INGENIUM
European University

Deliverable 3.3

INGENIUM Platforms

Work package 3 – Digital INGENIUM

Co-funded by
the European Union

Call: ERASMUS-EDU-2022-EUR-UNIV (EUROPEAN UNIVERSITIES)
Topic: ERASMUS-EDU-2022-EUR-UNIV-2

Proposal number: 101090042
Proposal acronym: INGENIUM

Project duration: from 1 January 2023
to 31 December 2026

COORDINATOR
University of Oviedo (UNIOVI), Spain

PARTNERS
Medical University - Sofia (MUS), Bulgaria
University of Crete (UoC), Greece
Karlsruhe University of Applied Sciences (HKA), Germany
South-Eastern Finland University of Applied Sciences (XAMK), Finland
University 'G. d'Annunzio', Chieti-Pescara (Ud'A), Italy
University of Skövde (HS), Sweden
Munster Technological University (MTU), Ireland
University of Rouen, Normandy (URN), France
'Gheorghe Asachi' Technical University of Iasi (TUIASI), Romania

Project URL: https://ingenium-university.eu/

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor the granting authority can be held responsible for them.

Table of contents

List of figures

Document information

Project number	101090042	Acronym	INGENIUM
Full title	INGENIUM Alliance European Universities		

Deliverable number: 3.3	Tittle	INGENIUM Platforms
Work package number: 3	Tittle	Digital INGENIUM
Tasks related:	Task 3.3 INGENIUM Education Platforms	
WP lead beneficiary	University of Crete	

Due date	M24 – Month 2024	
Delivery date	31/12/2024	
Status	Version: 1.6	Draft Final ☑
Type	R-Document, report ☐ DEC-Websites, patent filings, videos, etc. ☑ OTHER ☐	
Dissemination level	SEN-Sensitive ☐ PU-Public ☑	

Description of the deliverable (3-5 lines)	The document pertains to the creation of the internal network platform "Intra-Alliance" on the INGENIUM website, the Front Portal and the development of the INGENIUM Education Platform.
Key words	Intranet, Website, Intra-Alliance site, Front Portal, Learning Management System, joint e-learning platform

Document history

Date	Version	Prepared by	Description
30/10/2024	1.1	Vathianaki Agapi	First Draft
10/11/2024	1.2	Zouraris Manolis	Second Draft
14/11/2024	1.3	Bolanakis Nikolaos	Third Draft
18/11/2024	1.4	Anastasaki Maria	Fourth Draft
20/11/2024	1.5	Bolanakis Nikolaos	Fifth Draft
21/11/2024	1.6	Chalkiadakis Georgios	Sixth Draft
25/11/2024	1.6	Anastasaki Maria	Final Draft
02/12/2024	1.6	Chalkiadakis Georgios	Final Document
13/12/2024	1.7	Vathianaki Agapi	Final Document with Comments from WP3 members
28/11/2025	1.8	Vathianaki Agapi	Revision of the Final Document
28/11/2025	1.9	Bolanakis Nikolaos	Second Revision
28/11/2025	2.0	Anastasaki Maria	Third Revision
07/12/2025	2.1	Vathianaki Agapi	Fourth Revision
08/12/2025	2.2	Bolanakis Nikolaos	Fifth Revision
08/12/2025	2.3	Anastasaki Maria	Sixth Revision
08/12/2025	2.4	Chalkiadakis Georgios	Final Revision

Definitions & Acronyms

Acronym (in alphabetical order)	**Definition**
CMS	Content Management System
CRM	Customers Relationship Management
IEP	INGENIUM Education Platform
LMS	Learning Management System
SSO	Single Sign-On
SEO	Search Engine Optimization

EXECUTIVE SUMMARY

This document presents the deliverable D3.3 INGENIUM Platforms. It highlights the development and implementation of three key digital platforms that support the alliance's educational and collaborative goals: the e-Learning Platform INGENIUM Education Platform, the Intra-Alliance Site, and the Front Portal. These platforms are integral to achieve INGENIUM's vision of fostering innovation, inclusivity, and connectivity across the participating European universities.

The **e-Learning Platform-INGENIUM Education Platform** leverages Moodle as its Learning Management System (LMS), providing a user-friendly, flexible, and accessible solution for hosting learning and teaching activities. The platform supports various pedagogical approaches and offers digital tools that support partners' needs. Developed collaboratively by alliance members, the platform features integration with partner university accounts for authentication (via SAML2 and local accounts).

The **Intra-Alliance Site**, developed using WordPress, serves as a secure intranet for members to facilitate communication, collaboration, and resource sharing. Features include an events calendar, forums, Customers Relationship Management and Single Sign-On (SSO) for secure access. The design emphasizes usability, scalability, and cost-effectiveness to meet the needs of diverse users across partner institutions.

The **Front Portal**, also built with WordPress, functions as the public-facing website for the alliance. It promotes outreach and engagement by showcasing INGENIUM's activities through news, announcements, and newsletters. Advanced tools such as the Elementor Pro plugin enable customization, while plugins for security, Search Engine Optimization (SEO), and performance ensure reliability and efficiency.

This deliverable, details the rigorous methodology employed in platform development, including platform selection based on technical requirements, collaborative decision-making, and systematic installation and configuration. It outlines the main challenges associated with establishing a common authentication procedure for all partners, along with the mitigation measures implemented to address potential barriers. Comprehensive manuals and tailored guidance support students and staff, ensuring easy access to and effective use of the INGENIUM platforms and tools.

1. JOINT E-LEARNING PLATFORM: DEVELOPMENT OF THE INGENIUM EDUCATION PLATFORM

1.1. Description

The INGENIUM has developed an e-Learning Platform- INGENIUM Education Platform (IEP), which provides a digital education and training environment for all the institutions of the alliance. The IEP supports multiple pedagogical approaches from instructor-led courses to self-paced and blended formats.

Based on the Moodle Learning Management System (LMS), the IEP provides a user-friendly environment that promotes equity and inclusivity. The wide range of features for both students and teachers enhance collaboration and teamwork, customization of courses and integration with external resources and learning tools. The IEP fosters to bridge the gap between types of learning technologies among partners and promote professional development pathways for academics.

