



D6.2 PestNu Digital Platform

CERTH

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Topic: LC-GD-6-1-2020: Testing and demonstrating systemic innovations in support of the Farm-to-Fork Strategy

Subtopic C. [2021] Reducing the dependence on hazardous pesticides; reducing the losses of nutrients from fertilisers, towards zero pollution of water, soil and air and ultimately fertiliser use

List of Abbreviations & Definitions

Abbreviation	Definition
AI	Artificial Intelligence
AOP	Agro-ecological and Organic Practices
AR	Augmented Reality
DSS	Decision Support System
DST	Digital and Space-based Technologies
EU	European Union
F.A.Q.	Frequently asked questions
FAIR	Findable, Accessible, Interoperable and Reusable
GA	Grant Agreement
IoT	Internet of Things
IPR	Intellectual Property Rights
LCA	Life Cycle Analysis
M	Month
ORDP	Open Research Data Pilot
SME	Small and Medium-sized Enterprises
T	Task
WP	Work Package

Executive Summary

The present document constitutes the Deliverable D6.4 a first version of PestNu Digital Platform by M6, which presents the advanced PestNu website that is deployed as a digital platform for agro-advisory and business service along the Farm to Fork stakeholders. The deliverable is a living updated document associated with T6.2 and has two additional versions in M18 and M36. In this first version, D6.4 provides a full description of the platform structure with all its components and demonstrates the functional website implemented with all the agro-advisory and business services.

The structure of the document is as follows: Firstly, in **Section 1** a plain introduction to the project alongside the purpose of the document itself is presented in order the reader can further understand the project. Next, **Section 2** deals with the creation of digital platform: the domain name chosen appropriate for the PestNu project, the design of the webpage in a classic yet modern way, the construction of the main tabs for an easy and following navigation and finally the main functionality; the services. The services transform the website to a digital platform with a wide variety of functionalities with a solid purpose as mentioned above. There are 9 services in total that aim to assist any interesting party to understand thematics relevant to the project. The document concludes in **Section 3** pointing out the importance of the digital platform and mentioning the milestones that are reached and the ones that are about to be reached in the next months.

In the second version of the PestNu Digital Platform (D6.5 "PestNu Digital Platform" [2] by M18), the two software components described in high level architecture within this document, the Matchmaking and Augmented Reality Training tool, will be developed and integrated to the website under a unified framework by M12 and be functional operated and demonstrated by M18.

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1. Introduction

1.1. About PestNu

PestNu targets the field-testing and demonstration of Digital and space-based technologies (DST) and Agro-ecological and organic practices (AOP) under a systemic approach to reduce the pesticides and fertilisers use, and loss of nutrients. All the DST will be interconnected to a user-centric cloud-based farm management system, which features a robust Decision support system (DSS) integrated with a blockchain based system for DST data evidence, integrity, and Artificial Intelligence (AI) models verification and with a cybersecurity platform to prevent cyber-attacks and Internet of Things (IoT) vulnerabilities. The showcase systemic DST & AOP solutions will be demonstrated and tested in aquaponic and hydroponic greenhouse and open-field vegetable cultivation in Greece and Spain. A pesticide reduction program will evaluate the maximum residue and acceptable daily intake levels to ensure vegetable's food safety and Life Cycle Analysis (LCA) activities will be performed. All these systemic approaches will be performed under a strong collaboration among all the Farm to Fork stakeholders and European Commission services.

1.2. Purpose of this Document

The present document constitutes the Deliverable D6.2 “PestNu Digital Platform” in the framework of WP6 “Open Science and Innovation Actions”, T6.2.

Project website purpose is both publicity and internal use, including a secure area for document storage. The website will be designed and developed to look as a digital platform that will provide agro-advisory and business services and field coaching through on-line courses. The platform will offer:

- 1) Digitalisation of workshop results,
- 2) Documentation and video of best practices in aquaponics, precision farming, circular economy food systems, bio-based fertilisers & biopesticides, reduction of fertiliser and pesticide use, and loss of nutrients, organic farming, agroecology,
- 3) Experiences on frequently asked questions,
- 4) Feasibility studies on applications similar with PestNu in different countries – interconnection with sister projects websites,
- 5) Main markets and sales, market size and penetration on PestNu thematic,
- 6) Investment opportunities through a robust existing Matchmaking tool from CERTH that will be deployed further for the needs of PestNu in order the registered users to platform to look for specific capabilities, skills and profiles and link directly to the EU relevant services and national Payment Authorities of Common Agricultural Policies,
- 7) The recent national plans of each PestNu consortium country regarding the pesticides and fertilisers use, regulations, protocols, and standards nationally, EU and globally on these thematic but also in circular economy applied to agriculture and agrofood, novel food production systems for food resilience, organic farming, and agroecology,

- 8) Training material that will be derived from T6.5,
- 9) AR training toolkit from CERTH (developed in H2020 iPRODUCE) which will be re-adjusted for support e-Agriculture training
- 10) Real time visualization of results & measurements from DSS at pre-pilot and demo sites.

The website will be the main promotion and data management platform, which will be updated during and after (>5 years) the project.

1.3. Structure of this Document

Section 1, "Introduction" briefly introduces the objectives of the WP6 "Dissemination and Engagement". Section 2, "Website" presents the PestNu project website, delineating its structure. The deliverable concludes on Section 3.

2. Digital Platform

2.1. Access

The PestNu project website is accessible for everyone via the Internet. The selected URL of the website allows finding the page easily also via search engines. The most suitable domain name for the purposes of the PestNu was: *www.pestnu.eu*.

2.2. Design

The project's website was developed with Drupal content management software using the "StartupGrowthLite" theme which is a free Bootstrap. Drupal is easy to use, has great standard features with a little taste of minimalism¹ and balances a modern and a classic touch combining gorgeous typography, has easy content authoring, reliable performance, and excellent security. But what sets it apart is its flexibility; dynamic web content and modularity is one of its core principles and for that reason has been chosen for PestNu platform design²

2.3. Structure

The platform architecture is oriented in developing an easily accessible and user-friendly digital tool, and follows the structure (sitemap) below:

- Home
- About
 - Scope
 - Mission
 - Objectives
 - Goal of Impacts
 - Meet the Partners
- News & Events
 - News
 - Events
 - Newsletter
- Resources
 - Public Deliverables
- Services
 - Workshop Results
 - Material on Best Practices
 - Clustering Activities

¹ https://www.drupal.org/project/startupgrowth_lite

² <https://www.drupal.org/about>

- Market Trends
- Business & Investment Opportunities
- National Plans
- Training Material
- Augmented Reality Training Toolkit
- Online Measurements from pilot Sites
- FAQ
- Contact Us
 - Contact
 - Privacy and Cookie Policy

2.3.1. Home

The homepage (Figure 1) is the landing page for first time access to the platform through entering the URL (*www.pestnu.eu*) in an internet browser (e.g., Firefox), a search engine (e.g., Google) or through a link on a different website (e.g., partner websites).

