end-user group) to 4 (least important).*

1. Farmers/practitioners
2. Farm advisors/agricultural consultants
3. (Agricultural) policy-makers
4. (Agriculture) teachers/trainers

2. What are the main goals you want to achieve with the platform?

1. Knowledge sharing
2. Cross-fertilisation between different agricultural domains
3. Networking

3. How do you think these goals are reached? How do you define and measure success?

We think that NEFERTITI platform is on a good way to reach goals. We have set KPIs, which are being monitored and evaluated closely.

Do you measure key performance indicators (KPIs)?

- ☐ No.
- ☐ **Yes:** *Please indicate which ones, and provide approximate results/values for the last 1-year period:*
 - ☐ Number of contents: Farms: 992, actors: 176, events: 249
 - ☐ Quality of contents: 100%
 - ☐ Number of visits: 16.744 (01/10/2018 – 01/11/2019)
 - ☐ Number of downloads: /
 - ☐ User satisfaction with the platform:
 - ☐ User satisfaction with the contents:
 - ☐ User feedbacks:
 - ☐ Other:

4. How do you evaluate the search options provided?

- Overall evaluation (*please underline your answers*):
 - ☐ We are fully – partly – not satisfied.
 - ☐ We think that the end users are fully – partly – not satisfied.
- Weak points: not identified
- Strong points: everything that was asked by project partners was implemented

5. How do you evaluate your knowledge reservoir platform as a whole? What do you consider as the added value of the platform?

- Overall evaluation: very broad and comprehensive database of demonstration farms in Europe
- Weak points: Some of farms did not want to make their data public, therefore not everything we have in the database is publicly available
- Strong points: Variety of data – farms, innovation actors, relevant demo events
- Added value: demonstration of knowledge and best-practices to farms, networks and regions outside NEFERTITI

6. What are the sources of the contents?

- ☐ X Own creation
- ☐ Transferred from external open source
- ☐ Anyone can contribute.
- X Other: FarmDemo Hub

7. How do you check/validate the quality of the content?



- ☒ The contents are validated and edited/corrected if necessary.
 - ☒ The reliability/trustworthiness of the content is checked.
 - ☐ The completeness and connecting metadata are checked.
 - ☒ The completeness of the content is checked.
 - ☐ Quality control is only occasional and not regulated.
 - ☐ There is no control.
 - ☐ Other:
8. Are maintenance and sustainability of the platform ensured?
- Yes, by means of:
 - Partly, by means of: BioSense Institute will maintain the platform 2 years after the project ends.
 - No.
9. Can the platform interact with other platforms? *If yes, please explain how.*
- Yes,
 - ☐ fully automatically
 - ☐ partly automatically
 - ☒ manually
 - ☐ other:
 - Party,
 - No.
- If yes**, what is the reason for the interaction?
- ☒ Transferring contents from other platforms
 - ☒ Transferring contents to other platforms
 - ☐ Other:

5.3 EIP-AGRI

1. Which end users does your platform target? *Please rank the following target groups from 1 (most important end-user group) to 4 (least important).*
- 1 Farmers/practitioners
 - 1 Farm advisors/agricultural consultants
 - 1 (Agricultural) researchers
 - 2 (Agriculture) teachers/trainers
 - 2 (Agricultural) policy-makers
2. What are the main goals you want to achieve with the platform?
- One stop shop for agricultural innovation in Europe: The EIP-AGRI website is the main networking tool of the EIP-AGRI Network. As such, it has been constantly growing both in terms of content and interactions, adapting to the evolving needs of the stakeholder community and the EIP-AGRI networking activities
3. How do you think these goals are reached? How do you define and measure success?
- Website development is part of the overall communication strategy, which is translated into yearly communication action plans that are monitored and evaluated. In addition, we did a web user survey and used the results to plan further improvements to the website. We also measure key performance indicators (based on website analytics) including the numbers of registered website users.
- Do you measure key performance indicators (KPIs)?
- ☐ **Yes:** Please indicate which ones, and provide approximate results/values for the last 1-year period: All of the indicators below

