



AGRIFOOD

4Future

D4.6

E-learning tools



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Abstract

The purpose of this document is to provide a comprehensive overview of the Learning Management System (LMS) platform's capabilities and benefits for delivering asynchronous training sessions. The platform is designed to host educational content online, allowing learners to adapt the training individually to their needs. Additionally, the document includes a description of the MOOC's structure and content, with a focus on aligning the learning outcomes of the MOOC with the skill gaps identified in WP2. For the AGRIFOOD4FUTURE project, these tools will support the development of innovative VET programs by facilitating the widespread dissemination of knowledge on sustainable practices and digital technologies. They align with the project's aims by enhancing skill development, fostering cross-border collaboration, and ensuring that learners acquire critical competencies in both green and digital domains to drive transformation in the agri-food sector.

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List of abbreviation

AF4F	AGRIFOOD4FUTURE
CoVE	Centers of Vocational Excellence
VET	Vocational Education and Training
LMS	Learning Management System
MOOC	Massive Open Online Course

1 Introduction

1.1 Project overview

The AGRIFOOD4FUTURE project aims to establish a network of Centers of Vocational Excellence (CoVEs) in the agri-food sector to improve workforce skills and align the industry with the Green Deal and European Digital Agenda. To support this goal, the project will develop e-learning tools that will be hosted by a Learning Management System (LMS) platform. These tools will enhance VET program quality, foster collaboration, support entrepreneurship, address skills gaps, and promote digital and green skills. In addition, the platform will offer interactive content, assessment tools, certification support, and accessibility features, ensuring a high-quality learning experience for users.

1.2 Target audience

The e-learning platform is accessible to a wide range of target audiences including VET students, Farmers and Agri-Food workers. It is specifically designed to host various training courses designed within the AgriFood4Future Project such as the capacity building program (T4.4) and the training program for farmers' advisors (T4.3), responding to the diverse educational needs of these groups.

1.3 Purpose of this document

This document serves as a detailed guide to the LMS platform's capabilities and advantages for delivering flexible, asynchronous training sessions. Designed to host a wide range of educational content online, the platform empowers learners to tailor their training experience to their individual needs and schedules. By providing a user-friendly interface and robust features, the LMS platform enables effective knowledge transfer and skill development in a self-paced learning environment.

2 Platform overview

2.1 Why LMS factory as platform's provider?

A benchmark about LMS providers was carried out by Arvalis at the beginning of the Project. We concluded at the end of this benchmark that Moodle™ was the best choice for LMS platform. The Moodle™ LMS platform is the world's most widely used solution for education and training, totally open source, natively supporting 37 languages, and fully documented.

Today, the LMS is used by over 190,000 educational institutions and companies, and 300 million people. The tool includes functionalities for creating content in various formats, courses, quizzes, analyses...

It's free to use. However, installation and customization may require technical expertise.

For that reason, we decided to take out an annual subscription to Moodle LMS Factory provided by LMS Factory, a French company specialized in customizing the Moodle platform.

The subscription covers the following services:

- Hosting and maintenance of the Moodle LMS platform
- Moodle LMS platforms audits
- Implementation of customized graphic charts
- Configuration of the platform to suit the project
- Training and support
- Maintenance of third-party applications
- Development of customized plugins

2.2 Key features

The Moodle LMS platform offers a comprehensive suite of features designed to facilitate online learning and training:

- **Course creation and management:** Easily create and manage courses with tools for developing, organizing, and distributing course content.
- **Platform customization:** Adapt the graphical presentation to suit project requirements.
- **User management:** Ability to create and manage user accounts, roles and permissions.
- **Content delivery:** Provide learning materials in a variety of formats, including text, video, audio, and interactive elements.
- **Assessment and testing:** Questionnaire creation, assignment submission, and grading tools.
- **Progress monitoring :** Learner progress tracking and performance analysis.
- **Communication tools:** Discussion forums, messaging systems, and announcement functions.
- **Mobile compatibility:** Access to courses via mobile devices.
- **Reporting and analytics:** Generating reports on user engagement, course completion rates, etc.
- **Certification and compliance management:** Track and manage certifications and compliance training.
- **Multilingual support:** Ability to provide content in different languages. Currently (M16), welcome and transition pages are configured in English and French only. Additional languages for the main contents (including the consortium languages) will be implemented in the next few months.

