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3rd NEFERTITI platform report: Technical overview on knowledge tanks





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Abstract

NEFERTITI Programme promotes the creation of interactive thematic networks related to the agriculture sector to promote knowledge, learning and the adoption of innovative techniques through the exchange of information between different actors and live demonstrations.



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1

Introduction



Introduction

In this last WP4 deliverable for the official project period, focus is on technical overview and explanation of how the knowledge tanks were developed, maintained and improved during the Nefertiti poroject. Secondary, in deliverable it is described the integration with similar ongoing projects, and adding of additional sections and features to the platform existing architecture.

As the project was going on during the period of this deliverable, existing features were frequently used which resulted in adding new events, resurces, sections and in registering new demo farms across European countries. After the Nefertiti project officially ends, this won't be the end of usage of knowledge tanks created during this project. The platform itself well be furtherly maintained, while gathered knowledge and experience will be transmitted to a successors projects of with a strong connection to the topic of demo farms and innovation sharing.



2

Platform facts and figures



Platform Facts and Figures

During the project duration, upon the time of writing this deliverable, project results and outcomes were growing and multiplying. Products of hard work of the included stakeholders, and first of all project partners, were visible through Farm demo events organization and management; number of farms and actors included in the activities; and useful learning materials and practice abstracts produced. All of these results were facilitated through and found its place at Nefertiti website and platform. Measurable activities were evaluated through numbers and presented at the infographic attached bellow. Those activities includes: Number of farm registered at the platform, number of events registered at the event Calendar; number of useful materials uploaded, overall unique page visitors and pages viewed, and number of learning resources downloaded by the platform users.



IN NUMBERS

**FARMS
REGISTERED**

1.109

**EVENTS
REGISTERED**

1.086

**RESOURCES
UPLOADED**

193

**EVENT
MATERIALS
UPLOADED**

1.154

PAGE VIEWS

19.897

**UNIQUE
VISITORS**

9.248

**RESOURCES
DOWNLOADS**

22.682



Figure 1- Nefertiti project in numbers

3

**Overview at technical platform development
process**



Overview at technical platform development process

Development process from sketch to platform launch

Nefertiti platform intense developing period was happening between M01 and M09 after which the platform was launched and available for use and feedback from the main project stakeholders. During the intense platform development period agile project management processes were used in order to get the best possible product at the end.

Agile techniques that were used were based at Scrum work surrounding. This means that project manager of the platform development was in a close relation with development team and with end users during the development process. This include all Scrum elements, like making and maintenance of Product Backlog, Sprints, Sprint Review, Sprint Retrospective and daily meetings held in order to minimize work not needed and get out the most from the time development team dedicated to this project.

Development process after the platform launch

After the Nefertiti platform was launched and started to be usable, working environment changed and it entered the phase of maintenance and incremental development which was less intense and dynamic, so the need for using Scrum work environment finished. Afterwards, the platform was maintained and further developed in a more flexible arrangement, without strict formal format.

Although agile development process formally finished after the M09, development process remained agile and flexible towards new requests coming from partnering institutions. Requests coming after the platform was mainly developed and launched were mostly accepted and implemented, even some of the requests made platform improvement challenging as platform architecture was already set and some of the new requirements caused big adaptation measures and challenging integration with existing ones.

In this period of development, after the platform launched, inputs and additional requirements came to the development team mostly after review meetings, project annual meetings and after reaching set milestones. Those were the events that triggered additional comments, sparking the new ideas and suggestions for additional improvement. BioSense representative and development team were always keen to hear, discuss and elaborate on new requirements, although some of them were challenging to be implemented at the already existing platform architecture.

Event which influenced and changed the development process was Covid-19 pandemic which influenced deep changes in the project structure. Those changes influenced the platform development process as well. Additional requests from the Consortium occurred in order to adopt to increasing unpredictable change. Idea behind the platform development



was to be digital knowledge reservoir for the project, and Covid-19 highly increased this need as most offline events were cancelled and all information exchange went online. One of the bigger adaptation measures was making of Forum functionality at the platform. This idea was realized in a timely manner but this functionality was not used in practice by the stakeholders, as people are not used any more at this kind of information exchange anymore.

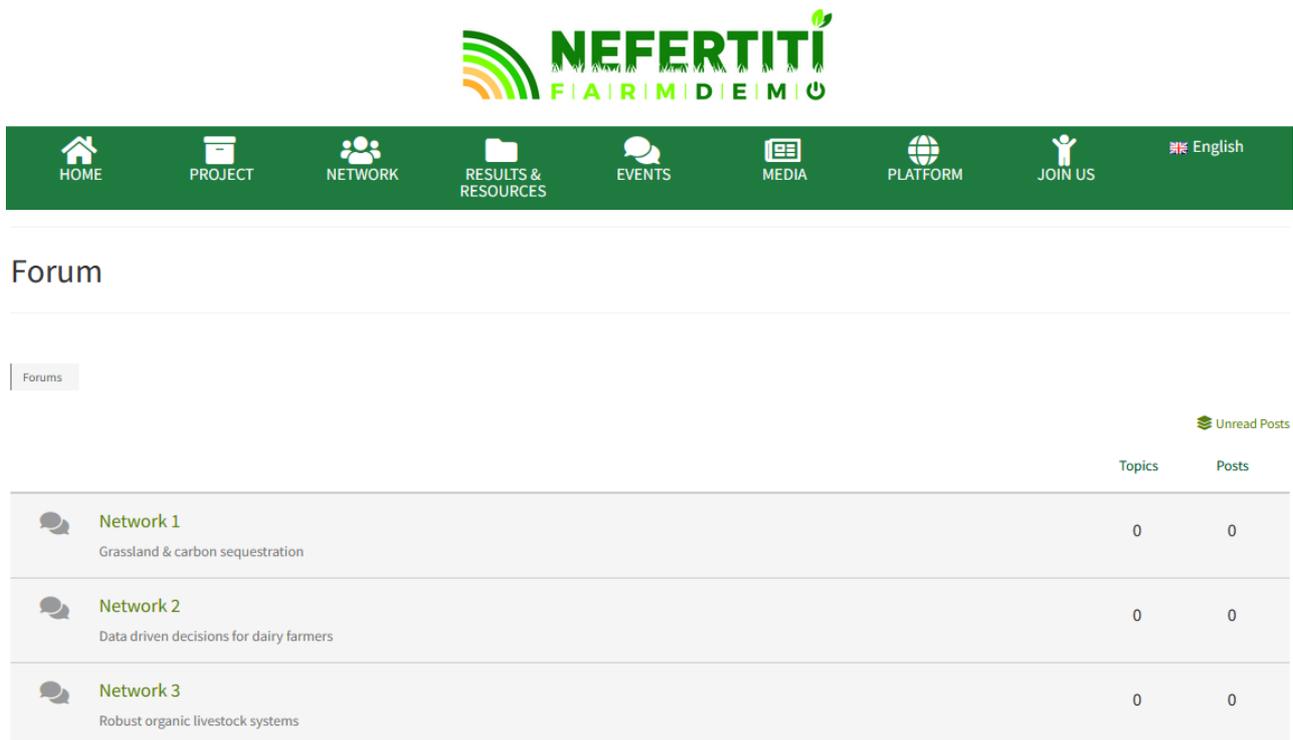


Figure 2 - Forum functionality implemented as a response to Covid-19 mitigation measures



Technical development of the platform

Nefertiti platform is implemented as a multi-layered web application using AngularJS[1] framework for building presentation layer and Java programming language and Enterprise Java Beans [2] for the implementation of backend side of platform. In addition, Wildfly application server [3] is used to serve the components of a Nefertiti application to clients. In order to store all necessary data gathered through the Nefertiti platform, we created a relational database using PostgreSQL DBMS [4]. The part of that relational database scheme is presented in figure bellow.

