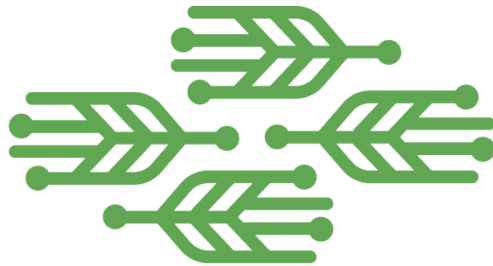


Deliverable 2.2 – WP2

Report on format and design of knowledge reservoirs of Thematic Networks



EURAKNOS

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



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TASK 2.2: Design of knowledge reservoirs within current and past Thematic networks

DoA description

An evaluation of the format and design of Knowledge Reservoirs (as open sources) within current and past Thematic Networks (28) and linked H2020 multi-actor projects and Operational Groups will be carried out, especially in view of linking them to open data sources used by the European Commission (e.g. OpenAIRE) and different international (e.g. FAO, OECD, EFSA) and similar national databases, RN.

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List of acronyms and abbreviations

TN: Thematic Network

KR: Knowledge Reservoir

IKR : Innovative Knowledge Reservoir

F2F : face to face

WP: Work Package

OG: Operational Group

CMS: Content Management System

GDPR: General Data Protection Regulation

1. Introduction

1.1. The general WP2 objectives

WP2 is dedicated to the evaluation of past and running thematic networks (TNs) and other EIP-AGRI related activities such as operational group (OGs). The 28 TNs investigated are all related to agriculture, but in very different thematic production fields (crops, livestock, forestry and horizontal themes such as water or fertilisation).

The WP2 evaluation focuses on the methodology, contents, format and design chosen to build a Knowledge Reservoir (KR) for a TN and on identifying the means necessary to increase impact on the end-user groups. In particular, the investigation emphasis is on the data types and the ways in which data is produced, collected and stored (data impact assessment) in the current H2020 TNs. Moreover, the format and design of KRs within current TNs are analysed. Communication, dissemination and information strategies (materials, tools, and channels) are evaluated, with regard to their impact, and the employed multi-actor approach is also analysed.

Finally, an overarching goal is to explain and describe the experience and know-how that are developed with the aim to come up with best practices and methodologies for TNs or uptake of the results by the end user, in particular farmers, foresters and advisors.

To begin with, a knowledge reservoir is a collection of best materials, practices, instruments, methodologies and tools, which contribute to the use of innovative solutions for sustainable agriculture and forestry. A digital KR is organised around:

- A back-end where the data (knowledge) is stored and organized in order to be mobilized in applications and operations. This part can be seen as a library of different types of content with shelves and with an order able to locate information and use it. Data is understood here as information provided in different forms (e.g. digital data, metadata, as well as urls, pictures, videos, articles, practice abstracts, newsletters, fact sheets, leaflets, press releases and articles, scientific papers, tools). This data can be classified accordingly to their format and their usefulness for a given type of user.
- The user interface is the visible part of the KR. The user interface corresponds to the visible part of the KR. This interface is therefore a showcase for the information contained in the back-end and makes the contents visible in an organized way.

Different software solutions, such as Content Management Systems (CMSs) have been used to design and build websites and KRs. These software applications or sets of related programs are used to create and manage digital content (text and embedded graphics, photos, video, audio, maps and programme code). It enables to display content and to interact with the user.

As far as the format and design of KRs are concerned, they are defined as indicated below:

- The format of knowledge reservoir is the data and contents form used and managed in the TNs KR sites (e.g. digital data, urls, pictures, videos, articles, practice abstracts).
- The design describes the way the site is organised and also the different functionalities to deliver the knowledge to the end users meaning the main proposition value expressed by a decision tree,



information layout and prioritization. A decision tree is used to determine the selection criteria used to make knowledge available. Once this tree has been elaborated, it then constitutes a way to provide the most pertinent knowledge searched by the end-user.

1.2. Task 2.2 objectives

Within those objectives, Task 2.2 focuses on describing the format and the design of the KRs developed through the 28 TNs. It means IT tools (software), formats (materials and their organisation), search engine, user friendliness, etc. in the goal to disseminate innovative knowledge and best practices in agriculture and forestry. Beyond informatics infrastructure solutions, decision trees or filtering tool boxes have been used to rank project outcomes. That is why a qualitative and quantitative analysis involving facilitators or innovation brokers of the regional networks is needed, based on the experience of running and past TNs and multi-actor H2020 projects together, to express some recommendations for the future similar projects.

In order to carry out this evaluation, work was executed in two stages, namely a first stage involving a desktop study and a second stage consisting of interviews.

The purpose of the desktop study was to become familiar with the 28 TNs and their respective knowledge reservoirs. This stage was therefore concerned with discovery and exploration of the organization of the different KRs, as well as their associated functionalities.

Interviews were conducted with the aim to contact people involved in the different TNs and in the design of the KR. Analysis of interview results made it possible to refine the different options taken by the TNs to set up their open source KRs.

Similar initiatives at national and international level will be selected in the next phase of the project (Task 4.1) as to compare or to explore possibilities to link all together.

Table 1: Partners involved in the different Tasks of WP2 (in bold the task leader).

	EURAKNOS' partners involved in WP2													
	ACTA	IDELE	NAK	UGent	GLZ	USC	AU	PSKW	ARC	AUA	IFA	LFG	RAU	EV ILVO
Partners involved in task 2.2	X	X	X	X		X	X	x		X				

2. Methodology

The analysis has been carried out in two stages; the desktop study and the interviews.

2.1. Desktop study

The desktop study, focused upon a remote investigation of the open source KRs of the 28 TNs. Its aim has been to analyse content and KR-related functionalities.

It should be noted that some open source KRs were not available at the outset of Task 2.2 analysis due to the fact that the respective TNs had just started. The design and implementation of KRs as open sources is an integral part of the project associated with the establishment of the TNs.

KRs are generally made available only after some months from the start of the respective TNs. This is an undeniable fact that is specific to the launch of the thematic network.

The desktop study therefore was concerned with the review of all KRs that are available online by the different TNs. For this purpose, a spreadsheet (see *Annex 1: Desktop study template*) has been developed to establish a set of criteria and functionalities to be evaluated based on the online consultation of the KRs.

Criteria employed for the desktop study were the following :

- Degree of completion of the KR, the type of KR (Website / platform);
- Targeted end-users;
- Type of content (practice abstracts, factsheets, testimonials, url links to other resources or contacts);
- Open source compatibility;
- Language used;
- Tools (search engine, calendar);
- Access (personal account);
- Decision tree and ranking criteria;
- Contact information.

2.2. Face-to-face interviews

The face-to-face interview process consisted of three stages. The first stage was the collective development of a survey questionnaire, all the partners involved in T2.2 were involved. The second stage was to conduct surveys with representatives of the 28 TNs. Finally, the third stage was about compiling and reporting interview results.

2.2.1. Stage #1: to elaborate a global questionnaire

The complete questionnaire is available in Annex 2.

As the subject of the T2.2 study is very technical, the focus of the questionnaire is on specific aspects such as the type of software solution employed to create the content repository / the security of KR's outputs / the exploitation plan...

Before reaching a finalised version of the questionnaire, many iterations took place as part of exchange of ideas among T2.2 partner, supplemented by a first series of questionnaire tests. The final version of the questionnaire was validated by all partners.

Interview items were divided in two parts: (i) a written part (survey), and (ii) an oral part.

Questionnaire parts:

- **The “written part”**

The questionnaire part called "written part" is a document consisting of a series of 15 question items. The written part of the questionnaire was decided to be administered to interviewees with the help of SurveyMonkey® (<https://nl.surveymonkey.com/r/SQW2GJ9>), a very convenient online survey tool which match the needs of this phase of the project.

The usefulness of making the questionnaire available online was to give the interviewees time to access needed information and reply at their own convenience.

The link to the online questionnaire was provided at the time the interviewees were contacted.

In practice, two scenarios arose:

- Either the interviewee accessed the questionnaire before the interview (oral part of the questionnaire) was conducted to start filling in the questionnaire;
- Or the interviewee accessed the questionnaire after the interview (oral part of the questionnaire) was conducted to continue and finalize the completion of the questionnaire.

Most of the time the interviewee took the time to consult the questionnaire online before the day of the interview, for reasons mentioned above (prior collection of information, time dedicated to it) they spent post-interview time completing the questionnaire.

- **The oral part**

The questionnaire called "oral part" is a document that consists of a series of 10 question items. This part of the questionnaire mainly consists of closed-type questions, in an attempt to obtain specific kinds of responses, but also some open questions in order to enrich the results.

2.2.2. Stage #2: implementation of interviews

For each TN, a representative person, qualified as "IT KR responsible", was identified following individual contacts with each TN coordinator. Once this list was finalized, the following breakdown of the 28 TNs to be investigated was made. Unfortunately, only one third of the interviews were conducted in a face-to-face mode. Despite the fact that the rest of the interviews took place over a distance, there were no trade-offs with regard to allocated time and collection of the required information.

Table 2: 28 TNs interviews allocation among the 7 EURAKNOS' partners involved

TNs name	EURAKNOS' partners acronym						
	RAU	USC	IDELE	PSKW	UGent	NAK	ICROFS/AU
AGRI-SPIN				X			
HNV-LINK			X				
SMART-AKIS			X				
AGRIFORVALOR				X			
AFINET						X	
Inno4Grass				X			
SKIN			X				
ENABLING			X				

TNs name	EURAKNOS' partners acronym						
	RAU	USC	IDELE	PSKW	UGent	NAK	ICROFS/AU
NEWBIE				X			
Suwanu				X			
OK-Net-Arable							X
FERTINNOWA				X			
WINETWORK			X				
EUFRUIT							X
CERERE					X		
INCREDIBLE		X					
PANACEA					X		
INNOSETA		X					
Best4soil			X				
Legumes translated				X			
HENNOVATION	X						
EuroDairy	X						
4D4F				X			
EU Pig			X				
SheepNet			X				
OKNeT Ecofeed							X
Disarm					X		
Nutriman						X	
TOTAL	2	2	8	8	4	2	2

Each partner responsible for these interviews contacted each "IT KR responsible" via a collectively developed contact email provided in Annex 3.