2.3 Platform management

To access the platform, we have chosen the following domain name: agrifood4future-e-learning.com. Users can access the platform using this following URL: <https://agrifood4future-e-learning.com/login/index.php> or via the project website. As far as administration is concerned, the system supports several administrator roles with different levels of access and control. Currently, three administrators can manage users, courses and system settings.

Only Arvalis employees have access to the platform's administration. If consortium members wish to post content on the platform, they can submit a request to Arvalis, who will integrate the content into the platform and customize it if they have specific requirements. Consortium members can be assigned different roles: teacher, content creator or student if they require specific actions on the platform.

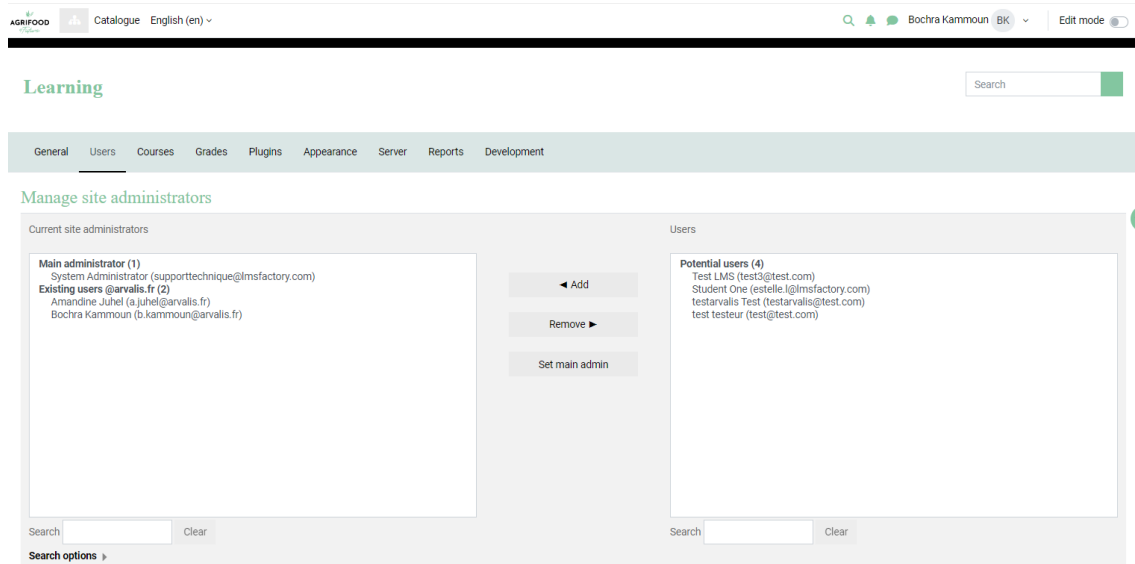


Figure 1 : List of administrators

Detailed reports can be downloaded to track the user numbers, participation rates, course progress...

Arvalis will provide these reports to partners in order to monitor the KPIs linked to training courses.

3 User guide

3.1 Registration and account creation

The platform is accessible to up 1000 accounts simultaneously. Access to the platform requires the creation of an account via the login page.