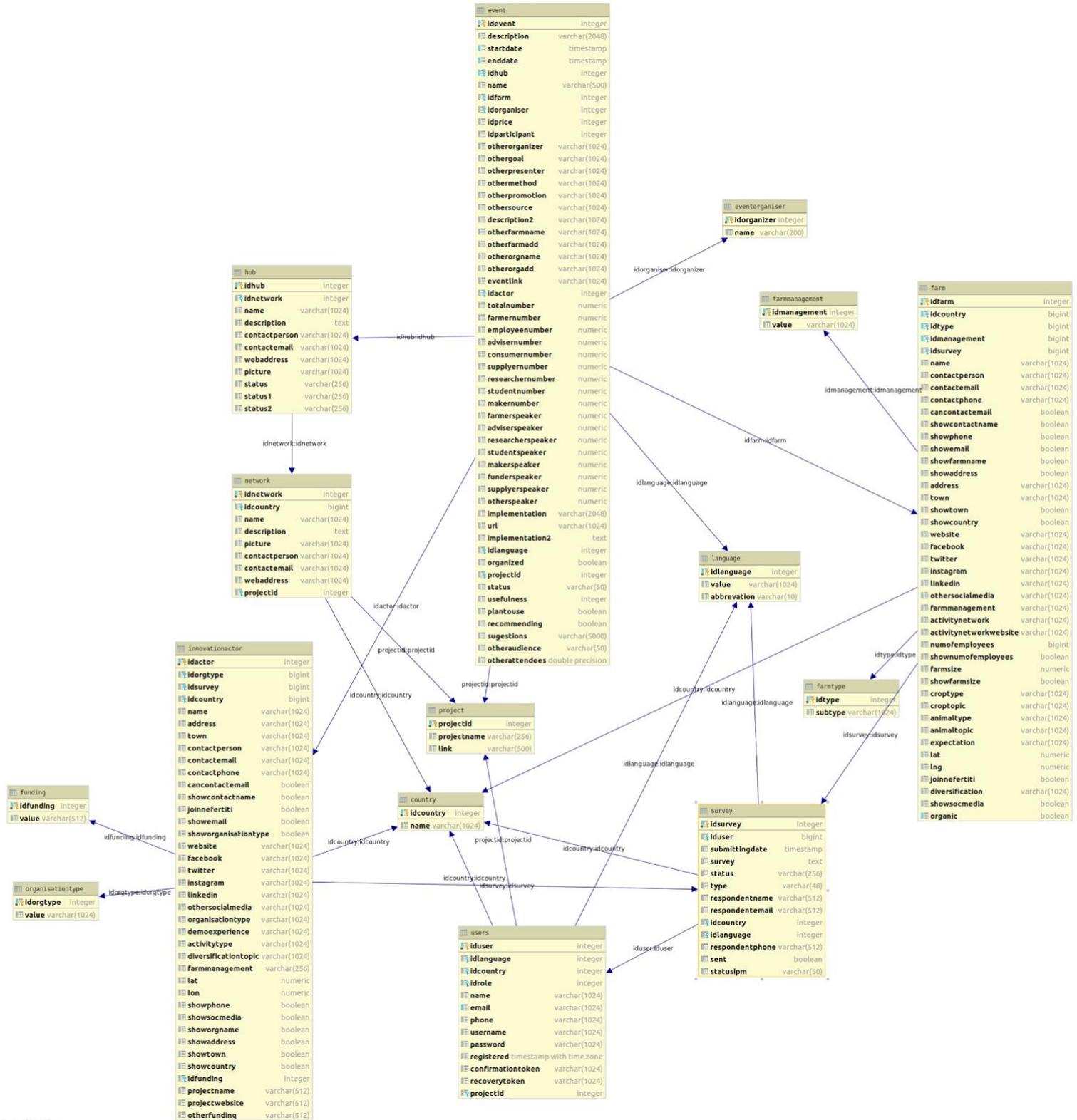


Figure 3 - part of Nefertiti relational database scheme



The central tables are farm and event. Based on the relationships in the schema, we can see that the farm belongs to the hub and the hub belongs to the network and the network is determined by the project. Network can belong to one of the following projects: Nefertiti, IPM Decisions, IPM Works and Dephy. Also, there is the event table, describing events held inside of some hub and hosted by a farm or innovation actor. Currently, information about more than 1700 events is stored in this table. There are a lot of other tables in this database, but they are omitted for the sake of better visibility.