As far as possible (on the basis of the availability of the person that was interviewed and the geographical distance between the interviewer and the interviewee), face-to-face interviews were preferred, if not, skype meetings were organised and held.

2.2.3. Stage #3: analysis of results

All the answers obtained were compiled in a single spreadsheet.

For open-ended questions, it was first necessary to carry out a phase of standardization of the answers, by codification, in order to be able to consider a group analysis, as for all the other answers obtained.

2.2.4. Method limitations

- General comments

It should be noted that it has sometimes been difficult to establish contact with some TN representatives or IT KR responsible, mainly because of a lack of available time.

It is much easier to conduct face-to-face interviews and obtain information than to remotely follow up with people to complete the questionnaire online.

In some cases there were some overlaps between the online questionnaire and the interview yet, a finer level of detail was feasible to obtain. So, more accurate information was collected. However, it sometimes requires guidance to answer them as accurately as possible.

- **The survey approach**

The design of an open source KR is a very technical subject, which is especially true in the written part of the questionnaire. The written part is very detailed and also quite long (time-consuming) to complete.

In advance, we were potentially aware of this difficulty. However, it was not easy for each TN to correctly identify the person or persons to be interviewed in the timeframe allocated. This problem was also magnified by the fact that, in some cases of TNs, the development and administration of the KR was the responsibility of different people (such as different project partners or a partner more particularly in charge of administration but in relation with IT developers for the development of the KR).

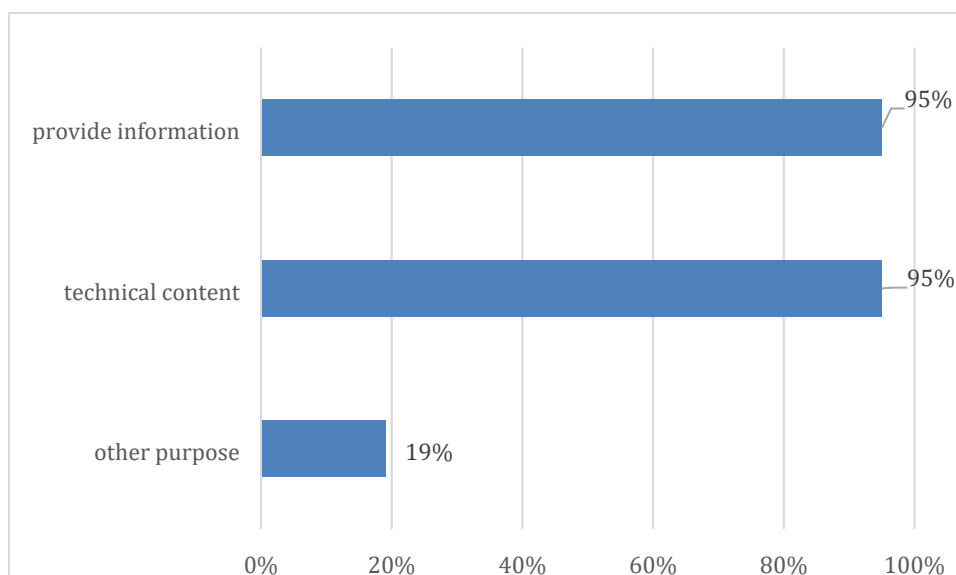
3. TN's Knowledge Reservoirs

3.1. Key features

3.1.1. The scope of the KR's

Interviewees sometimes find it difficult to distinguish between the design of the open source KR itself and the design of the website used to present the project and store information and knowledge produced by TNs. This is largely due to the fact that 70% of the KRs are integrated into the project website. This also implies that the design of the KR is closely linked to the design of the project website. These two elements have been designed with the same approach.

This confusion is in the same vein as the confusion that is often made between the following two notions "communication" and "dissemination".



Graph 1: KR's scope

The open source KR has two main objectives: provide access to information (related to the project: project status, partners involved...) and technical content (all types of knowledge produced by the TN and intended to be disseminated).

Only 19% (which is equivalent to 5 TNs among the 25 respondents) of the TN declare to have other goals such as:

- 1) acting as an archive to make the results of a project accessible
- 2) promoting innovations
- 3) fostering dialogue with end-users, in particular the farming community : forum functionality

The analysis faced the issue of the level of achievement of each TN site with regards to the level of the progress of the respective TN. Some were not yet completed when others were completed, and active.

This explains how some sites achieve some criteria and others do not such as the open source characteristics or their compliance with the GDPR (General Data Protection Regulation) legislation.

Some open source KRs were still not available at the start of the T2.2 analysis due to the fact that some of them had just started.

3.1.2. KR's hosted in the TN website

For the majority of TNs, the design and implementation of the KRs as open sources is an integral part of the project associated with the establishment of the TNs. Therefore it is necessary that the TN is already “running” before considering this phase of KR development as open source.

The distribution of the location of the KRs is carried out as follows:

	Number of KR	% of KR	TN's name
integrated into project site	12	43%	FERTINNOWA AGRI FOR VALOR SUWANU EURODAIRY 4D4F EUIPIG AGRISPIN HNV-LINK CERERE NEWBIE SKIN INCREDIBLE
integrated into project site + dedicated platform	1	4%	HENNOVATION
KR in its own right hosted by project site	3	11%	AFINET (knowledge cloud) SHEEPNET (SheepNet reservoir) NUTRIMAN (Farmer platform)
not yet available	6	21%	ENABLING LEGUMES TRANSLATED INNOSETA DISARM PANACEA BEST4SOIL
dedicated platform	6	21%	SMART-AKIS : Smart Farming platform WINETWORK : knowledge reservoir OK-NET ARABLE & OK-NET ECOFEED : organic farm knowledge INNO4GRASS: encyclopedia pratensis EU FRUIT: knowledge platform
Total	28	100%	

Among the 28 TNs and with regard to the previous table, various options have been taken regarding the hosting and availability of their KR.

The vast majority of TNs (58%) have opted to host their KR on the project website. However, two solutions have been adopted:

- Provision of knowledge in various web pages of the project website; or
- Creation of a specific web page, in the project website, allowing for content visibility and clarity.

It should also be noted that some TNs are still too recent and have not yet started the design or deployment phase of their KR. This still concerns 21% of the TNs.

Finally, only 25% of the TNs opted to create a separate, dedicated platform.

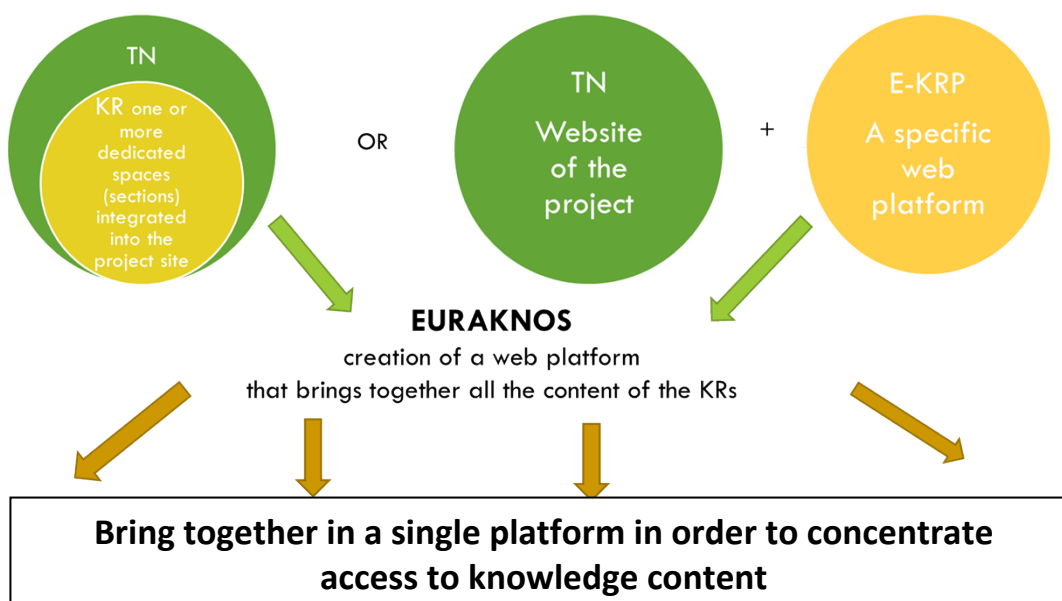
Initiatives to be highlighted

The majority 70% of TNs make the KR produced available as open source on the project website.

Only one third of the TNs have a dedicated knowledge platform to host the KR.