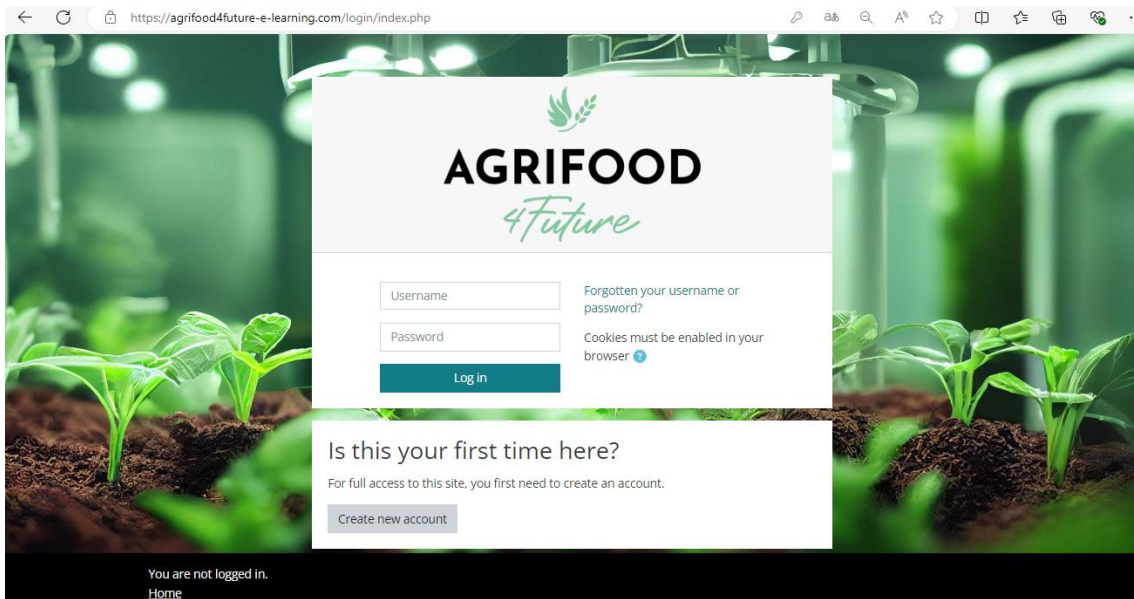


Figure 2 : Connexion page

The user then fills the application form with the required information.

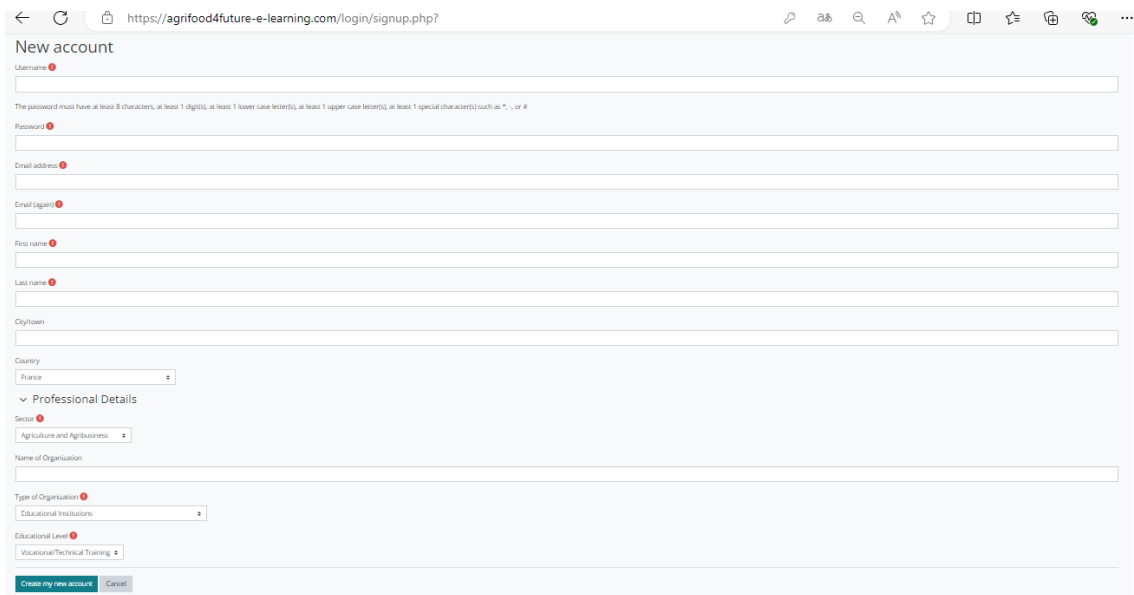


Figure 3 : Application form to create an account

Once, he has validated this information, he receives the following email:

“ Hi {full name},

A new account has been created for you on '{sitename}' and you have received a new temporary password.

Your current login details are now:

username: {username} password: {new password}
 (you will need to change your password when you log in for the first time)

To start using '{sitename}', connect to {link }. In most e-mail programs, this should appear as a blue link that you simply click on. If this doesn't work, copy and paste the address into the address line at the top of your web browser window.

Goodbye from the administrator of '{sitename}', "

Once the account has been created and validated, the user can access the platform's home page, where they can view the list of available content and upcoming events. However, to participate in the course, the user must enter the registration code and click on the registration button.