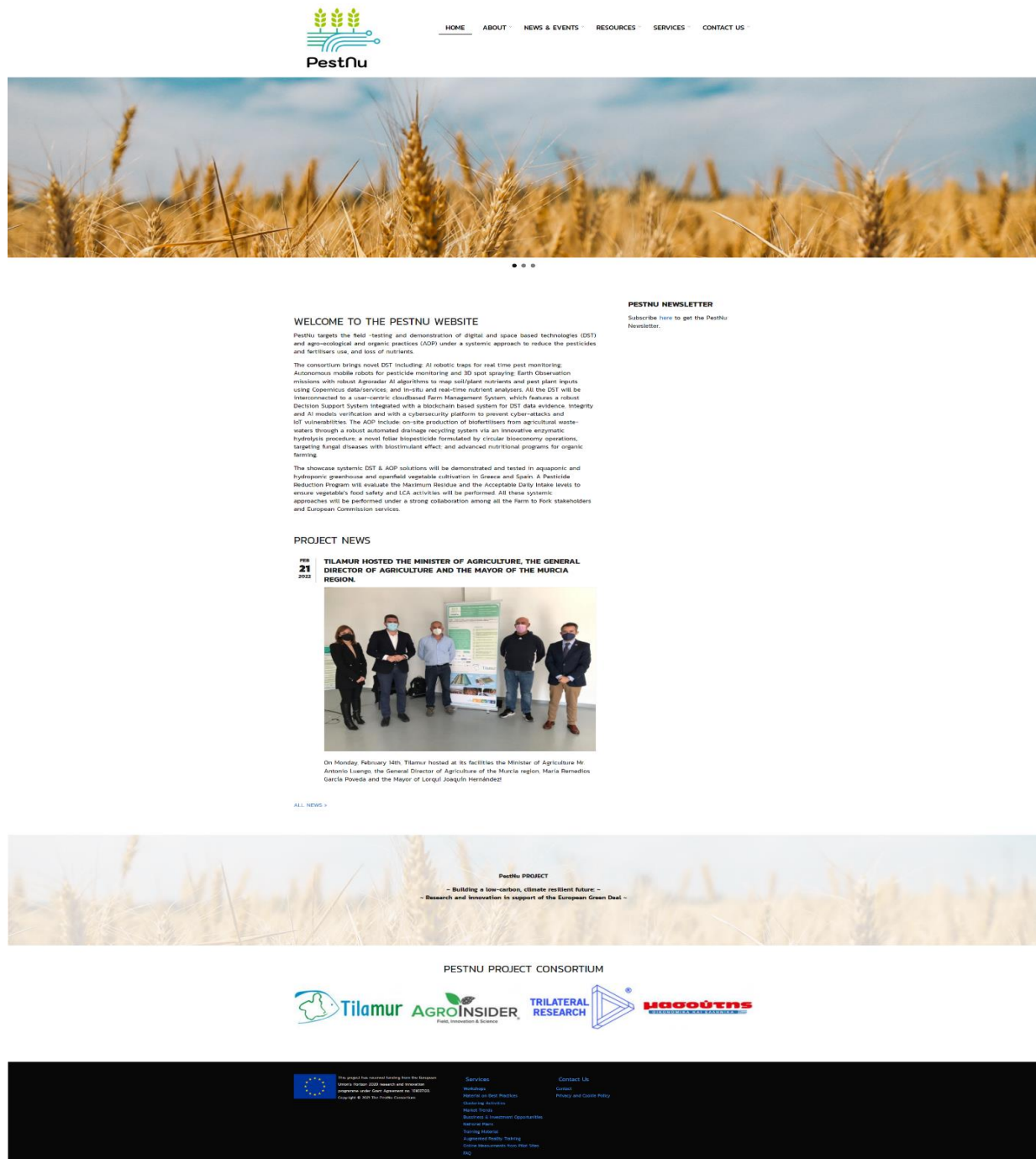


Figure 1: Screenshot of the homepage of the PestNu platform

The platform header is visible in all pages and includes the PestNu logo and the menu. The menu is organized in six tabs, some of them contain subtabs for an easy and straightforward navigation. Detailed descriptions of all of them are provided in the sub-chapters below. Note that one can return to the homepage by clicking the PestNu logo.

The footer (Figure 2), also visible in all pages, includes the Services and Contact Us sections and the acknowledgement of EU funding (a flag and a text in line with the requirements from the European Commission).

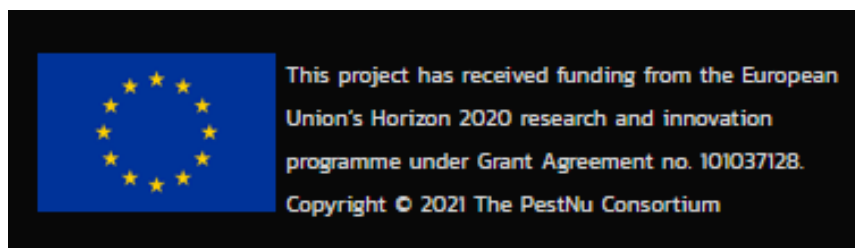


Figure 2: Screenshot of the EU acknowledgement that appears in footer

The platform body includes a short description of the project which focuses on the objectives with an external link with additional information about the PestNu project. It also contains a section for project news (see 2.3.3.1) and newsletter (see 2.3.3.3) which can also be found through the menu. In the bottom of the body there is a photograph related to PestNu and below a banner with the project's consortium.

2.3.2. About

Under this section the platform visitors will find further information about the PestNu project divided in two different subsections: "Scope" and "Meet the Partners". Scope is further divided into "Mission", "Objectives", and "Goal of Impacts".

2.3.2.1. Scope

Scope refers to the combined objectives and requirements needed to complete the PestNu project. Scope is further divided into "Mission", "Objectives", and "Goal of Impacts".

2.3.2.1.1. Mission

This section includes the missions which are defined as the purpose and goals PestNu project pursue (Figure 3)



Figure 3: Screenshot of the “Mission” page of the PestNu website

2.3.2.1.2. Objectives

This section includes the goals in a plain and simple way. In PestNu project, objectives are specific milestones and achievements that are necessary for accomplishing the project’s goals (Figure 4). More precisely, there are 7 objectives in an integrated approach as defined in the GA.

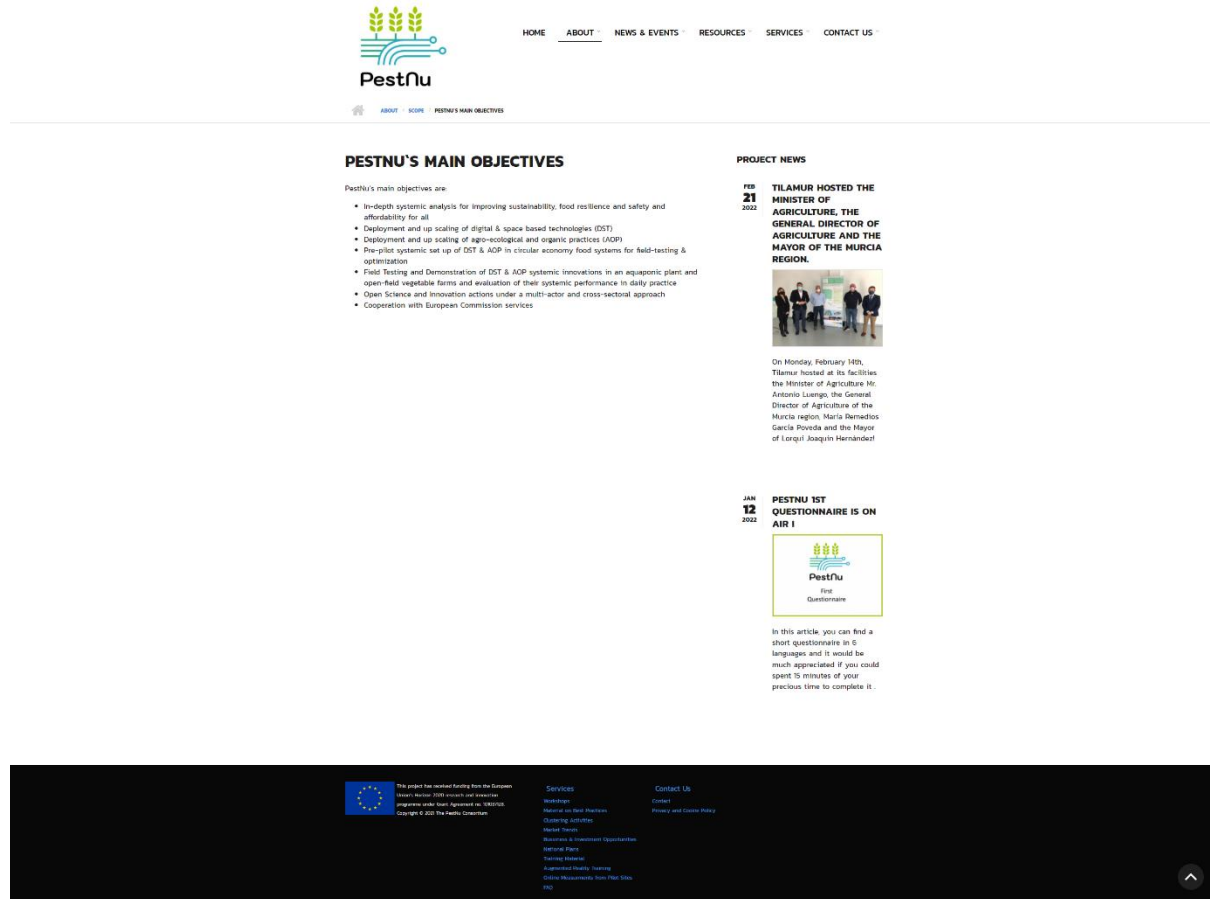


Figure 4: Screenshot of the “Objectives” page of the PestNu website

2.3.2.1.3. Goal of Impacts

This section includes the project impact: the long-term effects that should be triggered (Figure 5).