- ☐ Number of contents: 4254 contents (this includes, basic information pages, events, news, projects, needs for research, funding opportunities, etc.)
 - ☐ Quality of contents: According to the web users survey, visitors are very satisfied with the quality of the contents (see below)
 - ☐ Number of visits: for October 2018 – September 2019 (one full year) the number of unique visitors per month varied between 9111 to 12755, with an average number of 11081 unique visitors per month. The total number of visits for the same period was 187524 for the whole year.
 - ☐ Number of downloads: 63589 for October 2018-September 2019
 - ☐ User satisfaction with the platform: see below
 - ☐ User satisfaction with the contents: see below
 - ☐ User feedbacks: based on the last survey:
Main findings• Close to 93% of the respondents have already visited the EIP-AGRI website• 43% visit the website monthly and 38% less than once per month• The quality of the website in general is considered good by around 40% of the respondents and very good by 46%• 80,2% of the respondents declared that they can easily find information on the EIP-AGRI website• On average 73% of the respondents consider the EIP-AGRI website to be the one-stop-shop for agriculture and forestry innovation in the EU• 89% consider the website's content to the point and easy to understand• Generally the EIP-AGRI website is used to search and find solutions or inspiring ideas but is used less to share own problems, ideas, etc. • Around 82% of the respondents share information found on the EIP-AGRI website with others• 25% of the survey respondents declared not to be registered to the EIP-AGRI website
 - ☐ Other: number of visits, unique visits, time spent on the page, top downloads per month, and downloads for the different website sections, etc.
4. How do you evaluate the search options provided?
- Overall evaluation (*please underline your answers*):
 - ☐ We are fully – partly – not satisfied.
 - ☐ We think that the end users are fully – partly – not satisfied.
 - Weak points: Current search options provided for the project database not fully in line with evolving user needs
 - Strong points: Search functionality for the whole website works very well – there are two options, general and through third party platform ('ask Valerie').
5. How do you evaluate your knowledge reservoir platform as a whole? What do you consider as the added value of the platform?
- Overall evaluation: We are striving to be the one-stop shop for innovation knowledge for agriculture and forestry in Europe. EIP-AGRI has come a long way since 2013 and now scores as one of the top results in search engines. We have a lot of content, most of which is user generated.
 - Weak points: integration with existing knowledge platforms (including e.g. existing project databases) and – partially - with social media
 - Strong points: user-generated content; relevant content for users – users replied to say that they can find what they are looking for.
 - Added value: Builds on growing and consolidating offline community and creates links between relevant policy fields; bridges between research and practice, and to policy.
6. What are the sources of the contents?

This depends on the type of contents – some content types are open to contributions from all website visitors, others only for registered users, and some are own contribution or shared from other databases.

- ☐ Own creation **yes**
- ☐ Anyone can contribute. **yes**
- ☐ Other: transfer from existing databases **yes**

7. How do you check/validate the quality of the content?

- ☐ The contents are validated and edited/corrected if necessary (content moderation)
- ☐ The reliability/trustworthiness of the content is checked.
- ☐ The completeness and connecting metadata are checked.
- ☐ The completeness of the content is checked.

8. Are maintenance and sustainability of the platform ensured?

Yes, by means of: dedicated resources to web management, technical development and maintenance (annual contracts with external service providers); and hosted on the ec.europa.eu domain

9. Can the platform interact with other platforms? *If yes, please explain how.*

Yes, partly automatically.

If yes, what is the reason for the interaction?

- ☐ Transferring contents from other platforms

5.4 Organic Farm Knowledge

1. Which end users does your platform target?

1. Farm advisors/agricultural consultants
2. Farmers/practitioners
3. (Agriculture) teachers/trainers
4. (Agricultural) policy-makers

2. What are the main goals you want to achieve with the platform?

1. Promoting the exchange of knowledge among farmers, farm advisors, and scientists, with the aim of increasing productivity and quality in organic farming across Europe
2. Providing access to a wide range of tools and resources about organic farming
3. Serving as a virtual meeting place for cross-border learning

3. How do you think these goals are reached? How do you define and measure success?

We do measure a number of indicators (see below), but we don't have clear definition of success or framework to measure it. In general, we think the goals are reached if we have high number of quality content (tools) on the platform, if there is a high number of visitors, and if the content is intensively shared/discussed on social media.

Do you measure key performance indicators (KPIs)?

- No.
- **Yes:** *Please indicate which ones, and provide approximate results/values for the last 1-year period:*
 - ☐ **XNumber of contents:** 196 tools, 60 news items (some of them announcing tools).
 - ☐ Quality of contents:
 - ☐ **X Number of visits:** 12'900 (since Jan 1, 2019)
 - ☐ Number of downloads: 1143 (since Jan 1, 2019)

- ☐ User satisfaction with the platform: We have no measuring instrument for that.
 - ☐ **XUser satisfaction with the contents**: Users can rate the content of the platform, but the feature is hardly used
 - ☐ **XUser feedbacks**: Users can comment on the content of the platform (with DISQUS, Facebook, Twitter), but the feature is hardly used
 - ☐ Number of followers on social media: Facebook (284) and Twitter (194)
 - ☐ Other:
4. How do you evaluate the search options provided?
- ☐ Overall evaluation (*please underline your answers*):
 - ☐ We are fully – **partly** – not satisfied. The search function itself is good, but it is not very stable (often the search function goes in error mode when submitting a query)
 - ☐ We think that the end users are fully – **partly** – not satisfied We need to test if the search function works well in other languages than English
 - ☐ Weak points:
 - ☐ Strong points: In principle it is possible to use the search function in 13 languages. It allows for arbitrary text search, and search by theme or keyword. Content can be filtered according to language, type of tool, year of production and country of origin
5. How do you evaluate your knowledge reservoir platform as a whole? What do you consider as the added value of the platform?
- Overall evaluation: Organic Farm Knowledge fills a gap. Knowledge around organic farming practices is scattered across countries. In some countries, farmers have easily access to knowledge, in others not. Organic Farm Knowledge brings this knowledge together in one platform.
 - Weak points: Not very well known yet (= low amount of users). Besides arable cropping, other themes of the platform still need to be filled with material. Recently, material related to organic feed production and processing have been added and more will come.
 - Strong points: Contains almost 200 high-quality tools related to organic arable cropping. Available in 13 languages. Good search function. Linked with social media (Facebook, Twitter, Disqus)
 - Added value: It is the only EU-wide knowledge reservoir for organic farming
6. What are the sources of the contents?
- ☐ xOwn creation
 - ☐ Transferred from external open source
 - ☐ xAnyone can contribute
 - ☐ Other: we work together with H2020 thematic networks and multi-actor projects (see list [here](#)) that provide content for the platform
7. How do you check/validate the quality of the content?
- ☐ xThe contents are validated/edited/corrected if necessary.
 - ☐ The reliability/trustworthiness of the content is checked.
 - ☐ xThe completeness and connecting metadata are checked.
 - ☐ xThe completeness of the content is checked
 - ☐ Quality control is only occasional and not regulated.
 - ☐ There is no control.
 - ☐ Other...
8. Are maintenance and sustainability of the platform ensured?

