Co-funded by the Erasmus+ Programme of the European Union

R4.A1

[INVITE_Deliverable_4.1 final]

Author(s):	**[Vidakis Nikolas (HMU), Papadakis Alexandros (HMU), Logothetis Ilias (HMU), Chatzea Vasiliki Eirini (HMU), Stavrakaki Marianna (HMU)]**
Editor(s):	**[Vidakis Nikolas (HMU), Papadakis Alexandros (HMU), Logothetis Ilias (HMU), Chatzea Vasiliki Eirini (HMU), Stavrakaki Marianna (HMU)]**
Responsible Organisation:	**[Hellenic Mediterranean University)HMU)]**
Version-Status:	**Final**
Submission date:	**31/01/2025**
Dissemination level:	**PU**

This project has been funded with the support of the Erasmus+ programme of the European Union

Document factsheet

Project Number:	**KA220-HED-2021-006**
Project Acronym:	**INVITE**
Project Title:	**Developing Competences and Innovative Designs for International Virtual and Blended Modalities**
Title of: Document	**R4.A1 – [[INVITE_Deliverable_4.1 final]]**
Output:	**R4.A1 – An Open Interactive Digital Ecosystem (INVITE-EcoDigSys) in the form of an educational platform**
Due date according to contract:	**31/12/2023**
Editor(s):	**[Vidakis Nikolas (HMU), Papadakis Alexandros (HMU), Logothetis Ilias (HMU), Chatzea Vasiliki Eirini (HMU), Stavrakaki Marianna (HMU)]**
Contributor(s):	**[Vidakis Nikolas (HMU), Papadakis Alexandros (HMU), Logothetis Ilias (HMU), Chatzea Vasiliki Eirini (HMU), Stavrakaki Marianna (HMU)** **Alice Barana and Marina Marchisio Conte (University of Torino)** **Georgios Triantafyllidis and Ania Hildebrandt (Aalborg University)** **Kelly Henao, Daniel Samoilovich (Columbus Association)]**
Reviewer(s):	**All Partners**
Approved by:	**All Partners**
Abstract:	The INVITE Open Interactive Digital Ecosystem/Platform supports the development/creation and implementation/runtime of international virtual and blended learning modalities. The platform foster collaboration and innovation by creating a repository of open-access materials. These resources empower educators and learning designers to craft impactful educational experiences. Furthermore, the Platform host hackathons that bring together stakeholders to design solutions addressing pressing global challenges, such as the Sustainable Development Goals (SDGs) and the Green Agenda. By offering these resources under an open commons license, the platform ensures widespread accessibility and adaptability, enabling users to organize hackathons, training sessions, or other collaborative events. The INVIRE Hackathon Platform is tailored to a diverse audience, including teachers, learning designers, educational innovators, and students. The platform encourages active participation from these groups to either create new ideas or critically evaluate existing ones for international blended and virtual projects.
Keyword List:	Open Interactive Digital Ecosystem, Platform, Hackathons, open-access material, Green Agenda, Education

Consortium

	Name	Short Name	Country
1	AALBORG UNIVERSITY	AAU	Denmark
2	HELLENIC MEDITERRANEAN UNIVERSITY	HMU	Greece
3	UNIVERSITA DEGLI STUDI DI TORINO	UNITO	Italy
4	COLUMBUS PARTNERS	CP	France

Revision History

Version	Date	Revised by	Reason
1	**31/12/2023**	**ALL partners**	**Completion of Platform Development**
2	**31/01/2025**	**ALL partners**	**Final Submission**

Statement of originality:

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

Disclaimer

This project has been funded with support from the European Commission. This deliverable reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Table of Contents

List of Figures

List of Tables

List of Abbreviations

The following table presents the acronyms used in the deliverable in alphabetical order.

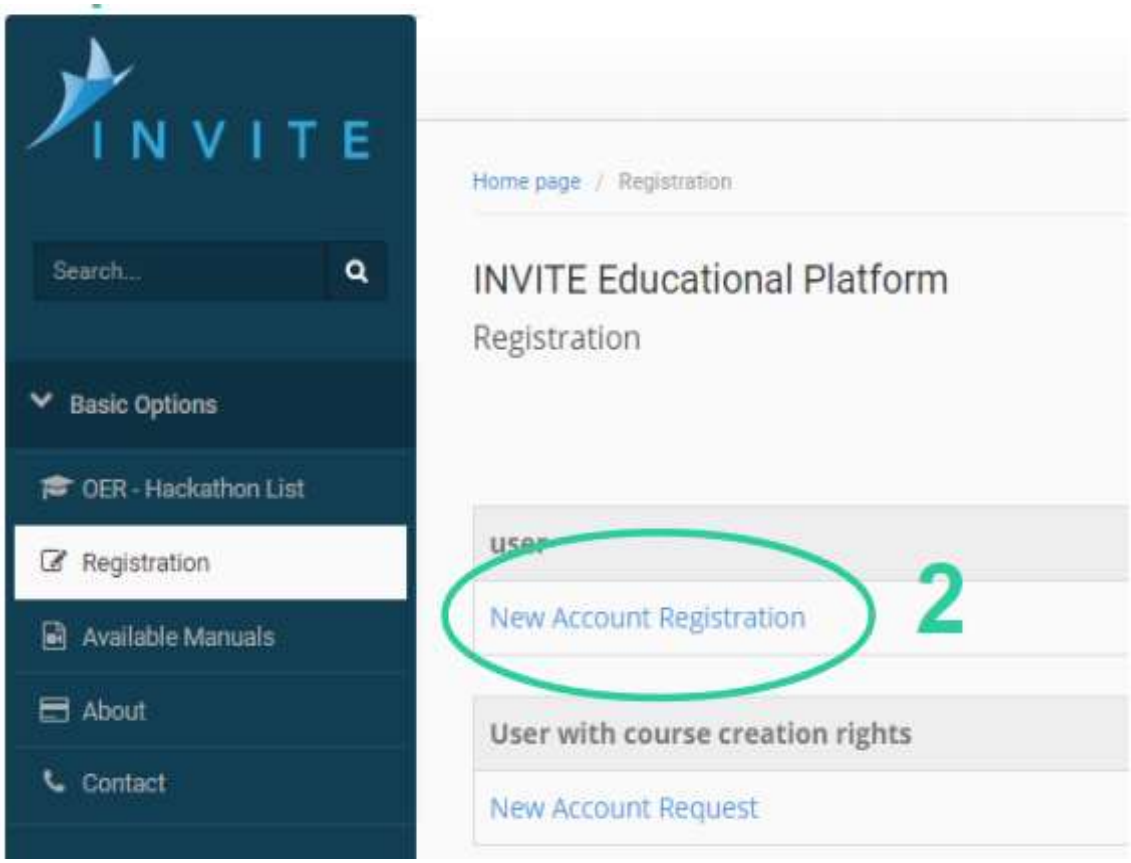
Abbreviations	Description
ADDIE	Analysis, Design, Development, Implementation, and Evaluation
SUS	System Usability Scale
SDGs	Sustainable Development Goals
UI	User Interface
UX	User Experience
STEAM	Science, Technology, Engineering, Arts, and Mathematics

Executive Summary

Simple text

The **INVITE Open Interactive Digital Ecosystem/Platform** supports the development/creation and implementation/runtime of international virtual and blended learning modalities. The platform foster collaboration and innovation by creating a repository of open-access materials. These resources empower educators and learning designers to craft impactful educational experiences.
Furthermore, the Platform host hackathons that bring together stakeholders to design solutions addressing pressing global challenges, such as the Sustainable Development Goals (SDGs) and the Green Agenda. By offering these resources under an open commons license, the platform ensures widespread accessibility and adaptability, enabling users to organize hackathons, training sessions, or other collaborative events.
The INVITE Hackathon Platform is tailored to a diverse audience, including teachers, learning designers, educational innovators, and students. The platform encourages active participation from these groups to either create new ideas or critically evaluate existing ones for international blended and virtual projects.

Caption



1 Introduction

1.1 Scope

R4 is designed to establish an **Open Interactive Digital Ecosystem** to support the development and implementation of international virtual and blended learning modalities. At its core, the initiative aims to foster collaboration and innovation by creating a repository of open-access materials. These resources will empower educators and learning designers to craft impactful educational experiences. Furthermore, R4 will host hackathons that bring together stakeholders to design solutions addressing pressing global challenges, such as the Sustainable Development Goals (SDGs) and the Green Agenda. By offering these resources under an open commons license, the platform ensures widespread accessibility and adaptability, enabling users to organize hackathons, training sessions, or other collaborative events.

1.2 Audience

R4 is tailored to a diverse audience, including teachers, learning designers, educational innovators, and students. The platform encourages active participation from these groups to either create new ideas or critically evaluate existing ones for international blended and virtual projects. By fostering a community of interdisciplinary thinkers, R4 supports the co-creation of projects that address real-world challenges while advancing educational innovation.

1.3 Structure

The structure of the document is as follows: Section 2 provides a background on hackathons and educational online platforms. Section 3 outlines the methodology of work, while Section 4 describes the design process of the system following by Section 5 with the technical guidelines. Finally, Section 6 reports a pilot study to test the platform and Section 7 provides the references

2 Literature Review

2.1 Hackathons

2.1.1 Definition and Purpose of Hackathons

Hackathons, a blend of "hack" (creative problem-solving) and "marathon," are intensive, short-term events where participants work collaboratively to create solutions to specific problems. These events often attract individuals with diverse skill sets, including software developers, designers, and business professionals, making them highly interdisciplinary. Hackathons are driven by the following goals:

- Rapid Prototyping: Producing functional prototypes or ideas within a limited timeframe.
- Skill Development: Encouraging participants to learn and apply new technologies or methodologies.
- Community Building: Fostering networks among participants with shared interests.
- Innovation: Generating solutions for industry or community challenges [1], [2], [4].

2.1.2 Types of Hackathons

Hackathons are designed to meet specific objectives and appeal to particular audiences. Common types include:

1. Corporate Hackathons: Focused on solving business problems, fostering innovation within organizations, or scouting talent. Examples include hackathons hosted by major tech firms like Google or Microsoft.
2. Community Hackathons: Organized to address social, environmental, or community challenges. They often aim to drive civic innovation.
3. Educational Hackathons: Targeting students, these hackathons enhance learning by combining theoretical knowledge with practical experience [3], [6].

2.1.3 Structure and Key Components of Hackathons

Hackathons typically follow a structured format consisting of several stages:

1. **Pre-Event Planning:**
    - Selection of themes or challenges.
    - Recruiting participants, mentors, and judges.
    - Providing resources such as tools, software, and materials.
2. **Team Formation:**
    - Participants form diverse, multidisciplinary teams, ensuring a mix of skills and perspectives.
3. **Development Phase:**
    - Teams work intensively on their projects, often using design thinking and agile methodologies.
    - Mentors provide guidance and troubleshooting support.
4. **Pitch Presentation:**
    - Teams showcase their work through concise pitches or demos.
    - Judges evaluate projects based on criteria like innovation, feasibility, and potential impact.

5. **Awards and Follow-Up:**
    - Winners receive prizes, and promising ideas may receive support for further development [5], [7].

2.1.4 Outcomes and Impacts of Hackathons

Hackathons deliver multiple benefits:

- **Innovation and Prototyping:** They are a fertile ground for the creation of groundbreaking ideas or functional prototypes.
- **Skill Development:** Participants gain hands-on experience, enhancing their technical, problem-solving, and teamwork skills.
- **Networking:** Hackathons bring together professionals, students, and industry leaders, fostering collaboration and future opportunities.
- **Community Building:** Events often create lasting communities around shared goals or technologies [6], [9].

2.1.5 Comparison with Challenges

Hackathons and challenges share similarities in promoting innovation, but they differ in structure and approach. Hackathons prioritize speed, collaboration, and tangible outputs, while challenges provide more flexibility and depth in problem exploration [1], [3].

Table 1: Hackathon versus Challenge

Feature	Hackathon	Challenge
Format	In-person or virtual, team-based events	Team-based or individual, in-person or remote
Duration	Typically, 24–48 hours	Flexible, ranging from days to months
Outcome	Prototype or working solution	Can include ideas, products, or reports
Focus	Collaboration and rapid prototyping	Open-ended problem-solving

2.1.6 Challenges and Criticisms of Hackathons

Despite their popularity, hackathons face criticisms:

- **Sustainability Issues:** Many projects do not progress beyond the event.
- **Inclusivity Challenges:** Limited accessibility for underrepresented groups due to financial or logistical barriers.
- **Intellectual Property Concerns:** Participants' work is sometimes used without adequate recognition or compensation [7].

2.1.7 Essential Tools for Hackathons

1. Communication and Collaboration Tools

- **Slack or Discord:** Facilitate team communication and coordination.
- **Zoom, Microsoft Teams, or Google Meet:** For virtual meetings, mentor sessions, and presentations.