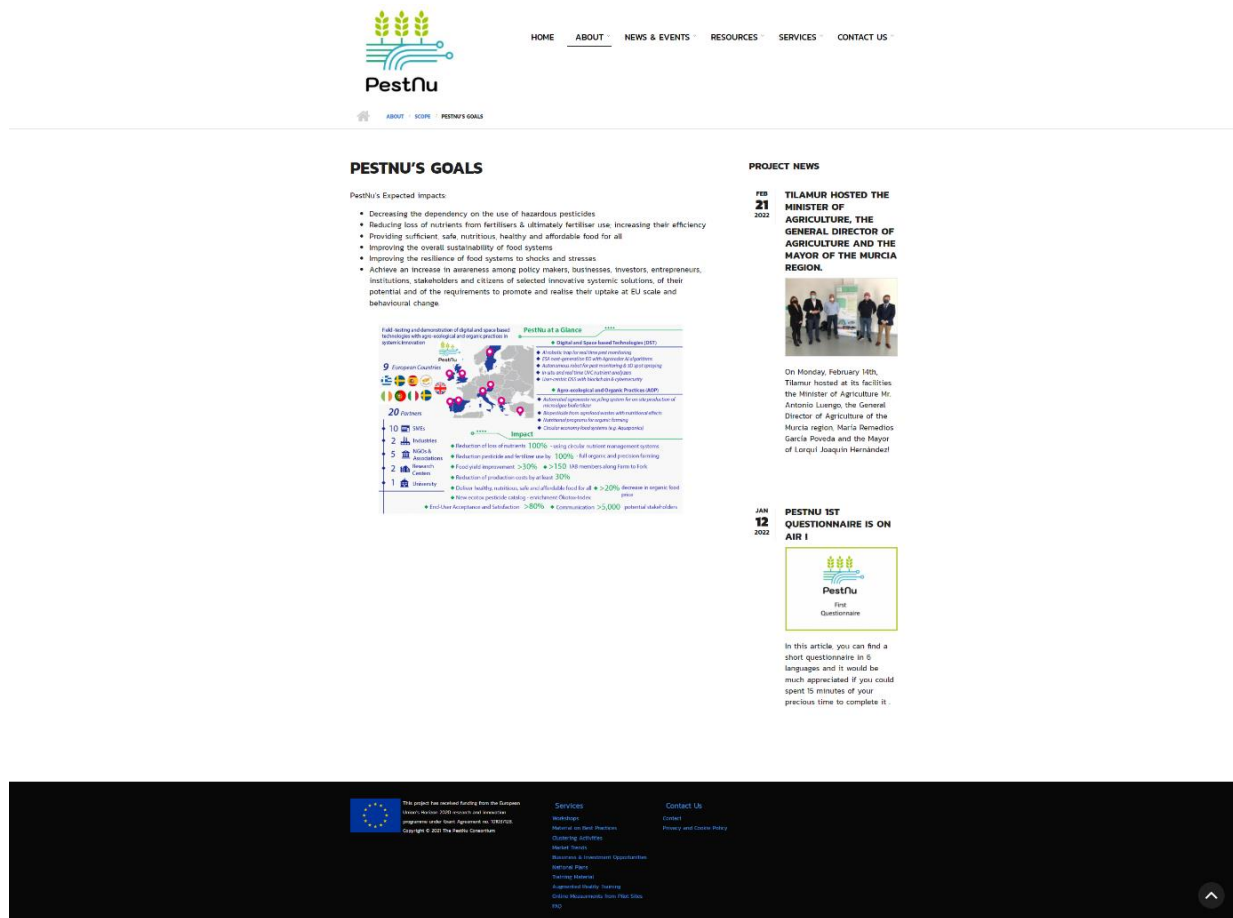


Figure 5: Screenshot of the “Goals of Impact” page of the PestNu website

2.3.2.2. Meet the Partners

PestNu consortium consists of 20 partners from 9 EU countries (Greece, Italy, Portugal, Spain, Cyprus, Austria, Ireland, Sweden, United Kingdom). It includes 2 Industries, 10 SMEs, 5 non-governmental organizations - agricultural, environmental and food associations, 1 university and 2 research centres. In this section the partners are displayed with their visual identity. When clicking on each partner logo, information alongside the website of the partner appears (Figure 6).

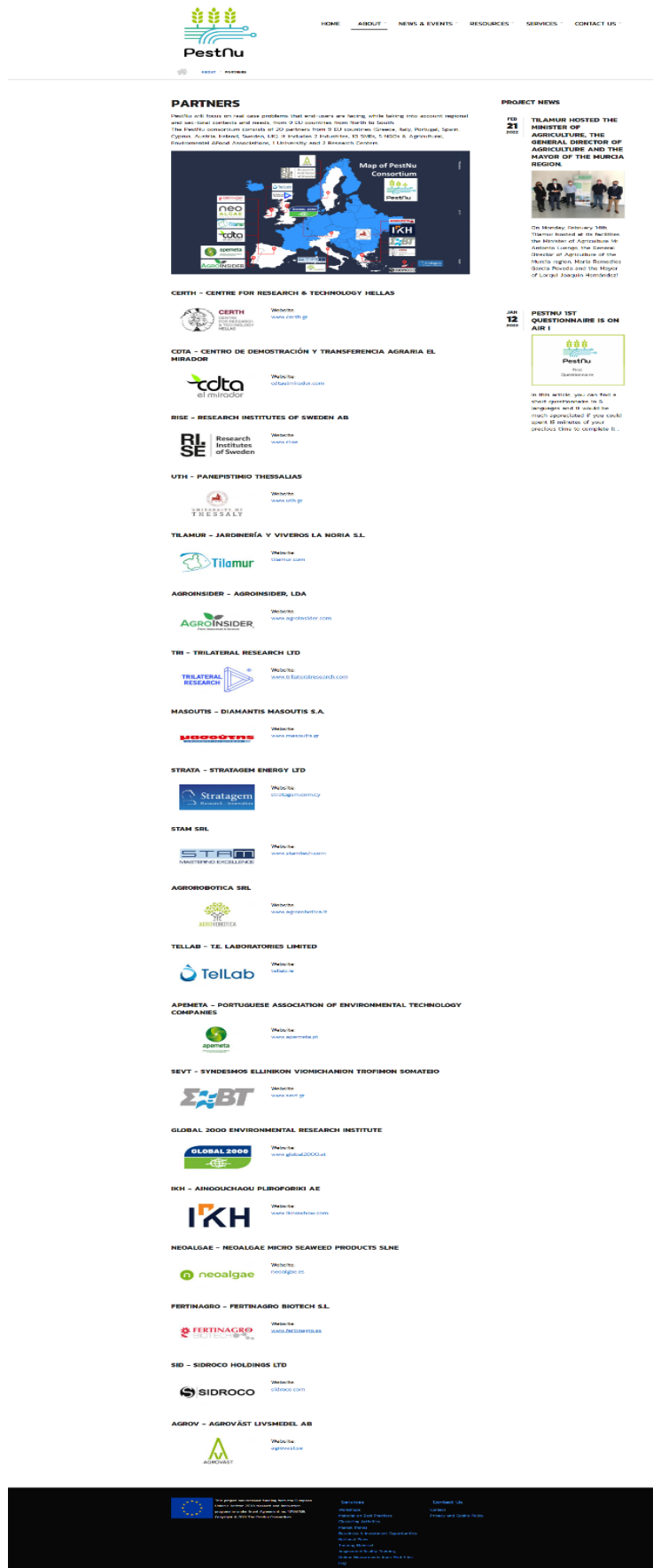


Figure 6: Screenshot of the “Meet the Partners” page of the PestNu website

2.3.3. News & Events

This section features short blog posts published whenever there is a worthy update regarding the PestNu project, or when news articles and any other related communication item of interest for the project and its stakeholder groups is released.

2.3.3.1. News

This section shows the project related news, in regard to activities, events and publications and also external key developments under the project scope (Figure 7).