1.2 Methodology applied

1.2.1 Selection of Moodle Platform

The IEP should be flexible and accessible to all partner institutions, while considering the diverse needs, capabilities, and constraints of each member. The questionnaire circulated as part of the Deliverable 3.2 - “Digital Framework: Alliance digital state analysis” to all partners, intended to capture the current digital state of each institution, including the Learning Management System used by each institution.

The received answers have been discussed with the WP3 team consisted by IT members from each partner, that they identified Moodle Learning Management System (LMS)- https://moodle.org- as the most suitable option for the education platform of the Alliance.

Moodle is a versatile and widely used open-source learning management system. It empowers educators to create dynamic online learning environments, fostering collaboration and engagement among students. Moodle offers a variety of features, including course creation, content management, discussion forums, quizzes, assignments, and gradebooks. Its flexibility allows customization to suit various educational contexts, from K-12 classrooms to corporate training programs. Moodle's global community provides extensive support and resources, ensuring continuous improvement and innovation in online learning.

During the onsite WP3 meeting in Iasi, 21-22 of May 2024, the team of University of Crete presented the developed IEP and elaborated on the SAML2 authentication process proposed. They discussed possible constraints of a common authentication procedure and proposed mitigation measures to overcome such barriers. It was decided that for partners not yet able to proceed with SAML2 protocol, the WP3 team will create local accounts and ensure their access to IEP.

1.2.2 Moodle installation, configuration and support

The Moodle platform has been successfully installed and customized to meet partners' specific requirements. Through careful configuration, the LMS was tailored to provide a user-friendly and effective learning environment.

Key customizations include:

- The implementation of specific themes to enhance the overall user experience and create a visually appealing and engaging learning environment. The theme was configured to align with INGENIUM's media guidelines to achieve a coherent, distinctive, and contemporary visual identity (figures 1 & 2). The selected theme includes multiple accessibility features designed to accommodate a wide range of user needs (figure 1).
- Partners (students and staff) are able to access the IEP through their institutional accounts. SAML2 authentication protocol has been implemented in the IEP, enabling seamless and easy access. For partners (HKA & MTU) where SAML2 authentication is yet to be implemented, users can access the IEP with local accounts.
- INGENIUM Course Catalogue: The launch page of the IEP presents the INGENIUM Course Catalogue offers. Students, academics, lifelong learners and the wider public can view a range of available learning formats, courses, teaching resources and educational materials.

To ensure seamless access for all users, Education Platform tutorials and walkthroughs have been created to provide guidance for both students and teachers (figure 4). They provide comprehensive information and step-by-step procedures for students who want to explore the educational opportunities offered and for teachers who want to join and contribute to the INGENIUM pedagogical framework.

Both student's and teacher's manuals offer tailored guidance for partners who have not yet implemented the established authentication procedure of SAML2. In addition, the INGENIUM helpdesk provides customized support and ensures timely responses to all questions and inquiries.

Education Platform manuals are accessible from the Instructions-Manuals-Guidelines dedicate section in the launching page of INGENIUM website and in the footer of the Education Platform webpage.