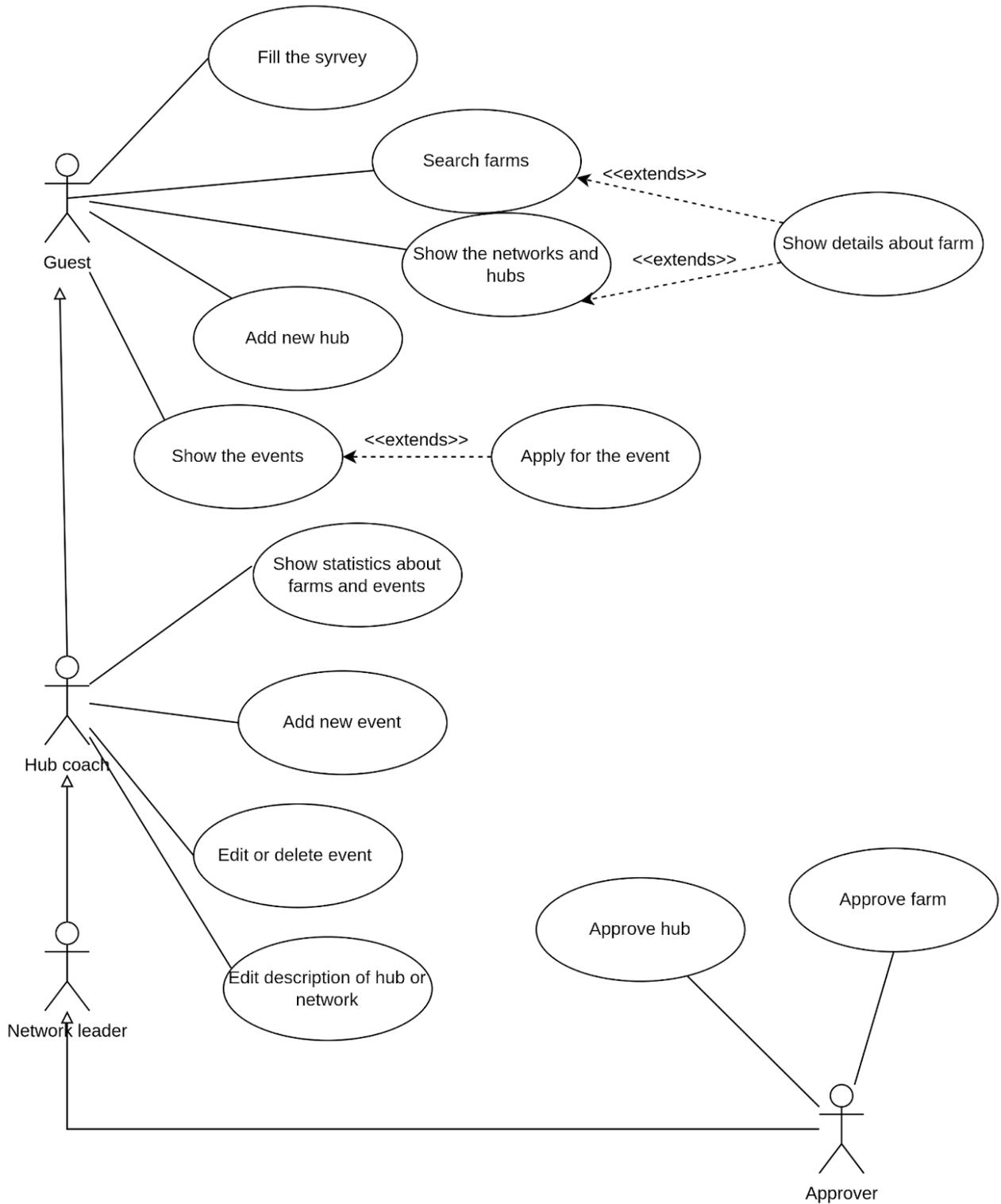


Figure 4 - Functionalities of the Nefertiti platform



Furthermore, the Nefertiti platform utilizes role-based access control, or RBAC, in order to restrict platform access based on the roles of individual users across the platform. Nefertiti platform supports several user's roles, such as Network leader, Hub coach, Approver, Admin, Guest. All those roles have different privileges in the platform. Use case diagram describing different functionality of different users is presented in Figure Y.

In addition, we established a protected network connection with the Nefertiti server using Virtual Private Network (VPN) and software such as OpenVPN [5]. Unlike open networks which are accessible to the outside world and therefore susceptible to attacks from malicious users, private and virtual private networks restrict access to selected users. Also, in order to protect the integrity and confidentiality of data between the user's computer and the Nefertiti platform we used HTTPS, an internet communication protocol which is the de facto standard in developing modern secure web applications.

Considering integration of the Nefertiti platform with other platforms, we supported search of the Valeri database through the Nefertiti platform. Also, we enabled that all farms entered in the Nefertiti platform are automatically stored in FarmDemo database. In addition, the Nefertiti platform exposes its services through the REST API, so the integration with any other platform is technically very simple.

Servers and hosting

At the beginning of the development of the Nefertiti platform, it was hosted at external servers (SBB – Serbia broadband provider) while BioSense system administrators made regular data backups at BioSense servers, for security reasons. In order to make the platform more secure and to save costs, BioSense engineers expanded capacities of BioSense local servers and migrate platform infrastructure and data to the internal BioSense servers. By having the whole platform on internal servers, it provided opportunity to manage it from the first hand and to react when needed in order to adopt to platform needs in that sense. The platform with its domain was hosted at EUNET company, one of the national domain providers in Serbia.

Technical details of the BioSense servers can be found below:

Server type: Lenovo x3850 X6

Operating System: Proxmox Virtual Environment

OS: CentOS Linux release 7.9.2009

Web server name: Nginx / PHP 7.4 / Wildfly Java

Database: Postgres

Except during platform improvements deployment, or during bug fixing time, platform was stable at BioSense servers, enabling users to add or download materials, register actors, events and use other platform functionalities.



4

Overview of the main platform features



Overview of the main platform features

Based on user needs research and user requirements, Nefertiti platform was designed to fulfil all project goals and support achieving project outcomes and impact. To enable this, several main and side features were developed. Some of the most important features are:

- Actors registration and farm search
- Event registration, calendar, application management and event reporting
- Project information, results and learning resources upload and overview
- Farm Demo Training Kit

As above mentioned features are the most important ones for the knowledge reservoirs, a brief overview of its most important characteristics will follow.

Actors registration and farm search

In order to enable all relevant farmers and innovation actors to present themselves and be visible to the innovation community, platform enabled registration of farms directly, Hubs and policy makers, and indirectly new farms to be registered at the platform by Hub coaches and Network leaders.

Platform hosted 15 Networks from Nefertiti and IPM Works project at the Home page, as presented below.



Figure 5 - 15 Nefertiti and IPM Works Networks presented at the platform Home page



Farms registered at the platform could be found both via map at the Home page or through search option at the Search dedicated page. As most people are visual type of persons development team decided to put a visual map above the Networks section in order to visually show how many and where are the demo farms located across Europe.



Figure 6 - Demo farms across Europe presented at interactive map

By zooming in the map, a user could search all farms in a particular country or country region. Furthermore, a user can choose a farm of interest and find out most relevant information about it, like how big it is (in hectares), to which Network belongs, its management type and to see or ask for the farm contact as mutual cooperation could take place.

Another possibility to search and find a farm is to use search option at the Search section of the platform.



Figure 7 - Demo farm search by using filters at the Search section

In order to find specific farm of interest, user have an option to use 1 to 5 possible filters. Those filters options include:

- Networks
- Country
- Farm type
- Type of demo activities
- Organic yes/no option

First four functionalities were planned and introduced at the beginning of the platform launch, while Organic filter was added afterwards, as a need to distinguish organic from conventional farm producers.

Event registration, calendar, application, management and event reporting

Farm demo events were the key result of the Nefertiti project, consequently, one of the two most important features of the Nefertiti platform. Registered project partners and actors have an opportunity to register a farm demo event from their Hub or Network, and promote it via platform where all important information regarding that event were shown.



Figure 8 - Calendar with Farm Demo and other educational event

From a user/event participant perspective, an events could be searched and found through event calendar shown at a figure above, or via search option using filters at the top of the same page.

Events
New hub
Farm demo Training kit

Events

Please select the country for which you want to view the events

Select an option

Please select the project for which you want to view the events

All projects

Please select the network for which you want to view the events

Select an option

Show only events organized on organic farms:

Reset
Search

Figure 9 - Event search filters



Search could be done using filters regarding:

- Country where event will take place
- The project event belongs to (including Nefertiti, IPM Works, IPM Decisions and Dephy)
- Networks / topics
- Organic/non organic farms

Furthermore, the platform enabled option for farm demo participants to apply and register themselves for the event. This made huge benefit for participant but even more for event organizers, as there was no need for using external digital tools for event management.

Name of event
Farming for the Future: Leading Positive Change

Beginning of event
24/09/2022 @ 3:00PM

End of event
24/09/2022 @ 5:00PM

Network **Hub**

Name of the organisation
MacRobert Hall

Address of the organisation
MacRobert Hall

Link to event web resource
<https://fb.me/e/1N43LxKcY>

Project
NEFERTITI

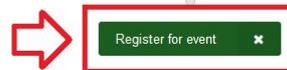


Figure 10 - Event registration option for participants

Event registration form was user friendly and was consisted of only most important information needed for the event organizer. One of the useful information asked for was a type of participant attending (farmer / policy maker / adviser, etc) as host could prepare the event on a most appropriate way for the target group coming.