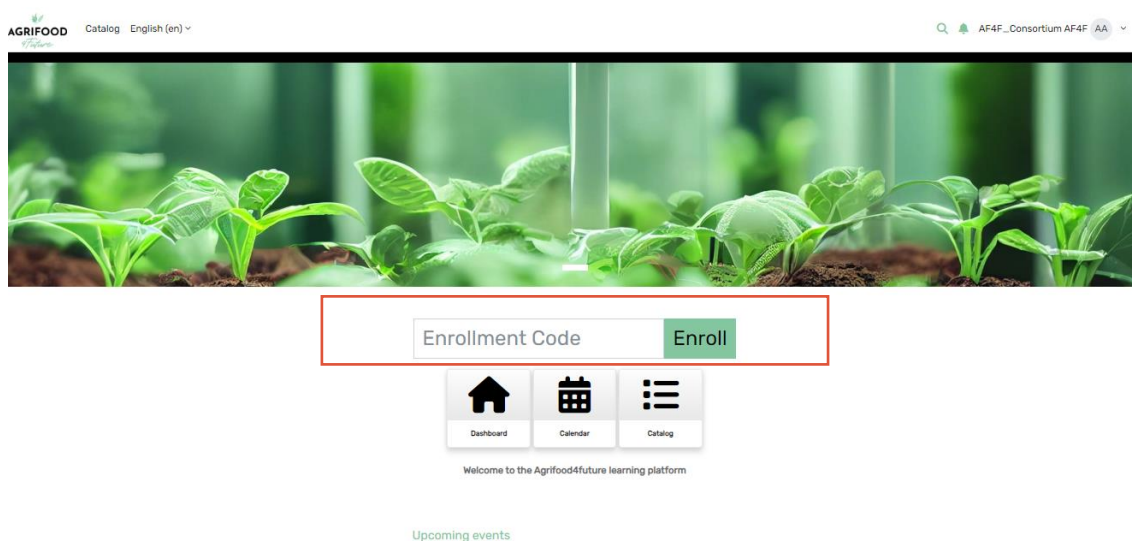


Figure 4 : Courses Access by enrollement code

3.2 Navigate the platform

The platform's user-friendly interface features a clear, intuitive navigation system. After logging in, users are presented with a comprehensive dashboard that includes the following elements :

- **Calendar:** A visual representation of upcoming deadlines, assignments and scheduled events.
- **Catalog:** A comprehensive list of all available courses, enabling users to easily navigate and enroll in relevant programs.

Within each course, a logical structure guides learners through modules, activities, and assessments.

For each course, administrators can have a quick view of the corresponding statistics.