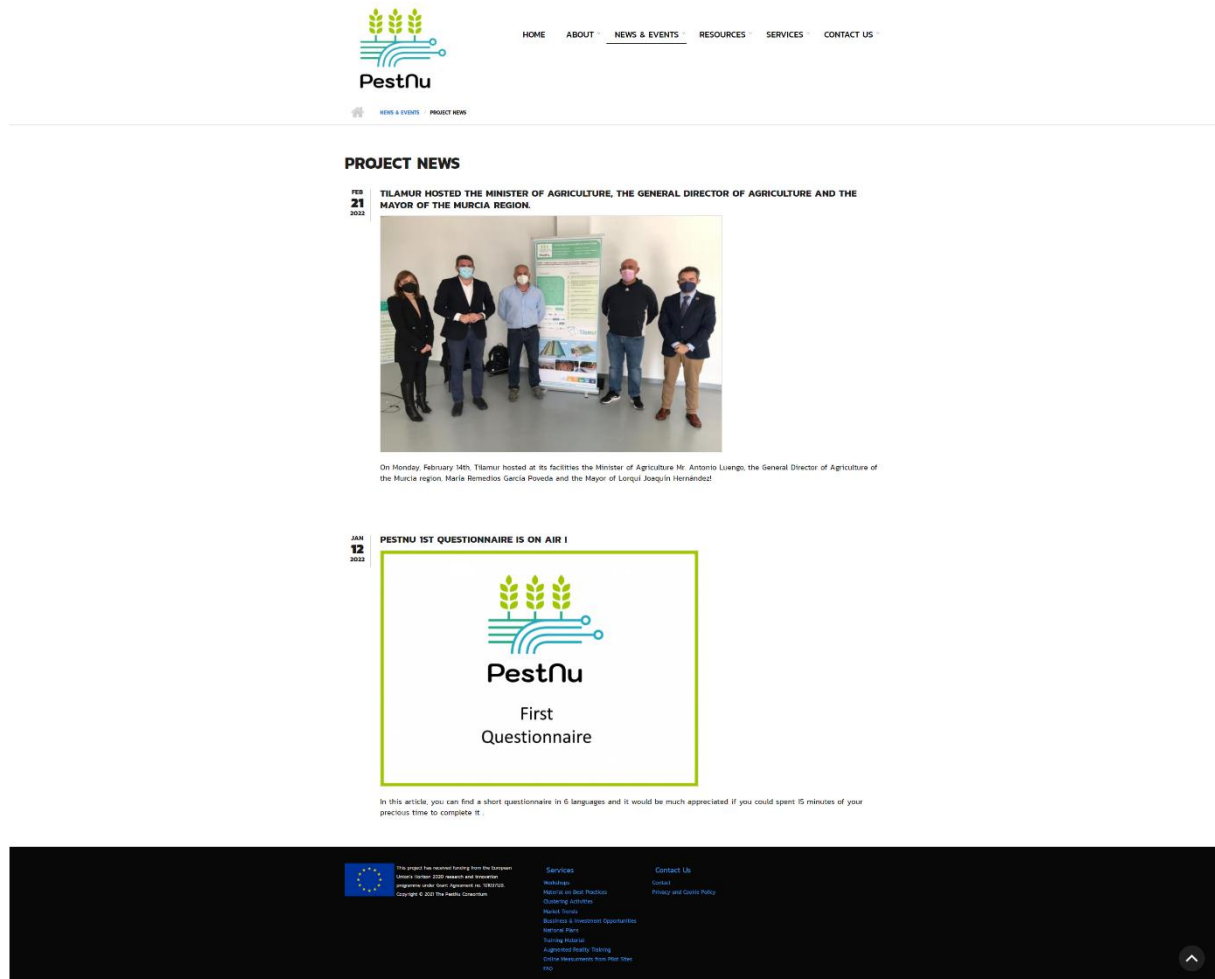


Figure 7: Screenshot of the “News” page of the PestNu website

2.3.3.2. Events

This section lists the project events and other relevant ones organised by partners and external stakeholders in relation to PestNu (Figure 8).



Figure 8: Screenshot of the “Events” page of the PestNu website

2.3.3.3. Newsletter

From this section the platform visitors will be able to read the newsletters, download them, and also register to receive them by email (Figure 9). One newsletter will be published by M12, and two newsletters on each of the two following years (five newsletters in total, for the project period). Newsletters mainly aim to raise awareness about the project, its news and the project's progress, among farm to fork stakeholders and general public.

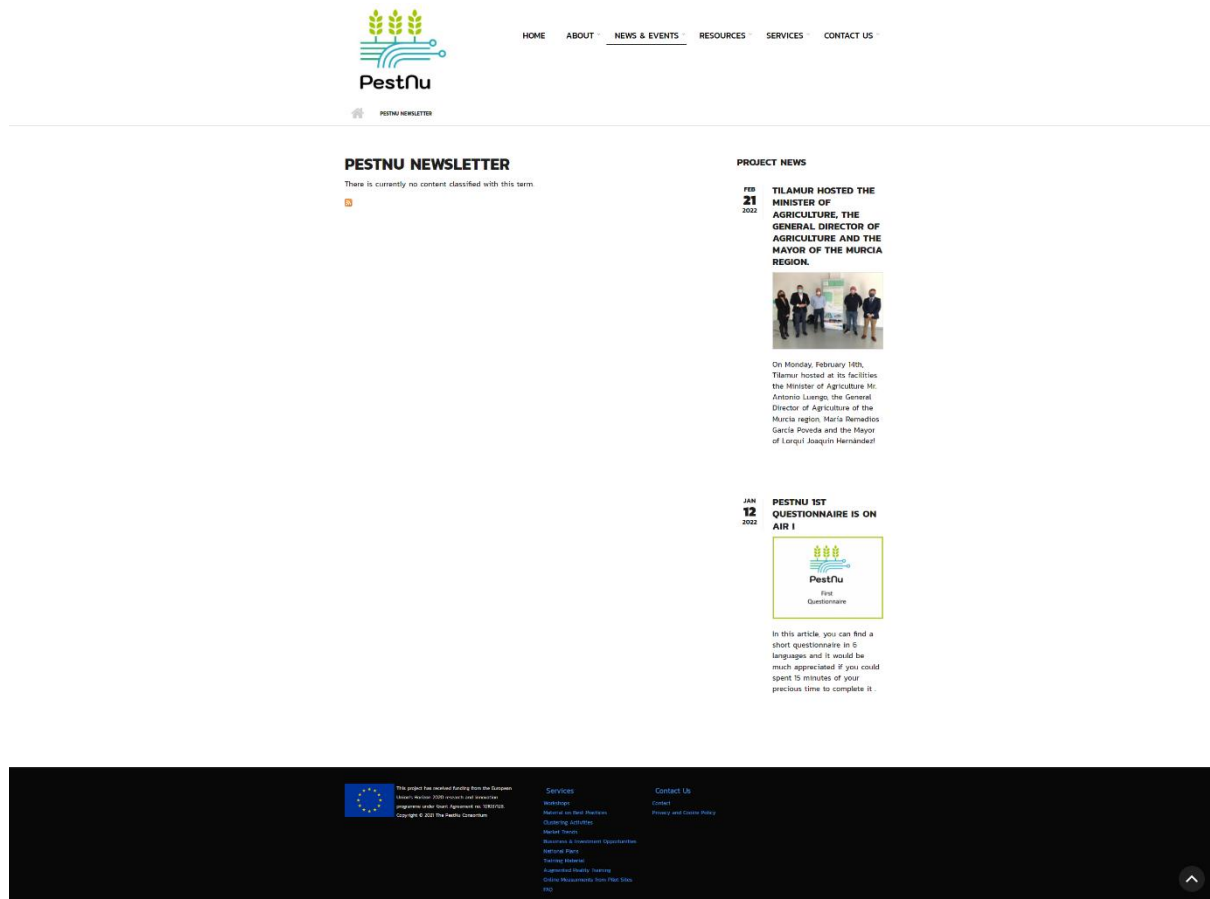


Figure 9: Screenshot of the “Newsletter” page of the PestNu website

2.3.4. Resources

This section provides publishable project resources targeted to scientific community, technicians, experts, designers, end users, potential customers/investors, and other stakeholders.

2.3.4.1. Public Deliverables

This section serves as a library for all the public deliverables to the European Commission (Figure 10).