* Name of participant

* Surname of participant

* Email

* You will attend as a

This field is required.

I have read and understood the informed consent

You must fill in all mandatory fields.

Figure 11 - Registration form for event participants

Event organizer had an option to follow application process and afterwards, to evaluate and report the key facts from the event back to the database. Every registered and documented event information was made possible to export and download in PDF format.



Questions to answer after the event

Was the event organized? Yes

How many people did participate to this event? 21

What is the precise or estimated % of ? (Please try to reach 100%)

Farmers	12
Public or Private advisers	3
Researchers	3
Students	3

How many demonstrators-speakers did present something on the event?

Farmers	1
Researchers	2

Please, describe the event implementation (max 500 characters)

This successful on-farm demo focussed on 'climate positive farming' at Glensaugh farm. The demo involved a farm tour and presentation about Glensaugh, and a presentation from another local farmer on their climate positive farming approaches. The participants also worked in small groups to develop business plans and proposals for alternative climate positive enterprises, which were presented and 'judged' in a friendly competition for the best proposal.

Documents related to event

File name	Download
file1.jpg	Download

Export to pdf

Figure 12 - Event brief report at the platform, with a possibility of PDF export

While report at the platform presents only a brief event report, option to export to PDF brings to the user opportunity to see more details on how the event was and what were the results.

Project results and learning resources upload and presentation

Starting from project information, objectives and deliverables, leading to project results and outcomes in the form of practice abstracts, useful links, guidelines and training kit, the platform was a basepoint and a main hub for all those kind of information, related with the project topic and themes.

Project management information at the platform included following sections:

- About the project
- Project objectives
- WPs and deliverables
- Advisory Board
- Consortium



WPs and deliverables

There are 9 project working packages:

WP 1 – Developing customised dynamic action plans and best practices for demo- farm networks in EU AKIS;

WP 2 – Networking demo-farmers to increase knowledge flows;

WP 3 – Supporting and facilitating on-farm demo-activities;

WP 4 – Knowledge reservoir on Demo activities and project platform;

WP 5 – Fostering learning, reflection and monitoring processes;

WP 6 – Policy dialogue and network sustainability;

WP 7 – Communication on demo-farm activities and dissemination of practical-oriented outcomes;

WP 8 – Project management and consortium coordination;

WP 9 – Ethics requirements.

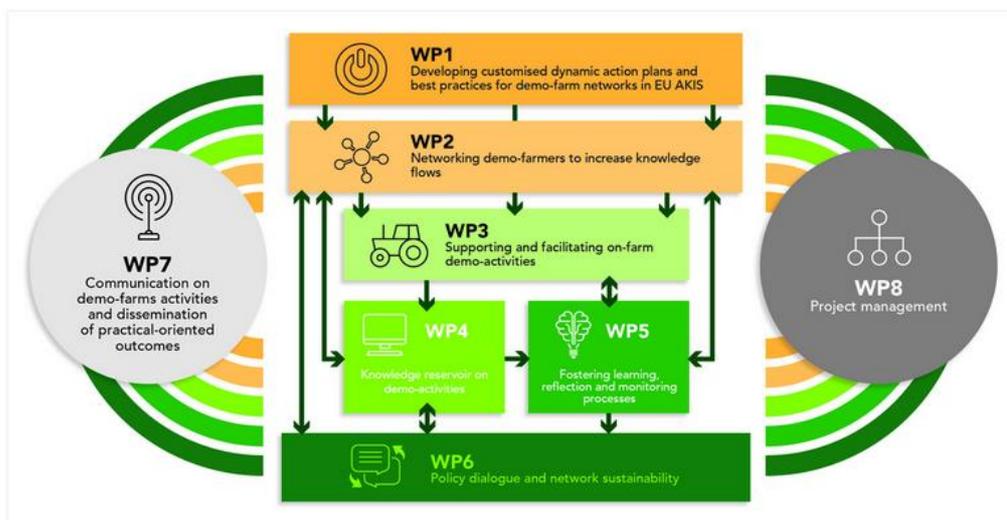


Figure 13 - WPs and deliverables overview , as one of the project information presented

Network section provided information about 4 project network sections present. Project Networks are furtherly divided into subtopics and narratively explained.

Results and Resources information included following:

- Guidelines and training materials
- Practice abstracts
- Useful info and links
- Related projects
- Webinar materials
- Fact sheets and reports



