

D1.2. ToRs for the development of INTENSE e-services

The structure of the INTENSE e-services is to incorporate the following constituents:

- INTENSE e-learning (Moodle-based) at the Open Education Platform
- The Massive Open Online Courses / MOOCs (Chamilo-based)
- INTENSE e-science modules
- INTENSE PhD portfolio

The necessity to divide the courses to be developed for Moodle and Chamilo platforms is conditioned by the difference in their functionality and adjustment options.

Below is a list of main features of both platforms:

Chamilo	Moodle
<p>General Info</p> <p>Chamilo is a Learning Management System that is designed to provide a cost-effective but powerful learning solution for users.</p>	<p>General Info</p> <p>A free LMS that enables educators to create their own private website filled with dynamic courses for learning anytime, anywhere.</p>
<p>General user satisfaction: 100%</p>	<p>General user satisfaction: 98%</p>
<p>Pricing Info</p> <p>Chamilo is offered for free on an open source license.</p>	<p>Pricing Info</p> <p>Moodle is offered in a variety of pricing plans, including a free version. If you want more functionalities, you can contact the vendor for a customized quote.</p>
<p>List of Features</p> <ul style="list-style-type: none"> • Free, open-source solution • Multi-lingual • Collaborative and interactive learning environment • Easy access to course content • Online editing tool • Can be integrated with existing IT infrastructure • Gamification options 	<p>List of Features</p> <ul style="list-style-type: none"> • All-in-one calendar • Bulk course creation and easy backup • Collaborative tools and activities • Convenient file management • Customizable site design and layout • Detailed reporting and logs • Embed external resources • Manage user roles and permissions

The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

<ul style="list-style-type: none"> • Mobile videoconferencing • SMS notification 	<ul style="list-style-type: none"> • Multilingual capability • Multimedia integration • Multiple progress tracking options • Notifications and automatic alerts • Outcomes and rubrics
<p>Integrations</p> <ul style="list-style-type: none"> • BigBlueButton • OpenMeetings • LibreOffice • Prestashop • Softaculous • Wiris 	<p>Integrations</p> <p>Moodle can be integrated with a range of other programs to meet the different needs of a website.</p>
<p>Available Devices</p> <ul style="list-style-type: none"> • Windows • Android • iPhone/iPad • Mac • Web-Based • Windows Mobile 	<p>Available Devices</p> <ul style="list-style-type: none"> • Windows • Android

Source: <https://comparisons.financesonline.com/chamilo-vs-moodle>

1. INTENSE e-learning (Moodle-based) at the Open Education Platform

The INTENSE Open Education Platform will be available at <http://dl.intense.network/>.

The main advantages of the Moodle system:

- The system is designed with regard to the achievements of modern pedagogy with an emphasis on interaction between students and their discussion.
- Can be used for both distance and hybrid learning.
- Has a simple and efficient web-interface.
- The design has a modular structure and is easily modified.
- Students can edit their accounts, add photos and change personal data and details.
- Each user can specify their local time, and all dates in the system will be shown for him/her in local time.
- Diverse course structures are supported: ‘calendar’, ‘forum’ and ‘thematic’.
- Each course can be additionally protected with a code word.
- Large set of component modules for courses - Chat, Poll, Forum, Glossary, Workbook, Lesson, Test, Questionnaire, Scorm, Survey, Wiki, Workshop, Resource
- Almost all typed texts can be edited by the built-in WYSIWYG RichText editor.
- All grades can be collected on one page or as a file.

The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

- A complete report on user login and operation is available, with graphs and details of work on various modules.
- It is possible to set up e-mail circulation of news, forums, assessments and comments of teachers.

The Moodle system will include a number of additional plug-ins. *Moodle plugins directory* can be found at: <https://moodle.org/plugins/>

2. The Massive Open Online Courses / MOOCs (Chamilo-based)

The Chamilo distance learning system <https://chamilo.org/en/chamilo/> proved the most suitable free media for creating MOOCs, as it enables development of individual learning paths.