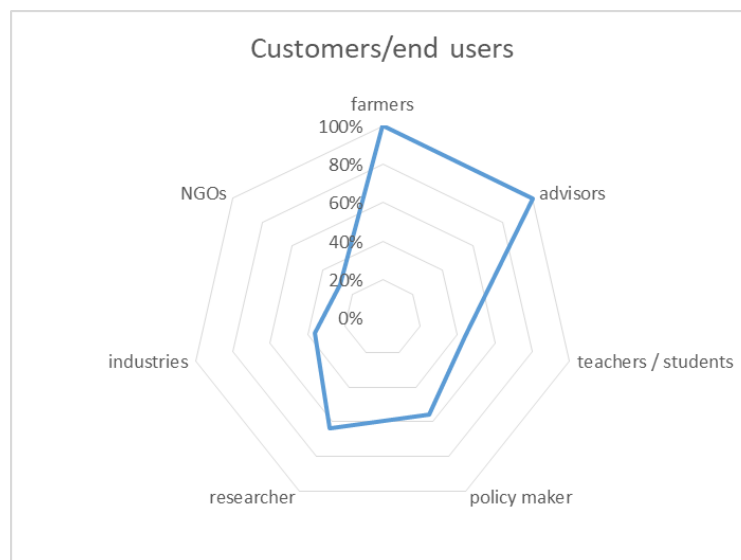
The majority of TNs (70%) provide access to their KRs through the TN's website, whereas the KRs of one third of the TNs are made available as a separate service.

We can therefore summarize the location of the open source KRs and link with the EURAKNOS project, with the following diagram:



3.1.3. KR's targets audience

From the desktop study, it was possible to identify the potential target groups as users of the different open source KRs investigated. The results of this analysis are available below:



Graph 2: distribution of the main target audience groups identified

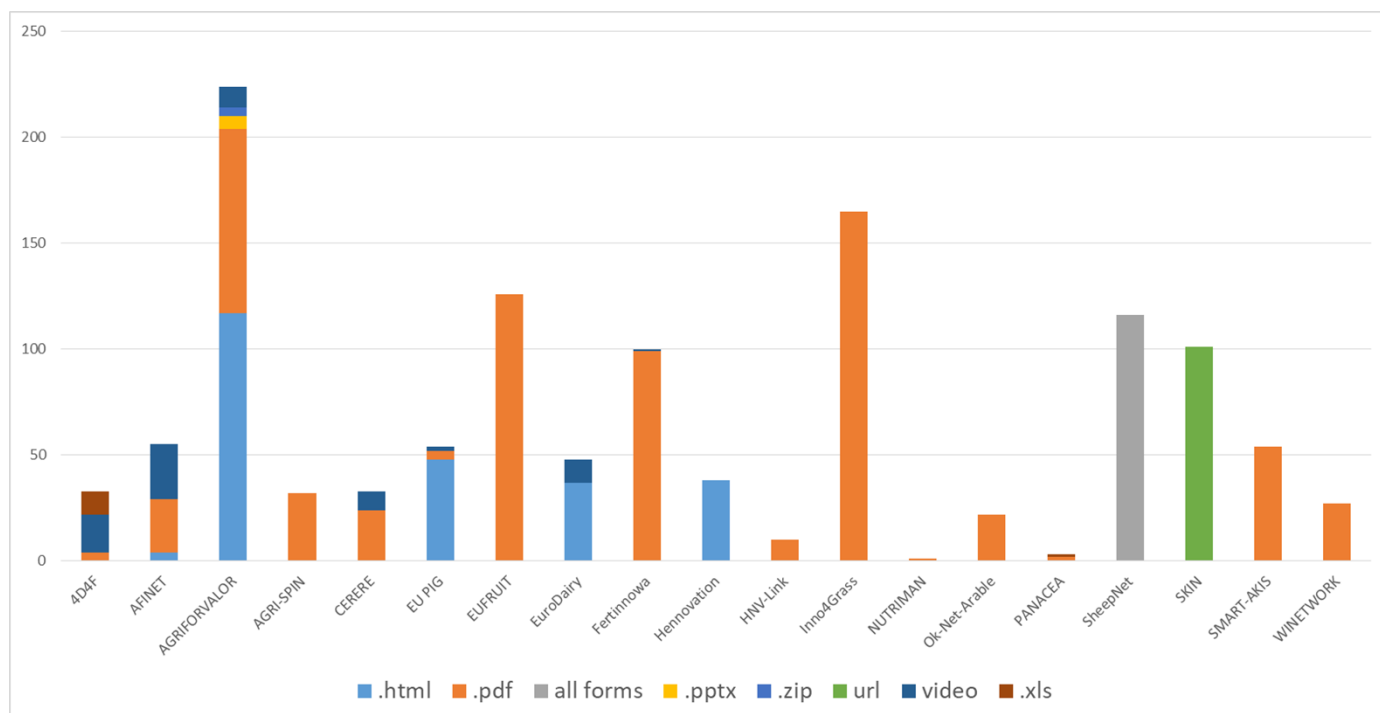
Few TN KR sites address directly their main end user groups of the outputs of the projects, i.e. farmers or foresters. However, content and information are provided for people already involved in agriculture and forestry and able to understand and use delivered recommendations. No distinction has been made between farmers and advisors in spite of their different use of innovation practices.

Advisors and innovation brokers are seen as an important target for all the KR managers. The content delivered in KRs is supposed to inform on new practices.

3.1.4. KR's ownership

3.1.4.1. The format of KR content

The graph below gives an overview of all content formats available in existing KRs. We can see that there is a great diversity in content formats. In general, the most commonly used formats are: PDF, HTML and different types of videos.



Graph 3: content format analysis of 19 TNs (based on the materials available on the TN websites)

This graph is given for information only. It was obtained by automatically processing the content formats available in the various KRs and from the project websites and not from the sites that host the KRs as such, which explains the existing bias for some KRs hosted on dedicated sites, such as the Organic Farmknowledge platform for OK-Net Arable and OK-Net Ecofeed TNs.

This scheme has the merit of presenting a certain diversity and also of highlighting the PDF format, which predominates.

3.1.4.2. Languages available to access the KR

The language used to access the contents of the KRs is a very important element to be taken into consideration.

	Number of KR	% of KR	TN's name
English only	11	50%	AGRISPIN CERERE EU FRUIT EUPIG EURODAIRY FERTINNOWA HENNOVATION HNV-LINK NEWBIE SKIN SUWANU

	Number of KR	% of KR	TN's name
A large number of languages	2	9%	4D4F AGRI FOR VALOR
Languages of the project partners	9	41%	AFINET INCREDIBLE INNO4GRASS NUTRIMAN OK-NET ARABLE OK-NET ECOFEED SHEEPNET SMART-AKIS WINETWORK
Total	22	100%	

Thus, it can be seen that in half of them, not understanding English is a major obstacle to access knowledge.

The translation of content is a very time consuming and tedious task to implement, but is the only solution to facilitate understanding of content by all end-users.

Initiatives to be highlighted

For the **SheepNet** KR, a major effort was made to translate the content into the partners' different languages.

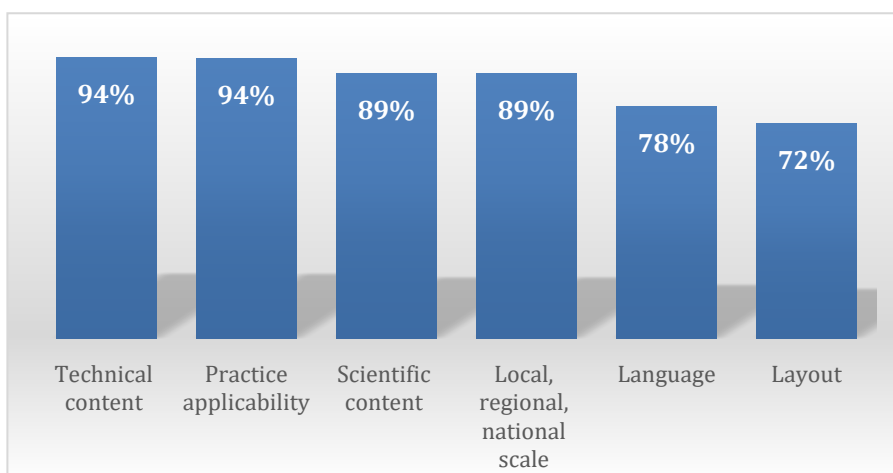
The knowledge access path in the **Winetwork** KR is really interesting. We start on the KR with the choice of language (linked to the languages of the project partners), then we choose the type of content we are looking for, which allows us to access different contents.

It should be noted that the functionalities of the open source KR (general website usability, content storage, content...) evolve according to the progress of the project and the first user tests. During the work carried out throughout WP2, for task 2.2, we noted developments and changes, which provide better access to the content of the KRs.

3.1.4.3. Data validation

In most KR cases, there is a data validation phase taking place prior to data storage.

To this end, the main areas of audit selected are presented below:



Graph 4: data's scheme validation

The graph above represents the number of positive responses given by the TN representatives interviewed according to the different items proposed. The higher the percentage associated with each item, the more frequently it was cited.

As made evident from the above graph, validation is mainly concerned with the technical content of provided data and the practice applicability (94% of the KR), while in many cases scientific content (around 89% of the KR) is also validated.

Language and layout attract less attention with regard to validation (below 78% of the KR). As far as involvement in different types of data validation is concerned, half of the KRs have applied more than 5 different validation types with applied validation types ranging from 3 to 5.

Other facts, if the coordinator is the administrator of the KR then there is more persistence to layout validation, it is the case for 85% of the TNs interviewed. If the coordinator is not the manager of the KR, then only a 25% of the TN validates the layout of the produced material.

About 85% of the TN that validates the layout also validates the language and 25% of the TN that does not validate the layout does not validate the language either.

3.1.4.4. Open access to content

A clarification about what 'open access' means was provided to interviewees so as to enable appropriate responses. The notion of 'open access' applied to open access to knowledge content is based on the principle that content can be freely used, re-used and redistributed by anyone - subject only, at most, to the requirement to attribute and share alike.