Fact sheets and reports

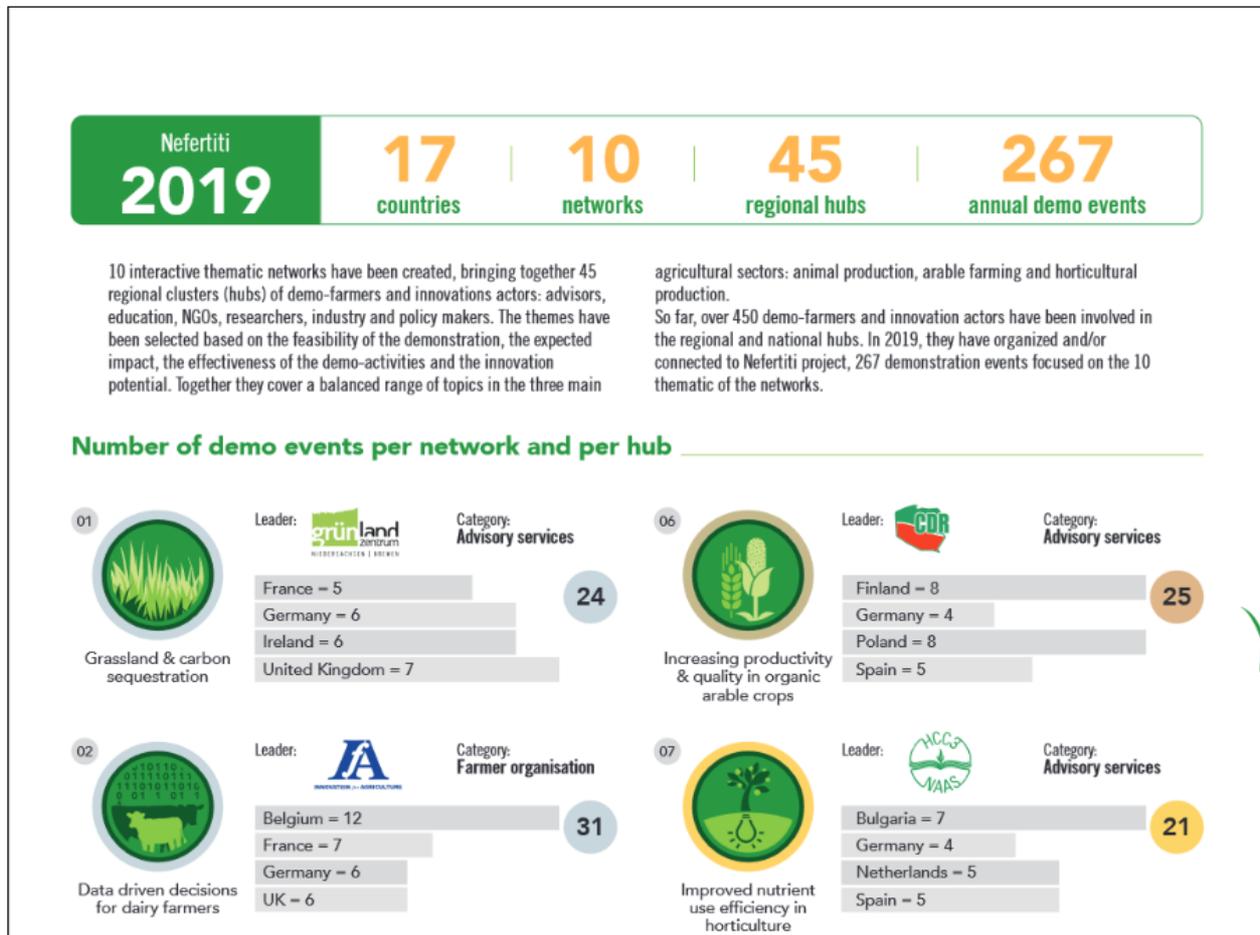


Figure 14 - One of the fact sheets and reports overview

Above mentioned platform sections with results and resources were regularly updated with new information.

Media section of the platform provided following:

- Latest news
- Videos
- Newsletters

Production of quality videos made mostly at demo farms was done during the project duration. Videos made were very important part of communication and dissemination activities as video format is among most popular formats to consume and learn from by users. That’s why video get separate section among Media resources and was enabled by development team for videos to be seen at the Nefertiti platform, without need to go and watch at external ones (e.g. Youtube).

The most video materials made during the project found its place at Farm Demo section hosting around 140 videos just from farm events.



Videos

The screenshot displays a grid of 10 video thumbnails, each with a play button icon. Below each thumbnail is a title, a 'Posted on' date (all are October 31, 2018), a 'Video' icon, and a view count.

- You can Farm: Farm attractivity for new entrants** (76 views)
- Pesticide use reduction in the production of grapes, fruits and vegetables** (69 views)
- Water use efficiency in Horticulture** (60 views)
- Improved nutrient use efficiency in horticulture** (73 views)
- Increasing productivity and quality in organic arable cropping** (53 views)
- Crop sensing and variable rate applications** (48 views)
- Optimal soil quality in arable crops** (81 views)
- Robust organic livestock systems** (78 views)
- Data driven decisions for dairy farmers** (59 views)
- Grassland and Carbon Sequestration** (104 views)

At the bottom left of the screenshot is the 'FarmDemo' logo, which consists of a stylized green and orange graphic next to the text 'FarmDemo'. Below the logo, it says 'FarmDemo' and '147 videos'.

Figure 15 - Video section of the platform with possibility to watch directly

Event reports as one of the resources made as a result of the project activities also deserves to be mentioned as a resource, and can be found at Events section of the platform, searchable through Event calendar or through Event filters.

All above mentioned provided users with structured information on where to find searched content regarding the project objectives, results and actors included.



Accessibility of the knowledge reservoirs

When we talk about accessibility in these kind of European level projects, first obstacle which can prevent users from using platform features and resource is language. In order to prevent it, it was decided and implemented that platform will be possible to be used in all European national languages where national Hub was established.



Figure 16 - Welcome page of the platform, with several language options provided

This was particularly important for farmers and others target groups who often does not speak languages other than their national one.

Besides platform translations, another very important part of the platform was completely translated to all European languages. The Farm Demo Training Kit, counting on both



interactive material presented at the platform, as well as many Kit attachments ready to be downloaded and put into practice.

User and stakeholder roles

Nefertiti project includes several different roles in its implementation and is open to stakeholders with variety of different backgrounds. During the project implementation the possibility for farmers and innovation actors to register and join was available and easily approachable.

ARE YOU AN INNOVATION ACTOR?
Join our community, fill in short questionnaire!

CONTACT

Please complete with your data (not to be made public)

*Name of the person completing the questionnaire

This field is required.

*Email address

This field is required.

Phone number (optional)

*Location country

*Language

Figure 17 - Part of registration form for an innovation actors

One separate registration place was provided for farmers to proactively take participation at the project and make their farms and work visible to others. Another option was a call for innovation actors where they could register and take participation. During registration process they should have mark their organization as one of the following actors:

- Advisory
- Applied research



- Civil organization
- Commercial company
- Farmer organization
- Food processing institution
- Higher education institution
- Policy actor
- Producer group
- Retailer
- Wholesaler

Based on entered information from registration fields, project and platform administrators had the opportunity to classify and manage newly registered actor.

On the other hand, Consortium members also had different roles. There was a role of platform administrators (BIOS) who were in charge for an overview on all technical parts of the platform as a whole and its functionalities. Besides technical administration, there were also roles of Network leaders and Hub Coaches, all of them with different administration permits regarding their actual role.

Farm Demo Training Kit

The Farm Demo Training Kit as one of the most important outcome of the Nefertiti project, will remain one of the Nefertiti main heritage in the world of innovation spreading through demonstration farms. This was the reason for partners to invest lot of effort in order to make the Training Kit advanced tool, easily approachable and useful resource for future demo events and future projects in this topic.

The Training Kit was hosted at Farm Demo platform, which was enabled by BioSense development team.