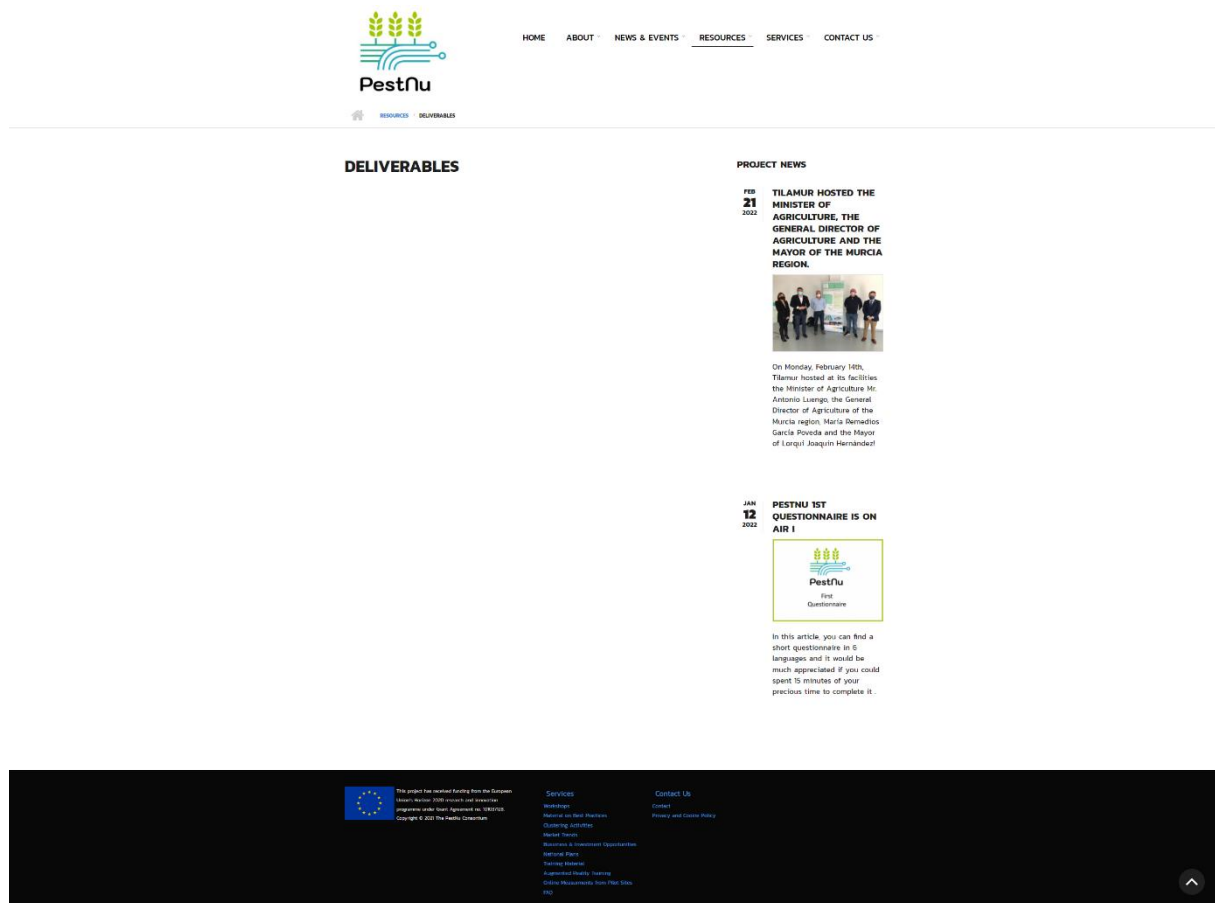


Figure 10: Screenshot of the “Public Deliverables” page of the PestNu website

2.3.5. Contact

This section provides to the users/visitors some tools to interact with the project: asking for some clarifications about the contents and establishing contacts for further information. The visitors will provide basic information about their profile to receive ad hoc explanations and targeted answers. The questions and visitors' information are treated following the GDPR principles.

2.3.5.1. Contact

A contact form (Figure 11) is available for all platform's visitors to have a direct contact with the project team. This section has fields for filling name, email address, subject, and contact form for a text message.

The screenshot shows the 'CONTACT' page of the PestNu website. At the top left is the PestNu logo. To its right is a navigation menu with links: HOME, ABOUT, NEWS & EVENTS, RESOURCES, SERVICES, and CONTACT US. Below the logo is a 'CONTACT US' link. On the left side of the page, contact information for Dr. Elzethia Maria Pechlivanli, Researcher C, is provided, including her address at Building A - Office 01, Information Technologies Institute, Centre of Research & Technology - Hellas, 6th km. Xerolou - Thessaloniki, Greece, and her phone, fax, and email details. The main content area is titled 'CONTACT' and contains four input fields: 'Your name', 'Your e-mail address', 'Subject', and 'Message', each with a red asterisk indicating a required field. A 'SEND MESSAGE' button is located below the message field. The footer includes the European Union flag, project details, and a list of services and contact links.

Figure 11: Screenshot of the “Contact” page of the PestNu website

2.3.5.2. Privacy and Cookie Policy

The Privacy Policy (Figure 12) is the legal document that explains the different ways in which the PestNu website collects and manages users' data. The cookies policy follows the general data protection regulation (GDPR) law, and the project's data protection principles as set out in D9.2.



PRIVACY AND COOKIE POLICY

Introduction

Thank you for visiting the website of our research project, "PESTNU" for short, which has been developed and now runs in the frame of the Horizon 2020 for Research and Innovation.

PESTNU is being implemented by a consortium led by CERTH and the website of PESTNU is being managed and hosted by the same partner. CERTH is the Data Controller for this website. More information about the consortium of PESTNU can be found [here](#).

In this context, your privacy is important for us and we are committed to protect it in accordance with the European General Data Protection Regulation 679/2016 (GDPR). To this end, we provide this Privacy Policy that applies to the PESTNU website and governs personal information collection and usage by the website only.

CERTH's data protection officer (DPO) can be contacted here: lvchal@certh.gr

By using this website, you consent to the personal information practices described in this Privacy Policy which is effective from 01/05/2018. We reserve the right to update or change our Privacy Policy at any time. With that in mind, you should periodically check this Privacy Policy.

Type of personal information that we collect

While using our website, you may share with us, on a voluntary basis, your e-mail address, name, country, region and gender through the contact page of the PESTNU website and/or by subscribing to our newsletter.

Use of personal information that we collect

We may use this information to contact you with newsletters, to disseminate information about PESTNU's activities and results or to promote information from other projects or third parties which we think you may find interesting. We will not use this information for any purpose other than those described in this Privacy Policy without informing and/or obtaining your consent first, when necessary.

Sharing of personal information that we collect

CERTH does not sell or lease the PestNu contact list to third parties. The PESTNU website keeps a copy of its contact list to the CERTH Information Technologies Institute's mail server, which is used for e-mail campaigns and newsletters distribution.

The personal information collected through the PESTNU website may be shared within the consortium of PESTNU to contact you for specific dissemination purposes. All such third parties are prohibited from using your personal information except to provide dissemination to PESTNU, and they are required to maintain the confidentiality of your information, according to PESTNU's privacy policy.

CERTH will disclose your personal information, without notice, only if required to do so by law.

Storage and deletion of personal information that we collect

Any personal information you provide us through the PESTNU website 'contact us' is only used for communication purposes and securely stored on the PESTNU's website email server by the Information Technologies Institute of the Centre for Research & Technology - Hellas only for as long as necessary for us to comply with our contractual obligations to the funding authority of PESTNU, namely the Research Executive Agency (REA) of the European Commission, and no longer than 5 years from PESTNU's completion.

You can unsubscribe from our contact list and/or request for your personal information to be deleted anytime by opting to unsubscribe in the e-mails and/or newsletters that you receive from us.

Security of personal information that we collect

CERTH takes information security seriously and uses reasonable physical, electronic, and managerial procedures to help prevent unauthorized access, maintain data security, and correctly use the information we collect.

Your rights

You have a number of rights, which you can exercise at any time. In particular, you have the:

- **Right to be informed:** You have the right to be informed about the collection and use of your personal information, including the purpose for which we are processing this information, the period that we will retain it and with whom we will share it.
- **Right of access:** You have the right to ask from us to confirm whether we are processing personal information concerning you. Where that is the case, you can access your personal information that we are processing and relevant supplementary information.
- **Right to rectification:** You have the right to request from us modifications to your personal information in case you believe that it is not up to date, complete or accurate.
- **Right to erasure ("right to be forgotten"):** You have the right to ask us to erase your personal information that we are processing.
- **Right to restrict processing:** You have the right to request from us to restrict the processing of your personal information, with a view to limiting the way that we use this information.
- **Right to data portability:** You have the right to ask for your personal information to be provided back to you or transferred to a third party.
- **Right to object:** You have the right to object to us processing your personal information at any time for reasons related to your particular situation.
- **Right not to be subject to a decision based solely on automated processing** (including profiling), which produces legal effects concerning you or similarly significantly affects you.

To exercise your rights, please contact PESTNU. Please keep in mind that you also have the right to lodge a complaint a supervisory authority (e.g. the Data Protection Authority within your region or country), should you wish so.

Third-Party Websites

Our website may contain links to or the ability for you to access third-party websites. We are not responsible for the privacy practices employed by those third parties, nor are we responsible for the information or content their websites contain. This Privacy Policy applies solely to information collected by us. We encourage you to read the privacy policies of any third parties before proceeding to use their websites.

Children

We do not knowingly collect, use, or disclose information from children under the age of 16. If we learn that we have collected the personal information of a child under 16 we will take steps to delete the information as soon as possible. Please immediately contact us if you become aware that a child under 16 has provided us with personal information.

Cookies

Cookies are small text files, which are saved on your computer, mobile phone or tablet. They allow the website to remember your actions and preferences (such as login, language, font size and other display preferences) so you don't have to keep re-entering them whenever you come back to the site.