2. Project Management Tools

- **Trello or Asana:** Organize tasks and workflows for efficient project execution.

- **Miro or FigJam:** Collaborative whiteboards for brainstorming and idea mapping.

3. Prototyping and Development Tools

- **Coding Platforms:**
  - **GitHub/GitLab:** Version control and repository management.
  - **Replit or CodePen:** Web-based development environments.
- **Design Tools:**
  - **Figma or Adobe XD:** For user interface and experience design.
- **APIs and Frameworks:**
  - Provide access to APIs relevant to the hackathon theme (e.g., Google Maps API, OpenAI).

4. Event Management Platforms

- **Devpost:** A platform to manage hackathon submissions and showcase projects.
- **Hackerearth or Eventbrite:** For participant registration and event updates.

5. Presentation Tools

- **Canva or PowerPoint:** Create visually appealing pitch decks.
- **OBS Studio or Loom:** Record or livestream presentations.

6. Infrastructure Tools

- **Cloud Services:** AWS, Google Cloud, or Microsoft Azure for hosting and deployment.
- **Hardware Resources:** Provide devices like Raspberry Pi, Arduinos, or other hardware kits if needed.

7. Feedback and Judging Tools

- **Google Forms or Typeform:** Collect participant feedback.
- **Judging Platforms:** Platforms like HackerEarth's judging tool or custom scoring spreadsheets.

2.1.8 Practical Insights from References

- **Mentorship Importance:** Mentors are critical for guiding teams, especially in educational or community hackathons [5], [7].
- **Tools for Collaboration:** Platforms like Slack and GitHub enhance team efficiency and communication [1], [2].
- **Online Adaptations:** For virtual hackathons, platforms like Zoom and Miro play an essential role in replicating the in-person experience [4], [9].

2.1.9 Hackathons Beyond Coding

Hackathons are no longer confined to coding and software development. They now encompass various domains, fostering innovation across disciplines such as design, education, healthcare, business, and social impact. These events often integrate non-technical participants like designers, strategists, and subject matter experts, broadening their scope.

2.1.9.1 1. Non-Coding Hackathon Examples

1. **Design Hackathons**
    - Focus: Creating user-friendly interfaces, branding, or physical prototypes.
    - Participants: Designers, UX/UI experts, product managers.
    - Example: **Design Matters Hackathon** brings together creative minds to rethink interfaces or branding for real-world applications. Reference: Camburn et al. [5].
2. **Healthcare Hackathons**
    - Focus: Solving medical or healthcare challenges (e.g., creating affordable diagnostic tools).
    - Participants: Healthcare professionals, engineers, data scientists.
    - Example: MIT Hacking Medicine, which develops solutions like new diagnostic devices and process improvements in healthcare delivery. Reference: Komssi et al. [7].
3. **Social Impact Hackathons**
    - Focus: Addressing societal issues like education, sustainability, or inclusion.
    - Participants: Educators, environmentalists, and policymakers.
    - Example: **NASA Space Apps Challenge**, a global hackathon to solve challenges related to space exploration and Earth sciences.
4. **Business and Strategy Hackathons**
    - Focus: Developing innovative business models or marketing strategies.
    - Participants: Entrepreneurs, business analysts, and strategists.
    - Example: Startup Weekend events by Techstars focus on creating business ideas and prototypes over a weekend.

2.1.9.2 2. Cross-Disciplinary Collaboration in Hackathons

Hackathons now emphasize integrating diverse skill sets:

- **Non-Technical Roles:**
    - Designers contribute by creating user-friendly interfaces and visual elements.
    - Business professionals assess market viability and draft business models.
    - Educators design pedagogical strategies for educational hackathons.
- **Collaborative Tools:**
    - Miro and Figma for designers.
    - Trello and Slack for project management. Reference: HackerEarth [1].

2.1.9.3 3. Unique Themes and Deliverables

Non-coding hackathons focus on challenges that extend beyond software solutions. The deliverables often include:

- Visual presentations and mockups for **design hackathons**.
- Policy proposals or educational frameworks for **social and educational hackathons**.
- Business models and market strategies for **business-oriented hackathons**.

2.1.9.4 Why Hackathons Beyond Coding Are Important

1. **Fostering Inclusion:** These hackathons attract participants from non-technical backgrounds, broadening accessibility and impact.
2. **Real-World Relevance:** Many societal and business challenges require interdisciplinary approaches that coding alone cannot address.
3. **Diverse Outputs:** Deliverables range from physical prototypes and policy recommendations to visual designs and strategic plans.

2.2 LMS Comparison

Table 2: LMS Comparison

Feature	Open eClass	Moodle	Canvas	Chamilo
User Interface	Modern, intuitive	Customizable, flexible	Clean, user-friendly	Intuitive, user-friendly
Scalability	Low Scalability	Highly scalable	Scalable	Low Scalability
Community and Support	Small community	Large community	Active community	Active community
Integration with Third-party Tools	Support	Extensive support	Extensive support	Supports
Technical Requirements	Moderate	High	Moderate	Moderate
Updates and Development	Regular	Regular	Regular	Regular
Cost	Open source and free to use	Open source and free to use	Open source and free to use	Open source and free to use
Customization Options	Limited	Highly	Highly	Limited

Assessment and Grading Features	Basic	Extensive	Comprehensive	Extensive
Multimedia Support	Limited	Extensive	Extensive	Limited
Server Resource Usage	Light	Moderate	Moderate	Light
Familiarity (HMU Team)	High	Low	None	None
Features Coverage	Yes	Yes	Yes	Many
Deployment Resources	Low	High	High	Low
Ease Of Use	High	Low	High	High

3 Methodology

3.1 Textual Analysis

Performing an analysis on the platform description the following categories were identified:

- ***Requirement***
- ***Sub Requirement***
- ***Sub-Sub Requirement***
- ***Requirement-Specification***
- ***Deliverables***
- ***Sub Deliverable***
- ***Needs Analysis***
- ***User-Roles***

These categories assisted in identifying the key components, elements and features the Open Interactive Digital Ecosystem should include. Next paragraphs include the findings of the textual analysis.

3.1.1 Requirements

1. The open repository of open materials to support the design and implementation of international virtual and blended modalities.
2. This online platform will also host hackathons, where different stakeholders will be invited to:
   a. design innovative virtual and blended mobilities, addressing topics related to urgent problems such as the SDGs and the Green Agenda.
   b. The platform will contain hackathon competition guidelines for the participants, the selection and participation criteria,
   c. as well as a shared space for teachers to contact peers and design projects.
   d. Moreover, it will host all the design projects developed during the hackathons. interested stockholders will be able to use it and parameterize to organize Hackathons or other training events.
3. During the hackathon, the criteria for the submitted innovative solutions on virtual and blended mobility will be aligned with the findings of R1, R2, and R3.
4. At the end of the hackathon, there will be a series of demonstrations of the submitted designs.
   a. A panel of jurors composed of undergraduate & postgraduate students, teachers, innovation experts, and other relevant stakeholders will evaluate the submissions.
5. A repository of training resources for designers of such modalities.
6. Create or evaluate ideas for international blended and virtual projects.
7. For the participants of the hackathon, it will be mandatory to have followed the training modules in order to make sure that the solutions produced make use of the methodologies developed in the project.
8. Our hackathon incorporates elements of innovation such as
   a. Shifting cultural mindsets and behaviors,
   b. Engaging and retaining high performers,
   c. Engage senior staff who are short on time, and
   d. Bring together cross-functional teams and external participants.
9. technical and implementation guidelines will be produced.
10. fully transferable and adaptable for fostering innovation for ınternational mobility and collaboration.

The Open Interactive Digital Ecosystem will be available as an OER under a commons license and

3.1.2 Deliverables

1. INVITE will produce a set of software requirements for the development of the ecosystem and technical guidelines for enabling others to customize and adapt it to training modules and hackathons or similar activities.
    - Furthermore, the projects should be embedded in an academic module, include at least 1 international teacher, include a component of problem-solving related to the SDG agenda and green agenda, and include a clear international and intercultural dimension that adds value to students' learning.
    - Based on the experiences gained during the hackathon, a set of guidelines for designing, implementing, and evaluation hackathons for innovation in education will be compiled in order to support similar activities.

3.1.3 Needs Analysis

1. Needs Analysis and Impact: R4 will support innovative solutions on student-centered virtual mobility by offering various designs for international virtual and blended modalities
2. Moreover, the hackathon will support the participated teachers to produce innovative instruction in blended and virtual approaches. The adaptability of the platform will support innovation and training activities in this field.

3.1.4 User Roles

1. Target groups: R4 invites teachers (either participated in R3 or not), learning designers, educational innovators, and students to create or evaluate ideas for international blended and virtual projects.

3.2 Deliverables

1. E-learning Platform
2. HUB for accessing virtual & Blended mobility resources
3. Different Levels of access
4. Different Users
5. CRUD operations on materials
6. CMS to customize material (through configurable Options i.e. edit text & upload images)
7. Authentication
8. Registration
9. Background, Skills, details screening
10. Answer questions and offer help
11. Host on Repository the Hackathon Solutions
12. Organize Hackathons and training events
13. Provide Guidelines

3.3 Tasks

Task4.1.1 Software Requirements Definition based on Existing Virtual and Blended Mobility as well as the findings of the R1, R2 and R3 .
Task4.1.2 Design and implementation of the INVITE-EcoDigSys.
Task4.1.3 Technical Guidelines for the Open Interactive Digital Ecosystem installation and use.

4 Design the Platform

A typical flow of a hackathon event can be described from three main phases, namely the Pre-Event phase, the Event phase, and the Post-Event phase. Each of the phases contain subcategories, where in each sub category certain actions should be made. Thus the platform should support all these actions.