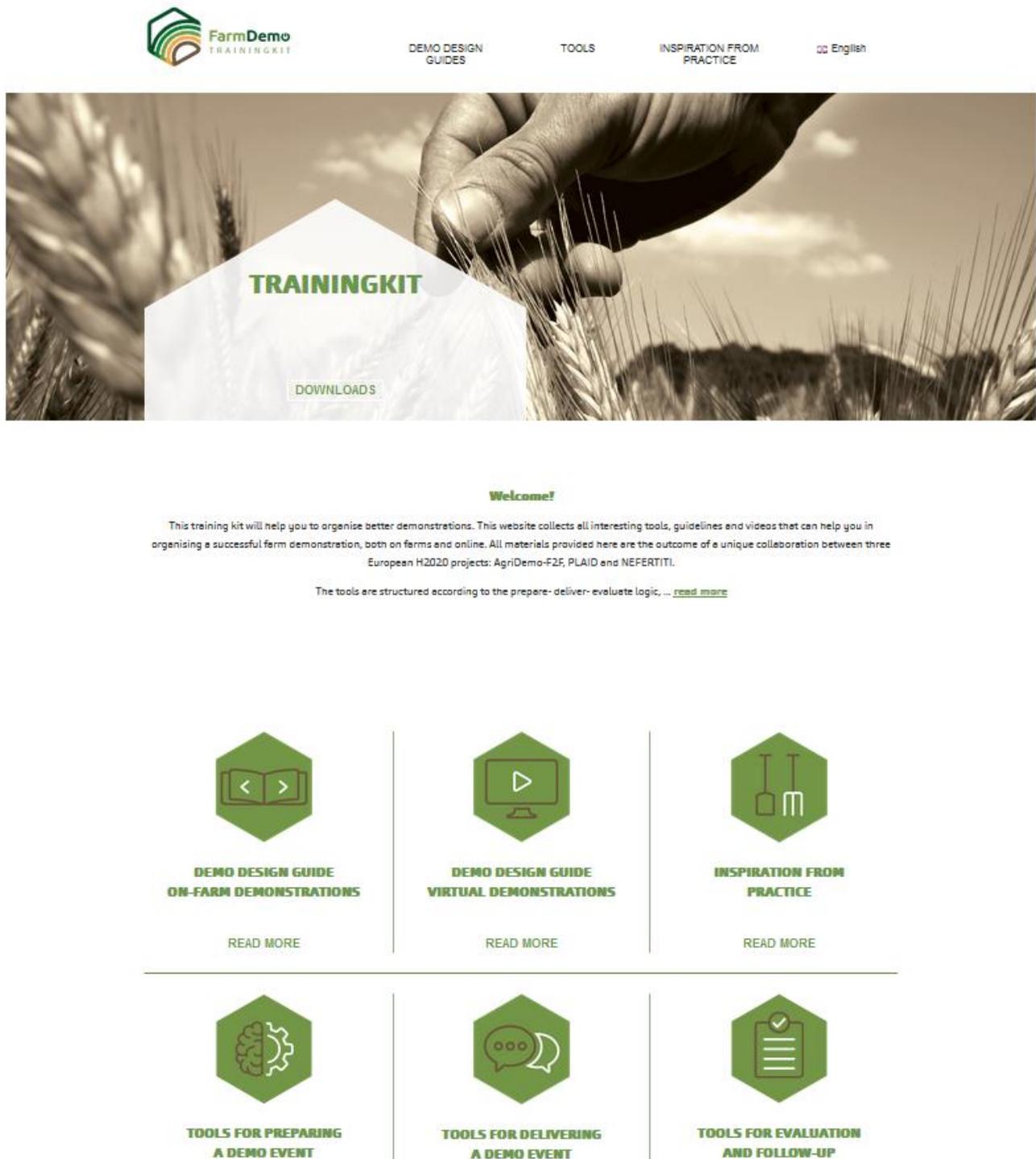


Figure 18 - Farm Demo Training Kit at FarmDemo platform

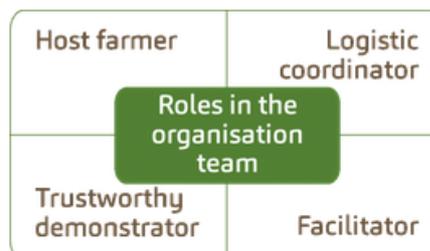
The Training Kit is made as a multipage tool consisted of reading materials, infographics, videos, tables and practical sheets.



DEFINE THE ORGANISATIONAL TEAM

A good preparation and planning is key for a successful demo event. We advise to start well in advance, to make sure the right people can be involved in the organisation and that they can be well informed about their roles in the organization of the demo event. Communication between all people involved during the preparation and the demo event itself is crucial for a smooth organisation.

In the downloadable material you can find a template to prepare your demo-event. It integrates the important aspects you should think about with your organization team when organizing a demo event.



PROMOTION OF THE DEMO EVENT



A first important aspect of promotion is to make a clear invitation that is adapted to the target groups ([Link to template for good invitation](#)). It should include a clear event name that reflects the key message, specify the target group(s), the demo objectives, the key demonstrators and speakers, the added value for the participants, and any extra incentives for farmers to come (e.g., free soil analysis, Food and drinks, Prizes to win, ...).

Second, think about who should spread the invitation and which channels should be used to be most effective to reach the target group. [Here](#) is a link to communication guidelines used in the NEFERTITI project. Or get inspired by some [teaser videos](#) made to announce a demo event.

Third, increase the engagement of your participants by already interacting with them before the event. E.g., ask them to register before the event, probe for specific interests or questions they have, send some information before the event (e.g. on the host farm or topic). [Here](#) you can find a template of registration form.

Tools for preparing the demo event with your organisation team

Figure 19 - Farm Demo Training Kit tables and infographics

All these is followed by additional downloadable tools, made with more details on a specific practical topic.



Tools for preparing the demo event with your organisation team

	Guidelines for communication before, during and after a demo event
download here	
	How to add a demo event to the NEFERTITI platform?
download here	
	Template for press release
download here	
	NEFERTITI_Template Consent Form Video Recordings and photos
download here	
	Template for an invitation
download here	
	Why and how to include policy makers in on-Farm Demonstration Actions
download here	
	Template Registration form with informed consent
download here	
	Template - prepare a demo event
download here	
	Tips on how to deal with challenges demo organisers face
download here	

Figure 20 - Farm Demo Training Kit downloadable additional tools

For the sake of high accessibility of the tools to different target groups, the Training Kit was translated at 23 European languages. Translation was provided both for online interactive content at the platform, and for all PDF annexes as well. Training Kit is now available at the following languages:

English, Bulgarian, Czech, Danish, German, Estonian, Spanish, Greek, French, Croatian, Italian, Latvian, Lithuanian, Hungarian, Dutch, Polish, Portuguese, Romanian, Serbian, Slovenian, Slovakian, Finnish, Swedish and Maltese.



The screenshot shows the 'Farm Demo TRAININGKIT' website. The navigation menu includes 'DEMO DESIGN GUIDES', 'TOOLS', and 'INSPIRATION FROM PRACTICE'. The main content area is titled 'TOOLS FOR PREPARING A DEMO EVENT'. A speech bubble contains the text: 'A good planning is a precondition for a successful field day'. Below this, a list of four steps is provided: 1. [Specifying the objective of the demo event](#), 2. [Finding a good host](#), 3. [Defining the organisation team](#), and 4. [Promotion of your event](#). A text block states: 'Preparation of a demo event includes all activities that need to be done before the demo event. We distinguish 4 important preparation phases. Further on this page you can find some tools to help you in the preparation phase.' At the bottom, there are links for 'TOOLS FOR ORGANISATION' and 'TOOLS FOR PROMOTION'. On the right side, a language selection dropdown menu is open, listing various languages including English, Bulgarian, Czech, Danish, German, Estonian, Spanish, Greek, French, Croatian, Italian, Latvian, Lithuanian, Hungarian, Dutch, Polish, Portuguese, Romanian, Serbian, Slovenian, Finnish, Swedish, and Maltese. The dropdown menu is highlighted with a red border.

Figure 21 - Farm Demo Training Kit with language translation options



5

Data protection and management overview



Data protection and management overview

During the creation and maintenance of the Nefertiti platform, data protection and management were done by following rules and principles given in the official GDPR document. That means that only necessary data was collected and stored at BioSense servers. All collected data was gathered exclusively with the clear consent from persons who gave their data while performing one of the operations at the platform.

Consent for data collection and storage was asked during registration of farmers and innovation actors, and it was conditional prior registration finalization.