More specifically, "Open Data" is about:

- **Availability and Access:** Data must be available as a whole as and at no more than a reasonable reproduction cost, preferably by downloading over the internet. The data must also be available in a convenient and modifiable form.
- **Re-use and Redistribution:** Data must be provided under terms that permit re-use and redistribution including the intermixing with other datasets.
- **Universal Participation:** Everyone must be able to use, re-use and redistribute. There should be no discrimination against fields of endeavor or against persons or groups. For example, 'non-

commercial' restrictions that would prevent 'commercial' use, or restrictions of use for certain purposes (e.g. only in education), are not allowed.

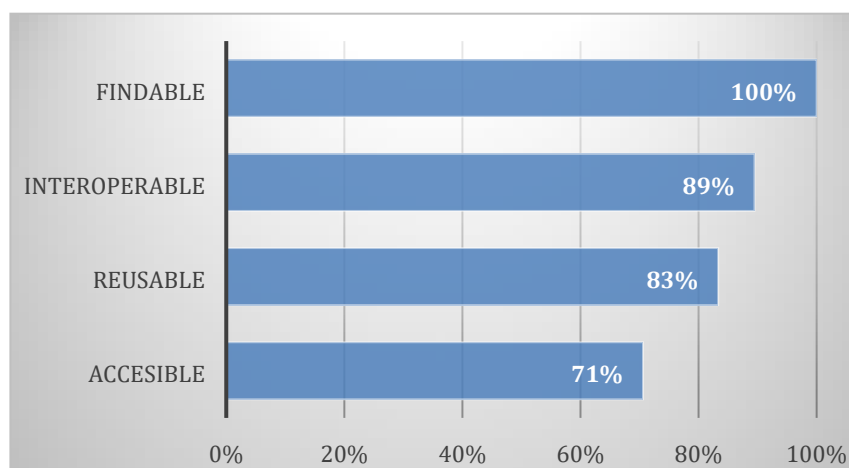
Compliance with "Open Data" guidelines is important for the reason that it ensures interoperability (i.e. the ability to interoperate - or intermix - different datasets).

3.1.4.5. The FAIR data principle

A clarification about what 'FAIR data principle' means was provided to interviewees so as to enable appropriate responses. The 'FAIR data principle' relates to the ways in which data is constructed, stored, presented or published in such a way that it can be:

- **FINDABLE:** data and supplementary materials have sufficiently rich metadata and a unique and persistent identifier
- **ACCESSIBLE:** metadata and data are understandable to humans and machines. Data is deposited in a trusted repository.
- **INTEROPERABLE:** metadata use a formal, accessible, shared, and broadly applicable language for knowledge representation.
- **REUSABLE:** data and collections have a clear usage licenses and provide accurate information on provenance.

Concerning the question relating to the FAIR principle, the graph below pictures what emerged from interviewees' responses:



Graph 5: FAIR data principle compatibility as indicated by 93% interviewed TNs

Interviewees consider that all knowledge content is findable, whereas 89% is interoperable, 83% reusable and 71% accessible. Almost all TNs fulfill some of these characteristics, with a range from 1 to 4.

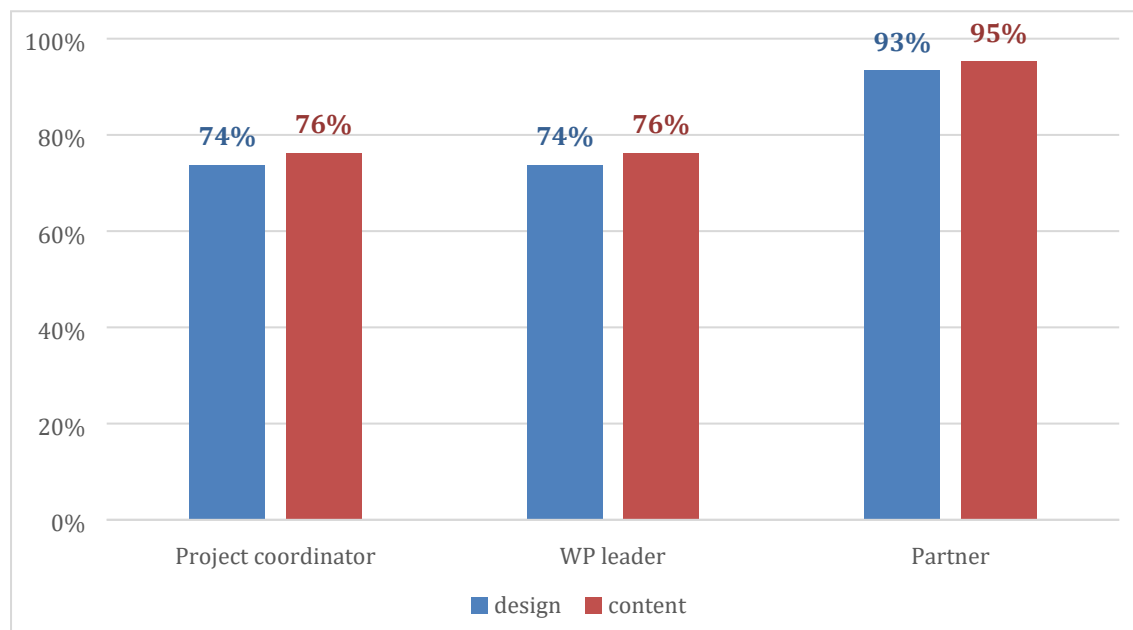
An important thing to note is that these notions are fundamental and of interest to all TNs, only they are complex concepts to understand and it was relatively difficult to elicit responses.

3.1.5. Design of KR's

3.1.5.1. Management of KR's

For each KR, different types of partners have been involved, with different degrees of involvement in the management of the KR.

KR's management includes both the KR design phase and then the KR content feed phase.



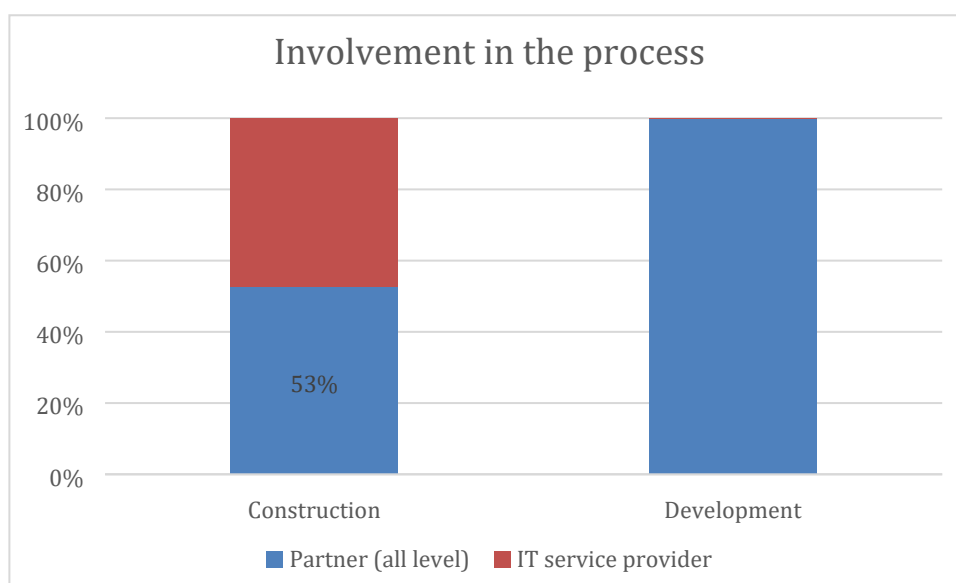
Graph 6: KR's management by different actors in the consortium, project coordinator, WP leader and partner according 26 TNs

One specific partner within a TN is generally responsible for the management and the design. But in several cases (with a frequency of 76%), the project coordinator and a Work Package (WP) leader are also involved with a high degree of co-responsibility.

It is typically a co-responsibility process.

3.1.5.2. Digital KR's "builders"

The development of an open source KR requires the use of several fields of expertise and most of the time to seek additional expertise in addition to that available among those of the consortium.



Graph 7: involvement of the consortium partner or IT provider in the process of construction and/or development phase of an open source KR

As shown in the previous figure, it can be seen that the vast majority of TN consortium partners are involved in the 'construction' of the open source KR (i.e. a phase of reflection and drafting of specifications for the expression of needs used to define the contents of the KR). However, as far as the IT implementation of these specifications is concerned, this step is mostly entrusted to IT developers.

However, partners need to carefully describe their needs and provide specifications. It is a matter of co-construction process.

3.1.5.3. Choice of the CMS

The CMS is the code language. It determines the associated content management functionalities. Different languages have been used mainly open source, i.e without any license fees required.

The IT language choice must also be compatible with the open access character. Open access means that research results are made freely accessible in digital form, which promotes the dissemination of research results both within the scientific community and to the public at large. The reader can read free of charge, use, copy, print, and link to the open access publications.

Some TNs choose to reference their KR on OpenAire, the scientific platform to exchange knowledge on agriculture. This solution gives some opportunities in storage data and information.

The majority of TNs projects which built the TNs site including the KR functionalities used Wordpress (CERERE, SUWANU, EU Pig). This CMS is widely used given its flexibility and ability to manage different sort of content, such as text and video. It is an open source solution, compatible with different informatics configurations. In some cases, however it appeared that it has not been very efficient. For instance, in cases in which existing items were needed to be altered.

Most of the projects that dedicated a specific site to the KR function built it with some specific tools: Drupal, TYPO3 or Joomla have been used for instance. Those languages gave the opportunity to organise the content in order to answer to user demand. Those have been used because of their functionalities such as the ability to add members to the community.