Figure 1: Typical flow of a hackathon event

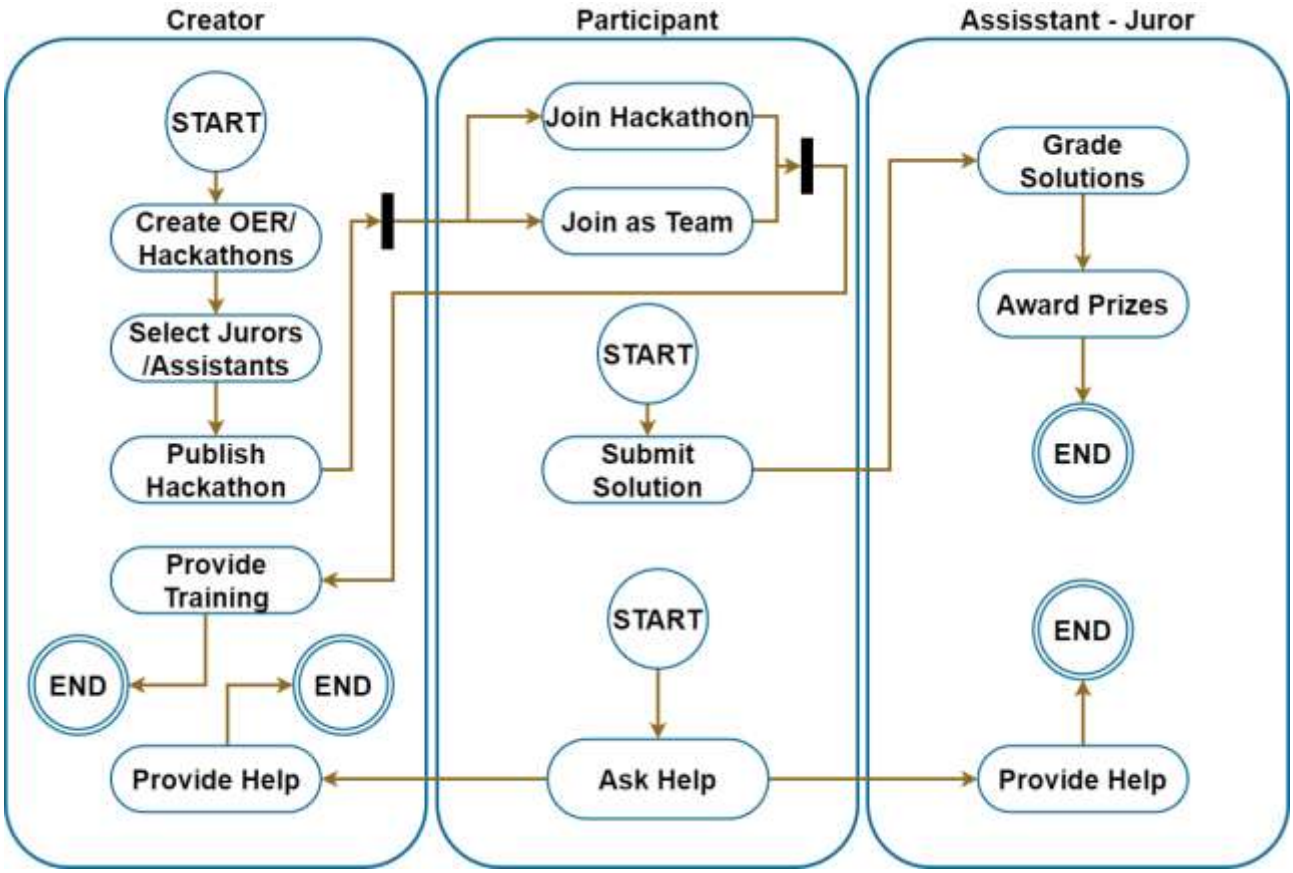


Figure 2: Roles of a Hackathon

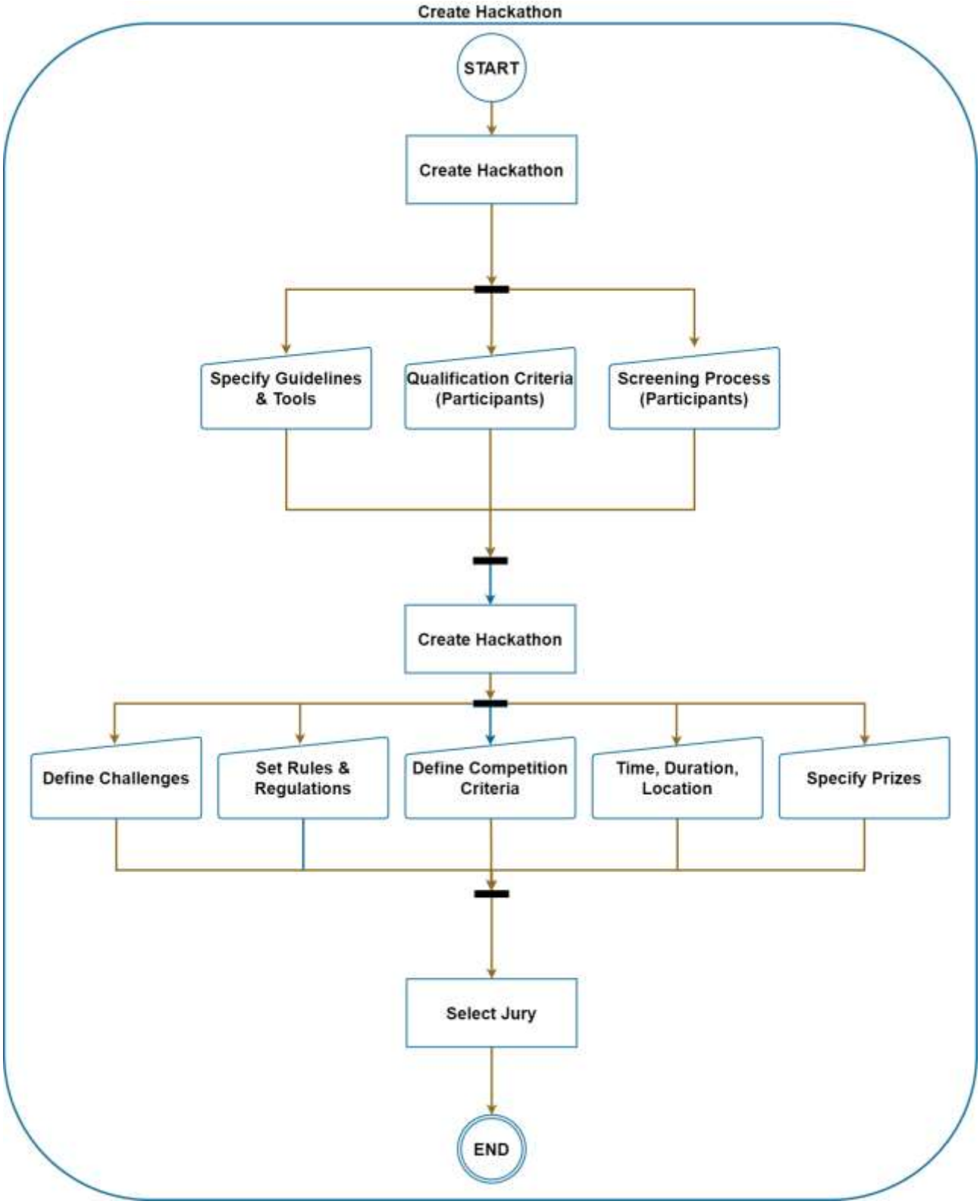


Figure 3: Create Hackathon flow

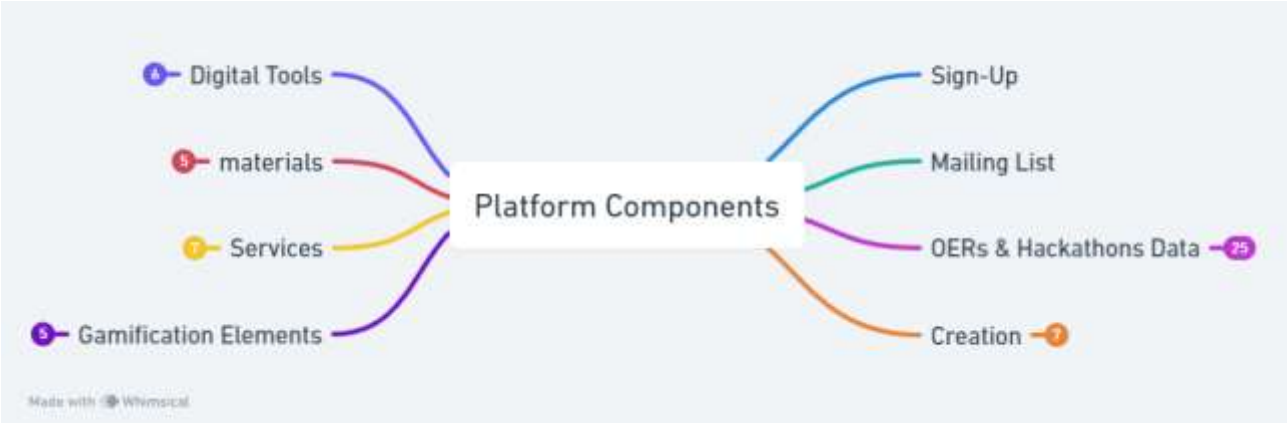


Figure 4: Hackathon Platform Components

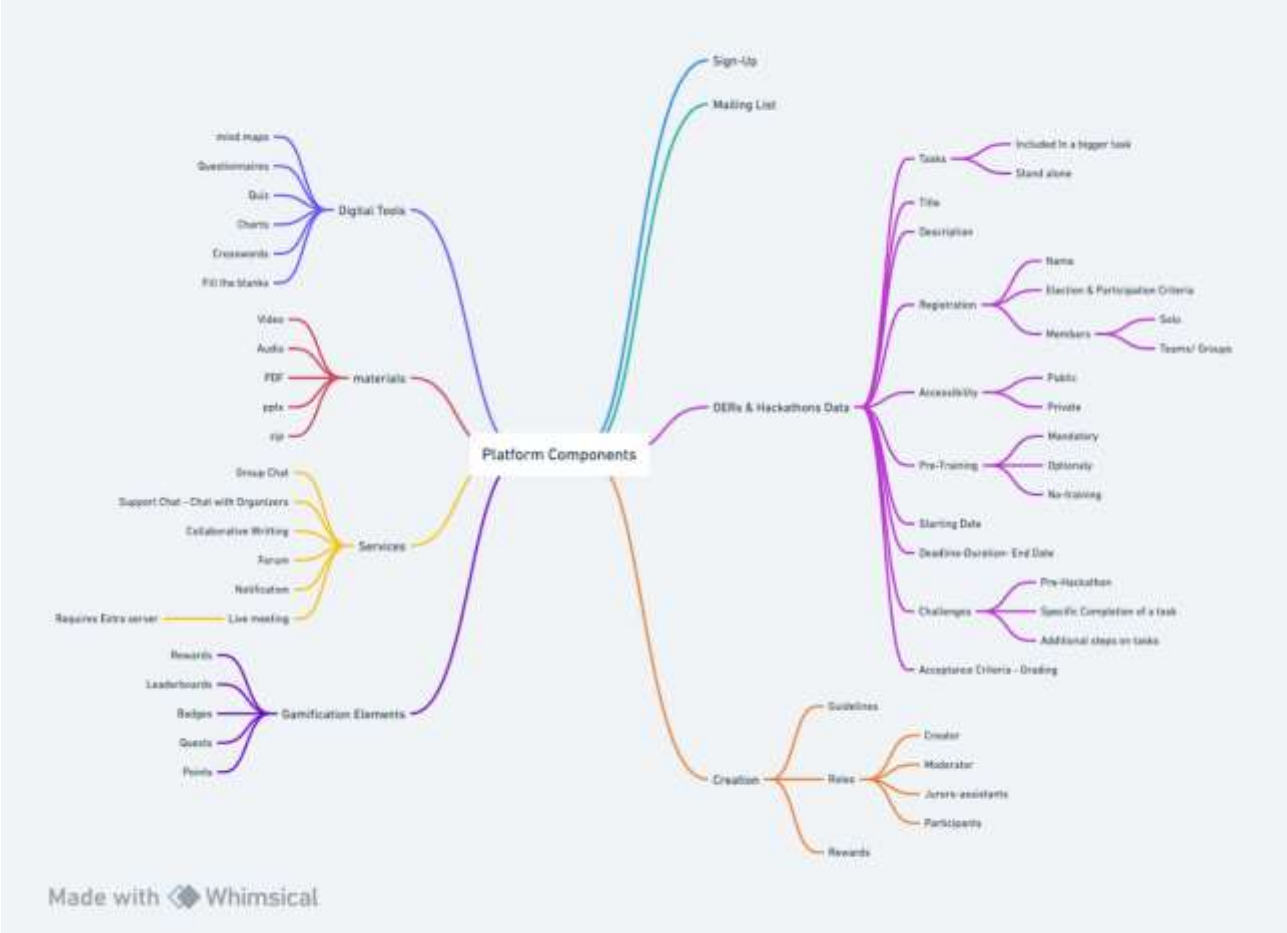


Figure 5: Hackathon Platform Components full scale

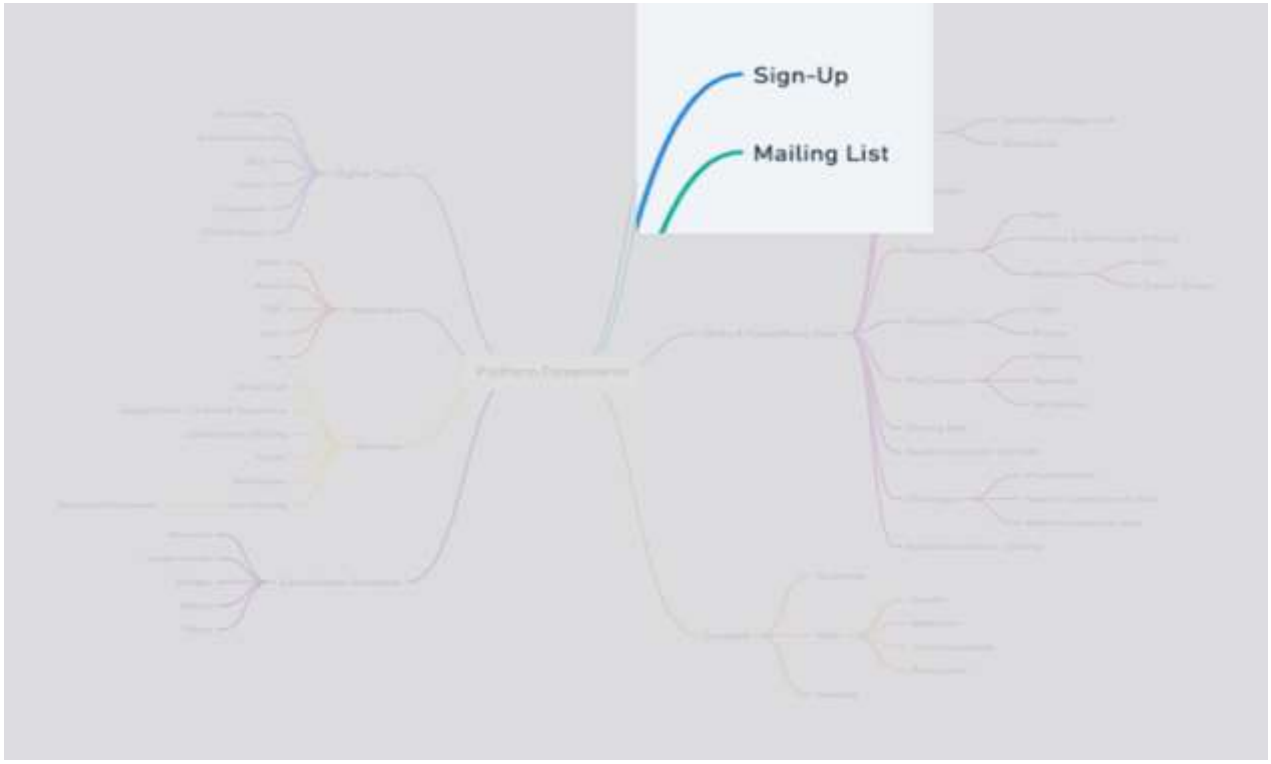


Figure 6: Hackathon Platform Components Zoom In Sign-Up & mailing list

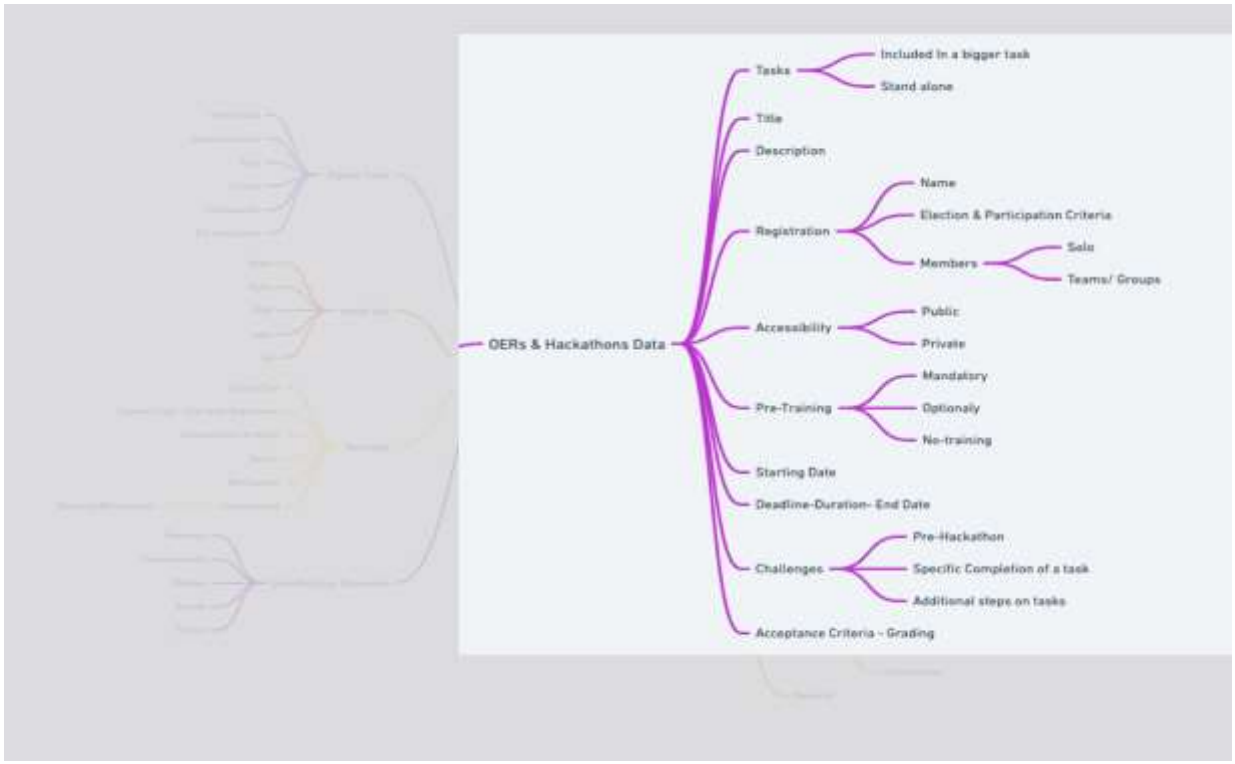


Figure 7: Hackathon Platform Components Zoom In OER

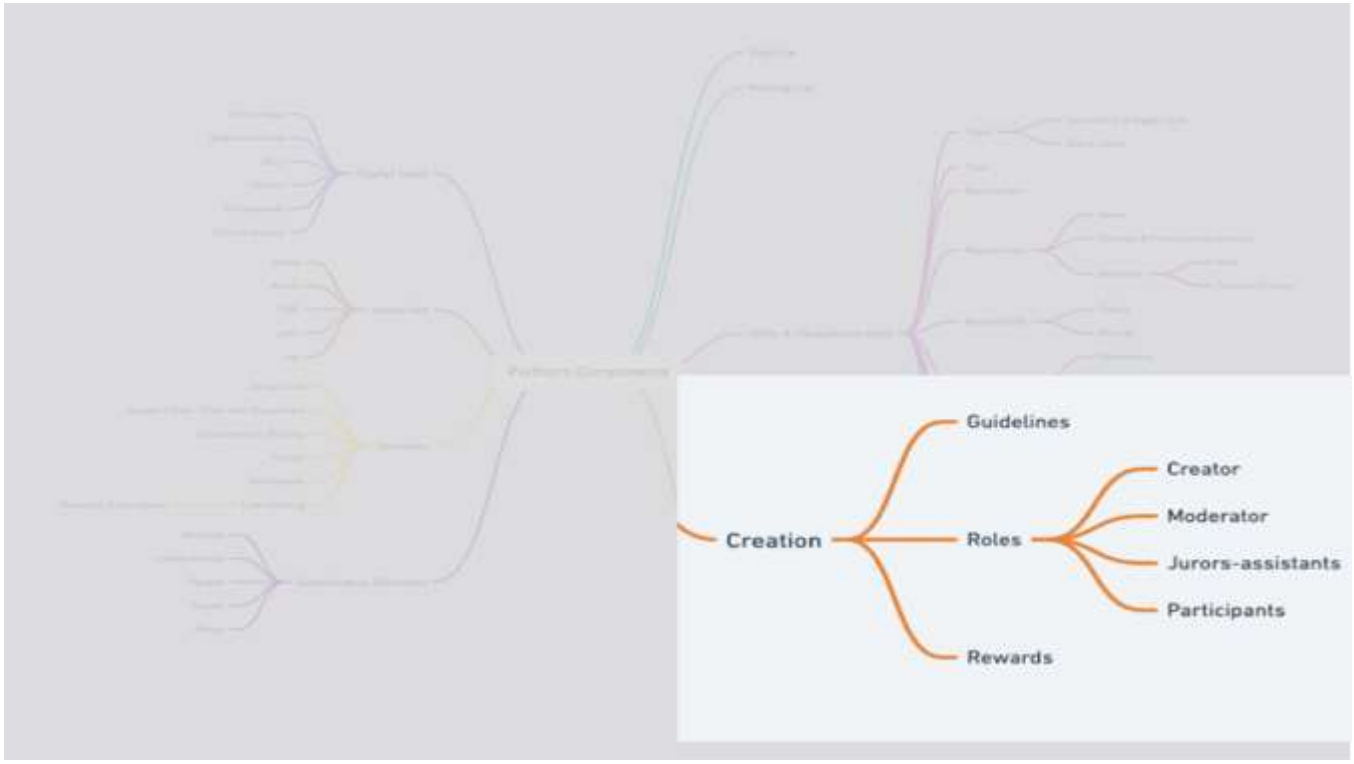


Figure 8: Hackathon Platform Components Zoom In Creation

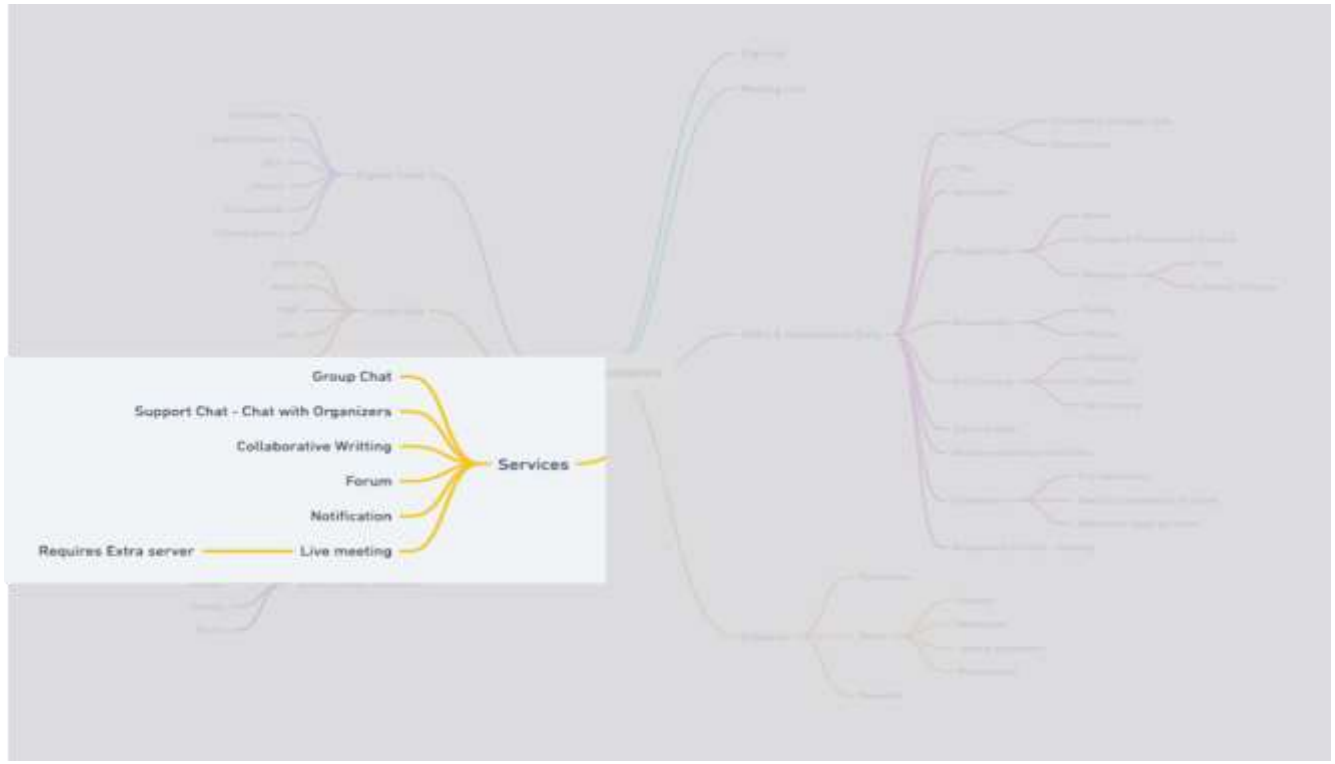


Figure 9: Hackathon Platform Components Zoom In Services

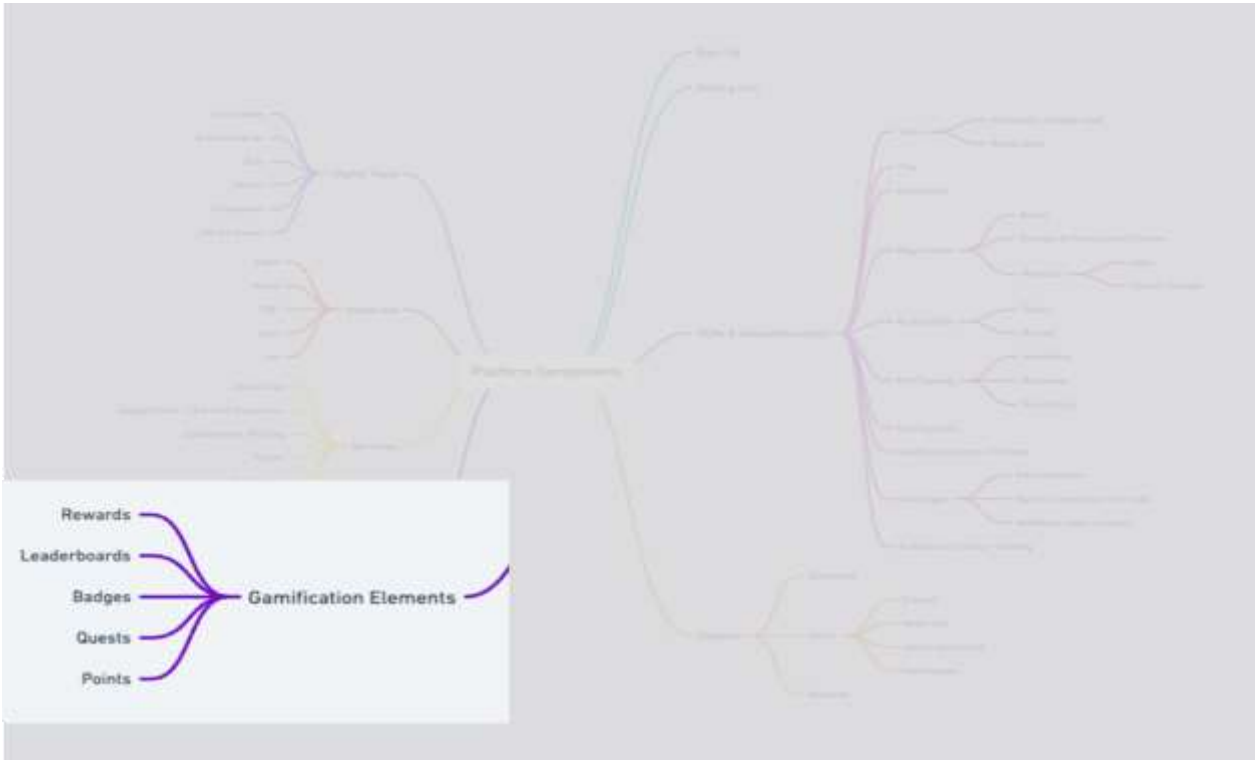


Figure 10: Hackathon Platform Components Zoom In Gamification Elements

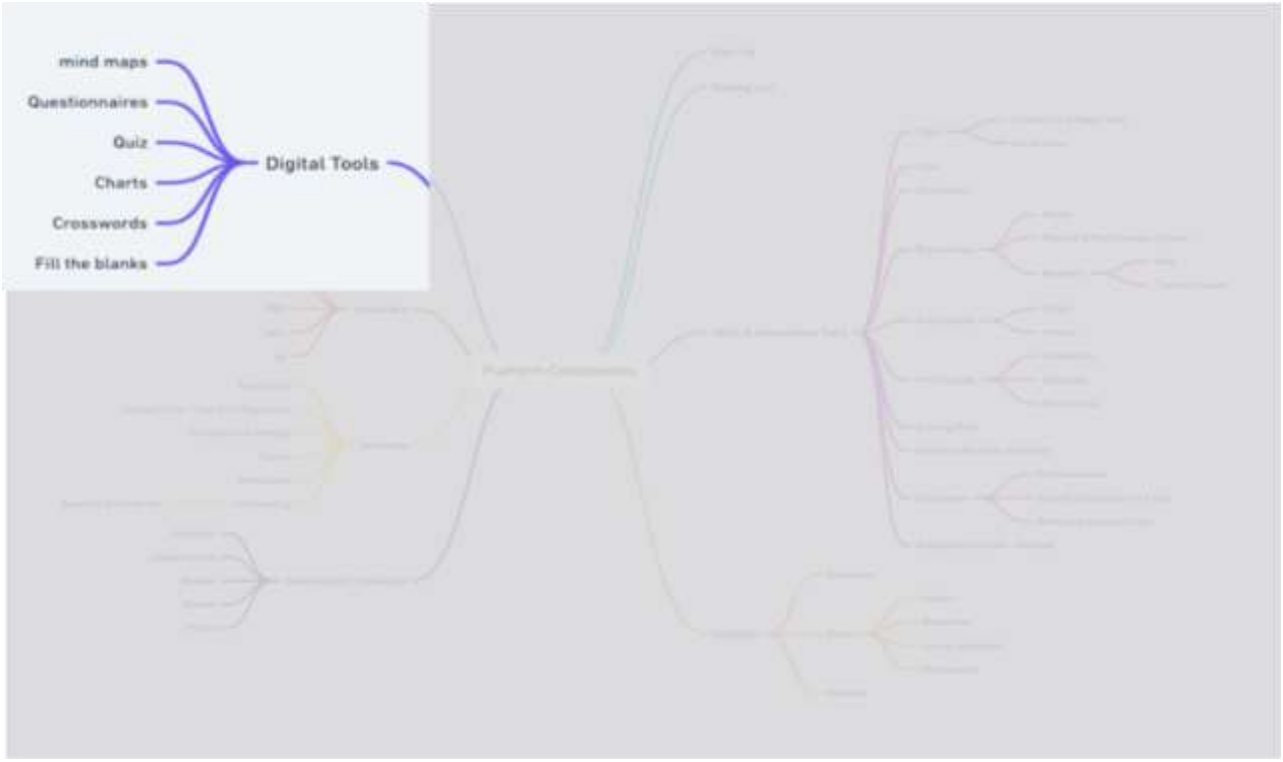


Figure 11: Hackathon Platform Components Zoom In Digital Tools

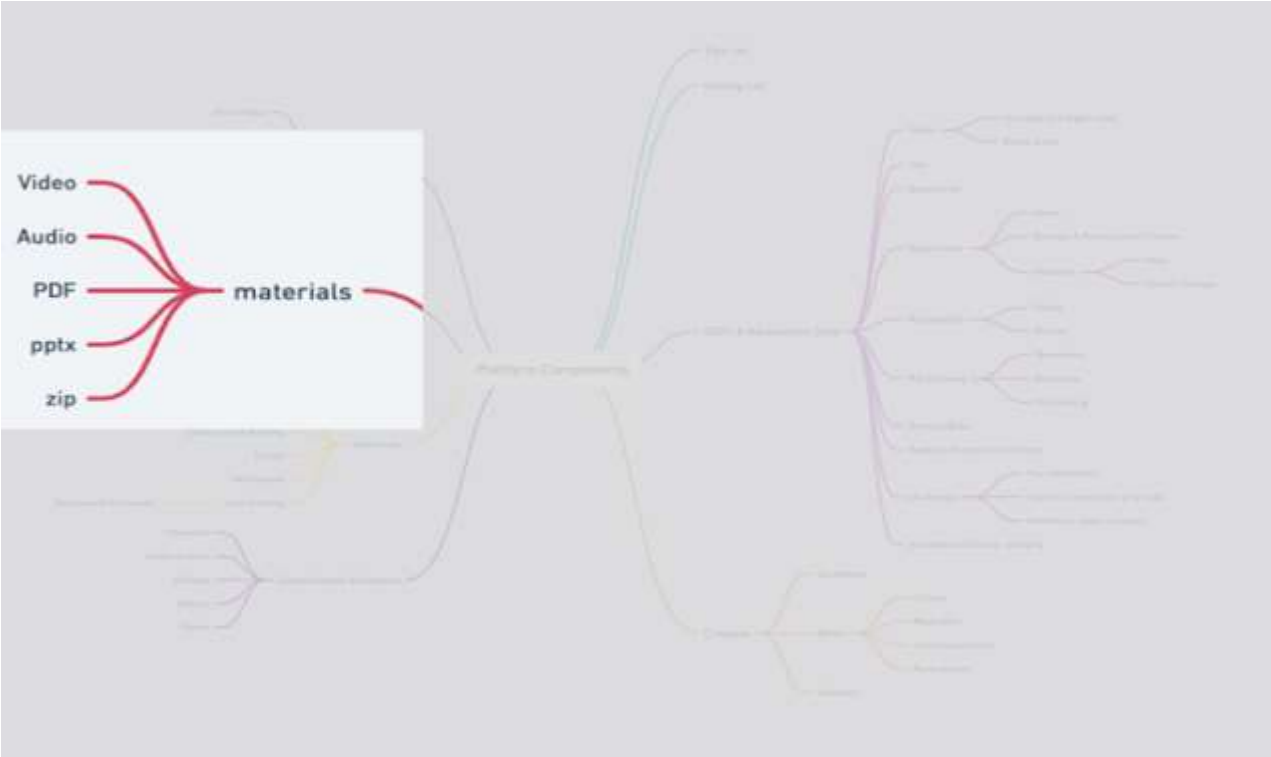


Figure 12: Hackathon Platform Components Zoom In Materilas

4.1 Implement the Platform

4.1.1 Selected Platform Tools Documentation

Student Manual: https://docs.openeclass.org/en/3.1/mans

Table 3: Modules

Platform Hackathon Modules		Platform OERs Modules
1. Agenda	11. Wall	1. Announcements
2. Announcements	12. Groups	2. Documents
3. Assignments	13. Links	3. Links
4. Documents	14. Teleconference	4. Multimedia
5. Exercises	15. Chat	5. Questionnaires
6. Forum	16. Mind Map	6. Mind Map
7. H5P Content	17. Progress	7. Wall
8. Messages	18. Wiki	8. Wiki
9. Multimedia		9. Blog
10. Questionnaires		10. Forum
		11. Messages

Hackathons are dynamic, collaborative events that require tools to facilitate communication, collaboration, resource sharing, and project management. Below, is the reason for each tool listed, considering their applicability to an e-platform for hackathons.

1. Agenda

Essential for organizing and outlining the event schedule. Participants can use it to keep track of deadlines, workshops, mentor sessions, and presentations.

2. Announcements

Allows organizers to communicate updates, reminders, or changes to participants in real time, ensuring smooth event coordination.

3. Assignments

Useful for hackathons where specific tasks or preparatory activities (e.g., pre-event ideation, research) are assigned to teams. This feature can be managed directly by organizers, as participants may not need full access.