- Yes, by means of:
 - Partly, by means of: funding through the H2020 projects that we collaborate with
 - No.
9. Can the platform interact with other platforms? *If yes, please explain how.*
- Yes,
 - ☐ xfully automatically with [Organic Eprints](#)
 - ☐ partly automatically
 - ☐ manually
 - ☐ other:
 - Partly,
 - No.

If yes, what is the reason for the interaction?

- ☐ XTransferring contents from other platforms
- ☐ Transferring contents to other platforms
- ☐ Other:

5.5 Agroecology Knowledge Hub (FAO)

1. End users targeted:
 1. (Agricultural) policy-makers (= most important end users)
 2. Farm advisors/agricultural consultants
 3. (Agriculture) teachers/trainers
 4. Farmers/practitioners
2. Main goals:
 1. Spread knowledge on agroecology
 2. Raise awareness on the potential benefits agroecology can bring and the connection with other international processes as the SDGs for instance
3. The Agroecology team is also evaluating the content and effectiveness of the platform, but so far, the goals have been reached. Normally the team monitors the **number of access**. No survey on user satisfaction has been conducted since the launch of the platform.
KPIs measured (values for the last 1-year period):
 - The platform has a total amount of 1,313 contents (database) and 160 in the case of AgroecologyLex.
 - While the quality of contents is not measurable, contents are technically cleared by the FAO Agroecology Team.
 - From 23/10/2018 to 23/10/2019, 115,000 users visited the platform.
 - The website has a dedicated email where users can provide feedback and suggestions.
4. Evaluation of the search options provided:
 - Overall evaluation: **not satisfied**
 - We think that the end users are **not satisfied**.
 - Weak points: The search option is not intuitive, and the quality of the results is not very good.
 - Strong points: The quality and quantity of the database and the policy database
5. Evaluation of the platform as a whole:
 - Overall evaluation: The Agroecology Knowledge Hub is an important tool to spread knowledge on agroecology among policymakers and is able to reach many countries. Most of its static content is translated into the 6 UN official languages.

- Weak points: There are too many pages and the website is heavy and not intuitive.
 - Strong points: Content in different languages, portal for policymakers, database
 - Added value: It is an FAO website dedicated to agroecology.
6. Content sources: All the pages were developed by FAO.
 - Own creation of the content on the static pages
 - The database and the policy database are based on external sources.
 - Anyone can contribute. People can share the content with the Agroecology team, and after an evaluation, the material can be uploaded on the database.
 7. Validation of the content quality: All the content is checked by the Agroecology team. Normally only one person checks the content, but if there is some doubt about the quality or relevance of the content, the team discusses the content and jointly decides if the material can be included in the database.
 8. Maintenance and sustainability of the platform are ensured. The Agroecology Knowledge Hub development was funded by a trust fund from McKnight Foundation and the maintenance of the website is included in the FAO activities.
 9. The platform can partly interact with other platforms to transfer contents from other platforms. Links from other websites and platforms can be embedded in the website.

5.6 Family Farming Knowledge Platform (FAO)

1. Which end users does your platform target?
 - X Farmers/practitioners
 - X Farm advisors/agricultural consultants
 - X (Agriculture) teachers/trainers
 - X (Agricultural) policy-makers
 - X Research centres and Academia

SAME IMPORTANCE

2. What are the main goals you want to achieve with the platform?
 - Integrate and systematizing existing digitized quality information on family farming (including national laws and regulations, public policies, best practices, relevant data and statistics, researches, articles and publications) from all over the world to better inform and provide knowledge-based assistance to policy-makers, family farmers' organizations, development experts, as well as to stakeholders in the field and at the grassroots level
 - Foster knowledge and information dissemination for concrete actions and policy making in support of family farming
 - Implement a participatory tool bringing together entities for sharing knowledge, solutions, and action-oriented initiatives around the world
3. How do you think these goals are reached? How do you define and measure success?

The number of visits, the synergies created as well as the users feedback provided through periodic surveys are the most reliable performance indicators.

Do you measure key performance indicators (KPIs)?

☐ No.