3.1.5.4. Tools developed by the KRs

3.1.5.4.1. Content querying options

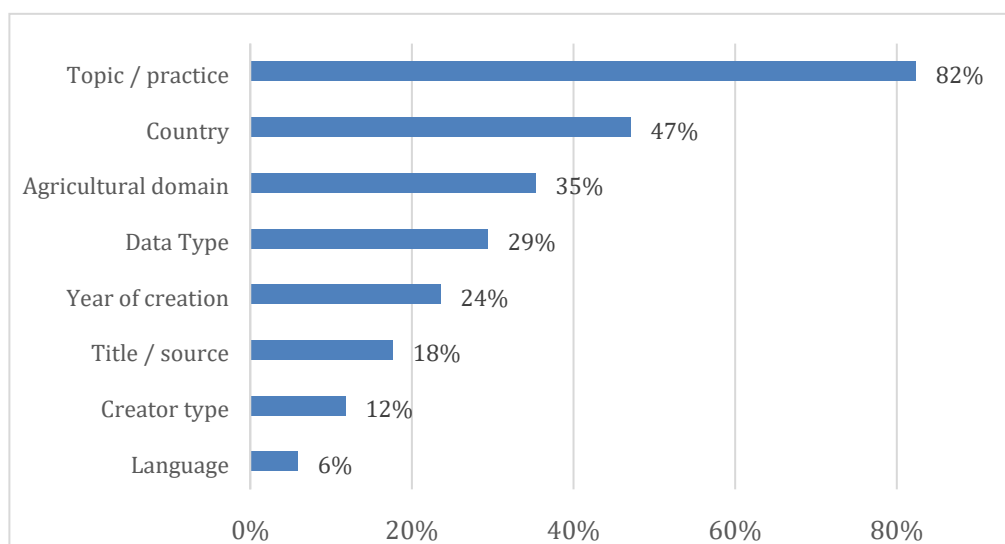
- **Search tool integrated in KR**

A little more than half of the KRs include a content search tool. Among the 22 KRs, we have:

	Number of KR	% of KR
Existing search tool	12	55%
No search tool	10	45%
Total	22	100%

It should be noted that of the 12 open source KRs that have specific research tools, only 1 (SUWANU) is a KR previously qualified as 'integrated into project site'. The other 11 are either KRs "hosted on a dedicated platform" (EU FRUIT, INNO4GRASS, OK-NET ARABLE, OK-NET ECOFEED, SMART-AKIS, WINETWORK) or KRs in their own right hosted by project site (AFINET, NUTRIMAN and SHEEPNET).

The graph below was developed from the responses collected from the 17 TNs. This graph is therefore a synthesis of the answers given to the question concerning the data querying options provided in each KR, in order to make content accessible to end-users.



Graph 8: data querying options

The most common content search options are, on the one hand, the subjects covered in the form of practical fact sheets, the country providing the content (which is strongly correlated with the language

in which the content is written) and the field with which the content refers. But not only that, because it is also clear that the type of content and the year of conception are also elements that are much emphasized in the availability of available content.

- **Evaluation of search tools**

Regarding the organisation of their KR, some TNs have taken initiatives that deserve to be highlighted. The search tools presented below help to guide the search and also make it easier to reach the most relevant content in relation to what end-users are looking for.

AFINET

We can do some search:

- by domains: if this option is chosen, then all the content listed in these sections can be accessed.
- or the user launches a search using a search engine that allows two options:
 - a simple keyword search
 - a search by type of support available (publications or research datas or projects)

The critical point that could be made is that we do not know what type of content we are, when the list of desired results is displayed. To do this, it is necessary to open the documents to find out what it is. It should also be noted that it is not possible to display content only according to the language used. It should be noted that all the contents of this KR are referenced on the OpenAIRE content search platform hosted on the content hosting platform: Zenodo.

NUTRIMAN

The project is still too recent to carry out a thorough evaluation. However, the "search bar" search functionality is already available. We notice that we are guided to enter the KR, two options are proposed to us "Products" or "technologies" then possible search by keyword, country, type of proposed solutions, level of knowledge and types of agriculture.

SHEEPNET

Search bar offers several options based on the following criteria: **topics / production / categories / list of key words / country / free search by key words.**

Thus it is possible to launch a content search, based on several specific search criteria.

INNO4GRASS

Search bar offers several options based on the following criteria: **product type (content support) or language or domains of innovation or mains types of animal or farming system or country.**

However, the proposed search filters are not cumulative.

EU FRUIT

EUFRUIT Knowledge Platform is an international open access database of electronic documents related to productivity, sustainability and quality of fruit in the European fruit sector. New knowledge on fruit research and best practice approaches at a European level are available in the database. It is possible to search for information in a specific language.

Focuses are on four thematic areas of critical importance to competitiveness and innovation potential of the European fruit sector: Search bar offers several options: activity type (in the broadest sense) / participation in... / organising / holding... / publication of... / publication in... / final project conference... / theme / country / organization that provides content

However, there is no search function by key word.

OK-NET ARABLE and OK-NET ECOFEED

It is a common KR platform.

We notice that we are guided to enter the KR, two options are proposed to us "Crop production" or "Animal husbandry" then a second time guided since the contents are classified according to different domains.

Or another option, we use the search tool by searching first by keyword, then other options are proposed: language, types of contents, themes, year, country of origin, keywords.

This KR platform is also connected to OpenAire through the repository Organic Eprints.

SMART-AKIS

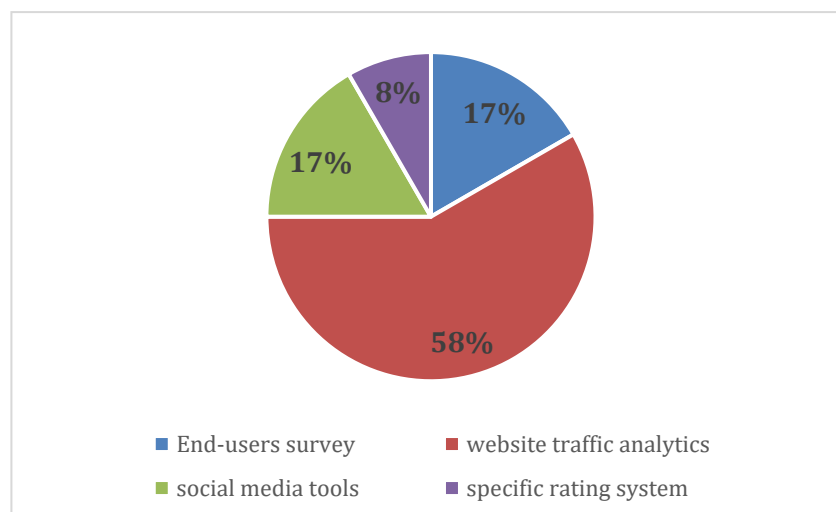
Search bar offers several options based on the following criteria: **keyword search / category (product available on the market or research project or scientific article) / list of countries / cropping system choice / total area cultivated choice / SFT type**

WINETWORK

The entry into the KR is made by type of content. There is also a keyword search bar.

3.1.5.4.2. Rating systems

We have tried to evaluate the rating systems implemented by some TNs, in order to assess the relevance of the content posted online. For this purpose, the graph below represents the responses that were most frequently given by the 26 TN representatives interviewed.



Graph 9: content rating system used by 26 TNs interviewed, end user traffic analytics, social media tools and specific rating system

As the graph above shows, it can be seen that the most commonly used tool is traffic analytics because it works on any website.

Among the other tools mentioned, it is noted that 17% of TNs use end-user surveys. The goal is to understand what end-users are looking for in terms of content.

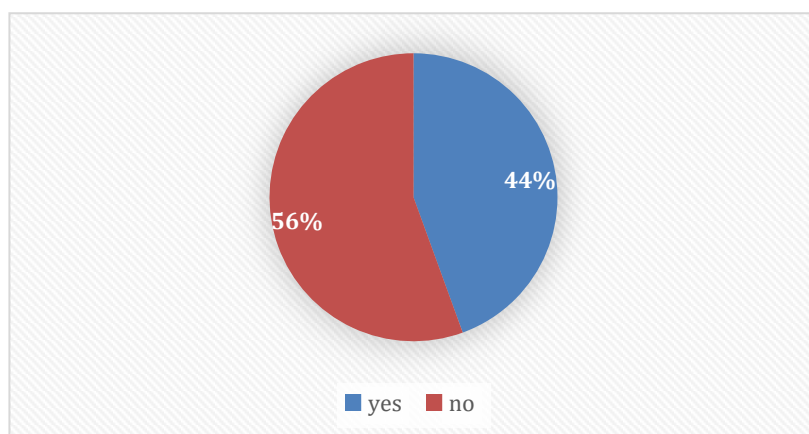
Some others TNs use social media tools. It is a way to promote some content and evaluate its popularity. Finally, few TNs have set up specific tools for content rating.

It is a way for the end-user to rate and comment upon content. Maintenance

3.1.6. The KR's exploitation plan

By definition, the KR's exploitation plan is a document which summarizes the practices that will be implemented and retained to be able to develop an open source KR and guarantee its sustainability in terms of longevity and updating of the content.

The graph below presents responses to the question 'availability of the exploitation plan?'



Graph 10: availability of the exploitation plan by 18 TNs that provided a response

The graph above shows that 44% of the TN has an exploitation plan, but only 66% of these are willing to make it available to EURAKNOS.

It has been observed that there is a correlation between the existence of an exploitation plan and the assumption of the KR's management responsibility by the TN coordinator. This observation is supported by the fact that 62% of TNs that have an exploitation plan have also their coordinator responsible for the KR management.

3.1.7. The KR updates

The graph below shows the frequency of KR updates (with regard to development of the KR; implementation of new functionalities, such as search tools, classification of content, delivery of new content...).