***Figure 2**: Front page*

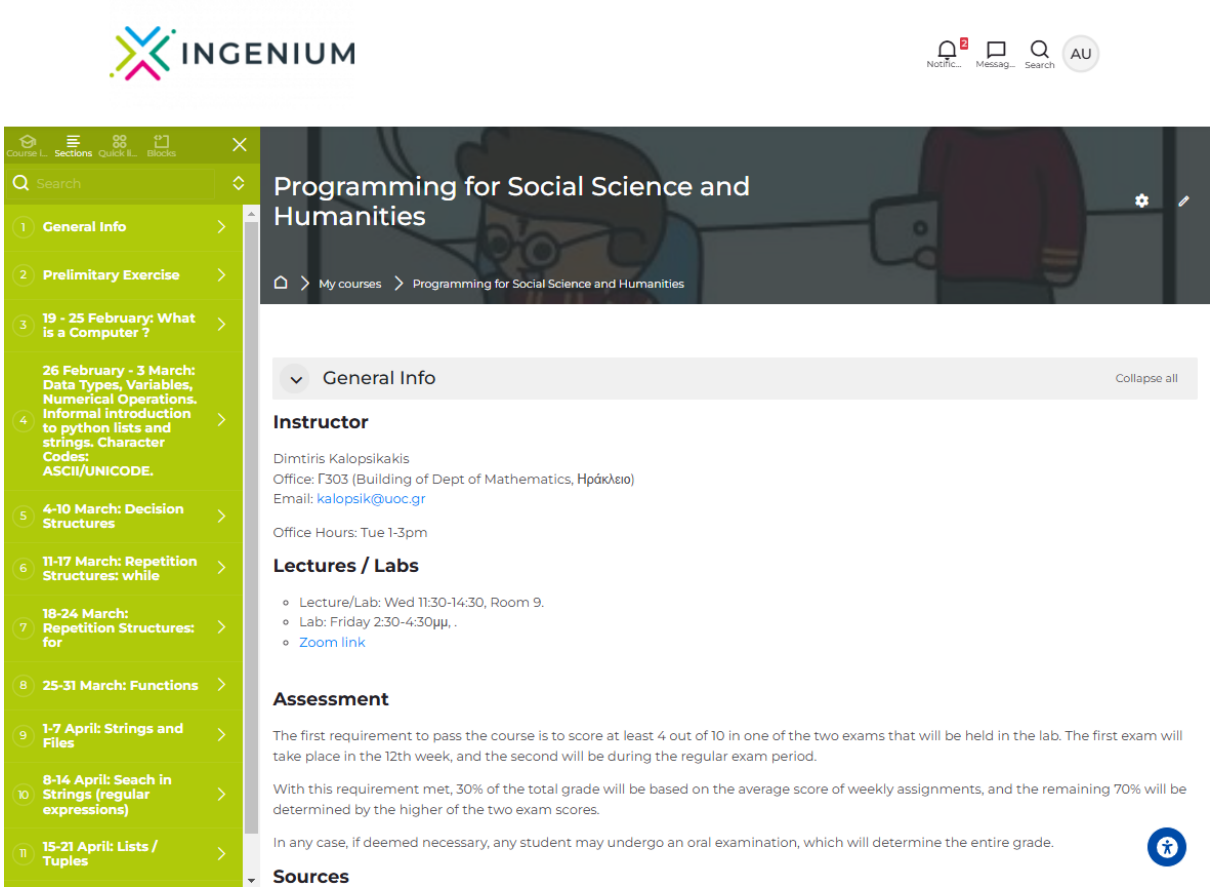

***Figure 3**: A course page*

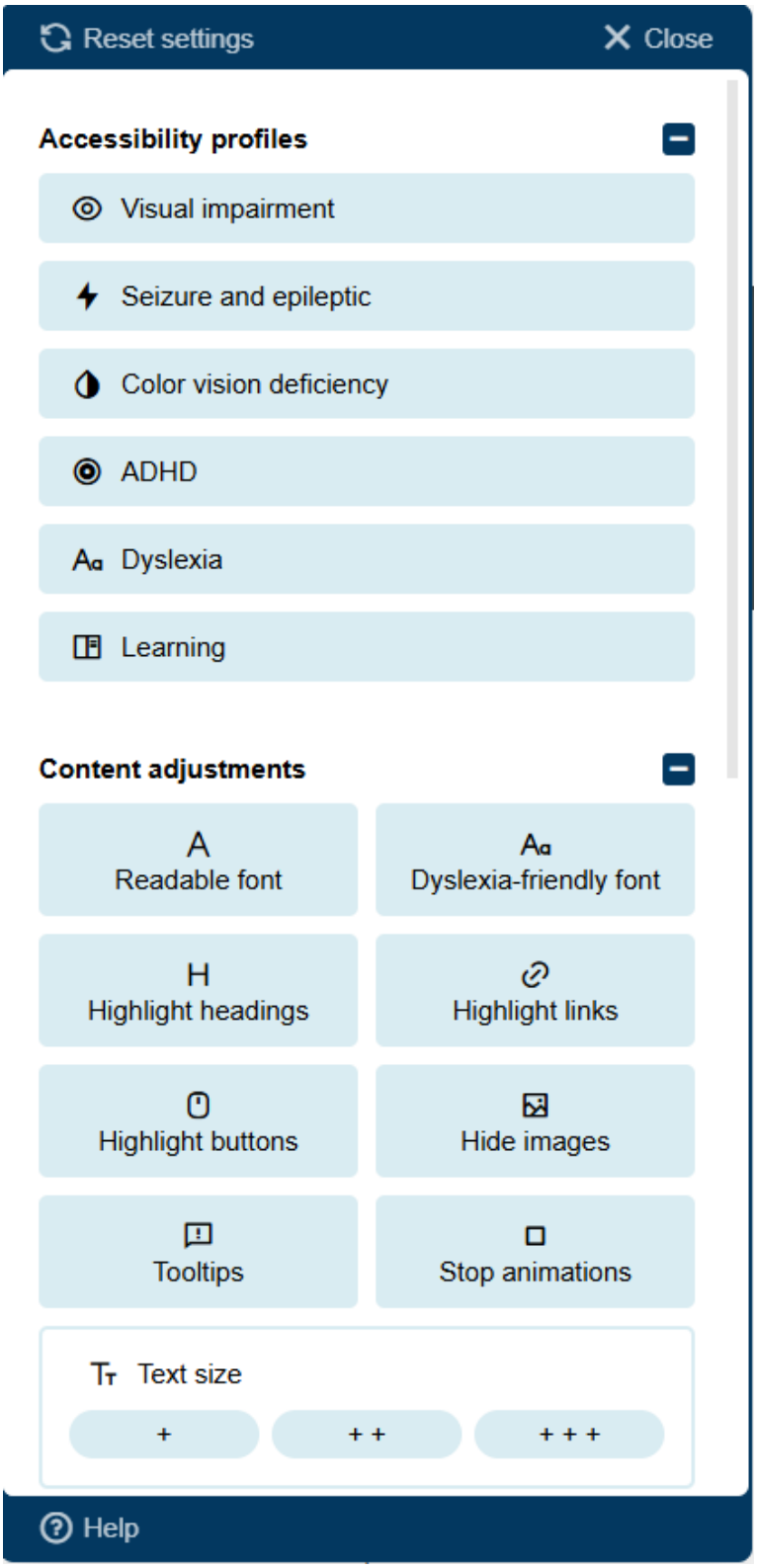

***Figure 4**: Accessibility tools*

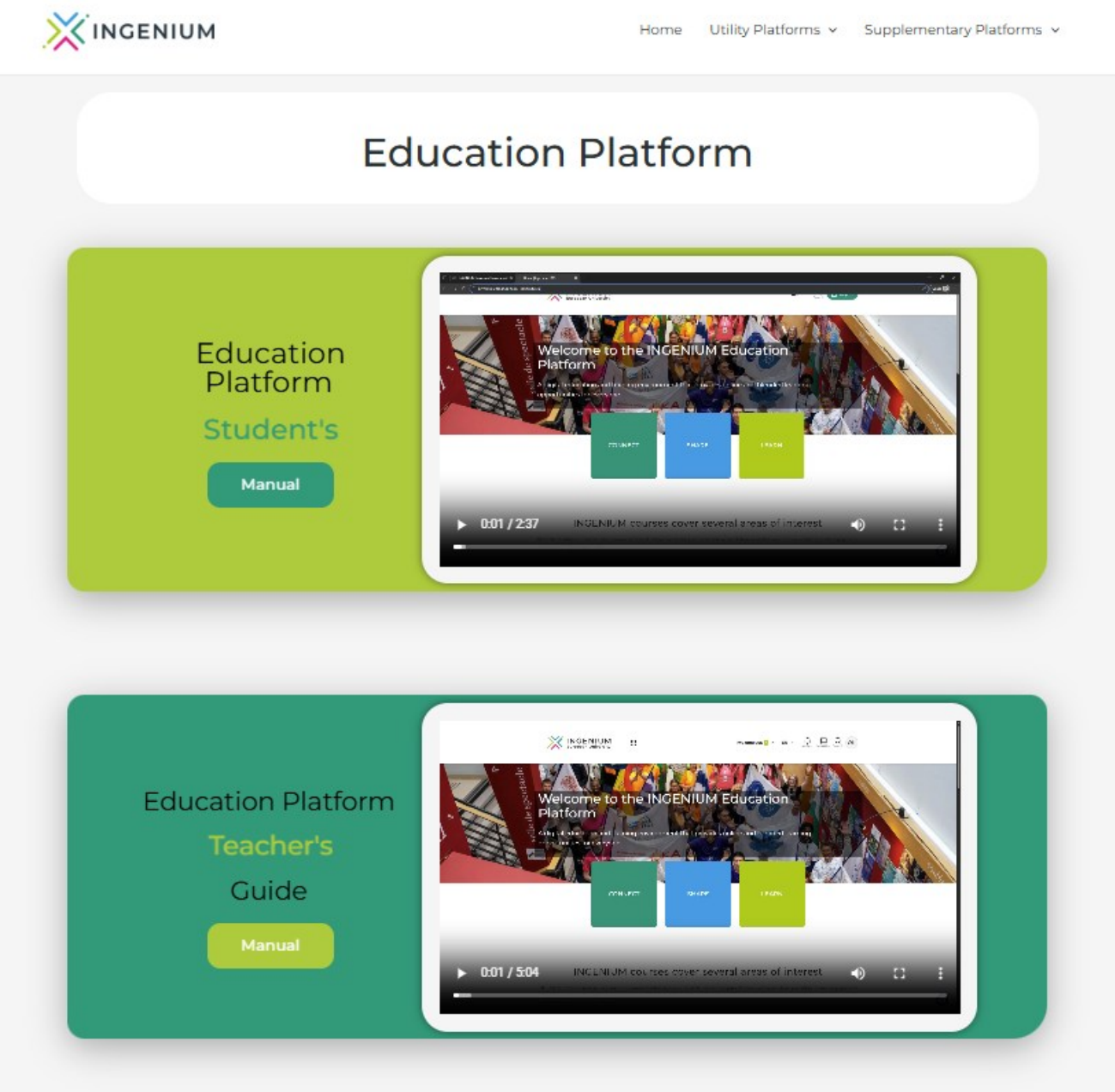

Figure 4: *Education Platform Instructions, Manuals and Guidelines*

1.3 Constrains faced

The main challenge faced during the process of developing the IEP was the log in procedure of users (students and staff) from all institution members. The SAML2 authentication protocol was proposed as employed in other INGENIUM Digital Services (e.g. INGENIUM Repository), that ensures that institutional members can access the IEP easily with their university credentials. However, this was not yet possible for two partners (MTU and HKA) as configuration is needed from their side. To overcome this difficulty and ensure that members from the above two institutions can easily access the platform, they will be provided with local

accounts for their users. Comprehensive manuals and guidance provide step-by-step procedures for all members, offering detailed information for all the INGENIUM institutions. With the support of the helpdesk facility, we promote equitable and inclusive learning and teaching across all ten universities.

1.4 Final Outcome

INGENIUM has achieved to launch a fully operational and accessible IEP: https://elearn.ingenium-university.eu/.
The IEP provides a collaborative space for all education and training opportunities offered from INGENIUM partners. A digital space that promotes innovation in pedagogy, learning technologies and teaching practices.

The IEP was developed and operational before the official submission date (M24) and hosted an INGENIUM course (Digital Wellbeing by MTU). Offering a course to a wide audience (approx. 70 Users) allowed to identify challenges, limitations, and areas for improvement.

A dedicated communication and dissemination campaign will be launched to enhance the platform's visibility and communicate its full range of offerings to students and teachers. It will promote the available courses and benefits of a shared digital learning and teaching space across the ten partner institutions.

2. INTRA-ALLIANCE SITE

2.1. Description

The INGENIUM Intra-Alliance Site is an internal web platform (Intranet) that facilitates direct communication among members and provides access to all developed services and tools for the INGENIUM Alliance.

Members of INGENIUM can access via local accounts and SSO Integration. The INGENIUM Intra-Alliance hosts the below facilities:

(a) Forum,
(b) Events calendar
(c) Webmail
(d) Repository
(e) Helpdesk
(f) Customers Relationship Management (CRM)

2.2 Methodology applied

2.2.1 Choosing a platform to use

For the development of the intranet site, WordPress has been selected. WordPress offers the flexibility and functionality needed to build a secure and user-friendly intranet environment. The selection of WordPress is based on the following key factors:

1. **Ease of Content Management** - WordPress excels as a content management system (CMS), making it easy to manage and organize internal documents, announcements, and resources. The platform's straightforward dashboard allows administrators to quickly upload, edit, and share content with team members.
2. **Customization for Intranet Needs** - With an extensive library of plugins and themes, WordPress can be tailored to meet the specific requirements of an intranet site. Features such as user authentication, document sharing, and team collaboration tools can be implemented seamlessly.
3. **User Roles and Permissions** - WordPress provides robust support for managing user roles and permissions. This ensures that sensitive information is accessible only to authorized personnel while maintaining ease of use for all employees.
4. **Integration with Existing Systems** - The platform's ability to integrate with tools like Microsoft Office 365, Slack, and Google Workspace makes it an excellent choice for intranet development. These integrations enhance productivity by creating a centralized hub for communication and resources.
5. **Scalability and Maintenance** - As the organization grows, the intranet can be expanded to accommodate additional users and functionalities. WordPress's modular architecture ensures that new features can be implemented without disrupting existing workflows.
6. **Cost-Effectiveness** - WordPress is a cost-efficient solution, especially when compared to custom-built intranet platforms. Its open-source nature, coupled with a wide range of free and premium plugins, reduces development costs while maintaining high quality. Sustainability and human resource costs are always critical considerations for open-source products. WordPress addresses these challenges in two keyways: (a) by offering ease of consistent and secure updates / upgrades, and (b) through its vast and active community, which includes companies, institutions, and independent developers. Today, at least half of all websites are powered by WordPress.

By choosing WordPress for the intranet, the alliance benefits from a reliable, scalable, and customizable solution that meets both current and future needs. This platform ensures seamless collaboration, streamlined communication, and centralized resource management, fostering a more connected and efficient workplace.

2.2.2 Installation and configuration

After downloading the installation files for the management system, they were uploaded to the server designated for the implementation of the Intranet. The database was then created, and using the installation wizard, the database was successfully integrated with the content management system.

Key considerations for the theme selection included:

1. **Clarity and usability:** Ensuring that users could easily navigate the site, find the information they need, and avoid complex menus.
2. **Forum functionality:** Enabling members to communicate directly with one another.
3. **Shared calendar:** Allowing each work package to be informed of upcoming events and participate as needed. The calendar was also equipped with an event export feature.