Cours exemple Agrifood4future

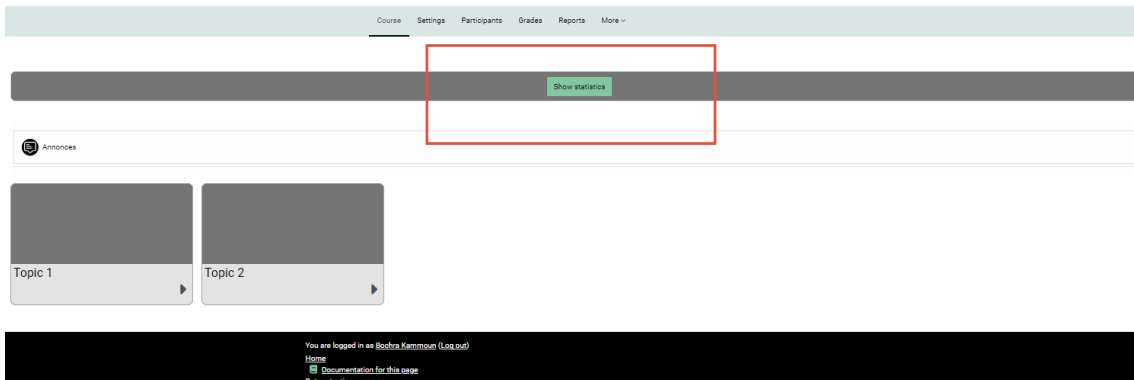


Figure 5 : Course registration and follow-up

Cours exemple Agrifood4future

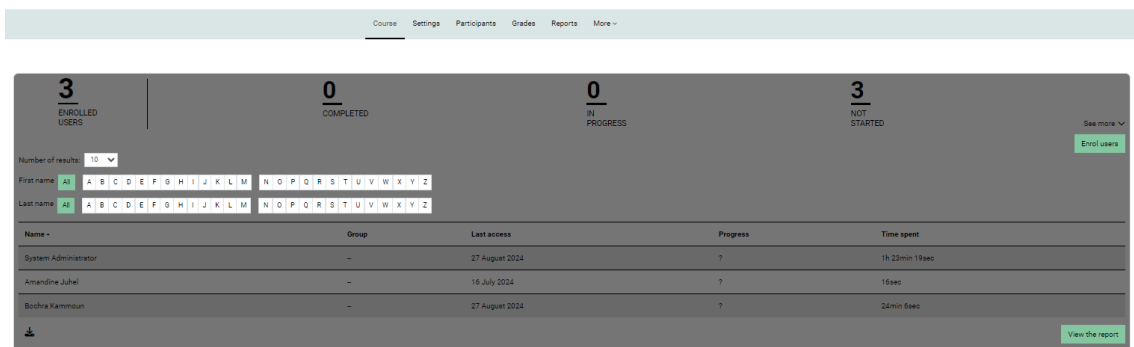


Figure 6 : Quick access to registration details

As for learners, they will see the progress of their activity above each lesson.

Cours exemple Agrifood4future

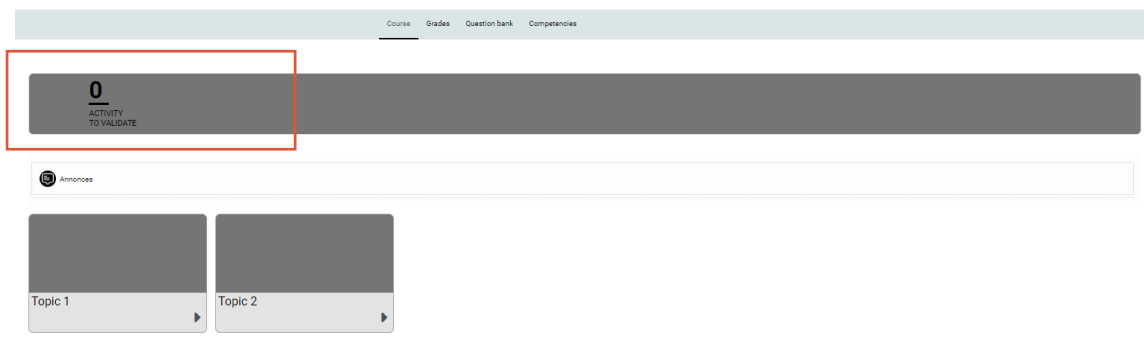


Figure 7 : View of activity progress

3.3 Accessing content

To access course content, users must first obtain a registration code. Once registered, they can start working on the course material. The platform makes it possible to establish restrictions between the different sections of a course, ensuring that users have completed the prerequisite activities before moving on to subsequent modules. This ensures a structured and progressive learning experience. The course creator can also define the duration of course availability.