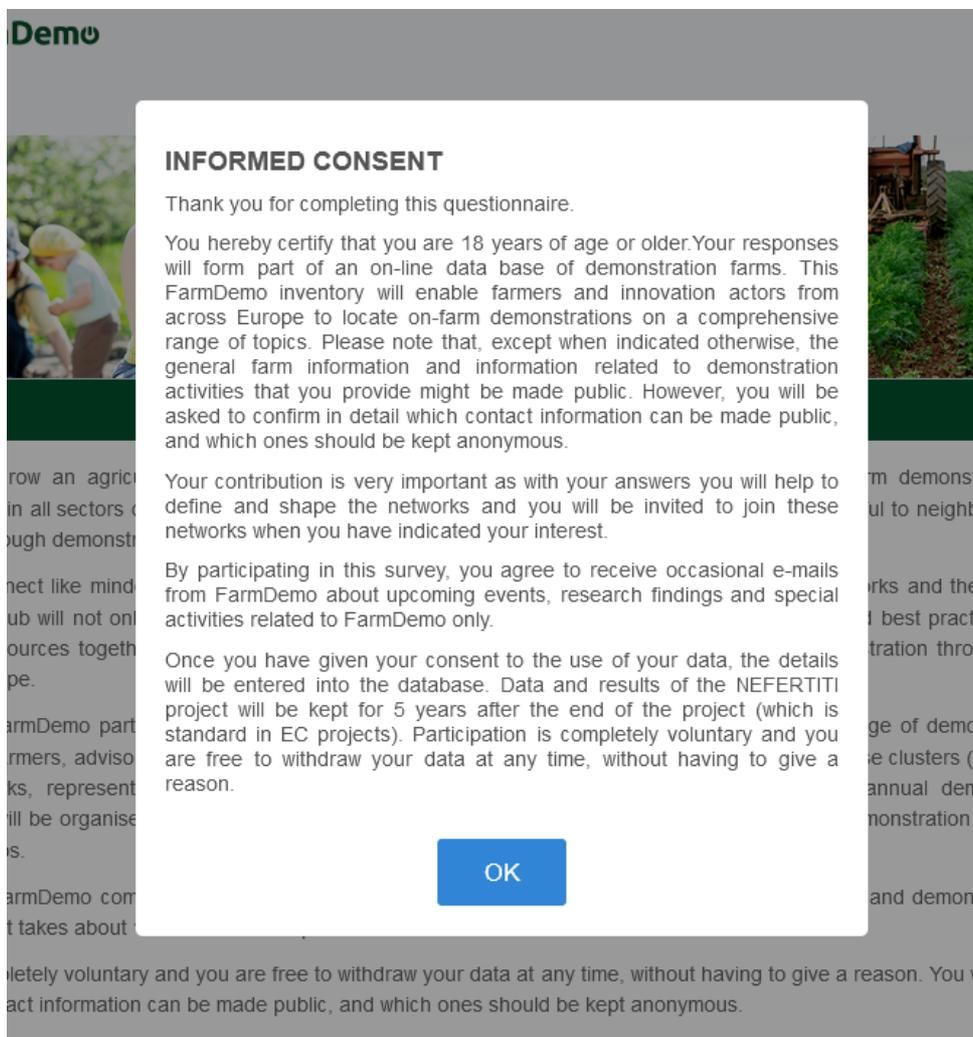


Figure 22 - Consent for data collection and storage during farmers registration



Personal data which was given for some other person (e.g. when a Hub Coach wanted to register a new farm from his hub) also has been approved by those persons before they were published to the platform and used. This point sometimes have been challenging as not all farmers are used to frequently use and check their e-mails, so confirmation process sometimes took more time than it was planned at the first place. For example: in a situations when a farm was not registered by the farm owner or manager, than by the Hub coach, farm owner/manager had to confirm the registration from their personal/work email, as the farm will be visible at the platform. Technically, this was happening when during farm registration process, email at the registration form were not the same.

CONTACT

Please complete with your data (not to be made public)

*Name of the person completing the questionnaire

*Email address

Phone number (optional)

Contact information for the farm

* Name of the farmer (or other contact person of the farm)
I agree that this information can be made public.

* Email
I agree that this information can be made public.

agree that visitors of FarmDemo hubs and platforms can contact me through a contact request field without seeing my email-address

Figure 23 - Consent challenges when farm is registered by another authority

All personal data and contacts were kept private and undisclosed. If some of the users who gave their data wanted to delete it or change it, this was possible at any time as administrators have the option to arrange those types of user requirements.

Data transfer to and from end-users (including transfer of sensitive data if allowed) is performed encrypted, either sent by encrypted ZIP or RAR files, or download directly as web-based services from servers (e.g. GeoServer). In any case strong password (more than 30 randomly generated characters in order to prevent dictionary or brute force attacks) is required for accessing transferred dataset and passwords must be sent separately from



the dataset (preferably using also different channels of communication e.g. SMS, Viber, WhatsUp). Prior the sharing for the analysis all data containing sensitive personal information has to be anonymized. Anonymization refers to removing any identifier that can reveal identity of the participants both from data and metadata.

The data stored in the BioSense Institute Data Storage System are not exposed directly to the end users/internet thanks to two line defence architecture. In the first line there is one Virtual Machine running as a Proxy server for all requests, also taking care of balance load. Calls are then forwarded to another Virtual Machine that can access to the stored data. Thanks to such architecture, even if someone manages to intrude into the Proxy machine, it will not have a direct access to the data, which are hidden behind another Virtual Machine.



6

Summary of the platform improvements since M43



Summary of the platform improvements since M43

Regarding the fact that some improvements were made since the last deliverable period, we will here mention those which are visible and are used by the project stakeholders. Here we can emphasize presentation and transfer of the Training Kit, as one of the most important legacy of the project. The Training Kit is an extensive manual guide for all stakeholders who have contact with online or offline demo events in the sector of agriculture inovations.

Other than that, it worth to mention the integration with IPM Works project which benefited both projects included. By this integration, both project platforms enriched its database of materials and topic related resources. This improvement was in line with the strategic cooperation and partnership between projects with similar topics both funded by the EU Commission and Horizon 2020.

As the project was evloving and developing during the deliverable period, addiitonal sections and temathic areas were added to the platform. This can be seen at several platform sections, like Practice abstracts, Guidelines and training materials, etc.

Integration with other matching knowledge tanks, i.e. projects

Integration with IPM Works project

In order to multiply effects of both EU funded projects, partners from Nefertiti and IPM Works joint forces and decided to integrate compatible data at these two public platforms. As a result of this cooperation, stakeholders and visitors from both websites have the opportunity to search and find farms and useful resources and materials from both project. Direction of useful information and material exchange was going into both directions, which means that Nefertiti results reach also spreaded to these partnering projects as well.

Additional farm networks were made at Nefertiti platform as a result of this integration.

Those networks are:

Arable field crops

Vineyards

Orchards

Outdoor vegetables, soft fruits and ornamentals

Greenhouse horticulture



Figure 24 - Integration of new sections from IPM Works project

For each new network, new farms were added to the platform which enabled additional exchange among different stakeholders.

Calendar of events, farm overview and useful materials were not integrated only with IPM Works, but with the related project IPM Decisions, where farm demonstrations were not organized separately, yet IPM Decisions activities were sometimes presented at IPM Works and Nefertiti farm demonstrations. This was recognized and supported through registration of the events at the Nefertiti platform, as shown at the picture below.