X Yes: Please indicate which ones, and provide approximate results/values for the last 1-year period:

- X Number of contents:
- X Quality of contents:
- X Number of visits:

- ☐ Number of downloads:
 - ?? User satisfaction with the platform:
 - ?? User satisfaction with the contents:
 - X User feedbacks: emails and surveys
 - ☐ Other:
4. How do you evaluate the search options provided?
- Overall evaluation (*please underline your answers*):
 - ☐ We are fully – partly – not satisfied.
 - ☐ We think that the end users are fully – partly – not satisfied.
 - Weak points:
 - Strong points:
5. How do you evaluate your knowledge reservoir platform as a whole? What do you consider as the added value of the platform?
- Overall evaluation:
 - Weak points:
 - Strong points:
 - Added value:
6. What are the sources of the contents?
- ☐ Own creation
 - X Transferred from external open source
 - ☐ Anyone can contribute.
 - ☐ Other:
7. How do you check/validate the quality of the content?
- X The contents are validated and edited/corrected if necessary.
 - The reliability/trustworthiness of the content is checked.
 - X The completeness and connecting metadata are checked.
 - X The completeness of the content is checked.
 - Quality control is only occasional and not regulated.
 - There is no control.
 - X Other: By checking the source of the content
8. Are maintenance and sustainability of the platform ensured?
- Yes, by means of our IT Unit
 - Partly, by means of:
 - No.
9. Can the platform interact with other platforms? *If yes, please explain how.*
- Yes,
 - X fully automatically
 - ☐ partly automatically
 - ☐ manually
 - ☐ other:
 - Party,
 - No.
- If yes, what is the reason for the interaction?**
- X Transferring contents from other platforms
 - ☐ Transferring contents to other platforms
 - ☐ Other:

5.7 Oppla

1. Which end users does your platform target? *Please rank the following target groups from 1 (most important end-user group) to 4 (least important).*
 2. Farmers/practitioners **4**
 3. Farm advisors/agricultural consultants **3**
 4. (Agriculture) teachers/trainers **1**
 5. (Agricultural) policy-makers **2**
2. What are the main goals you want to achieve with the platform?
 1. Improve how we share, obtain and co-create knowledge to better manage our environment
 2. Helping non-specialists to access research outputs more easily
 3. A successful, sustainable and ethical business
3. How do you think these goals are reached? How do you define and measure success?
 - An engaged and expanding community
 - More case studies and products from around the world
 - Generating income and supporting employment

Do you measure key performance indicators (KPIs)?

 - ☐ No.
 - ☐ **Yes:** *Please indicate which ones, and provide approximate results/values for the last 1-year period:*
 - ☐ Number of contents: Over 500 products, 250 case studies
 - ☐ Number of visits: 40,000+ yearly visits
 - ☐ 2,000 members
4. How do you evaluate the search options provided?
 - Overall evaluation (*please underline your answers*):
 - ☐ We are fully – partly – not satisfied.
 - ☐ We think that the end users are fully – partly – not satisfied.
5. How do you evaluate your knowledge reservoir platform as a whole? What do you consider as the added value of the platform?

Since launching in 2016 the success of Oppla has exceeded all expectations. The SME has grown in strength: employing new staff; becoming financially self-sufficient; and supporting European relations with other regions, most recently Latin America.

Oppla adds value by in supporting EU-funded environmental research achieving real benefits for society. It enables scientists, policymakers, businesses and the public to access information in ways not previously possible – and in ways that non-specialists can engage with. Content is free and open, following the principles of co-creation and crowd-sourcing: a truly open platform for tackling the environmental challenges of today and tomorrow.

The original platform, which has been in development since 2016, will shortly be replaced with a new and improved version that will include functionality enabling other platforms to integrate more closely with Oppla and each other: helping to drive forward the concept of nature-based solutions to benefit societies across Europe and around the world.

6. What are the sources of the contents?
 - ☐ Own creation
 - ☐ Transferred from external open source
 - ☐ **Anyone can contribute.**
 - ☐ Other:

7. How do you check/validate the quality of the content?
- ☐ The contents are validated and edited/corrected if necessary.
 - ☐ The reliability/trustworthiness of the content is checked.
 - ☐ The completeness and connecting metadata are checked.
 - ☐ **The completeness of the content is checked.**
 - ☐ Quality control is only occasional and not regulated.
 - ☐ There is no control.
 - ☐ Other:
8. Are maintenance and sustainability of the platform ensured?
- **Yes, by means of:** Since launching in 2016 Oppla has continued to grow into a sustainable SME. The business model for Oppla combines grant funding with paid-for services made available to projects and organisations on demand (membership of Oppla and access to its content will always remain free of charge).
9. Can the platform interact with other platforms? *If yes, please explain how.*
- **Yes,**
 - ☐ **fully automatically**
 - ☐ partly automatically
 - ☐ manually
 - ☐ other:
- If yes, what is the reason for the interaction?**
- ☐ **Transferring contents from other platforms**
 - ☐ **Transferring contents to other platforms**
 - ☐ Other:

Through an API (Application Programming Interface) developed by Oppla. The API is freely available from Oppla and can be easily customised to display or share specific groups of case studies on other project's or organisation's websites. Case studies can be uploaded or edited on other websites using the API and they will automatically be uploaded to Oppla. Further information on the Oppla API:

<https://oppla.eu/oppla-content-api#/>

5.8 Agrisource

1. Which end users does your platform target? *Please rank the following target groups from 1 (most important end-user group) to 4 (least important).*
 - 1 Farmers/practitioners
 - 2 Farm advisors/agricultural consultants
 - 3 (Agricultural) policy-makers
 - 4 (Agriculture) teachers/trainers
2. What are the main goals you want to achieve with the platform?
 1. Reaching out to a wide diversity of agricultural players and projects
 2. Encouraging the emergence of new collaborations for climate mitigation and adaptation
 3. Co-designing an open source database for solutions and existing initiatives
3. How do you think these goals are reached? How do you define and measure success?