4. Documents

Central repository for sharing hackathon guidelines, datasets, APIs, or other resources required for participants to complete their projects.

5. Exercises

Can be used by organizers to upload preparatory activities, tutorials, or coding challenges to help participants build skills relevant to the hackathon.

6. Forum

A community space for participants to discuss ideas, ask questions, and seek peer support. Encourages collaboration and knowledge-sharing.

7. H5P Content

Organizers can use H5P content to create interactive learning modules or quizzes for onboarding participants or providing tutorials.

8. Messages

Enables direct communication between organizers, mentors, and participants for quick queries or support.

9. Multimedia

Organizers can upload multimedia such as videos or recordings of workshops, keynote speeches, or pre-event training materials.

10. Questionnaires

Useful for collecting feedback from participants after the event or during the registration process to understand their expectations.

11. Wall

A virtual space for participants to post updates, share milestones, or celebrate achievements. Fosters community engagement and motivation.

12. Groups

Facilitates team organization, allowing participants to collaborate within their designated groups. Organizers can manage groups for ease of communication and tracking.

13. Links

Organizers can provide relevant links to external resources, APIs, tools, or datasets needed for projects.

14. Teleconference

Crucial for virtual hackathons or hybrid events. Enables organizers to host webinars, team meetings, or mentoring sessions.

15. Chat

Organizers can use chat for real-time announcements or facilitating Q&A sessions during webinars.

16. Mind Map

Organizers can use this feature to provide participants with visual brainstorming tools or templates to structure their projects.

17. Progress

Organizers can track participants' or teams' progress through this feature, helping to identify when additional support or mentoring is needed.

18. Wiki

Wikis are not commonly necessary in hackathon contexts, as information is typically provided in concise, structured formats such as documents or links.

4.1.2 Recommendations

Keep non-participant-accessible tools for organizers: These features (e.g., assignments, H5P, and progress) streamline event management, ensuring participants focus on the hackathon challenges.