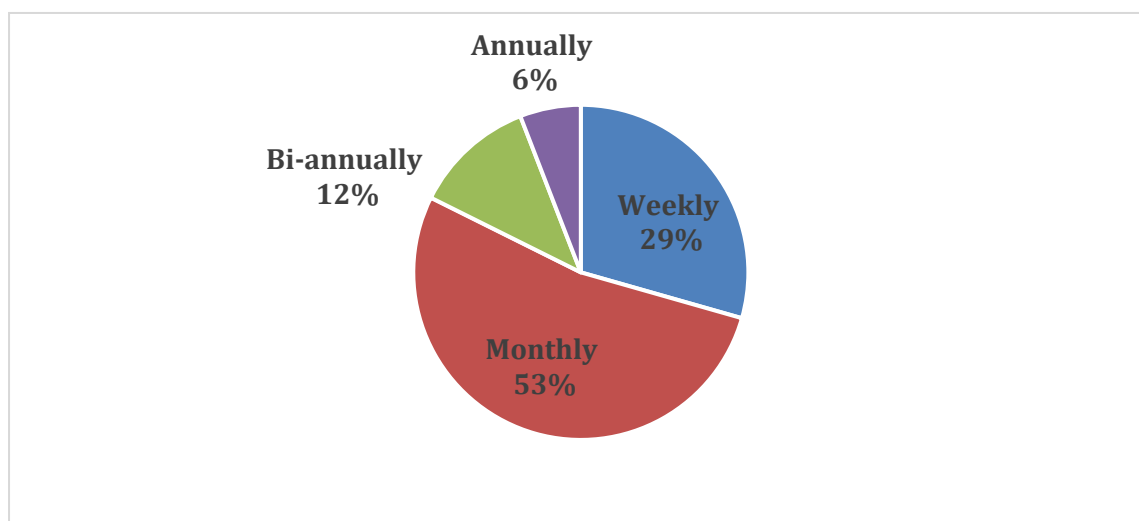


Figure 11: frequency of website updates by 17 TNs that provided a response

The KR updating is fully correlated to the lifetime of the project. During the project, the content is regularly updated. However, after the end of the project the content of the open source KR remains static and no longer evolves due to lack of time, budget and person in charge.

A general observation that can be made regarding the strategy for providing new content in the KR and new functionalities is that this is fully correlated with the stage of project progress.

First months of the TN's life (first year): reflection on the contents that will be integrated into the KR and reflection on the development of the KR.

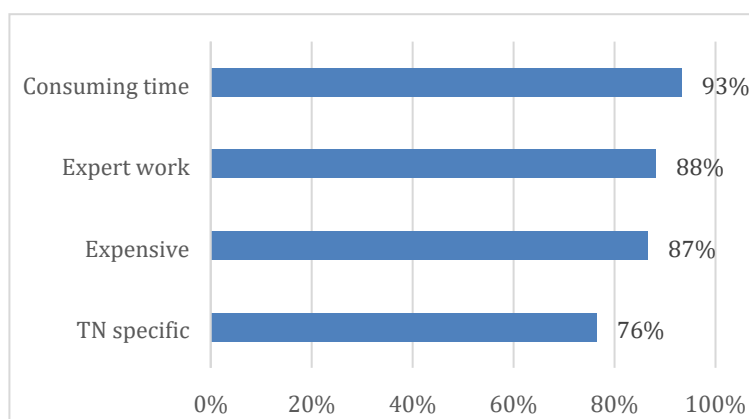
Then in the following months (when the KR exists), new content is integrated into the KR every month and then every week.

Afterwards this phase of supplying the KR with content slows down considerably when the project comes to an end. The updates of the KR are then much less significant and are updated at least annually.

It should be noted that the attendance rate of the KR is strongly correlated with the frequency with which content is updated. To retain the loyalty of a KR user, it is necessary to regularly provide the KR with new content adapted to the expectations of this user.

3.1.8. The annual maintenance

The graph below presents the reasons provided by TN representatives when asked about the main barriers identified with regard to the annual maintenance of their KR.



Graph 12: barriers identified on annual maintenance by the 26 TNs interviewed

It appears that the annual maintenance of the KRs is time consuming, needs work of experts for most of the TNs (93 and 88% of the TNs) while for only some of them is specific to each TN and expensive (87 and 76%, respectively).

The real question in relation to the annual maintenance cost is who will have to support them once the project is completed, which raises the question of the sustainability of the content deposited in the KRs. This is therefore a real concern of the TNs coordinators.

3.2. Relationship between KRs and other databases

To this end, we searched for possible links that may already exist or could potentially be envisaged between the KRs currently available and databases with international, European or national dimensions.

As a first approach, it is important to indicate that these are essentially scientific content databases and that existing databases can also serve as examples for the creation of KRs.

Whether it is the FAO's AGRIS portal (<http://agris.fao.org/agris-search/index.do>), with international dimensions, or the European OpenAire portal (<https://explore.openaire.eu/>), the conclusion is the same; they are both tools that do not host any content on their site. They are search engines that reference scientific content in open access format.

Task 4.1 (Deliverable 4.1) will further investigate the functionalities of databases with agri-knowledge at international and national level in more detail.

To date, very few TNs have opted to host their content on open access databases. The KRs we were able to identify, which has opted to host all the content available in its KR on the Zenodo open access database are AFINET and Organic Farmknowledge (OK-Net Arable and OK-Net Ecofeed) through Organic Eprints.

3.3. KR mapping

3.3.1. Generalities

The general observation that can be made on the KRs is as follows: different designs for different KRs.

Some KRs are based on:

- End-users requests and needs
- Type of contents which can be scientific or not so scientific, very « hands-on » with lots of tips and forums
- Input from partners and users (videos, etc...)

All these criteria emerged from all the exploration and investigation work carried out within the various KRs.

3.3.2. Classification of KRs

According to the criteria mentioned above, there are 4 main types of KRs.

3.3.2.1. KRs as a catalogue, choose your innovation

KR AS A CATALOGUE : CHOOSE YOUR INNOVATION



The screenshot shows the EURAKNOS search interface. On the left is a 'Search bar' with filters for Keywords, Category (Research project), Country (Albania, Luxembourg), Cropping system (Grassland systems, Open field vegetables), Total area cultivated (201 - 500 ha), and SFT type (Reacting or variable rate technology). A green speech bubble labeled 'Search engine' points to the search bar. The main content area is titled 'LEAVE YOUR FOOTPRINT' and features a central image of hands holding a tablet displaying a graph. A green speech bubble labeled 'Argument' points to this image. Below the image are four icons representing different impact categories: Quantity of product (Large increase), Revenue, profit, farm income (Some increase), Biodiversity (other than soil) (Some increase), and Productivity (crop yield per ha) (No effect). On the right, a 'Basic information' panel lists details for a selected item, including Vendor (Intelly website), Country (Albania, Luxembourg), Technology (Farm Management Information System application or App), Cropping system (Vineyards), and Technology description (Dejzhuvelia consists of an intelligent connectivity system that pivots on the concept of footprint in its environmental / emotional duality, as a point of connection between the consumer (who generates the user experience) and the winery (provider of the value of wine). Truly we know that our consumer wants to feel...).

Contents:
HTML and PDF stored on the KR....

PDF icon and HTML icon are shown below the text.

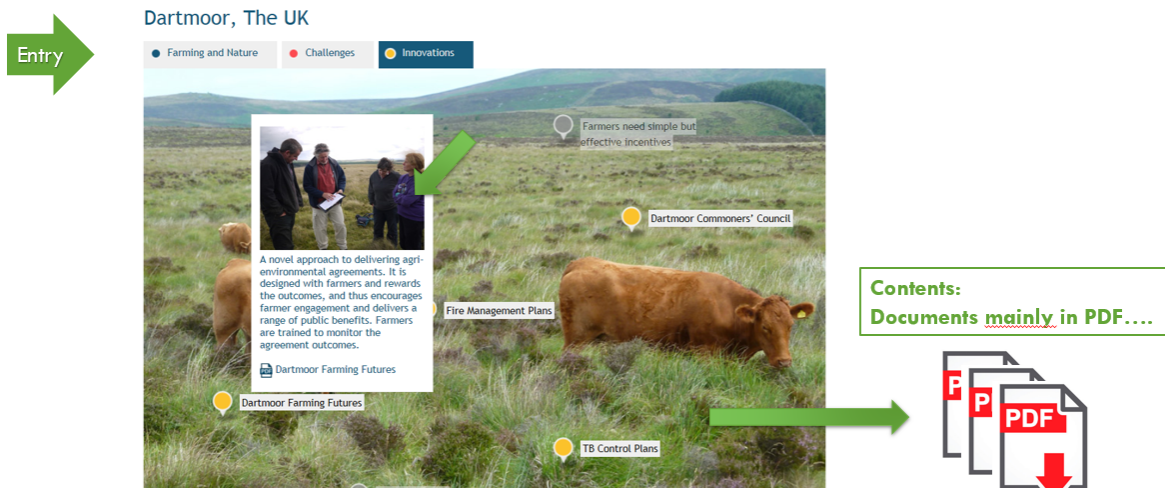
The KRs of the following TNs comply with this approach: **Smart-Akis, INNOSETA and Nutriman**. The main interest is, that it is essential to note is that this type of KR supports the user in his choices oriented in the search for practical solutions. So, these KRs reference some innovative technical solutions. The key steps for consulting content are in the first place through the use of a search engine; in the second place search criteria are defined to filter solutions.

The Most widely adopted content formats are PDF and HTML.



3.3.2.2. KRs as a library: find the knowledge on the right shelves

KR AS A LIBRARY : FIND THE KNOWLEDGE ON THE RIGHT SHELVES



The KRs of the following TNs are similar to this approach: **AGRI-SPIN**, **HNW-LINK**, **AFINET**, **FERTINNOWA**, **EUFRUIT**, **CERERE**, **PANACEA**, **HENNOVATION**, **EuroDairy** and **EU Pig**. This category is the most represented among all the KRs.