4. **Quick access to essential applications:** Including Email, Helpdesk, and Repository tools.
5. **CRM integration:** Providing detailed information about the members of each work package.
6. **SSO integration:** Implementing Single Sign-On to ensure restricted and secure access to the Intranet.

2.3 Final Outcome

The Intra-Alliance Site is functional, and the access is through the INGENIUM official Website. Alliance members can access it either with their institutional emails (SSO procedure) or through local accounts.

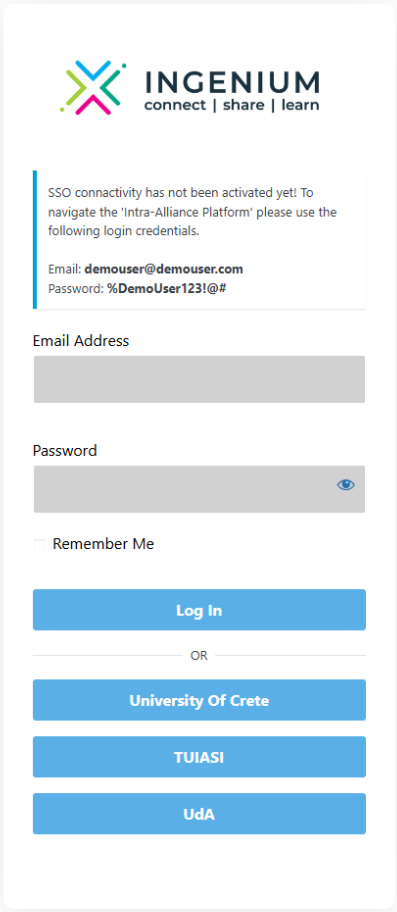

Figure 5: *Login Page of Intra-Alliance Website*

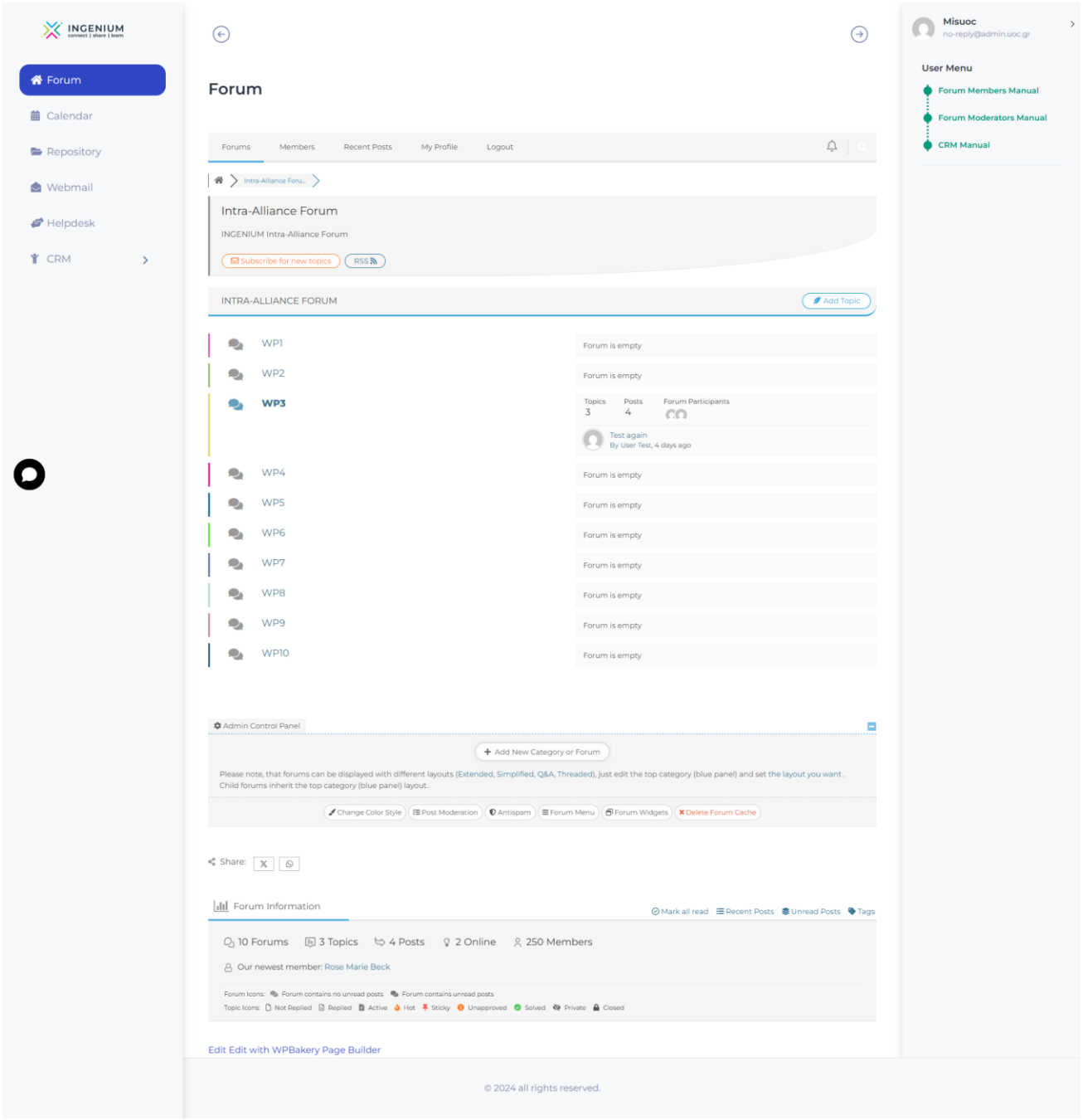

***Figure 6**: Forum Page*

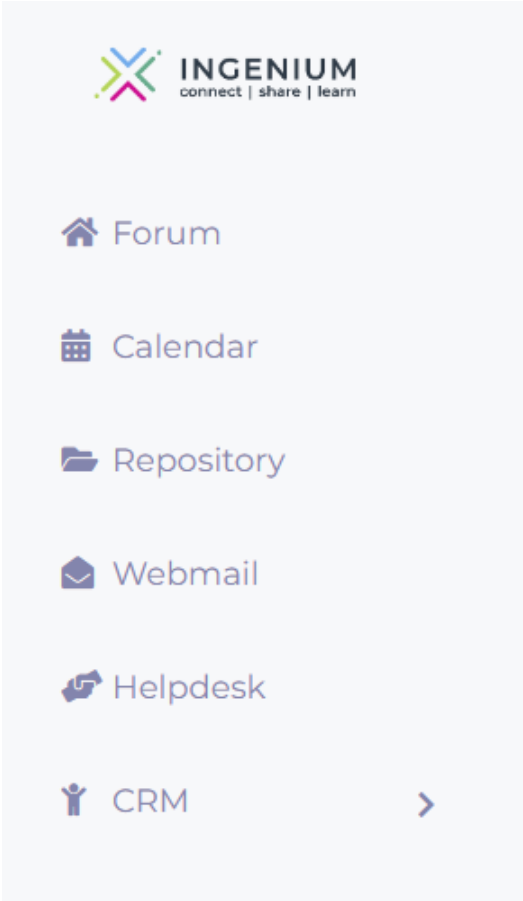

Figure 7: *Main Menu of Intra-Alliance*

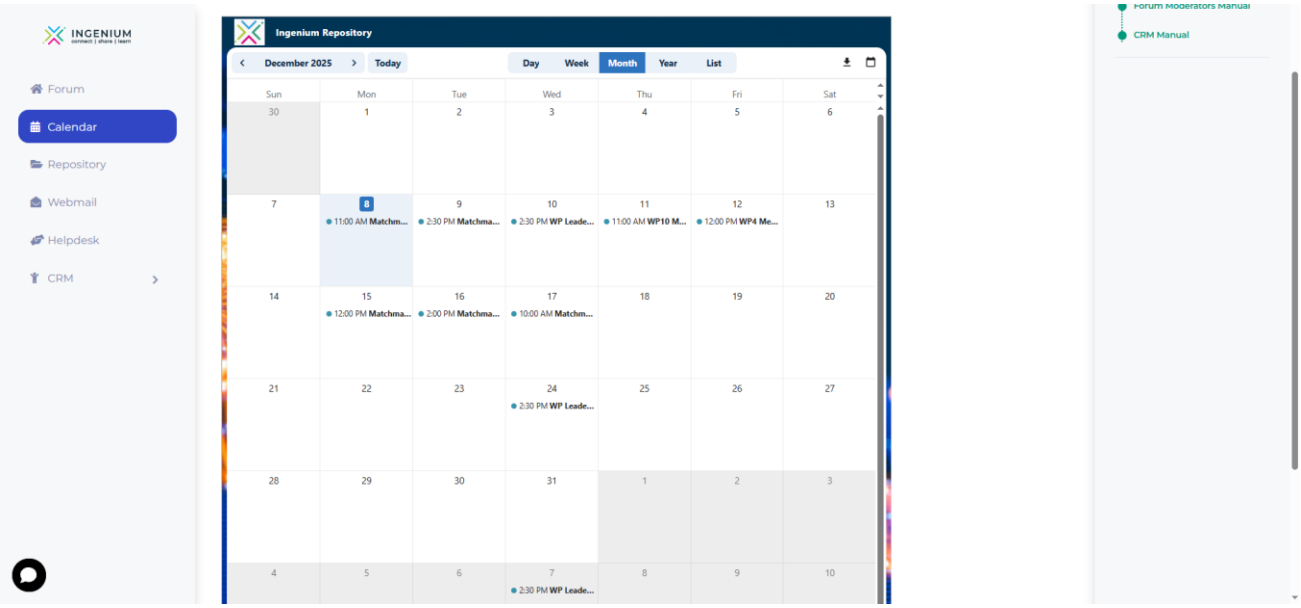

Figure 8: *Calendar View*

3. FRONT PORTAL

3.1 Description

The official INGENIUM website promotes the activities of the Alliance and shares its vision and its educational and societal objectives. It communicates collaborative initiatives, mobility opportunities and joint projects to a wide community. Students, academics, staff, and stakeholders can easily find the information they need and stay connected by subscribing to the newsletter or following INGENIUM on social media.

3.2 Methodology applied

3.2.1 Choosing a platform to use

Selecting the right platform for the Official website is a critical decision that impacts the functionality, usability, and scalability of INGENIUM's digital presence. For this project, WordPress has been chosen as the platform to develop the front portal. WordPress stands out for several reasons:

1. **Ease of Use** - WordPress is renowned for its user-friendly interface, which allows both technical and non-technical users to create and manage websites efficiently. The platform's intuitive dashboard makes content creation, editing, and updating straightforward.
2. **Flexibility and Customization** - WordPress offers thousands of themes and plugins, enabling a high degree of customization. This flexibility ensures that the website can meet specific design and functionality requirements, such as interactive elements, multimedia integration, and advanced search features.