These goals are reached when there is complementarity of action between 1) a powerful online tool for knowledge sharing and matchmaking, and 2) a direct field animation provided by the networks of players involved. The success of such an organisation can be measured

through audiences and contents added to the online platform, and the connection with actual networks of farmers, researchers and professionals in the field.

Do you measure key performance indicators (KPIs)?

- ☐ **Yes:** Please indicate which ones, and provide approximate results/values for the last 1-year period:
 - ☐ Number of contents:
 - a. **December 2018:** 440 Players, 95 Projects, 75 Documents, 60 Innovations
 - b. **December 2019:** 585 Players, 122 Projects, 84 Documents, 68 Innovations
 - ☐ Number of visits:
 - a. **January to December 2018:** 4 337 users, 7 791 sessions
 - b. **January to end of October 2019:** 16 959 users, 17 536 sessions

4. How do you evaluate the search options provided?

- Overall evaluation (*please underline your answers*):
 - ☐ We are partly satisfied.
 - ☐ We think that the end users are partly satisfied.
- Weak points:
 - No “advanced” search engine to use filters or other tools for expert users
 - In its current version, the “all-in-one” search engine approach could be more intuitive so that no search result is neglected
- Strong points:
 - “All-in-one” search engine makes it very simple to use, therefore very accessible (although more expert users can find it frustrating)
 - Multiple entry points are available to the users: classic search engine, geographical mapping of players and projects, and relational mapping of the platform’s contents which is a unique feature of Agrisource.

5. How do you evaluate your knowledge reservoir platform as a whole? What do you consider as the added value of the platform?

- Overall evaluation: The Agrisource platform has the potential to become a powerful tool for collaboration for climate action. Its unique features have raised very positive feedback from its users and visitors. However, as mentioned at point 3., it is key to the success of such an online device to be supported by field networks and animation. In the current situation, the project team has not yet succeeded in involving a community of practitioners.
- Weak points: Lack of content, ergonomics can be improved, few users
- Strong points: Relational mapping as a unique feature, open source technology very flexible for new technical developments, capacity to welcome different communities from multiple regions, value chains, themes, and gather them in a unique shared database of content.
- Added value: Open and intuitive access to a representation of the existing collaborations between players, including common topics which could lead to new collaborations. Agrisource is a major tool for open dissemination of project results and benchmarking of on-going initiatives.

6. What are the sources of the contents?

Anyone can contribute.

7. How do you check/validate the quality of the content?

- ☐ Other: subscription to Agrisource is very basically controlled, and contents do not require validation. The quality control so far relies on the good will of the users who would send an email to flag illicit contents to the administrators.
- 8. Are maintenance and sustainability of the platform ensured?
 - Partly, by means of: on-going European project, (MEDCLIV) funded by Climate-KIC. Platform's sustainability is, so far, ensured by project fundings.
- 9. Can the platform interact with other platforms?
 - No, not yet. However, the possibility to promote and connect with other platforms, more dedicated to specific topics, may be implemented. Moreover, the project team has been in contact with other platforms for agricultural knowledge and field data to study the complementarities between each of them.

5.9 Organic Eprints

1. Which end users does your platform target? *Please rank the following target groups from 1 (most important end-user group) to 4 (least important).*

- 4 Farmers/practitioners
- 2 Farm advisors/agricultural consultants
- 2 (Agriculture) teachers/trainers
- 4 (Agricultural) policy-makers

The platform content ranges from scientific publications to dissemination in farmers newspapers and practice tools, however, the main target is researchers and students and administrators.

2. What are the main goals you want to achieve with the platform?
 1. To facilitate the communication about organic research
 2. To improve the dissemination and impact of research findings
 3. To document the research effort
3. How do you think these goals are reached? How do you define and measure success?

Re 1) and 2) with more than 23000 eprints about research in Organic Food Systems, ranging from refereed journal papers over conference abstracts and presentations, books and reports and chapters from such, articles in newspapers and magazines and dedicated practice tools and many other types, we think we reach our goal of communication about organic research. We are not doing much about the dissemination, but we are certain that when people can find these papers, the impact of the results will be improved.

Re 3), the Danish national research program in organic farming as well as the H2020 ERANET CORE Organic and its predecessors use the archive as a tool to document the research effort and find it very useful. Almost 4,700 eprints are from Denmark and more than 1,700 from CORE Organic projects.

We mainly measure our success by a) uploads b) visits and downloads. We have app. 5,000 downloads every day.

Do you measure key performance indicators (KPIs)?