You can control and/or delete cookies as you wish. If you do this, however, you may need to manually adjust your preferences every time you visit a website. For more information on how to manage cookies, please visit: <http://www.aboutcookies.org/>

Google analytics

We use tools like Google Analytics to better understand how visitors interact with our website. This provides us with important information to enable the site to work better. The information collected is not linked to your personal data.

For more information on the cookies set by Google Analytics, please visit: <http://code.google.com/apis/analytics/docs/concepts/gaConceptsCookies.html>

If you do not wish your information to be sent to Google Analytics, you can install the Google Analytics Opt-out Browser Add-on.

PROJECT NEWS

FEB 21 2022

TILAMUR HOSTED THE MINISTER OF AGRICULTURE, THE GENERAL DIRECTOR OF AGRICULTURE AND THE MAYOR OF THE MURCIA REGION.



On Monday, February 14th, Tilamur hosted at its facilities the Minister of Agriculture Mr. Antonio Luengo, the General Director of Agriculture of the Murcia region, María Remedios García Posada and the Mayor of Lorquí Joaquín Hernández.

JAN 12 2022

PESTNU IST QUESTIONNAIRE IS ON AIR I



In this article, you can find a short questionnaire in 6 languages and it would be much appreciated if you could spend 15 minutes of your precious time to complete it.



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Services

Workshops

Webinars on Demand

Cluster Activities

Market Trends

Business & Investment Opportunities

National Plans

Training Material

AgriFood Health Training

Online Measurements from Pilot Sites

FAQ

Contact Us

Contact

Figure 12 Screenshot of the "Privacy and Cookie Policy" page of the PestNu website

2.3.6. Digital Platform Services

The services section aim to transform the project's website into a digital platform for agro-advisory and business services and field coaching through on-line courses. It is clear from Section 2.3 that through the services tab, one can navigate through all the 9 services provided by the platform as seen in Figure 13. The following paragraphs (2.3.6.1-2.3.6.9) provide a detailed analysis of each service.

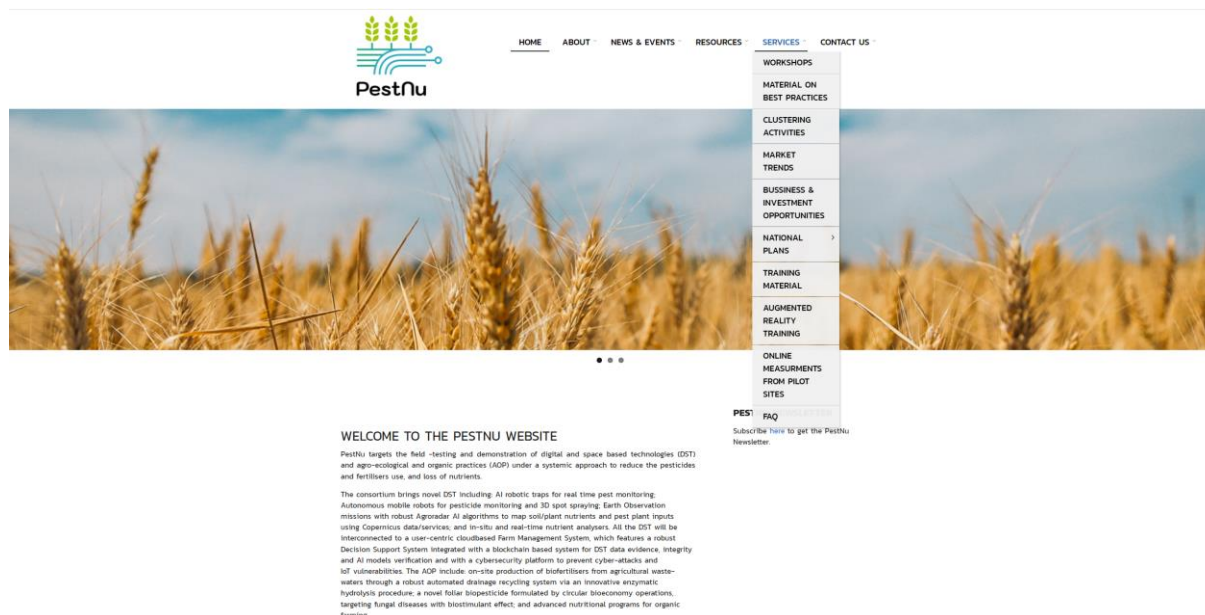


Figure 13 Services navigation through PestNu Digital Platform

2.3.6.1. Workshop Results

This service offers digitalisation of workshop results (data visualization with diagrams, statistics, etc). Each national partners' cluster (8 in total) will execute one Workshop per year. A separate press release for each workshop will be developed, which will briefly present the presentations of the speakers, as well as their background. Also, the main elements of the round table discussions will be published, and the results of possible questionnaires (if there are any, it depends on each workshop's agenda) or questions answered during the presentations will be presented within platforms press releases. Thus, stakeholders who did not participate in the workshops will be informed about the main elements presented and discussed. This service allows platform's users to recognize relationships between the data, providing greater meaning to it.

2.3.6.2. Material on Best Practices

This section offers documentation and video of best practices in aquaponics, precision farming, circular economy food systems, bio-based fertilisers and biopesticides, reduction of fertiliser and pesticide use, and loss of nutrients, organic farming, agroecology. The technical partners and the end users of the project in this service will provide the best practices relevant on their sector and technology (based on literature, protocols, regulations, and standardised applications) to be used as useful set of guidelines for a particular action in a given business situation or real settings scenario for implementation. Clustering Activities.

Moreover, it offers feasibility studies on applications similar with PestNu in different countries and interconnection with sister projects websites. The established links aim to coordinate effort and avoid duplication of work, thus maximising the potential benefits for stakeholders. The partners will contact other existing initiatives and entities to find synergies enriching the initial planning. PestNu also will create collaboration channels and joint activities with projects to enhance systemic solutions on the objectives of Farm to Fork and Green Deal. Also, PestNu will identify similar and/or complementary H2020 running projects on the reduction of pesticides and fertilisers use and assess synergies. From the PestNu perspective, such cooperation aims to attract attention and initiate joined activities among businesses, investors, entrepreneurs, institutions, stakeholders, and citizens for particularly user-driven innovation.

2.3.6.3. Market Trends

This section offers the latest Agriculture4.0 and organic farming products and practices market trends and forecasts, on PestNu thematic. Digitalization, IoT, and sustainability have fully supported farmers in various economic scenarios and PestNu within this service give an opportunity to consider 1) trends in Agriculture4.0 and organic farming, 2) causes of these trends in Agriculture4.0 and organic farming, 3) implications of these trends, and 4) opportunities arising from these trends.

2.3.6.4. Business & Investment Opportunities

This service offers a software tool for business & investment opportunities that visitors of the PestNu digital platform will favour. For having this service, the visitors should register in the login option of this software tool. The registered users to the service will be able to look for specific capabilities, skills and profiles and link directly to the EU relevant services and national Payment Authorities of Common Agricultural Policies. This software tool includes a Matchmaking the Matchmaking and Team Formation component already developed by CERTH in other EU projects (e.g., H2020 Composition and H2020 EFPF projects) and will be re-adjusted and deployed properly for the PestNu needs.

Matchmaking is about bringing users (SMEs, farmers, investors, citizens of farms etc) together through the use of a competent search/query mechanism. The Matchmaking is a two-stage process. One stage monitors the data relating to the Matchmaking criteria to update the index based on new information, and this is operating continuously. The other is ad-hoc that is triggered when users run the matchmaking function. The Matchmaking criteria relates directly to the ad-hoc searches leading to creation of teams, or the addition of users to teams. The Team Formation tool supports the creation of teams that can jointly address a specific user/business need. The Team Formation module in platform will use tailored search and data indexes to enable a team to be formed to serve a specific purpose. The search indexes are created from within the Matchmaking component that has previously been described in its functionality. Furthermore, the use of AI (Machine Learning) is a very relevant and practical approach which can be used within the Matchmaking and Team Formation component in the digital platform. These forms of machine learning are being considered to provide the core team matching algorithm: a) Frequent Pattern Discovery, b) K-means, and c) Semantic Analysis. Using business & investment opportunities service, every registered user providing his name, surname and additional tags that characterise what he/her seek in the service. The tool matches users based on three levels:

- Tags,
- Country: geolocation, how far or near the user is,
- User type: seeker or provider.