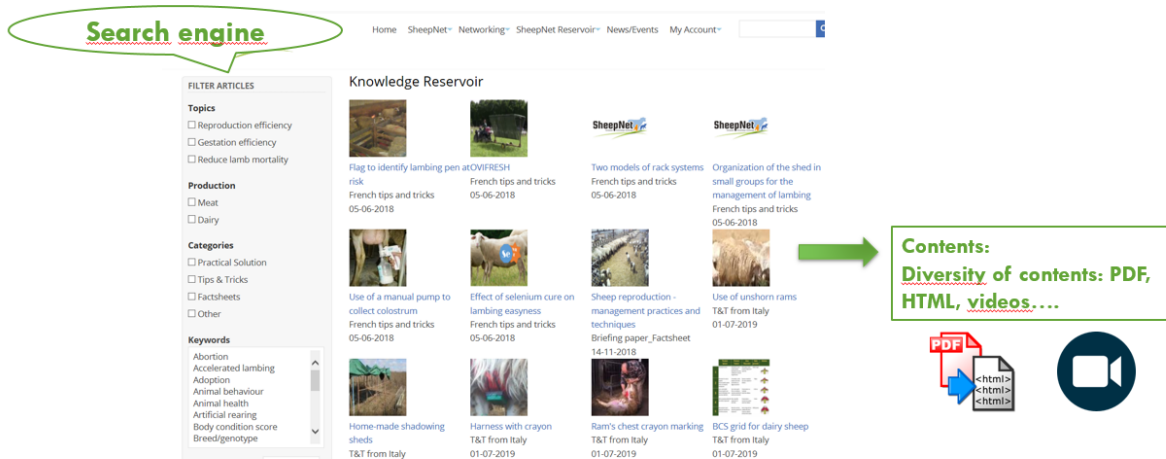
The main functionalities identified are a classification of contents by theme or type of content.

The key steps for consulting content area guidance on the site according to a proposed thematic classification.

The most widely adopted content format is a PDF.

3.3.2.3. KRs as a practical digital guide book

KR AS A PRACTICAL DIGITAL GUIDE BOOK



Search engine

Home SheepNet Networking SheepNet Reservoir News/Events My Account

Knowledge Reservoir

FILTER ARTICLES

Topics

- ☐ Reproduction efficiency
- ☐ Gestation efficiency
- ☐ Reduce lamb mortality

Production

- ☐ Meat
- ☐ Dairy

Categories

- ☐ Practical Solution
- ☐ Tips & Tricks
- ☐ Factsheets
- ☐ Other

Keywords

- Abortion
- Accelerated lambing
- Adoption
- Animal behaviour
- Animal health
- Artificial rearing
- Body condition score
- Breed/genotype

Articles:

- Flag to identify lambing pen at OVIFRESH risk**
French tips and tricks
05-06-2018
- Two models of rack systems**
French tips and tricks
05-06-2018
- Organization of the shed in small groups for the management of lambing**
French tips and tricks
05-06-2018
- Use of a manual pump to collect colostrum**
French tips and tricks
05-06-2018
- Effect of selenium cure on lambing easyness**
French tips and tricks
05-06-2018
- Sheep reproduction - management practices and techniques**
Briefing paper_Factsheet
14-11-2018
- Use of unshorn rams**
T&T from Italy
01-07-2019
- Home-made shadowing sheds**
T&T from Italy
- Harness with crayon**
T&T from Italy
01-07-2019
- Ram's chest crayon marking**
T&T from Italy
01-07-2019
- BCS grid for dairy sheep**
T&T from Italy
01-07-2019

Contents:
Diversity of contents: PDF, HTML, videos....

PDF, HTML, videos

The KRs of the following TNs are similar to this approach: Inno4Grass, **OK-Net-Arable** and **OKNet Ecofeed** (it is a common platform for these two TNs), **WINETWORK**, **4D4F**, **SheepNet**.

The main functionalities identified are a presentation of tricks and tips and very practical solutions.

The key steps for consulting content are first, through the use of a search engine, second search criteria defined to filter solutions or defined on the subject on which it is focused.

The types of content available are very variable, both in PDF format, but also in HTML and also a number of videos are available.

3.3.2.4. KRs as a market place to exchange good practices

KR AS A MARKET PLACE TO EXCHANGE GOOD PRACTICES



The KRs of the following TNs are similar to this approach: **Skin** and **Newbie**.
This category is the less represented among all the KRs.

The main functionalities identified are a KR which does not host any knowledge content but which lists references accessible through URL links.

3.3.2.5. KRs as a mix of different categories

In this section, the KRs of the following TNs are to be mentioned:

- **Agriforvalor**, which is a mix of a catalogue and a library,
- **Enabling**, which is a mix of a market (for its section: *Biomass trade platform*), a catalogue (for its section: *Best practices atlas*) and a library (for its section: *innovation watch*).

4. Main outcomes and recommendations

- **A great diversity of approach, therefore of content and KR**

Current TNs have different websites with different IT structures, formats and contents, depending on the actors involved in the project, the theme, the sector, the targeted audience and countries and the outputs of the project.

To be of high impact the results which should not only be of high relevance to the end-user but also easily accessible and understandable, and this should be better facilitated.

The sustainability of the website is a key issue in terms of long term impact. Therefore, a generic website or platform may be created with short descriptions and links to the individual project websites, which are built in a common format.

- **Some recommendations for a High Impact Knowledge Reservoir**

When designing a KR, it is absolutely essential and fundamental to take into account the need and to satisfy the expectations of end-users. We must be able to know what type of content end-users expect and to define the functionalities offered by the KR in order to direct end-users as much as possible and as well as possible towards suitable and interesting content.

To this end, it seems important to plan to develop a prototype that can be presented to a panel of end-users, with different profiles, who will then be able to give their opinions and share their perceptions.

It is also essential to support end-users in their navigation in the KR and it is also important to think about finding a way to make the most appropriate content as easily accessible as possible.

A few comments collected during the surveys summarize quite well the points of vigilance that must be kept in mind when developing a KR:

“Communication is the main issue: we need to know our targets! “

“Keep in mind the end-users’ needs: main criteria to reach them: easy to use, be visual, different languages available”

“Share with all the stakeholders on the design of the KR”.

To be able to connect all KRs in a common open source infrastructure, a standardized framework should be developed. It should be a dynamic system with a self-improving feedback loop, with well overthought search options for specific farmers’ needs, actions and different sectors.

Indicators such as the number of hits for specific information or profile of the end-user, can be used for continuous monitoring, evaluation and adaptation of the system.



5. Annexes

- **Annex 1:** Desktop study template
- **Annex 2:** The complete questionnaire (written part + oral part)
- **Annex 3:** The contact e-mail template



Annex1: The desktop study template

	Degree of completion	Main objectives and means					Software				
		Project management	Website / platform	Languages on websites	Languages on websites	Customers / end users	Value proposition	Compatible opensource	Type of support	management	Who fill information
H2020 THEMATIC NETWORK		Name it	Nb	how many ?	name them	farmers : 1 advisors : 2 teachers / students : 3 policy maker : 4 researcher : 5 industries : 6 NGOs : 7	decision tools : 1 contacts : 2 best practices : 3 other : 4	yes/no	computer : 1 tablet computer : 2 mobile : 3	Who's in charge	Partners : 1 stakeholders : 2
	100%	AGRI-SPIN									
	97%	HNV-LINK									
	100%	SMART-AKIS									
	100%	AGRIHORVALOR									
	72%	AFINET									
	72%	Imo4Grass									
	78%	SKIN									
	39%	ENABLING									
	39%	NEWBIE									
	8%	Suwanu									
		CROPS TN									
	100%	OK-Net-Arable									
	100%	FERTINNOWA									
	100%	WINETWORK									
	97%	EUFRUIT									
	75%	CERERE									
		INCREDIBLE									
	39%	PANACEA									
	25%	INNOSETA									
	14%	best4soil									
	8%	legumes translated									
	14%	Nutriman									
		LIVESTOCK TN									
		HENNOVATION									
	100%	EuroDairy									
97%	4D4F										
73%	EU Pig										
78%	SheepNet										
39%	OKNet Ecofeed										
6%	Disarm										



		Functionalities				Knowledge Organisation				Data presentation			Comment		
	Degree of completion	Events calendar	Personal account	Newsletter	Contact formulary	Others	Search engine	Contents ranking	Ranking criteria	Other ranking criteria	Contacts	Partners descriptions		Logo	Contact address
H2020 THEMATIC NETWORK															
		yes/no	yes / no	yes / no	yes / no	name it	yes/no	yes/no	Country : 1 Production : 2 Type of contents : 3	name it	yes/no	yes/no	yes/no	yes / no	
		100%													
		97%													
		100%													
		100%													
		72%													
		72%													
		78%													
		39%													
		39%													
		8%													
		CROPS TN													
		OK-Net-Arable	100%												
		FERTINNOWA	100%												
		WINETWORK	100%												
		EUFUIT	97%												
		CERERE	75%												
		INCREDIBLE	44%												
		PANACEA	39%												
		INNOSETA	25%												
		best4soil	14%												
		legumes translated	8%												
	Nutriman	14%													
	LIVESTOCK TN														
	HENNOVATION	100%													
	EuroDairy	100%													
	4D4F	97%													
	EU Pig	73%													
	SheepNet	78%													
	OKNet Ecofeed	39%													
	Disarm	6%													

Annex 2: The complete questionnaire

EURAKNOS aims to design a High Impact Knowledge Reservoir (HIKR) based on relevant data and content from TNs websites with high impact on the end-users.