Avoid redundant features: Tools like Wiki may be unnecessary if documents and forums already cover information needs.

Enhance collaboration: Make tools like Wall, Groups, and Forum highly visible and user-friendly to foster participant engagement.

Relevant work highlights key aspects of organizing hackathons and informs the choice of tools for effective management and collaboration. Studies on hackathon dynamics emphasize the importance of resource management, team coordination, and communication, aligning with the utility of tools like Documents, Announcements, and Groups to streamline these processes. Research into the general structure of hackathons stresses the need for scheduling tools (Agenda), platforms for participant discussions (Forum), and mechanisms to facilitate virtual participation, such as Teleconferencing features.

The role of collaboration and ideation in hackathons is also a prominent theme, showcasing the relevance of tools like Mind Maps for brainstorming and Groups for team-based progress tracking. Inclusivity and diverse roles in hackathons underscore the need for open discussion platforms like Forums and centralized update tools like Announcements to ensure all participants are informed and engaged. Additionally, hackathon outputs often vary widely, highlighting the necessity of progress tracking and resource management tools such as Assignments to keep teams on track and organized.

While some tools like H5P Content, Wall, or Chat are not directly discussed in these studies, their roles in enhancing engagement, interactivity, and collaboration are logical extensions of the broader functionalities highlighted in the research. These tools contribute to an enriched experience, ensuring that participants remain connected and productive throughout the event.

While the reasons provided integrate insights from the relevant work, the mapping of specific tools is a derived framework. It synthesizes referenced practices with practical knowledge about how hackathons typically operate, ensuring the platform aligns with both theoretical and applied hackathon structures.

5 Technical Guidelines

Use Units as template.
Add material on Units and keep tools not needed to be shown on participants as creator tools only, and prompt participants to access them through Units.
Prepare questionnaires and polls and award participation with badges to boost the engagement.