A high-level external architectural view of the business & investment opportunities tool can be seen in Figure 14. The business & investment opportunities tool consist of a) the matchmaking component which includes three subcomponents - the matchmaking function, the federated search functions, and the Graphical User Interface (GUI) and b) the Team Formation component. The matchmaking functions is a complex AI algorithm that matches users based on the three levels as mentioned above. The federated search function searches multiple data sources at once bringing external content to the PestNu platform. Based on the additional data, more opportunities are included relevant to the project. The GUI is a form of user interface that allows users to interact with electronic devices through graphical icons and audio indicator such as primary notation, instead of text-based user interfaces, typed command labels or text navigation. The matchmaking tool is linked to the data repository where all the information is stored. The Team Formation tool offers the ability to the registered users to follow project and create a network between them. Through this network users can interact with other registered users. The Team Formation tool is linked to the matchmaking tool creating a ranking system in the network where each user has an index based on similarity measure. That way, users with higher similarity appear higher on the ranking network system.

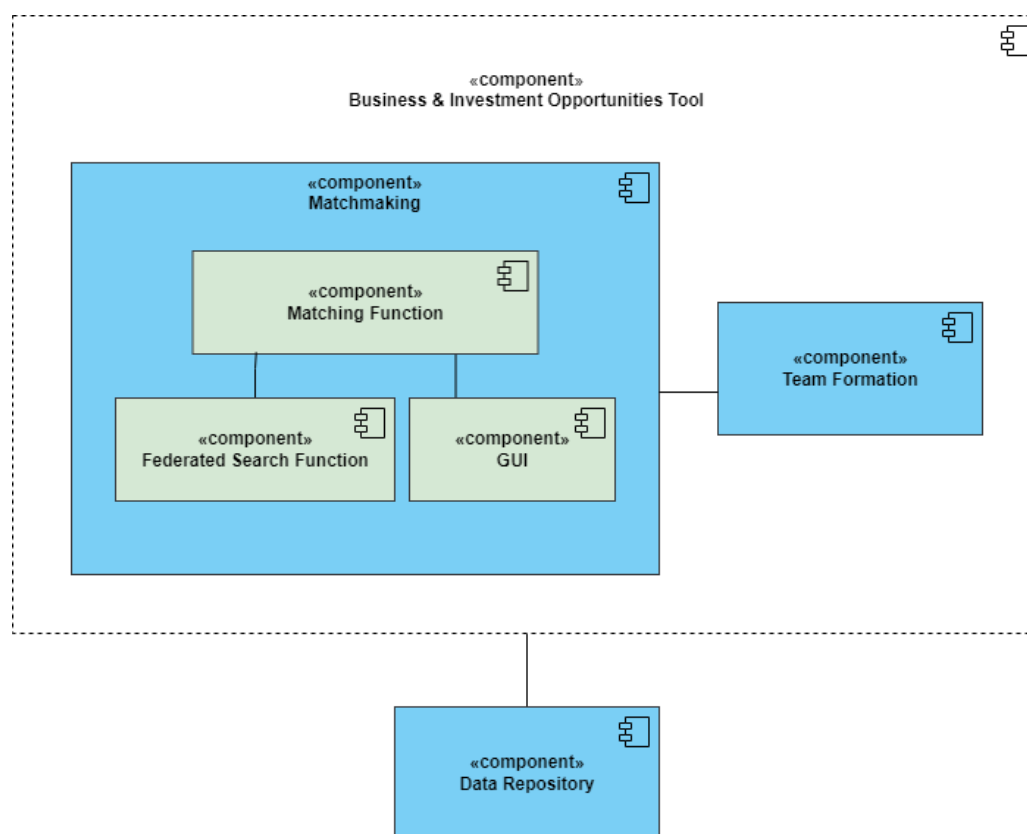


Figure 14: A high-level architectural view of the business & investment opportunities Tool

2.3.6.5. National Plans

This service offers the recent national plans with links from authorised platforms and websites of each PestNu consortium country regarding the pesticides and fertilisers use, regulations, protocols, and standards nationally, EU and globally on these thematic but also in circular economy applied to agriculture and agrofood, novel food production systems for food resilience, organic farming, and agroecology.

The national plans of each of the 9 countries (Austria, Cyprus, Greece, Ireland, Italy, Portugal, Spain, Sweden, and UK) are shown in Table 1.

Table 1: National Plan

Country	Name of institution	Name in English	Link of website
Austria	Bundesministerium für Landwirtschaft, Regionen und Tourismus	Federal Ministry of Agriculture, Regions and tourism	https://www.bmlrt.gv.at/
Austria	Landwirtschaftskammer Österreich	Chamber of agriculture Austria	https://www.lko.at/
Austria	Bundesamt für Ernährungssicherheit	Austrian Federal Office for Food Safety	https://www.baes.gv.at/
Austria	Österreichische Agentur für Gesundheit und Ernährungssicherheit GmbH	Austrian Agency for Health and Food Safety GmbH	https://www.ages.at/
Austria	Bundesamt für Ernährungssicherheit	Austrian Federal Office for Food Safety	https://www.baes.gv.at/
Austria	Netzwerk Zukunftsraum Land	The Austrian Rural Network	https://www.zukunftsraumland.at/
Austria	ARGE Nützlingsblühstreifen	Working group Beneficial Flowering Strips	https://www.zukunftsraumland.at/projekte/2409
Austria	ARGE Kreisläufe	Working group Cycles	https://www.zukunftsraumland.at/projekte/2439
Austria	Nationaler Aktionsplan für die nachhaltige Verwendung von Pflanzenschutzmitteln	National action plan for the sustainable use of pesticides	https://info.bmlrt.gv.at/dam/jcr:d4aeda07-4df1-411c-b017-fba39157731a/AUSTRIA_Nationaler_Aktionsplan_2022-2026.pdf
Greece	Υπουργείο Αγροτικής Ανάπτυξης και Τροφίμων	Ministry of Rural Development and Food (Greece)	http://www.minagric.gr/index.php/en/
Greece	Ελληνικός Γεωργικός Οργανισμός (ΕΛ.Γ.Ο.)	HELLENIC AGRICULTURAL RESEARCH, EDUCATION AND DEVELOPMENT ORGANIZATION (ELGO)	https://www.elgo.gr/
Greece	Οργανισμός Ελληνικών Γεωργικών Ασφαλίσεων (ΕΛ.Γ.Α.)	Hellenic Agricultural Insurance Organization (ΕΛ.Γ.Α.)	https://www.elga.gr/
Greece	Ελληνικός Οργανισμός Πληρωμών Κοινοτικών Ενισχύσεων Προσανατολισμού και Εγγυήσεων (ΟΠΕΚΕΠΕ)	Organization for the Payment and Control of Community Guidance and Guarantee Aid (OPEKEPE)	https://www.opekepe.gr/en/
Italy	Ministero delle politiche agricole alimentari e forestali	Ministry of Agricultural, Food and Forestry Policies	https://www.politicheagricole.it
Italy	Piano Strategico Nazionale della PAC	National Strategic Plan of PAC	https://www.reterurale.it/PAC_2023_27/PianoStrategicoNazionale
Portugal	Direção-Geral de Agricultura e Desenvolvimento Rural	General Directorate of Agriculture and Rural Development	https://www.dgadr.gov.pt/
Portugal	Gabinete de Planeamento, Políticas e Administração Geral (GPP)	General Administration Office for Planning & Policy (for both Agriculture and Sea Ministries)	https://www.gpp.pt/
Portugal	Direção Geral de Alimentação e Veterinária	General Directorate of Food and Veterinary	https://www.dgav.pt
Portugal	Rede Rural Nacional	National Rural Network	https://www.rederural.gov.pt/
Portugal	Centro Operativo e Tecnológico Hortofrutícola Nacional	National Fruit and Vegetable Operating and Technological Center	https://www.cothn.pt