- ☐ No.
- ☒ **xYes:** *Please indicate which ones, and provide approximate results/values for the last 1-year period:*
 - ☐ xNumber of contents: 1,808
 - ☐ xQuality of contents: checked before upload
 - ☐ Number of visits:
 - ☐ xNumber of downloads: 1,927,700
 - ☐ User satisfaction with the platform:

- ☐ User satisfaction with the contents:
 - ☐ User feedbacks:
 - ☐ Other:
4. How do you evaluate the search options provided?
- Overall evaluation (*please underline your answers*):
 - ☐ We are partly satisfied.
 - ☐ We think that the end users are partly satisfied.
 - Weak points: The simple search may be too simple and the advanced search too complicated. It is difficult to narrow in the search if you get too many hits.
 - Strong points: Once you have a good search you can save it and receive an email whenever new eprints fit the search. You can search within all fields.
5. How do you evaluate your knowledge reservoir platform as a whole? What do you consider as the added value of the platform?
- Overall evaluation: An amazing tool that has survived since 2002 with only basic funding and through the enthusiastic work of many voluntary national editors. Open access to 18,232 documents and the possibility to request a copy of those with restricted access. Linked to OpenAire.
 - Weak points: cumbersome to upload papers, no batch upload possible.
 - Strong points: Stricly information about organic farming based on research
 - Added value: Easier to find organic publications (without those about organic chemistry) lots of “grey” literature which might be difficult to find otherwise, permanent links to documents, dissemination aimed at end users but based on research
6. What are the sources of the contents?
- ☐ Own creation
 - ☐ Transferred from external open source
 - ☐ xAnyone can contribute.
 - ☐ Other:
7. How do you check/validate the quality of the content?
- ☐ The contents are validated and edited/corrected if necessary.
 - ☐ (x)The reliability/trustworthiness of the content is checked.
 - ☐ xThe completeness and connecting metadata are checked.
 - ☐ The completeness of the content is checked.
 - ☐ Quality control is only occasional and not regulated.
 - ☐ There is no control.
 - ☐ Other: we check the metadata, whether the content is about organic agriculture/food systems and whether it is based on research
8. Are maintenance and sustainability of the platform ensured?
- Yes, by means of: funded by the Ministry of Environment and Food of Denmark, maintained by ICROFS, FiBL will take over if funding in Denmark ceases.
 - Partly, by means of:
 - No.
9. Can the platform interact with other platforms? *If yes, please explain how.*
- Yes,
 - ☐ xfully automatically by OAI-PMH
 - ☐ xpartly automatically eg by XLSX
 - ☐ (x)manually
 - ☐ other:

- Party,
- No.

If yes, what is the reason for the interaction?

- ☐ xTransferring contents from other platforms, e.g. ProdINRA
- ☐ xTransferring contents to other platforms, e.g. Organic-FarmKnowledge.org
- ☐ Other:

10. In which development stage is your platform, and what are your plans for the future?
Our platform is working but we are always looking for opportunities to improve it

5.10 BIOEAST

1. Which end users does your platform target? *Please rank the following target groups from 1 (most important end-user group) to 4 (least important).*
 1. (Agricultural) policy-makers
 2. Farm advisors/agricultural consultants
 3. Farmers/practitioners
 4. (Agriculture) teachers/trainers
2. What are the main goals you want to achieve with the platform?
 1. disseminate information about BIOEAST related issues
 2. increase awareness and visibility of BIOEAST among various stakeholders and EU institutions
3. How do you think these goals are reached? How do you define and measure success?
The BIOEAST website is still a simple platform but the BIOEASTsUP project will help to upgrade it and a dedicated Communication expert team will feed the website regularly with content.

Do you measure key performance indicators (KPIs)?

- ☐ No.
 - ☐ Yes: Please indicate which ones, and provide approximate results/values for the last 1-year period:
 - ☐ Number of contents:
 - ☐ Quality of contents:
 - ☐ Number of visits:
 - ☐ Number of downloads:
 - ☐ User satisfaction with the platform:
 - ☐ User satisfaction with the contents:
 - ☐ User feedbacks:
 - ☐ Other:
4. How do you evaluate the search options provided? ???
 - Overall evaluation (*please underline your answers*):
 - ☐ We are fully – partly – not satisfied.
 - ☐ We think that the end users are fully – partly – not satisfied.
 - Weak points:
 - Strong points:
 5. How do you evaluate your knowledge reservoir platform as a whole? What do you consider as the added value of the platform?
 - Overall evaluation: at the moment it is a basic information platform.

- Weak points:
 - Strong points:
 - Added value:
6. What are the sources of the contents?
- ☐ Own creation
 - ☐ Transferred from external open source
 - ☐ Anyone can contribute.
 - ☐ Other:
7. How do you check/validate the quality of the content?
- ☐ The contents are validated and edited/corrected if necessary.
 - ☐ The reliability/trustworthiness of the content is checked.
 - ☐ The completeness and connecting metadata are checked.
 - ☐ The completeness of the content is checked.
 - ☐ Quality control is only occasional and not regulated.
 - ☐ There is no control.
 - ☐ Other:
8. Are maintenance and sustainability of the platform ensured?
- Yes, by means of: **BIOEAStsUP project**
 - Partly, by means of:
 - No.
9. Can the platform interact with other platforms? *If yes, please explain how.*
- Yes,
 - ☐ fully automatically
 - ☐ partly automatically
 - ☐ manually
 - ☐ other:
 - Party,
 - **No.**
- If yes, what is the reason for the interaction?**
- ☐ Transferring contents from other platforms
 - ☐ Transferring contents to other platforms
 - ☐ Other:

11. In which development stage is your platform, and what are your plans for the future?

The plan is to have a stakeholder database and dynamic stakeholder search engine.