In the context of EURAKNOS, a knowledge reservoir (KR) is a collection of best materials, practices, instruments, methodologies and tools, that contribute to the use of innovative solutions for sustainable agriculture and forestry.

This survey is about gathering information about the main specifications of your TN's KR (namely, TN's website that contains TN-related output or data repository/platform), as well as best practices for a new HIKR platform.

Documents that you should have prior the interview :

- the Data Management Plan
- the traffic analytics report for the TN's website and/or repository/platform for 2018 (about consulting all pages and the audience)

The written part

TN Scope and data insights

1. Data insights

Output type categories and output types		format (*)	data maintenance <i>Who keeps TN-related outputs up-to-date?</i>			
			Project coordinator	WP leader	Partner	Other (specify)
Project-related documents	Deliverable					
	Report					
	Milestone					
	Practice abstract					
	Other					



Additional documents	Factsheet					
	Press release					
	Newsletter					
	Review document					
	Technical article					
	Handbook					
	Scientific publication					
	Best practice guide					
	Manual					
	Booklet					
	Spreadsheet					
	Other					
ICT-based material	Technology database/ platform					
	Algorithms					
	Software					
	Decision Support Tools					
	Other					
Media-based material	Videos					
	Figures					
	Presentation					

	Infographic					
	Chart/graph					
	Podcast					
	Other					
Training material	Seminar					
	Workshop					
	Webinar					
	Other					

(*) Output format values

Project-related documents: .doc, .docx, .pdf, .odt, .rtf, .txt, .html, xls, .xlsx, .xlt, .ods, .csv, other (please specify)

Additional documents: .doc, .docx, .pdf, .odt, .rtf, .txt, .html, xls, .xlsx, .xlt, .ods, .csv other (please specify)

Media-based material: .mov, .mpeg4, .mp4, .avi, .wmv, .mpegps, .flv, .3gpp, .DNXHR, .ProRes, .HEVC, .CineForm, .jpeg, .png, .gif, .tiff, .html, .pdf, .wav, .bwf, .aiff, .wma, .mp3, .ogg, other (please specify)

2. How is the KR organized?

- a website,
- a newsletter,
- an e-platform,
- a handbook.
- Other specify

3. What data querying options have you provided to your TN's KR end-users? (more than one options may be selected)

- agricultural domain and subdomain
- topic/practice (e.g. field operation, animal breeding, etc.)
- creator type,
- title, project/TN in which data has been produced,
- year of creation,
- data type,
- data format,
- data purpose,
- language,
- country/region of data creator
- other: have you provided other keyword-related functionalities to your TN's KR end-users so as to enable access to TN-related outputs? If yes, could you name them?

4. Who is/was **in charge of your TN's KR development**? *(for any answer, please specify name & email address)*
 - The project coordinator
 - A WP leader
 - A partner
 - Other (specify)
5. Who **built** the KR? *(for any answer, specify name & email address)*
 - The project leader
 - A partner
 - IT service provider
 - Other (specify)
6. Which **technological infrastructure** is/was chosen for your **TN's website** (e.g. Wordpress, Joomla, Drupal, etc.)? Could you name it? Are you satisfied with your option? Please discuss.
7. In the case that your TN's KR is a **data repository/platform**, could you name the type of **software solution** that has been employed (SQL/NoSQL)? Could you mention what software solution has specifically been used?

Example SQL-based system solutions: Oracle database, MySQL, Microsoft SQL Server, PostgreSQL, DB2, other (specify)

Example NoSQL-based system solutions: Cassandra, Redis, HBase, MongoDB, Oracle NoSQL, other (specify)
8. In what way is **security of your TN's outputs** ensured? Have you made use of **security mechanisms** that are **built in the technological infrastructure** employed for your TN's website and/or data repository/platform? Have you made use of **any other** security mechanisms? Could you, please, provide details?

KR maintenance

In terms of querying issues related to KR maintenance, we make a distinction between the **back-end** (data repository, search engine, etc.) and the **front-end technological infrastructure** (website, Graphic User Interface, etc.).

9. Who is **responsible for front-end infrastructure** (of the website) **maintenance**? *(Please, specify name & email address)*
 - The project leader
 - WP leader

- A partner
 - IT service provider
 - Other (specify)
10. Who is **responsible for back-end infrastructure maintenance**? *(Please, specify name & email address)*
- The project leader
 - WP leader
 - A partner
 - IT service provider
 - Other
11. Who is in charge of **data storage**? *(more than one options may be selected)*
- The project coordinator
 - WP leader
 - Partners themselves
 - IT provider services
 - Stakeholders
 - Other (specify)
12. Is an **accreditation** or **inscription** required to access the data on your TN's KR? Explain why.
13. Are TN-related scientific publications available through **open source repositories** (e.g. Zenodo)? Could you name these repositories?

TN-related outputs impact

14. Are there any **statistics about KR usage data**? If yes, could you mention any specific **access patterns** related to the TN's KR? Which KR sections are **most frequently** used?
15. In case of existence of KR usage data, **which Analytics platform** has been used?
- Google analytics
 - Clicktale
 - Matomo (*Piwik*)
 - Other (*specify*)

Annex 3: The oral part

Question 1. The scope of my TN's KR is to provide...

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Not able to answer
information and results to a wide range of stakeholders including actors	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
technical content (e.g. best practices, innovative solutions, state of the art, etc.) to advisors, researchers and farmers/foresters	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>

EXPLAIN answer

Question 2. Who manages the **content of the KR**? (for any of the below provided options, please specify name & email address)

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Not able to answer
Project coordinator	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
WP leader	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Partner	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Data Management board	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>

EXPLAIN answer (who decided that he/she or they received the responsibility).

Question 2bis. Who manages the **design of the KR**?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Not able to answer
Project coordinator	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
WP leader	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Partner	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Data Management board	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>

EXPLAIN answer (who decided that he/she or they received the responsibility).

Question 3. Does an **exploitation plan** exist? If yes, could we have a look at it?

The exploitation plan refers to produced material and sustainability of your own TN KR.

Question 4. **How frequently** is the website content **updated**?

	Weekly	Monthly	3 Monthly	Half year	Yearly	Not able to answer
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>

EXPLAIN answer

Question 5. The **annual maintenance** for the KR (TN website and/or data repository/platform) is...

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Not able to answer
expensive	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
time consuming	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
expert work	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
TN specific	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>

EXPLAIN answers

Question 6. Have there been any **updates on the data stored in the KR**, after the initial storage?

Are there **different versions** of the data available through the TN's KR?

If yes, **how often** have these updates been done? What was the **reason**?

Could you by any chance refer to **different versions number**?

Question 7. Data are **validated/filtered** before storing them into the KR. We checked

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Not able to answer
Lay out	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Scientific content	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Technical content	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Applicability in practice	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Applicability on local, regional, national scale	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Language	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>

EXPLAIN data validation

Assessment of the feasibility of data extraction from your TN's KR to EURAKNOS HIKR

The aim of EURAKNOS project is to explore the feasibility to build a European wide open source KR connecting all TNs and giving easy access to end user materials and tools that have been produced by these TNs in an integrated form. To do so, we need to know the degree that your KR data can be Open and FAIR (findable, accessible, interoperable and reusable) for the EURAKNOS KR.

Question 8. How important is it that end users find your TN data. They find your data easily because they are:

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Not able to answer
Findable	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Accessible	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Interoperable	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>
Reusable	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>

EXPLAIN answers (can you give one good example and one bad example that illustrates that the data are findable, accessible, interoperable and reusable).

Question 9. The TN related output has a high impact.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Not able to answer
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/>

EXPLAIN rating system (data access frequency or user-driven data relevance/quality system)

Question 10 Given your experience, what would you **recommend** with regard to **design**, **development** and **maintenance** of an **open source HIKR**? (*Open discussion (good practices and pitfalls to avoid in the context of an HIKR design and development)*)

- Pitfalls to avoid;
- Good design and development practices;
- Good maintenance practices.

The contact e-mail template

Dear KR referent of the TN,

We (names of the involved partners) are working for the H2020 thematic network, EURAKNOS (<https://www.euraknos.eu/>) that aims to serve and connect all thematic networks (TNs) within two years to explore the possibility to develop a common data system to facilitate storing and access of TN outputs for EIP-AGRI and a broader public.

However, to achieve this ambitious goal of serving and connecting all the TNs, we need your help!

We are now starting to interview all TNs to map the valuable content they have produced or are going to produce. The Coordinator your TN indicated to us, that you are the responsible person for IT knowledge reservoir responsible. Can you please confirm this?

The first thing, I would ask you to do before we even define the terms of the interview together, is to take a few minutes of your time to go through, complete and return the consent document provided as an attachment to this email.

About the TN you are involved in, the main topic we would like to go through together will regard is the way that the data are placed in the Knowledge Reservoir.

In the meantime, we will be very thankful if you could provide us some background information or support documents that can help us better prepare for the interview. In our case, it would be very useful if you send us as soon as possible: the Data Plan Management of your thematic network and the traffic analytics report for your thematic network's website / platform for all 2018 year.

If you are indeed the correct person to interview, can you please specify some dates between 20th of May and 7th of June 2019 that would work for you to be interviewed. If you have the opportunity to let us know your availability by the 20th of May, it would be perfect.

To conduct this survey we will proceed in two steps as follows :

- First step : remotely, following your return by email of the consent document, we will send you a link to an online questionnaire that we will ask you to take the time to complete before the interview*
- Second step : the interview will be a time of exchange together (physically or by Skype / by phone) which will allow us to better know your Thematic Network, via a specific questionnaire complementary to the previous one. This will only take between 1 hour to 1 hour and half.*

If you have any questions or you wish to get an oral clarification about the interview, feel free to contact us.

Thank you very much for your collaboration.

With best regards

The EURAKNOS partner in charge of this interview