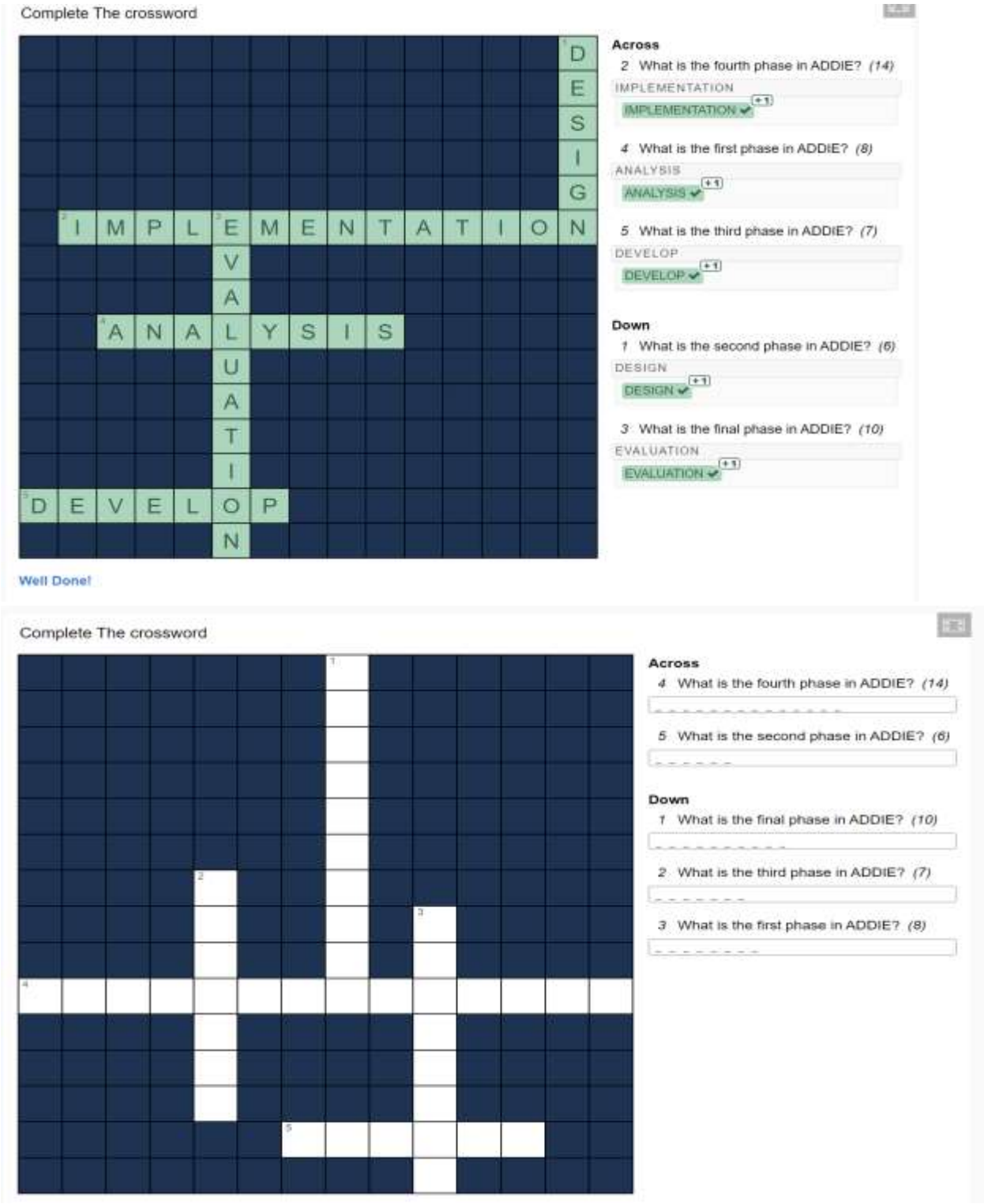


Figure 13: Hackathon Units

Add badges and certificates on forum participation to strengthen communication between participants.
Make Use of h5p content to offer and even more gamified experience.

Use the wall tool to allow participants to post their projects and show case their solutions.

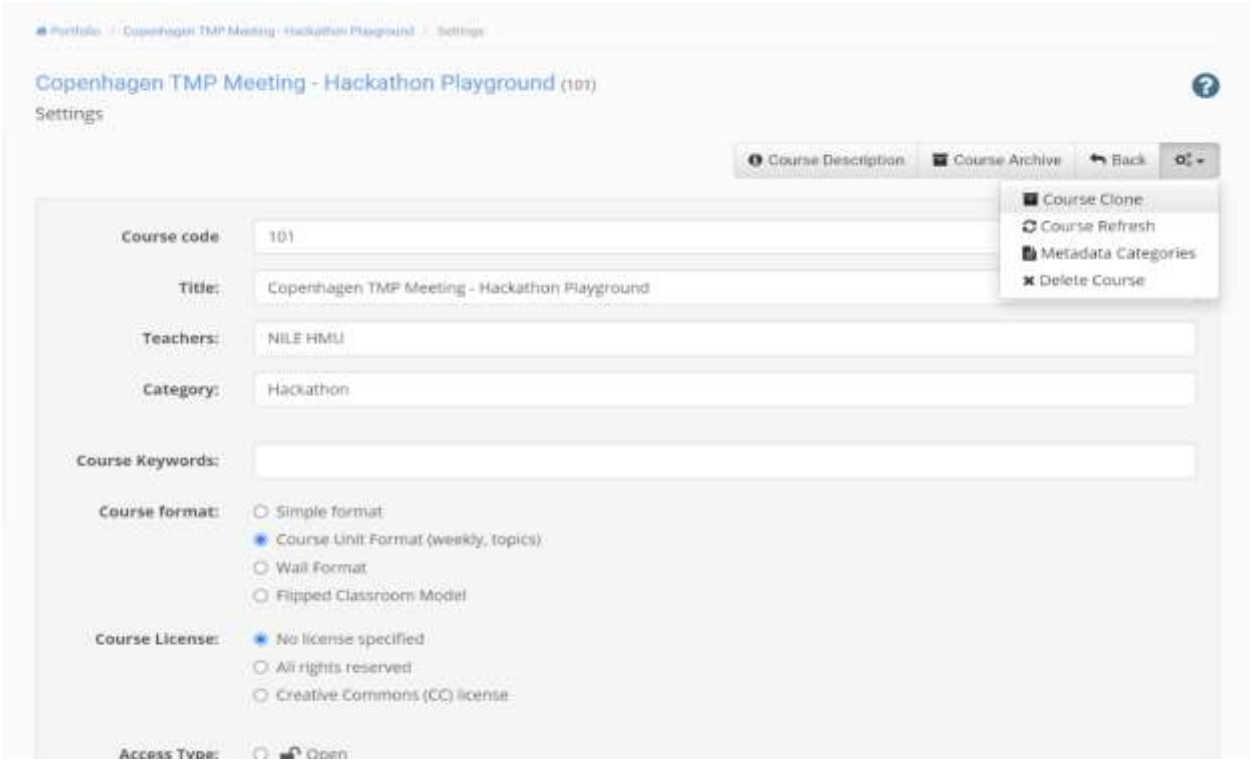


Figure 14: Hackathon Creation

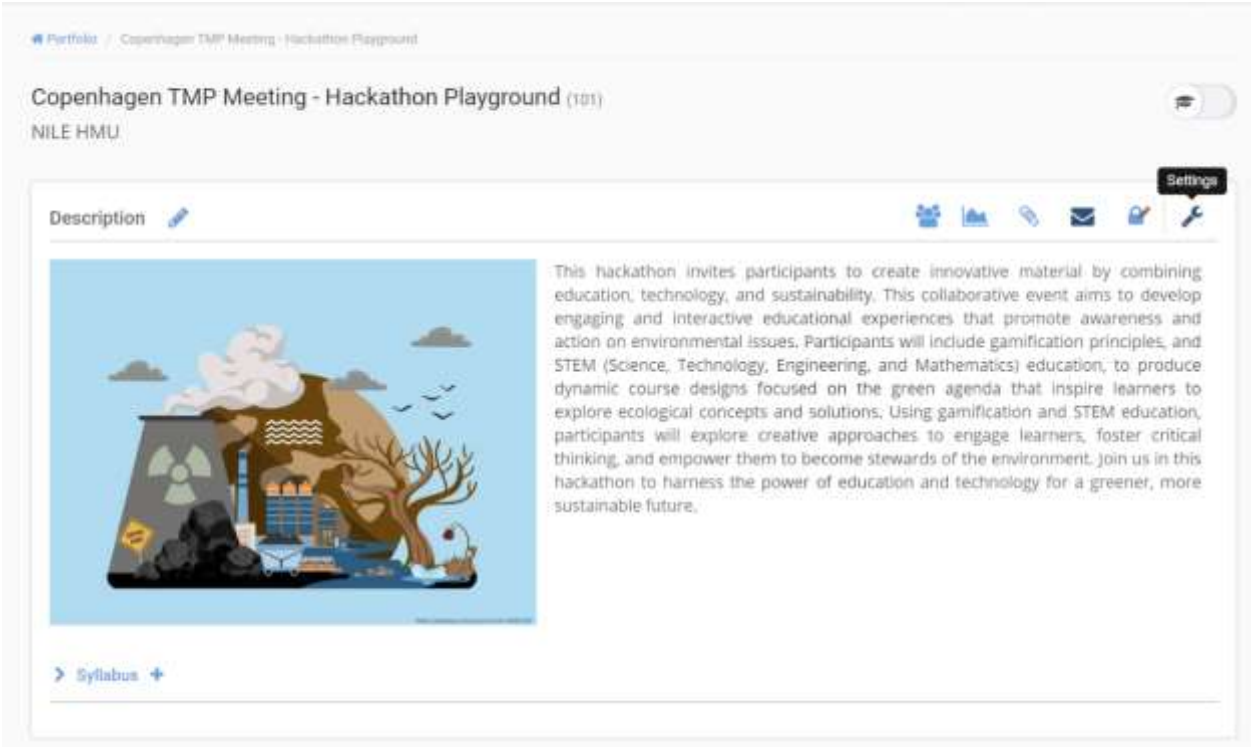


Figure 15: Hackathon Creation cont.