* Network:

* Name of event

Please tick here if this event is also an IPM Decisions event:

* Beginning of event

Figure 25 - Integration with IPM Decisions regarding events management



Integration with Farm Demo platform

As the first two Farm Demo projects (PLAID and AGRIDEMO F2F) finished its official duration, important parts of the Farm Demo platform (farmdemo.eu) were transferred to BioSense servers and connected with Nefertiti platform. The most important part of this transfer was the Farm Demo Training Kit.

To put more focus and additionally emphasize the Farm Demo Training Kit which is hosted at farmdemo.eu domain, Nefertiti platform was enriched with additional options to reach and promote the Training Kit. At the pictures bellow, it is shown where those options were added.

The first button was added at the menu of the Nefertiti Home Page.

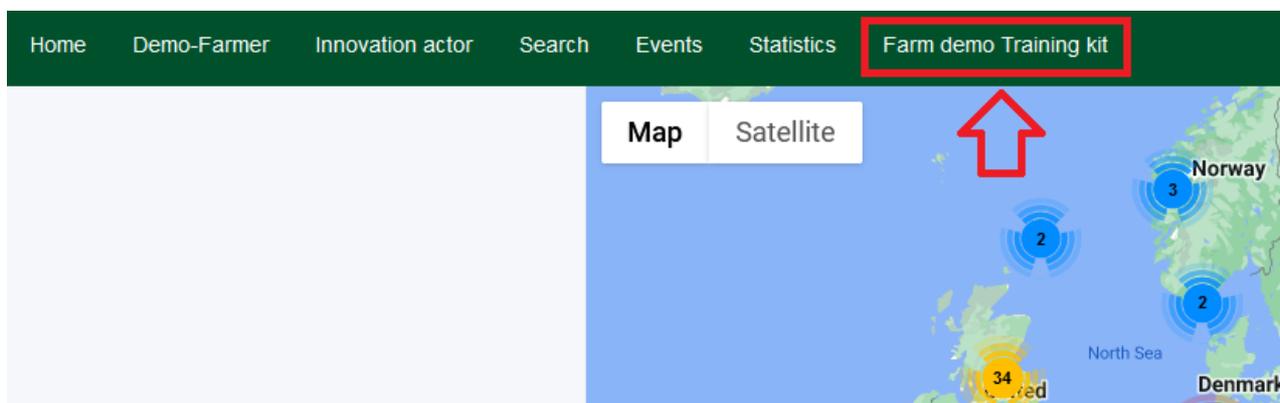


Figure 26 - Integration of Farm Demo Training Kit at Nefertiti platform

Two buttons were added at the platform footer, both connected with Training Kit.



Figure 27 - Integration of Farm Demo Training Kit at Nefertiti platform

Description of improvements and applied changes

Adding new abstract sections, abstract list and new abstracts

As the project going on, number of new resources, among which are practice abstracts, was getting bigger. This resulted with adding several new abstracts to the existing abstract sections, but also adding a completely new section dedicated to published Farm Demo Training Kit, as one of the most important project outcomes.

New Farm Demo Training Kit abstract section was added and made of 12 specific abstracts on this topic.



Grassland & carbon sequestration



Data driven decisions for dairy farmers



Robust organic livestock systems



Optimal soil quality in arable crops



Crop sensing and variable rate applications



Increasing productivity and quality in organic arable cropping



Improved nutrient use efficiency in horticulture



Water use efficiency in Horticulture



Pesticide use reduction in the production of grapes, fruits and vegetables



You can Farm: Farm attractiveness



Figure 28 - Addition of Farm Demo practice abstracts

To enable easy search and navigation of the abstracts, abstract list was added at the beginning of the Abstract page. Abstract list provide brief information about the topic, Network and country of origin. At the moment of writing this deliverable, 102 abstracts were listed.



LIST OF NEFERTITI EIP-AGRI PRACTICE ABSTRACTS (PAs)

PA 1	Climate change and carbon sequestration from grassland	Network 01 Grassland & carbon sequestration	France
PA 2	Grassland and carbon sequestration in UK	Network 01 Grassland & carbon sequestration	United Kingdom
PA 3	Optimal grassland management has benefits for both farm and performance and grassland carbon sequestration	Network 01 Grassland & carbon sequestration	Ireland
PA 4	Grassland and carbon sequestration, German perspective	Network 01 Grassland & carbon sequestration	Germany
PA 5	Roboting milking and grazing	Network 02 Data driven decisions for dairy farmers	France
PA 6	Optimization of oestrus detection and health through transponder collars	Network 02 Data driven decisions for dairy farmers	Germany
PA 7	Simplify feeding of the cows using an automatic feeder	Network 02 Data driven decisions for dairy farmers	United Kingdom
PA 8	Using data to tackle lameness in dairy cattle	Network 02 Data driven decisions for dairy farmers	Belgium
PA 9	Robust organic dairy farming	Network 03 Robust organic livestock systems	France
PA 10	Diversification - robust systems	Network 03 Robust organic livestock systems	Spain
PA 11	Obsalim - a method for evaluating the metabolism of cattle	Network 03 Robust organic livestock systems	Germany

« 1 2 3 4 5 6 7 8 9 10 11 »

Figure 29 - Addition of practice abstract list to the section



7

Maintenance overview and future plans



Platform maintenance process overview

Active maintenance of the platform was going on since the platform release, until the last days of the project length, and it will be continued in future as well. Due to complex functionalities, technical background and different user roles, platform from time to time experienced difficulties in operational work, and occasionally stoppage in work of some functionalities. Those difficulties were noticed either from the development team either from the different stakeholders who were using the platform. All operational problems and bugs were immediately reported and analyzed by the development team, and each of them were handled and resolved in a timely manner, as users could continue to use it in the best interest of project and project goals.

Future plans and platform sustainability

The Nefertiti platform will be sustained during the following period of time. During the following period all data and resources will be available to different stakeholders to view or download. This includes Event reports and summaries, practice abstracts, newsletters, registered farms, Farm Demo Training Kit, and other relevant materials.

Furthermore, right after Nefertiti project ends, its successor in the field of Demo Farms will take place since October 2022. First products of the new project called Climate Farm Demo will be visible in the form of brand new platform which will have most of functionalities as Nefertiti platform had, plus additional ones based on the project needs. New platform will be a central place for all farm demo events and farm repositories, which will enable integration of farms and all relevant data to be collected and presented at the new platform. This will significantly extend influence and outcomes Nefertiti project produced during its more than a 4 years duration.



8

Conclusion



Conclusion

Since the beginning of the Nefertiti project, until its official end, Nefertiti web platform was primary tool for knowledge and information collection, storage and exchange. It enabled registration and visibility of many demo farms across Europe, it provided space for events registration, visibility, promotion and reporting. Furthermore, it become knowledge reservoir as many different scientific and practice materials have been uploaded and downloaded from the platform. It becomes collaborative space for all stakeholders participating in positive change in and around transformation of European agricultural sector towards more sustainable, more productive and more environmentally friendly approach.

As it is described in plans for sustainability, the platform will remain live and accessible during the period in front of us, while the Climate Farm Demo project will collect and use the gathered data, resources and stakeholders, in order to continue and upgrade on path where Nefertiti project finished its dedicated mission.



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