Cours exemple Agrifood4future

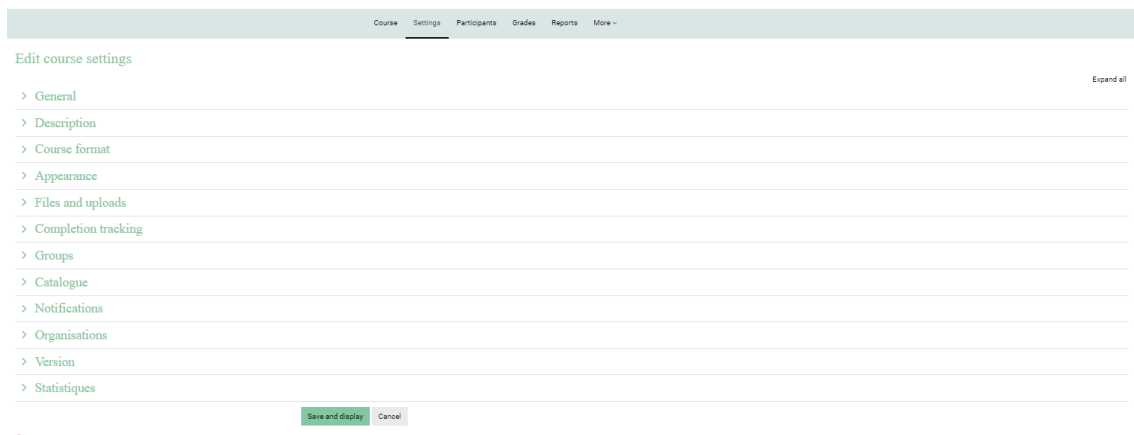


Figure 8 : Course setting

The platform also offers flexibility in configuring certification requirements. Course creators can customize the certification process based on their specific needs, including setting criteria related to assignments, quizzes, or overall performance. This enables personalized recognition of learners' achievements.

Assignments can be customized to meet the requirements of the course creator. In particular, it is possible to specify grading criteria, the skills to be assessed and the type of assignments (e.g. essays, presentations, practical work).. This flexibility enables course creators to design assignments that effectively measure student understanding and progress.

In addition, the platform is compatible with mobile devices. This means learners can access their accounts and follow their courses on their mobiles.

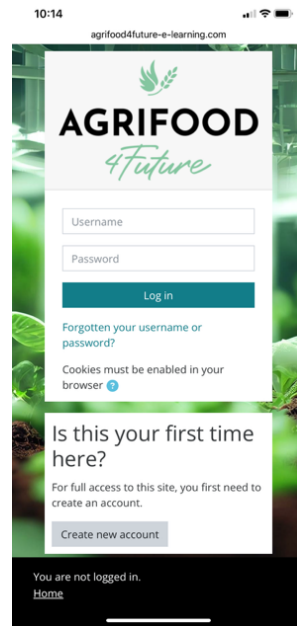
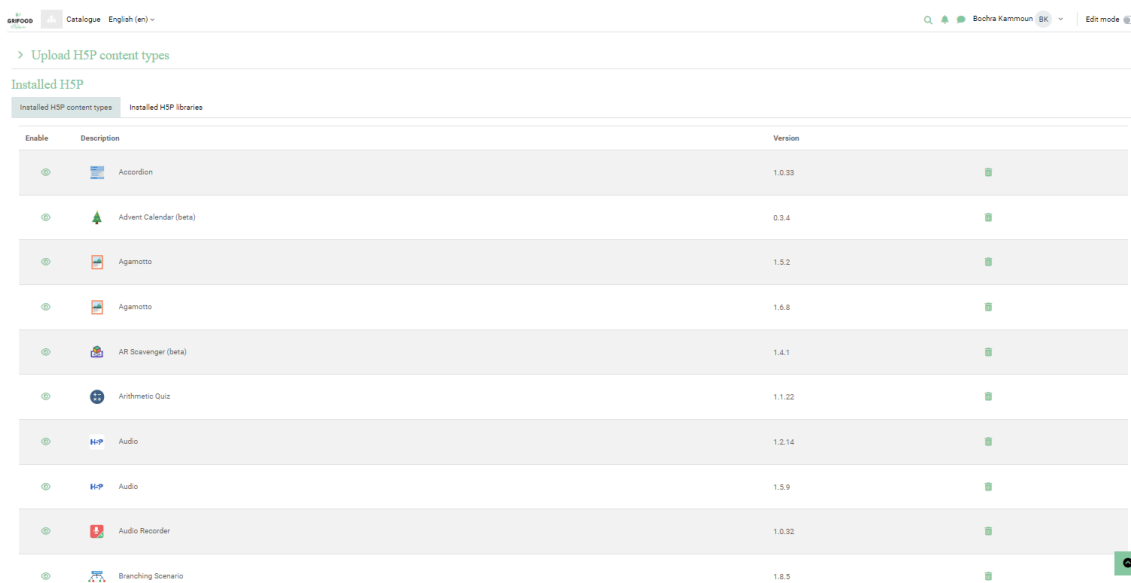


Figure 9 : Smartphone connexion page

3.4 Using learning tools

The platform offers a variety of interactive learning tools to enhance the educational experience. These tools can include:

- **H5P**: a versatile authoring tool that enables the creation of various types of interactive content, such as quizzes, presentations, and simulations, to provide more interactive and user-friendly content, enhancing the overall learning experience.