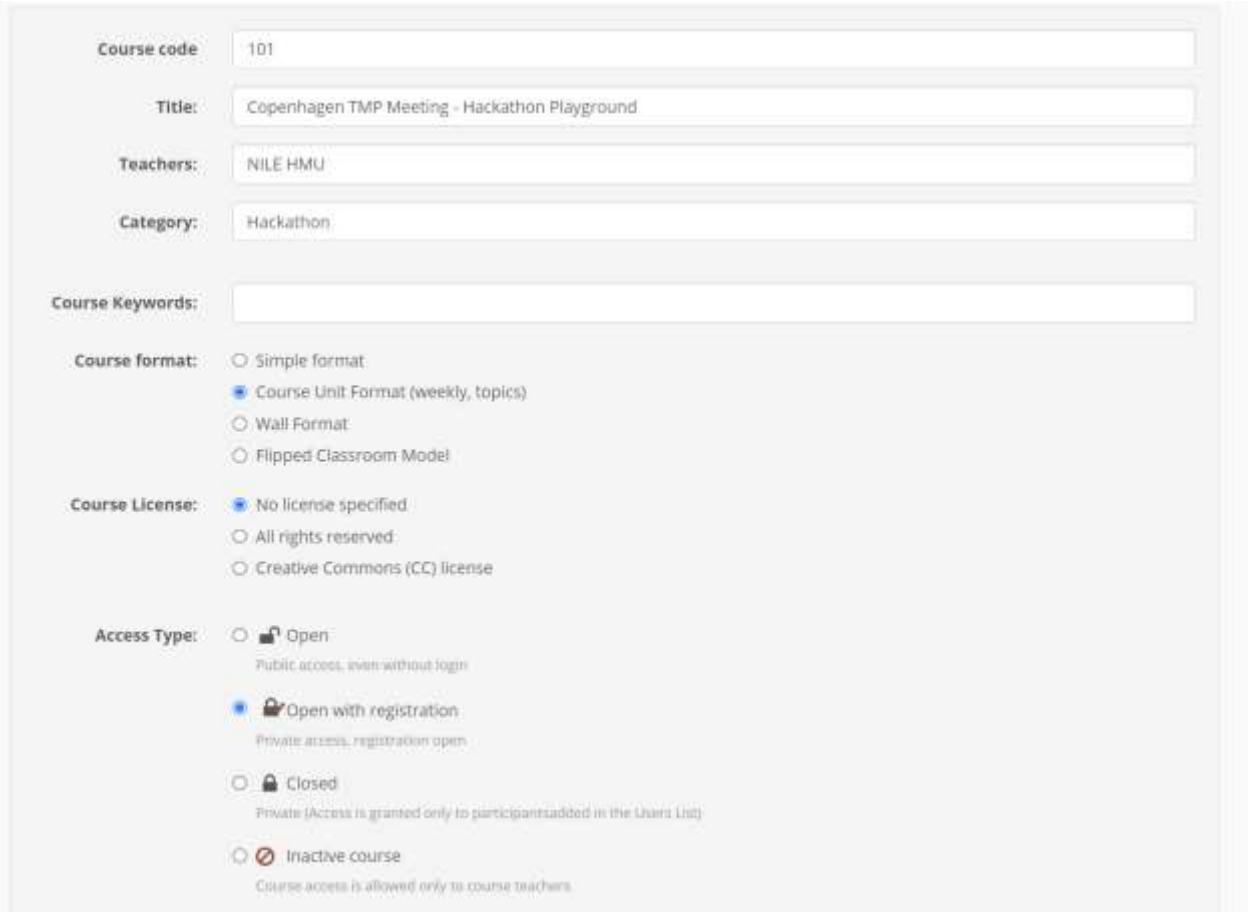


Figure 16: Hackathon Creation cont.2

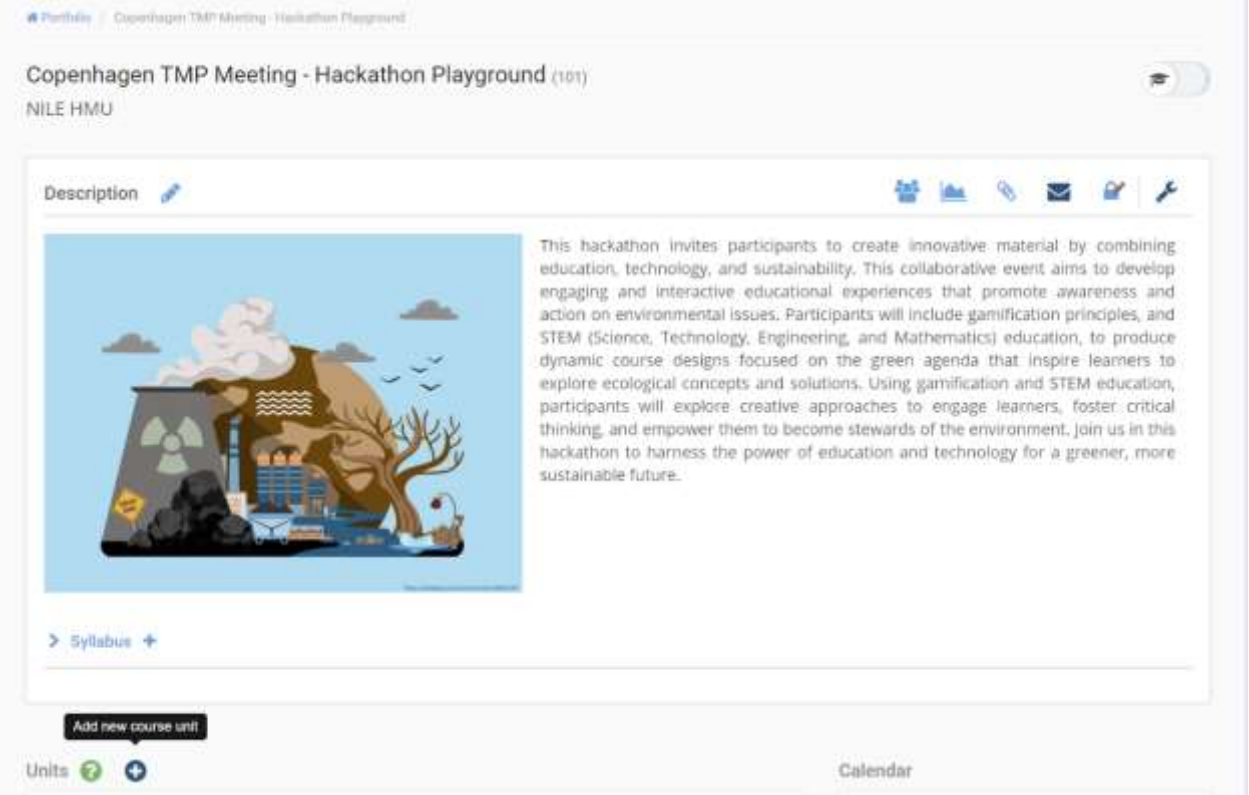


Figure 17: Hackathon Creation cont. 3

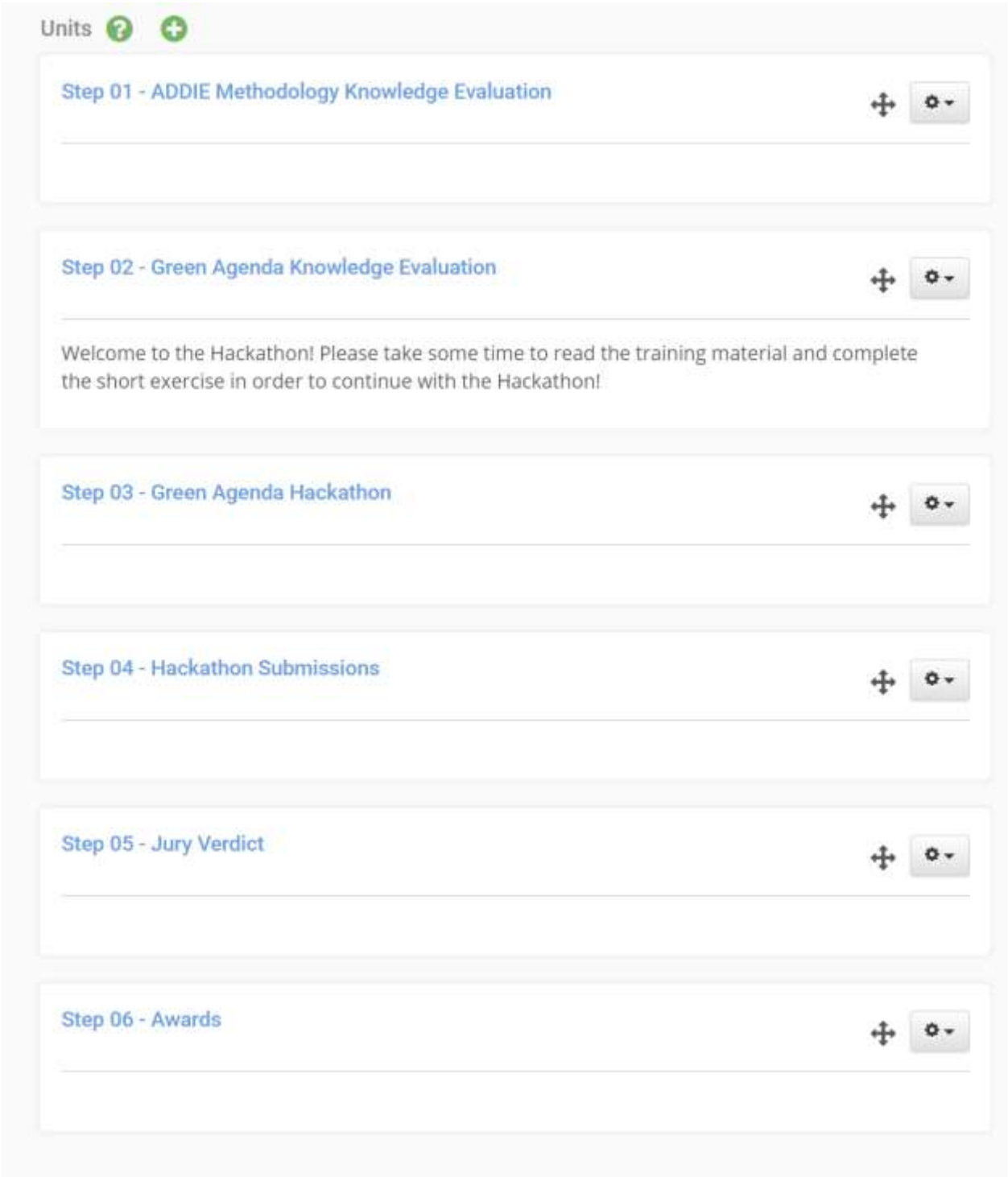


Figure 18: Hackathon Steps Creation

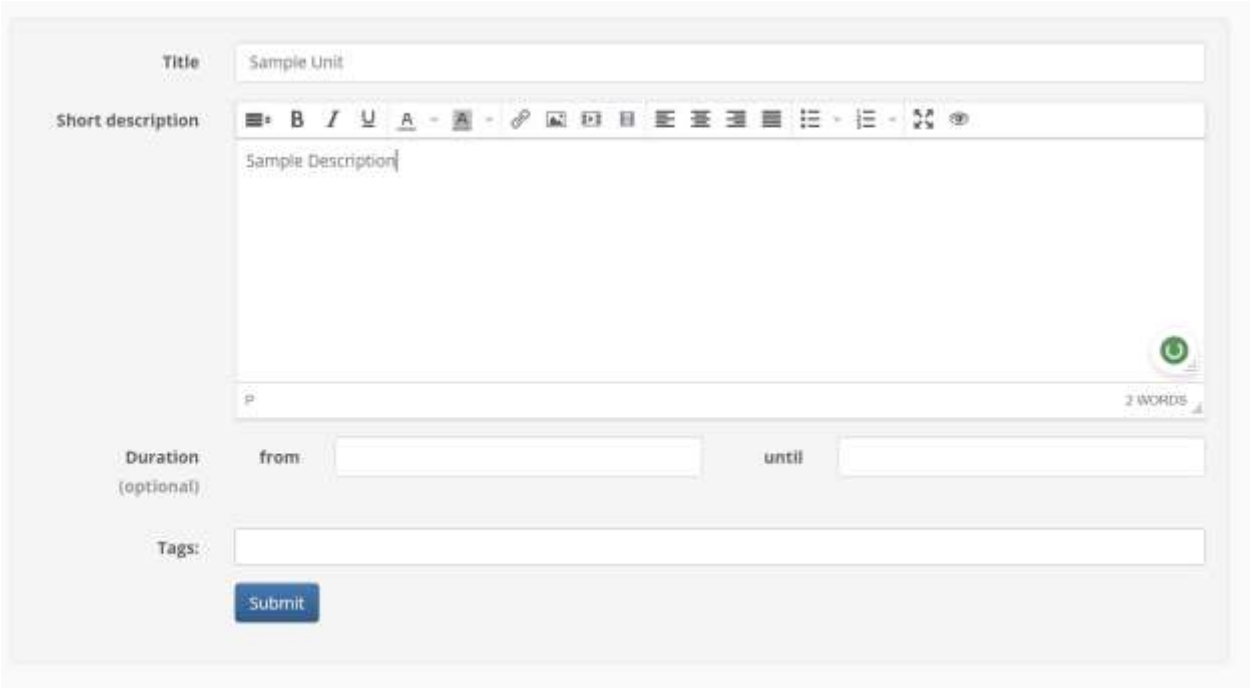


Figure 19: Hackathon Step Unit Creation

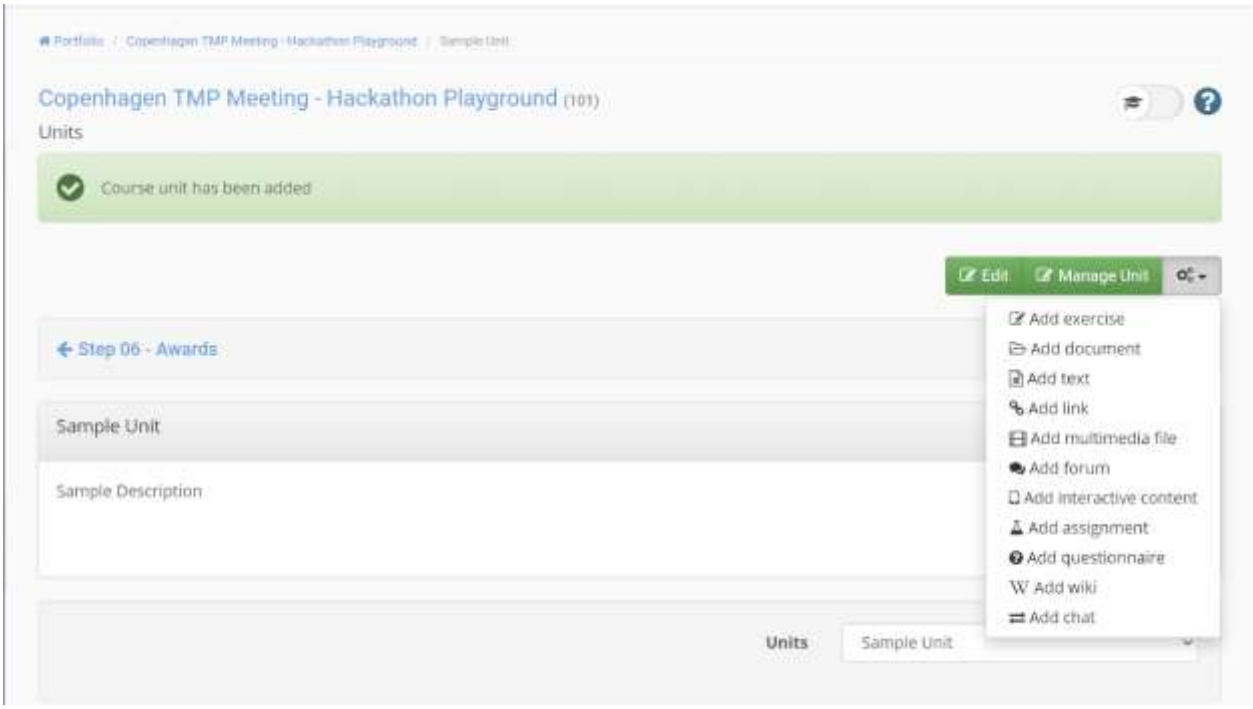


Figure 20: Hackathon Step Unit Creation cont.