5.11 Estonian Rural Network

1. Which end users does your platform target? *Please rank the following target groups from 1 (most important end-user group) to 4 (least important).*
 1. Farmers/practitioners
 2. Farm advisors/agricultural consultants
 3. (Agricultural) policy-makers
 4. (Agriculture) teachers/trainers
2. What are the main goals you want to achieve with the platform?



- To improve the quality of implementation of the Estonian Rural Development Plan 2014-2020 (RDP);
 - To increase stakeholder involvement;
 - To inform the wider public and potential beneficiaries of rural development policy;
 - To stimulate innovation in agriculture, food production, forestry and rural areas.
3. How do you think these goals are reached? How do you define and measure success?
- We believe that our (National Rural Network) main goals in terms of our web-platform are reached. Web-platform success we are measuring through basic qualitative and quantitative indicators: 1) viewers and unique viewers per month/year/period; 2) Feedback from end-user in the frame of focus groups or NRN board (our social partners mainly) meetings. Following you can read some reflections taken out from our last “RDP 2014-2020 mid-term evaluation Focus group meeting concerning National Rural Network activities:”
- *“The event calendar is important and so are the references - I use it all the time.”*
 - *“Webpage is successful and simple - information runs across multiple lines. Internal management, all things are there. We are visiting your web each day.”*
 - *“It looks old but it is simple - Please do not lose the simple functionality.”*
 - *“I’m regularly visiting Maainfo homepage and recommend it to my students.”*
- Do you measure key performance indicators (KPIs)?
- Yes: *Please indicate which ones, and provide approximate results/values for the last 1-year period:*
 - ii. **Number of contents:** In 2018, a total of 165 news-post on LEADER and 446 events organized by LEADER LAGs were published on www.maainfo.ee. In addition Maainfo.ee website has a separate subsection of the Innovation Network, which by the end of 2016, provided 278 news-post and 628 events information.
 - iii. **Quality of contents:** Usually we are posting/re-posting all the news/events taken from official sources: Universities, EC, EIP-AGRI Service Point, Farmers Union, LEADER Local Action groups, Ministries, Paying Agency etc.
 - iv. **Number of visits:** The National Rural Network's webpage maainfo.ee has a total of 4.6 million viewers and unique viewers 735 thousand (excluding repeat viewers) in 2014-2018. The number of viewers in 2017 has quadrupled compared to 2015 and remains at the same level in 2018.
 - v. **User feedbacks:** Mostly from focus groups and NRN board meetings.
4. How do you evaluate the search options provided?
- Overall evaluation (*please underline your answers*):
 - ☐ We are fully – **partly** – not satisfied.
 - ☐ We think that the end-users are fully – **partly** – not satisfied.
 - **Weak points:** As our platform was established in 2005, it’s works properly but is quite old. Functionality of search options is not the best one at the moment. Just to simplify it we have been created subsections on certain topics for example: Newsletters subsection since 2005, Strategic documents for the RDP 2014-2020, Best examples database of RDP 2014-2020, NRN publications since 2005 etc. Social media channels such as YouTube, Facebook, Twitter and the Google Map app were also used to focus and disseminate some important information published on our webpage.
 - **Strong points:** A strong and efficient database supporting end-users with all necessary information concerning each topic with newsletter, translated EC materials, organised events, presentations, video links etc.

5. How do you evaluate your knowledge reservoir platform as a whole? What do you consider as the added value of the platform?
 - **Overall evaluation:** Good – And still webpage works properly. It is very simple and efficient.
 - **Weak points:** There is a need to create additional functions that allows for the site to work and look good on any device, from the largest TV screen to the latest smartphones. It uses HTML, CSS, and sometimes JavaScript to optimize a website to the user's screen. Search option is quite weak. Still it is unable to integrate inside the post short-videos, animation, documents in any format and so on.
 - **Strong points:** All in one. End-users knows maainfo.ee pretty well and first of all as a place, where you can find all information concerning rural development, agriculture and many other topics. Latest local and EU newsletters (translated to Estonian language), easily navigated events calendar (with all events across Estonia, EU and Europe), latest news regarding coming call for applications (RDP, Horizon2020, InterReg f.e).
 - **Added value:** Homepage as Networking instrument. Our clients are trained how register to local events organised by NRN, how to find latest newsletters. Who from NRN are responsible for what topics published on maainfo.ee.
6. What are the sources of the contents?
 - ☐ Own creation
 - ☐ Transferred from external open source
 - ☐ Other: Official input from our Ministry or European Commission, which was sent first to us and after that we published it on maainfo.ee
7. How do you check/validate the quality of the content?
 - ☐ The contents are validated and edited/corrected if necessary.
 - ☐ The reliability/trustworthiness of the content is checked.
 - ☐ The completeness of the content is checked.
8. Are maintenance and sustainability of the platform ensured?
 - Partly, by means of: In case of need we use an assistance from our Support service provider HanzaNet.
9. Can the platform interact with other platforms? *If yes, please explain how.*
 - **Yes,**
 - ☐ partly automatically (Theoretically it can, but for that purpose we need to make some additional investments).