3. **Scalability** - As the project evolves, WordPress provides scalability to accommodate increasing traffic and additional features. Its modular nature allows new functionalities to be added seamlessly, ensuring that the platform grows alongside user needs.
4. **Community and Support** - With a vast community of developers and users, WordPress provides access to extensive documentation, forums, and support networks. This ensures that challenges can be quickly addressed, and the development process remains efficient.
5. **Integration Capabilities** - WordPress can integrate with various tools and platforms, including CRM systems, e-commerce solutions, and analytics tools. This capability aligns with the project's goal of creating a dynamic and interconnected digital ecosystem.

By leveraging WordPress, the project benefits from a robust, versatile, and well-supported platform, ensuring a professional and engaging front portal for users. This choice also aligns with the broader objectives of accessibility and long-term maintainability.

3.2.2 Installation and configuration

The installation and configuration of WordPress for the front portal followed a systematic and structured approach to ensure a stable and functional platform. This process was divided into distinct stages, each designed to align with best practices and meet the specific needs of the project.

1. Environment Setup

- A suitable hosting environment was selected, offering robust performance, security, and scalability.
- A domain name was registered, and DNS settings were configured to point to the hosting server.
- Necessary server requirements for WordPress, including PHP, MySQL/MariaDB, and Apache/Nginx, were verified and set up.

2. WordPress Installation

- The latest version of WordPress was downloaded from the official website and uploaded to the server.
- A database was created using the hosting provider's control panel or a database management tool like phpMyAdmin.
- The WordPress installation wizard was run, during which the database connection details, site name, and administrative credentials were configured.