Enable	Description	Version
<input checked="" type="checkbox"/>	Accordion	1.0.33
<input checked="" type="checkbox"/>	Advent Calendar (beta)	0.3.4
<input checked="" type="checkbox"/>	Agamoto	1.5.2
<input checked="" type="checkbox"/>	Agamoto	1.6.8
<input checked="" type="checkbox"/>	AR Scavenger (beta)	1.4.1
<input checked="" type="checkbox"/>	Arithmetic Quiz	1.1.22
<input checked="" type="checkbox"/>	Audio	1.2.14
<input checked="" type="checkbox"/>	Audio	1.5.9
<input checked="" type="checkbox"/>	Audio Recorder	1.0.32
<input checked="" type="checkbox"/>	Branching Scenario	1.8.5

Figure 10 : HSP content type repository

- **Subtitle downloads** : The platform allow users to download subtitles in multiple languages, making content accessible to a wider audience.
- **Various media formats**: Users can access and interact with content in different formats, including videos, audio files, images, and documents.

3.5 GDPR Compliance and Data Protection

The LMS platform is designed with a strong commitment to data protection and full compliance with the General Data Protection Regulation (GDPR). We prioritize the privacy and security of all users' personal information.

Administrators can manage privacy and policy settings.

4 MOOC Overview

As part of the Agrifood4Future project, Arvalis is developing a new Massive Open Online Course (MOOC) entitled "Digital agriculture: transforming field crop production." This MOOC is designed to further our mission of promoting innovation and knowledge in the agrifood sector through the integration of digital technologies.

The development of this MOOC supports the mission of the Agrifood4Future project by advancing digital innovation, facilitating knowledge transfer, and promoting sustainable practices. By showing how digital technologies can transform field crop production, the course

demonstrates the potential for technological advances to revolutionize agricultural practices. It offers accessible teaching to a global audience involved in large-scale agriculture, ensuring that crucial knowledge and skills are widely shared. In addition, the MOOC helps stakeholders apply digital tools to improve the efficiency and sustainability of field crops, contributing to more sustainable and productive agricultural systems.

4.1 Alignment with WP2

Analysis of the survey conducted in Project task 2.1 reveals significant skill gaps in crucial areas such as data management, digital entrepreneurship, and the use of advanced technologies like robotics and sensors. These gaps underscore the urgent need for targeted training programs to improve the digital literacy and practical skills of the workforce as a whole. While many workers are comfortable with basic digital communication tools, there is an urgent need to improve capabilities in areas such as farm management information systems, digital soil nutrient monitoring, and resource and logistics management.

A comprehensive digital farming course would address these critical needs by focusing on practical skills and real-world applications, supporting the sector's digital transition. Such a course would not only bridge the current technology gap but also prepare workers for future innovations, ultimately helping to increase the efficiency, productivity, and sustainability of agriculture. By offering both basic and advanced training modules, the course could cater for the different skill levels within the sector, playing a vital role in equipping workers with the skills needed for the digital age of agriculture and helping the industry to remain competitive in an increasingly technology-driven landscape.

4.2 Course structure and learning outcomes

The course is divided into 6 main modules, each focusing on a different aspect of digital farming. The course starts with context and basics, moves on to more specific technologies and applications, and ends with challenges and future perspectives. It covers different aspects of digital farming, including data collection, data security, decision support tools, precision farming, and the wider context of digital farming in Europe. The course not only covers current technologies and practices but also looks at future prospects and challenges, preparing learners for ongoing developments in the field.

Finally, the structure includes both technical aspects (such as data collection and analysis) and non-technical aspects (such as legal frameworks and restrictions), providing a well-rounded understanding of digital agriculture.