If yes, what is the reason for the interaction?

 - ☐ Transferring contents from other platforms
 - ☐ **Transferring contents to other platforms**
10. In which development stage is your platform, and what are your plans for the future?

There is clear evidence, that we need to make full restart to our webpage. For that purpose exist 2 options: restart and recover maainfo.ee in terms of new needs and preferences or transfer whole content to new platform which is more modern. By the moment unfortunately we don't have enough budget to do that.

5.12 TITRIS

1. Which end users does your platform target? *Please rank the following target groups from 1 (most important end-user group) to 4 (least important).*



1. Farmers/practitioners
 2. Farm advisors/agricultural consultants
 3. (Agriculture) teachers/trainers (for researchers also: if the TRL of innovation is low but idea is very interesting there will be possibility to contact the authors)
 4. (Agricultural) policy-makers
2. What are the main goals you want to achieve with the platform?
 1. To provide useful information about created and tested innovations for practical users (farmers) in agricultural sector;
 2. to inventory information about innovations (at national and international levels) in the first specialized digital database
 3. in collaboration with educational and research institutions as well as farmers to provide information under two categories: innovations from practice and innovation from research.
 4. to provide information about a possibility to get EU funds for existing records of innovations.
 3. How do you think these goals are reached? How do you define and measure success?
 TITRIS is available for open access only for few weeks. However, every time before shearing any record about innovation it is evaluated very carefully: the information is checked by our advisors and language specialists. We are sure that quality and relevance of data provided are key factors of a successful use of the platform.

At this stage, ranking of records or other ways to measure the success are not available. However, in the near future (0.6 –1 year) there are plans to make a possibility for users to assess TITRIS.

Do you measure key performance indicators (KPIs)?

- ☐ No.
 - ☐ **Yes:** Please indicate which ones, and provide approximate results/values for the last 1-year period:
 - ☐ Number of contents:
 - ☐ Quality of contents:
 - ☐ Number of visits:
 - ☐ Number of downloads:
 - ☐ User satisfaction with the platform:
 - ☐ User satisfaction with the contents:
 - ☐ User feedbacks:
 - ☐ Other: number of online questions (chat function)
4. How do you evaluate the search options provided?
 - Overall evaluation (please underline your answers):
 - ☐ We are fully – partly – not satisfied.
 - ☐ We think that the end users are fully – partly – not satisfied.
 - Weak points: we need to take care that data providers would write key words very precisely. Keywords can be edited by the system administrator. Later evaluator of innovation should answer if key words comply with the information provided.
 - Strong points:
 5. How do you evaluate your knowledge reservoir platform as a whole? What do you consider as the added value of the platform?
 - Overall evaluation: It is difficult to answer now- because TITRIS is very “young” system.

- Weak points: There are no a possibility to get feedback from users.
 - Strong points: **ONLY** reviewed information is publicised in the system which was evaluated by specialists of LAAS (innovations' evaluators). Data is published if they see relevance of information provided.
 - Added value: All records must have the element or efficiency and very easy understood arguments why. We want to support by this information the sustainability of farms.
6. What are the sources of the contents?
- ☐ 1 Own creation: results from projects (RDP, H2020, and other programmes) financed researches work – we are going to search for them and ask to do it other nAKIS actors.
 - ☐ 3 Taken from external open sources
 - ☐ 2 Anyone can contribute
 - Other: -
7. How do you check/validate the quality of the content?
- ☐ 1The content is validated and edited/corrected if necessary.
 - ☐ 4The reliability/trustworthiness of the content is checked.
 - ☐ 2The completeness and connecting metadata are checked.
 - ☐ 3The completeness of the content is checked.
 - ☐ Quality control is only occasional and not regulated.
 - ☐ There is no control.
 - ☐ Other:
8. Are maintenance and sustainability of the platform ensured?
- Yes, by means of: we have obligations for our Innovation Support Service - we have plans for next year about number of records (entries in the platform), development of the platform itself, there are plans for provision of servicers, etc..
 - Partly, by means of:
 - No.
9. Can the platform interact with other platforms? *If yes, please explain how.*
- Yes,
 - ☐ fully automatically
 - ☐ partly automatically
 - ☐ manually
 - ☐ other:
 - Party,
 - No, at the moment. We are still improving it.
 - If yes, what is the reason for the interaction?
 - ☐ Transferring contents from other platforms
 - ☐ Transferring contents to other platforms
 - ☐ Other:
10. In which development stage is your platform, and what are your plans for the future?

TITRIS comes over the first step of its official introduction. It is a big challenge to maintain the platform because it is new activity for us, we do not have enough experience in it. We are still not sure how it will be accepted by researchers and farmers. The platform will be introduced to researchers and they will be invited to cooperate with TITRIS the next year.

Of course, we have plans: we would like to have an e-library, an online national and international farm visit catalogue, information about our national partners' involvement in

international projects (we still do not have them all in one place!), dictionary of innovations, etc.