3. Theme Selection and Customization

- A suitable theme was selected to align with the portal's design requirements, focusing on responsiveness and user experience.
- Customizations were applied using the WordPress Customizer and, where necessary, by modifying the theme's code (e.g., CSS and PHP files).
- The elementor Pro plugin was integrated to provide advanced drag-and-drop design capabilities.

4. Plugin Installation and Configuration

- Essential plugins were installed to enhance functionality, including:
- Security plugins to protect the site from threats (e.g., Wordfence, Sucuri).
- SEO tools to optimize content for search engines (e.g., Yoast SEO, Rank Math).
- Caching and performance plugins to improve loading speed (e.g., WP Rocket, LiteSpeed Cache).
- Each plugin was configured to align with the specific requirements of the portal.

5. Content Structure and Navigation

- A logical content hierarchy was created, including main pages, subpages, and categories.
- The navigation menu was structured to provide intuitive access to the site's content.
- A homepage layout was designed to serve as an engaging entry point for visitors.

6. Testing and Optimization

- The site was thoroughly tested for functionality, compatibility, and responsiveness across multiple devices and browsers.
- Adjustments were made based on testing results to enhance user experience and ensure reliability.

7. Deployment

- After final adjustments, the site was deployed to the production server.
- A backup and maintenance schedule were established to safeguard the site and ensure its long-term stability.
- This structured methodology ensured the creation of a well-configured and robust WordPress-based front portal, ready to deliver engaging and efficient user experience.

3.3 Final Outcome

The official INGENIUM Website (https://ingenium-university.eu/) is the main tool for the dissemination of INGENIUM Alliance, its activities, outcomes and communication of its news and events. As the INGENIUM Alliance continues to grow and progress, the website will evolve to effectively meet INGENIUM's needs.