Module title	Content	Learning Outcomes	Skills required according T2.1 and covered by the MOOC
The context of agricultural data in Europe	<ul style="list-style-type: none"> • Current challenges in agriculture • Digital technology at the heart of future agriculture • Introduction to data in agriculture 	<ul style="list-style-type: none"> • Identify the challenges of today's agriculture • Recognize digital agriculture as a solution for the future • Define data in agriculture 	<p>Field operations management using digital tools: Includes the ability to manage field operations using digital tools to plan, monitor and optimize farming activities.</p>
Agricultural data collection technologies	<ul style="list-style-type: none"> • Types of data that can be collected in agriculture • Focus on weather data • Agricultural sensors: identification and comparison • Agricultural data analysis : methods and applications • Future prospects for sensors in agriculture 	<ul style="list-style-type: none"> • Distinguish data that can be collected in different compartments: soil, climate (weather), plant • Discover how weather stations work • Identify and compare different types of sensors • Explore methods of analysis and application of this data • Identify the development prospects for sensors 	<p>Monitor and manage soil nutrients using digital solutions: This skill includes the ability to monitor and manage soil nutrients using digital solutions to optimize crop performance and soil health.</p>
Ownership and security of used data	<ul style="list-style-type: none"> • Legal and regulatory frameworks for digital data in Europe • Pros and cons of agricultural charters • Data use rights: limitations and responsibilities 	<ul style="list-style-type: none"> • Identify the legal framework for digital data in Europe • List the advantages and disadvantages of agricultural charters • Reframe the right to use data 	<p>Hands-on experience with robotic technologies for agricultural tasks: Refers to practical experience of using robotic technologies to perform agricultural tasks, such as planting and harvesting, with the aim of improving efficiency and productivity.</p>
Use of decision support tools (DST)	<ul style="list-style-type: none"> • Definition and basic principles of DSSs • Differences between models and DSSs • Comparative analysis of supply and demand for DSS models in agriculture • Functioning of DSSs • Conclusion and perspectives on DSSs 	<ul style="list-style-type: none"> • Define what a DSS is • Distinguish between DSS and models • Compare different DSSs and select the most appropriate one • Define the data required to operate a DSS • Interpret DSS outputs • Identify DSS perspectives 	<p>Integration and implementation of sensor technologies for data collection and analysis: Includes the ability to integrate and use sensor technologies for data collection and analysis in agriculture, in order to improve the precision and efficiency of agricultural processes.</p>
Focus on precision farming	<ul style="list-style-type: none"> • Introduction to precision farming • How GPS Works : basic principles • Use of GPS in precision farming: case studies and practical examples 	<ul style="list-style-type: none"> • Define precision agriculture • Explain how GPS works • Illustrate the use of GPS for precision farming • Identify technologies and tools used in precision farming 	<p>Crop modelling, simulation techniques, and relevant software applications: Includes the ability to use models and simulation techniques to improve crop efficiency and productivity, and knowledge of software relevant to agriculture.</p>
Challenges and perspectives of digital agriculture	<ul style="list-style-type: none"> • Limitations of digital agriculture • Management and control of digital technologies • Prospects for the use of digital agriculture 	<ul style="list-style-type: none"> • Define the limits of digital technologies in agriculture • Identify best practices to guide digital innovation in agriculture • Identify perspectives on the use of data 	

Table 1 : MOOC structure and content

5 Conclusion

In summary, the Learning Management System (LMS) platform provides a robust and flexible solution for delivering asynchronous training sessions that effectively meets the diverse needs of learners. Its capabilities enable the seamless delivery of training content online, allowing learners to access and engage with the material at their own pace, significantly enhancing their learning experience.

Through this platform, we aim to equip learners with the digital and green skills needed to meet the requirements of the European Green Deal and the Digital Agenda. As well as improving the quality of the workforce, this initiative aims to foster entrepreneurship, address critical skills gaps, and encourage collaboration across the industry. Ultimately, our goal is to cultivate a more sustainable, resilient, and digitally-enabled agri-food sector.

The platform will be continuously enriched with diverse educational content throughout the project, ensuring the delivery of high quality e-learning experiences and the widespread dissemination of knowledge. In addition, a MOOC will be developed specifically to be tailored to address the identified skills gaps within the agri-food sector. This MOOC will provide learners with targeted, industry-relevant skills that will enable them to adapt to the evolving needs of the sector and contribute to its transformation. By integrating this specialised MOOC into our LMS, we are not only equipping students with the knowledge they need, but also creating a pathway for them to become leaders in the agri-food industry.

Ultimately, this LMS platform, with its dynamic content and specialised MOOC offerings, is poised to make a significant impact on both individual learners and the wider agri-food sector, driving forward the goals of sustainability, innovation, and digital transformation.