The Chamilo project was founded in early 2010 as a result of a fork from another free software e-learning platform, meant to protect the fundamental openness and free character of this LMS. It inherits indirectly from the Claroline project, first published in 2001. Although very little parts of the code of Chamilo still reflect that ancient history, the project philosophy never really changed: Chamilo is still one of the (if not *the*) easiest e-learning platform to use, making it easier for educators all around the world to digitalize and formalize their course content, and easier for all to get access to accessible education, improving the world's social and economic growth.

Prerequisites in Chamilo learning paths are available at:

https://www.youtube.com/watch?v=48Wf-87BVQs&ab_channel=JurgenGaeremyn

10 new features of Chamilo LMS:

- *Positioning test.* With this feature, you can test the level of your students before starting the course and after concluding it. Once you have configured an initial and a final test, you can see the results and compare them on a radar chart.
- *Post-test signature.* This new Chamilo version includes a feature (through a plugin) called "Tests with signature" which allows your learners to sign an online exam once it's completed. The goal of this feature is to let learners validate officially the exams they just passed, usually for security (validation this is the right user) or regulatory purposes (the learner confirms (s)he's taken the test).
- *Dynamic fields in course intro.* You can now personalize the course introduction in any course by using dynamic fields that will be replaced by the user's firstname, lastname, etc.
- *Replace documents.* You can now change a document "in-place", allowing you to correct content without altering users' past progress in the course.
- *Top 10 wrong questions.* Shows a report of the questions where most learners gave the wrong answer. These allow you to either detect an erroneous question or an item of the course that has to be improved.
- *Deny access instantly.* Enable a stricter validation of disabled users. Without this option, disabled users are only disabled on their next connection. With this option enabled, as soon as users are disabled, their access to any new page is blocked (configuration setting 'security_block_inactive_users_immediately').

The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

- *Time per question in tests.* Enables the use of time per question limits in the tests tool. This is particularly useful for tests in the aviation or driving sectors, where you want to control precisely how much time any user can spend on one specific question at a time (enabling this feature requires DB changes and enabling configuration setting 'allow_time_per_question').
- *Duplicate content from sessions.* This new action in the sessions list allows you to copy a session with its course-session content into another session. This considerably speeds up the session duplication process if content created in the session matters (requires enabling configuration setting 'duplicate_specific_session_content_on_session_copy').
- *Test results to PDF.* On the test results page, let students download a PDF recount of their exam. This add to accountability for the platform holders and gives additional confidence to users that their answers were properly saved (requires enabling the configuration setting 'quiz_results_answers_report').
- *Block image copy-paste in WYSIWYG.* Prevent users from copy-pasting images in CKEditor (using base64 format by default), generating huge space allocations in the database, which can then complicates the copy of courses. Users should upload images, then re-use them, for maximal efficiency (configuration setting 'ck_editor_block_image_copy_paste').

The INTENSE MOOC Platform will be available at <http://mooc.intense.network/>.

3. INTENSE e-Science Modules

The INTENSE e-science modules will aim to provide assistance to research trainees with their research through shared access to laboratory facilities, research databases, libraries, models and analytical tools.

The INTENSE e-science module will be accessed via the INTENSE Open Education Platform.

E-science is to support the complete scientific lifecycle: experimental design, data collection and analysis to publication.

The e-science modules will contain Methodological Guidelines on Research and Supervision, as well as links to research databases, libraries, real life observations, research and study versions of models and analysis tools, etc.

The IT platform, which will be used for the implementation of e-science modules, is ThingsBoard <http://e-science.intense.network/>.

ThingsBoard <https://thingsboard.io/> is an open-source IoT (the Internet of Things) platform for data collection, processing, visualization, and device management. It enables device connectivity via industry standard IoT protocols - MQTT, CoAP and HTTP and supports both cloud and on-premises deployments. ThingsBoard combines scalability, fault-tolerance and performance so you will never lose your data.

The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

4. INTENSE PhD Portfolio

The PhD portfolio is needed both for PhD students and their supervisors.

It will have several functions: control of students' performance, experience exchange, facilitation of joint research and advisership, promotion of INTENSE Network, etc.

The Portfolio will have the following structure:

- information on doctoral student
- general information on studies
- information by academic years on status of research work, courses completed, in-service training abroad, conferences, seminars, performed teaching, research projects, articles published, activity plans etc.

The PhD Portfolio will be available via the INTENSE Open Education Platform. It was decided to be implemented as a Data Base element located at the home page.