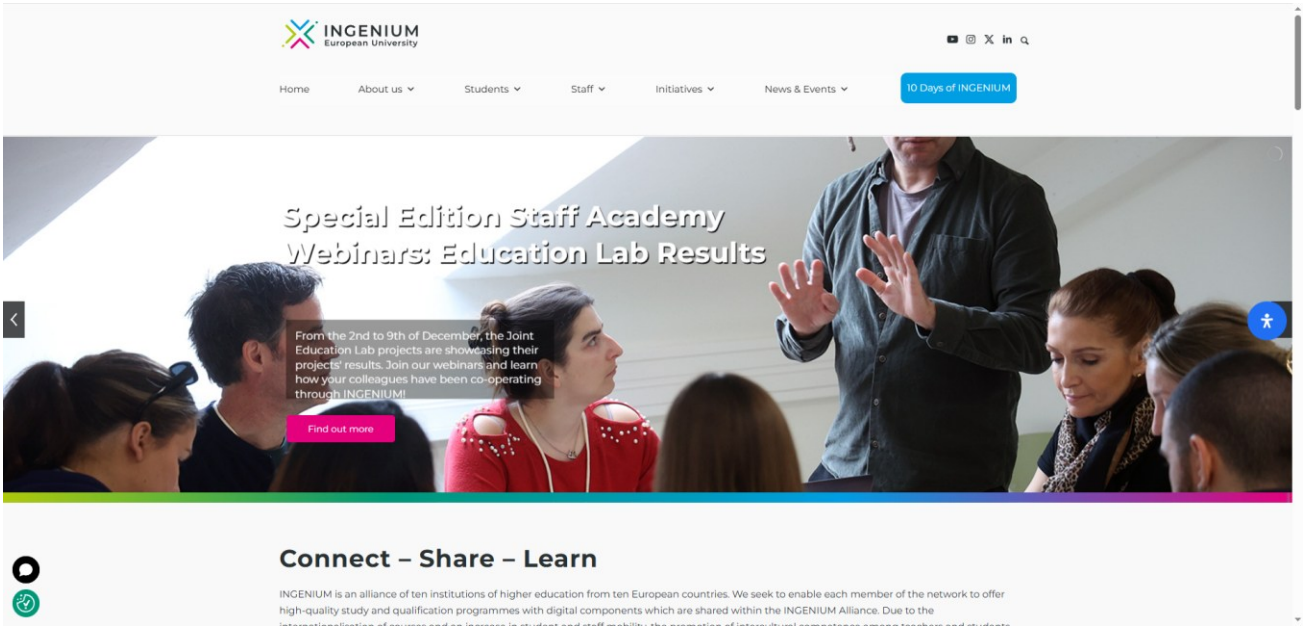

Figure 9: *Main Website*

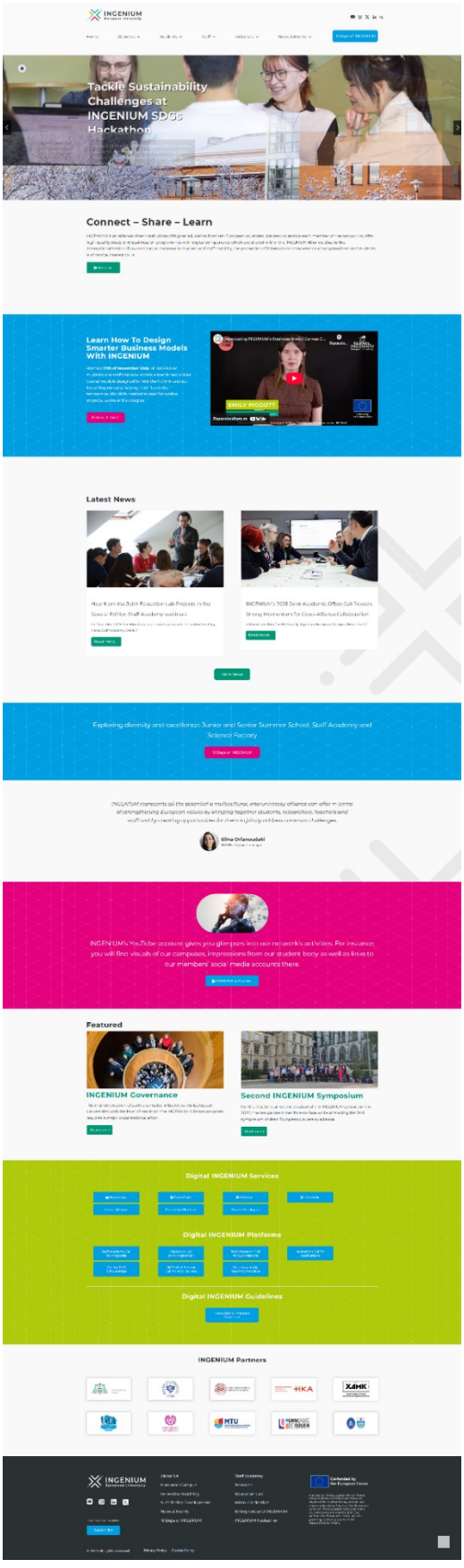

***Figure 10**: Full View of Website*

CONCLUSION

The successful development and implementation of the three core platforms- Education Platform, Intra-Alliance Site, and Front Portal— mark a significant milestone in the INGENIUM Alliance's mission to enhance digital collaboration, learning, and outreach across member universities. These platforms provide a robust digital infrastructure to support the alliance's strategic objectives, fostering innovation and inclusivity in higher education.

The INGENIUM Education Platform, offers accessible and inclusive digital environment for a wide range of educational and training activities. Its integration with existing university authentication systems and customizable features ensures it meets the diverse needs of the INGENIUM partners while promoting collaboration and resource sharing.

The Intra-Alliance Site, designed as a secure and user-friendly intranet, enhances internal communication, resource management and enabling seamless coordination among alliance members. The Front Portal serves as a vital outreach tool, promoting visibility and engagement with stakeholders through its intuitive design and dynamic content.

The main challenge of authentication integration and user support have been successfully addressed. The proposed mitigation measures together with the collaborative efforts of the alliance’s members ensures the sustainability of the developed platforms and digital tools. These platforms play a pivotal role in supporting INGENIUM’s educational and collaborative activities, facilitating the exchange of knowledge, and strengthening ties within the alliance and the broader academic community.

These platforms will play a crucial role in enhancing collaboration, supporting educational innovation, and fostering engagement within and beyond the alliance.

Annex 1. Matrix to be used by partners to list and to monitor the progress of their key institutional priorities related to the deliverable.

Institutional transformation objectives	• Integrate the university's website with the INGENIUM website -portal, establishing a cutting-edge, professional, and intuitive digital platform that showcases the institution's mission, ensures equitable accessibility, and offers an engaging, seamless experience for all users. • Establish a unified and efficient intranet platform that enhances internal communication, streamlines access to resources and updates for staff, and provides a foundation for expanding tailored functionalities to meet the needs of students. • Expand the university's academic offerings by introducing flexible, high-quality distance learning courses that cater to students unable to attend on-campus classes, promoting accessibility, inclusivity, and educational equity.
Barriers faced to achieve those objectives at the institutional level	Achieving the objectives is challenged by technical organizational barriers, requiring IT dpts collaboration to ensure successful implementation.
Potential Actions to be taken at the institutional level	• Adjusting the university's website to align with the INGENIUM website, to create a modern, professional, user-friendly and dynamic online portal, that highlights our mission, enhances accessibility, and delivers professional digital experience. • Implementing a comprehensive intranet system to integrate with the university's internal eco-system. Providing staff with a centralized platform for resources and updates, with subsequent expansion to include tailored functionalities for students. • Introducing distance learning courses to provide flexible, high-quality • educational opportunities for students who are unable to attend on-campus classes, ensuring accessibility and inclusivity in academic offerings.
Actions to be taken at other levels	
Responsible(s) within the instituion	• UoC Rector • UoC Vice-Rector of development, international relations and outreach • UoC INGENIUM Project Coordinator • Faculty, Staff
Expected timeline and key milestones	

Annex 2. Questionnaire: INGENIUM Education Platform (IEP)

Questionnaire: INGENIUM Education Platform (IEP)

Section: General Information

1. First Name
2. Last Name
3. University
4. Position in the institution

Section: Prerequisites / Needs for my Institution

5. My Institution will produce/upload in the IEP:
   (multiple choice)

   *A **module** is a single component, it can be a document, PDF, Powerpoint, SCORM presentation, Video, or Assessment you create, and it can be distributed alone or as part of a course.

   *A **course** is made of one or more modules packed together.

   *A **program** is consisted of several courses.

   a. Modules* / single activities
   b. Courses**
   c. Program***
6. Estimation of number of modules/courses to upload until December of 2025
7. Estimation of participants per classroom for your module/course
8. It will need to be (per course):
   (multiple choice)
   a. Asynchronous (activities without videoconference)

   b. Synchronous (using video/ videoconference)
   c. Both
9. If Yes please write your proposal
10. Do you think there is a need for a default set of tags?
    a. Yes
    b. No
    c. Other
11. If Yes please write your proposal
    a. Yes
    b. No
12. If Yes, provide more information (e.g software used)
    (Any proposal will be examined to test its compatibility with the LMS)
13. The courses/modules that your institution will produce will be available:
    (multiple choice)

a. Available to all INGENIUM Students
b. Available to all INGENIUM Staff (training of trainers or staff seminars, etc)
c. Available to Certain INGENIUM Students
d. Available to Certain INGENIUM Staff (training of trainers or staff seminars, etc)
e. Open (without enrollment)

14. How do you propose to categorise the courses/modules offered in the IEP? (multiple choice)
a. By relevant subject area
b. By relevant WP
c. By University / partner
d. By certification/ accreditation process (awarding certificate courses, badges, ECTS, etc.)
e. Other (specify)

15. Your modules/ courses:
(multiple choice)
a. Are already created on other platforms and need to be transferred. Please state the LMS.
b. Are going to be created on the INGENIUM LMS

16. IEP first page
Proposal: The first page should strictly focus on course information (and not other INGENIUM events, etc). That could be:

- Promoted courses / New courses
- Selection of course categories (open, seminars, short or full semester courses, other) – By clicking an option you can see the topics and then relevant courses.
- Course search: According to tags / keywords.
- Also, there will be instructions regarding enrollment to courses, and other staff.

Please, write your comments on the proposed structure of the IEP first page.

17. Do you need any technical support to create courses? If so, please let us know if there are any specific topics you would like help with.

Please write any comments you would like to add about the INGENIUM Education Platform.