Portugal	Centro de Competências da Agricultura Biológica e dos Produtos em Modo de Produção Biológico (CCBIO)	Competence Center for Organic Agriculture and Products in Organic Production Mode	https://www.ccbio.pt
Portugal	Centro de Competências para o Tomate Indústria (CCTI)	Competence Center for the Tomato Industry	https://www.ccti.pt/
Portugal	Plano de Ação Nacional para o Uso Sustentável de Produtos Fitofarmacêuticos	National Action Plan for the use of phytopharmaceuticals	https://www.dgav.pt/wp-content/uploads/2020/09/PANUSProdutosFitofarmacêuticos_2018_2023.F.pdf
Portugal	PEPAC Plano Estratégico da Política Agrícola Comum 2023-2027	Strategic Plan for EU's common agricultural policy	https://www.gpp.pt/index.php/pepac/plano-estrategico-da-pac-2023-2027-consulta-alargada
Portugal	Terra Futura Agenda de Inovação para a Agricultura 20 30	Agenda for Innovation for Agriculture 2020 2030	https://www.iniaiv.pt/terra-futura
Spain	Ministerio de Agricultura, Pesca y Alimentación	Ministry of Agriculture, fishing and feeding.	https://www.mapa.gob.es/es/
Sweden	Jordbruksverket	Swedish Board of Agriculture	https://jordbruksverket.se/
Sweden	Näringsdepartementet	Ministry of enterprise and innovation	https://www.government.se/government-of-sweden/ministry-of-enterprise-and-innovation/
Sweden	Länsstyrelser	County Administrative Board	https://www.lansstyrelsen.se/vastra-gotaland.html
Sweden	Lantbrukarnas riksförbund, LRF	Federation of Swedish Farmers	https://www.lrf.se/om-lrf/in-english/
Sweden	Kommuner	Municipalities	
Sweden	Regioner	Regions	https://www.vgregion.se/
UK	Department for Environment, Food and Rural Affairs (DEFRA)	Department for Environment, Food and Rural Affairs (DEFRA)	https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs
UK	Agriculture and Horticulture Development Board	Agriculture and Horticulture Development Board	https://www.gov.uk/government/organisations/agriculture-and-horticulture-development-board
UK	Natural England	Natural England	https://www.gov.uk/government/organisations/natural-england
UK	Science Advisory Council	Science Advisory Council	https://www.gov.uk/government/organisations/science-advisory-council
UK	Parliamentary Environment, Food and Rural Affairs Committee (EfraComm)	Parliamentary Environment, Food and Rural Affairs Committee (EfraComm)	https://committees.parliament.uk/committee/52/environment-food-and-rural-affairs-committee
UK	Parliamentary Environmental Audit Committee	Parliamentary Environmental Audit Committee	https://committees.parliament.uk/committee/62/environmental-audit-committee/
UK	Scottish Government, Agriculture and Rural Economy Directorate	Scottish Government, Agriculture and Rural Economy Directorate	https://www.gov.scot/about/how-government-is-run/directorates/agriculture-rural-economy/
UK	Scottish Government, Environment and forestry Directorate	Scottish Government, Environment and forestry Directorate	https://www.gov.scot/about/how-government-is-

			run/directorates/environment-and-forestry/
UK	Chief Scientific Advisor for Environment, Natural Resources and Agriculture	Chief Scientific Advisor for Environment, Natural Resources and Agriculture	https://www.gov.scot/about/how-government-is-run/directorates/environment-and-forestry/chief-scientific-adviser-environment-natural-resources-agriculture
UK	Welsh Assembly Government	Welsh Assembly Government	https://naturalresourceswales.gov.uk/
UK	Northern Ireland Executive, Department of Agriculture, Environment and Rural Affairs	Northern Ireland Executive, Department of Agriculture, Environment and Rural Affairs	http://www.daera-ni.gov.uk
UK	Animal and Plant Health Agency	Animal and Plant Health Agency	https://www.gov.uk/government/organisations/animal-and-plant-health-agency
UK	Environment Agency	Environment Agency	https://www.gov.uk/government/organisations/environment-agency
UK	Advisory Committee on Releases to the Environment	Advisory Committee on Releases to the Environment	https://www.gov.uk/government/organisations/advisory-committee-on-releases-to-the-environment
UK	Health and Safety Executive Northern Ireland	Health and Safety Executive Northern Ireland	https://www.hseni.gov.uk/taxonomy/term/27
UK	Agri-Food and Biosciences Institute (AFBI)	Agri-Food and Biosciences Institute (AFBI)	https://www.afbini.gov.uk

2.3.6.6. Training Material

This service offers Training material (presentations, application notes) which will be collected through the educational programmes from T6.5. The training material will be developed by all partners for each country, to maximize transfer of knowledge to researchers, university students from Agriculture science, young professionals, SMEs, food industries, consumers, citizens of farms. This material will be uploaded in the PestNu website public area to be accessible by the interested stakeholders and will be supported in the 7-languages (Greek, English, Spanish, Italian, Portuguese, Swedish, German) of consortium partners.

2.3.6.7. Augmented Reality Training Tool

This service offers an AR training toolkit developed by CERTH in iPRODUCE H2020 project, which will be re-adjusted for support e-Agriculture training, offering a dynamic alternative to traditional training.

The AR Toolkit is responsible for providing highly specialized services maximizing the prerogatives of AR that aims to support Farm to Fork stakeholders during their training process in DST operation in a more effective way by adding immersive, digital elements to a live, real-world environment through communications hardware like computers with headsets, tablets, phones, etc. A high-level external architectural view of the AR Toolkit' is presented in Figure 15. The AR toolkit consist of three components: a) the Training Flow, b) Training Material Management system, c) Training material display.

There are two types of user groups who interact with the system as is shown in Figure 15. **Error! Reference source not found.** Firstly, trainers (CERTH) create, update, or delete (CRUD) digital training

material. Secondly learners (users that have register to the toolkit service) request training supported through digital training material. Trainers interact with the Training Flow component which is the interface to the Training Material Management System. This uses the CERTH's data repository for storing the training material. The starting point for learners is always the Training View. This can by default be used to consume training material in the augmented reality view of the Training Material Display. The digital training material through AR training toolkit will be relevant for the four DST tools (AI robotic trap for real time insect monitoring, Agroradar, Autonomous self-navigating robot for pesticide monitoring and 3D spot spraying, real-time UVC nutrient analysers).

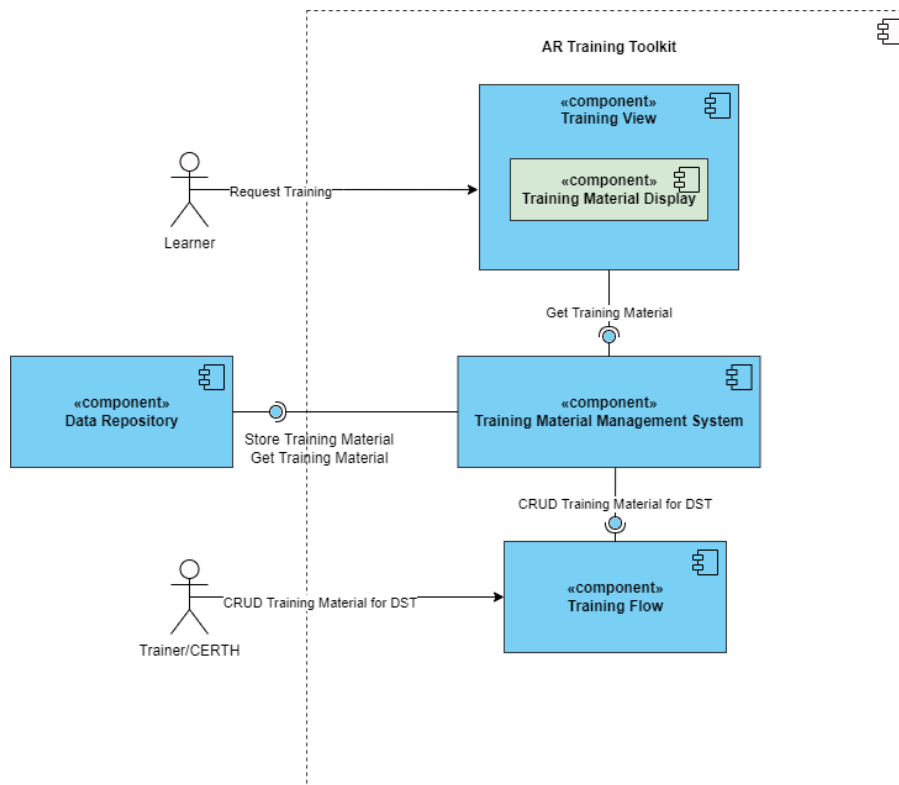


Figure 15 A high-level architectural view of the AR training toolkit

2.3.6.8. Online Measurement from Pilot Sites

This service offers real time visualization of some results and measurements from DSS at pre-pilot and demo sites qualify for the Open Research Data Pilot (ORDP) established by the EC for Findable, Accessible, Interoperable and Reusable (FAIR).

2.3.6.9. F.A.Q.

This service offers experiences on frequently asked questions (F.A.Q.).

3. Conclusions

PestNu digital platform (<https://pestnu.eu>) is the core tool of the communication and dissemination plan of PestNu and will be the main promotion and data management platform, which will be updated during and after (>5 years) the project. It is an essential platform to support Agriculture 4.0 activities and create awareness and engagement among targeted audiences in organic farming by presenting the project towards Farm to Fork stakeholders and also by attracting investor schemes, with a target of 2,000 registers during the project. The project website goes beyond the limits of a simple website. The development of the project's website that "looks and feel" as a platform is to 80% fulfilled. It remains to be deployed and integrated the software tools for business & investment opportunities and training and be reported in D6.5 by M18. The maintenance and update of the website will be carried out every week and the update of the whole platform services every month.



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