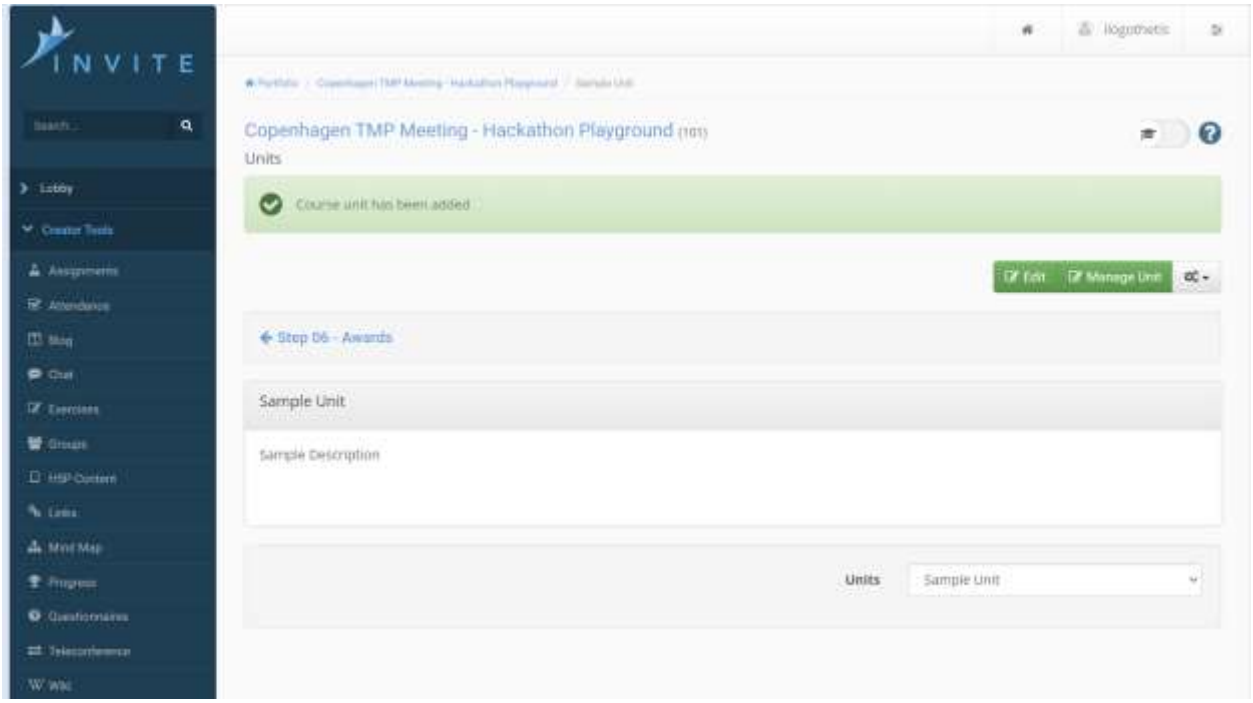


Figure 21: Platform main Hackathon Step Unit Creation cont.

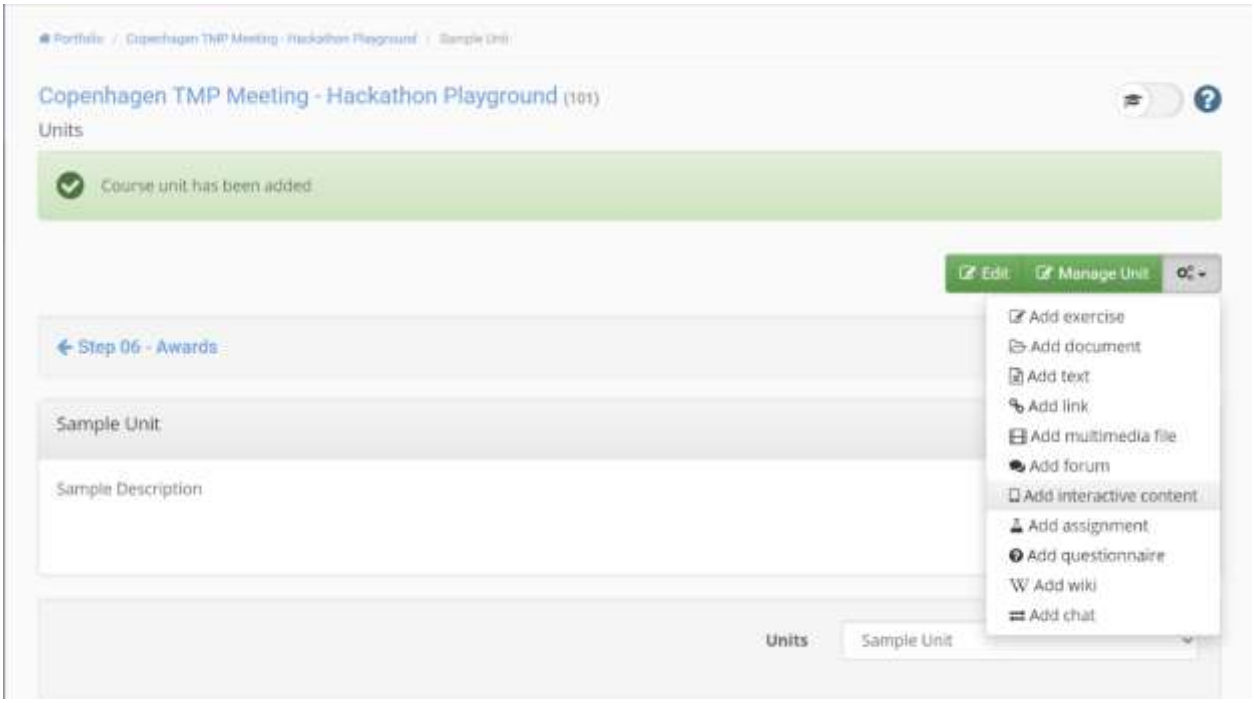


Figure 22: Platform main Hackathon Step Unit Creation cont.2

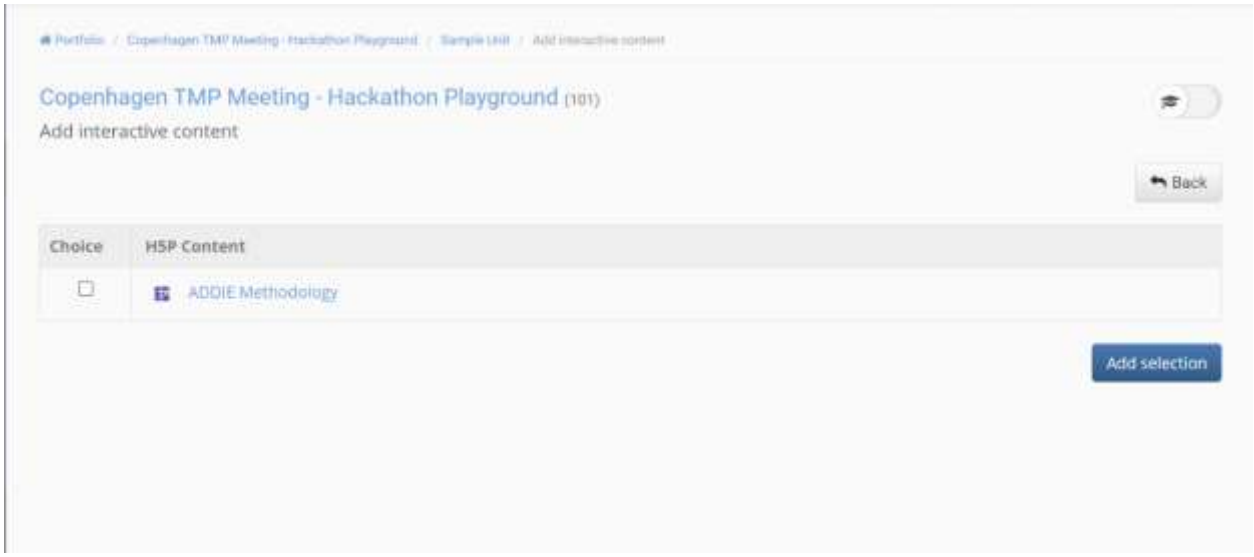


Figure 23: Hackathon Interactive Content tool

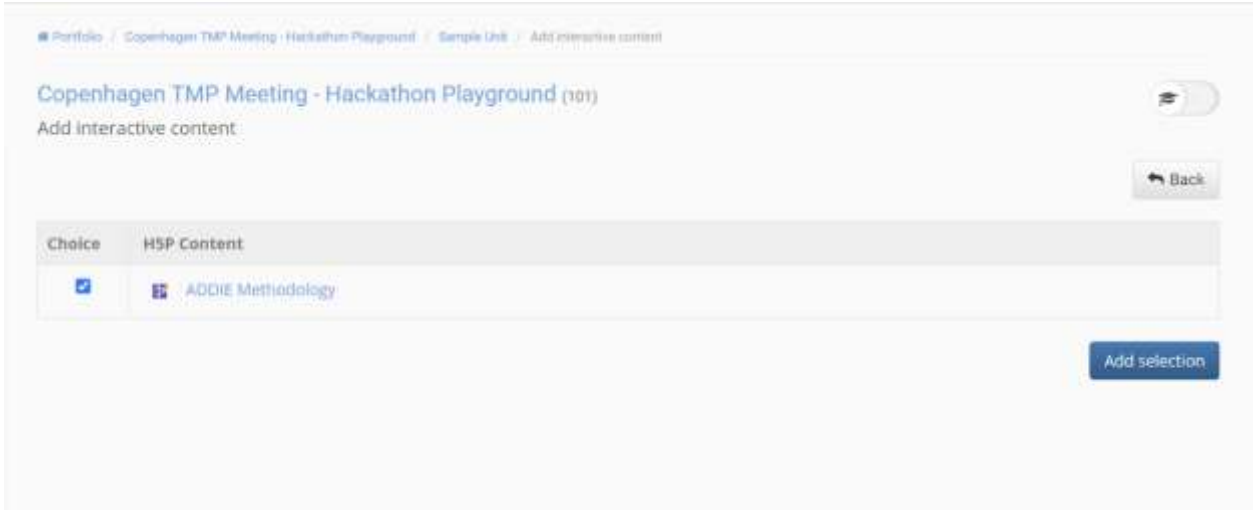


Figure 24: Hackathon Interactive Content tool cont.

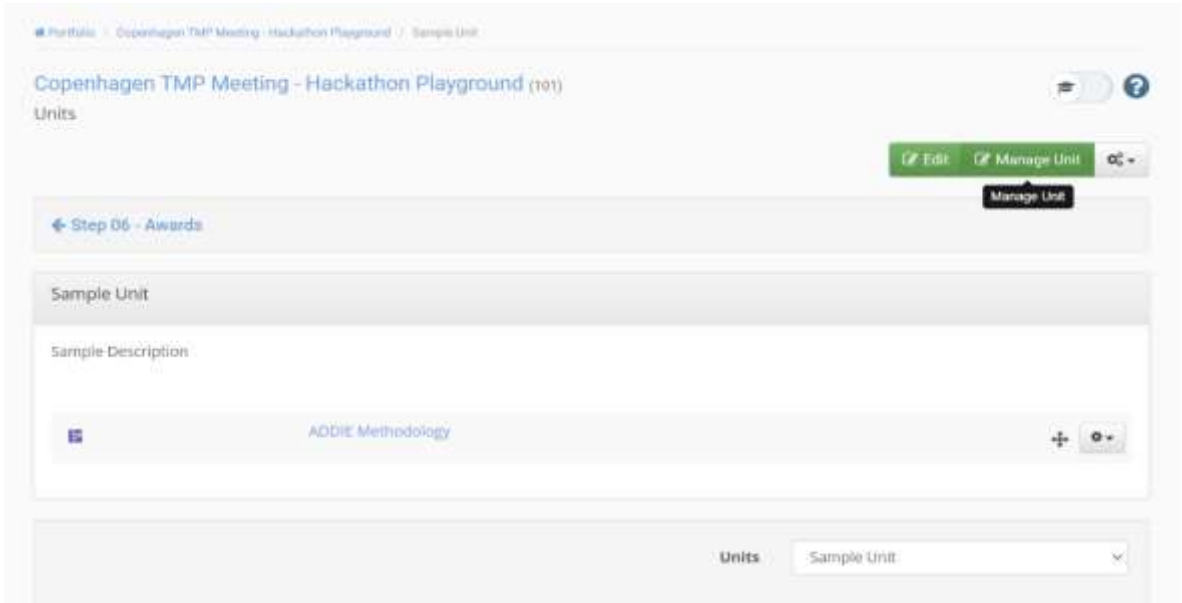


Figure 25: Hackathon Interactive Content tool cont.2

Figure 26: Platform Manage Unit

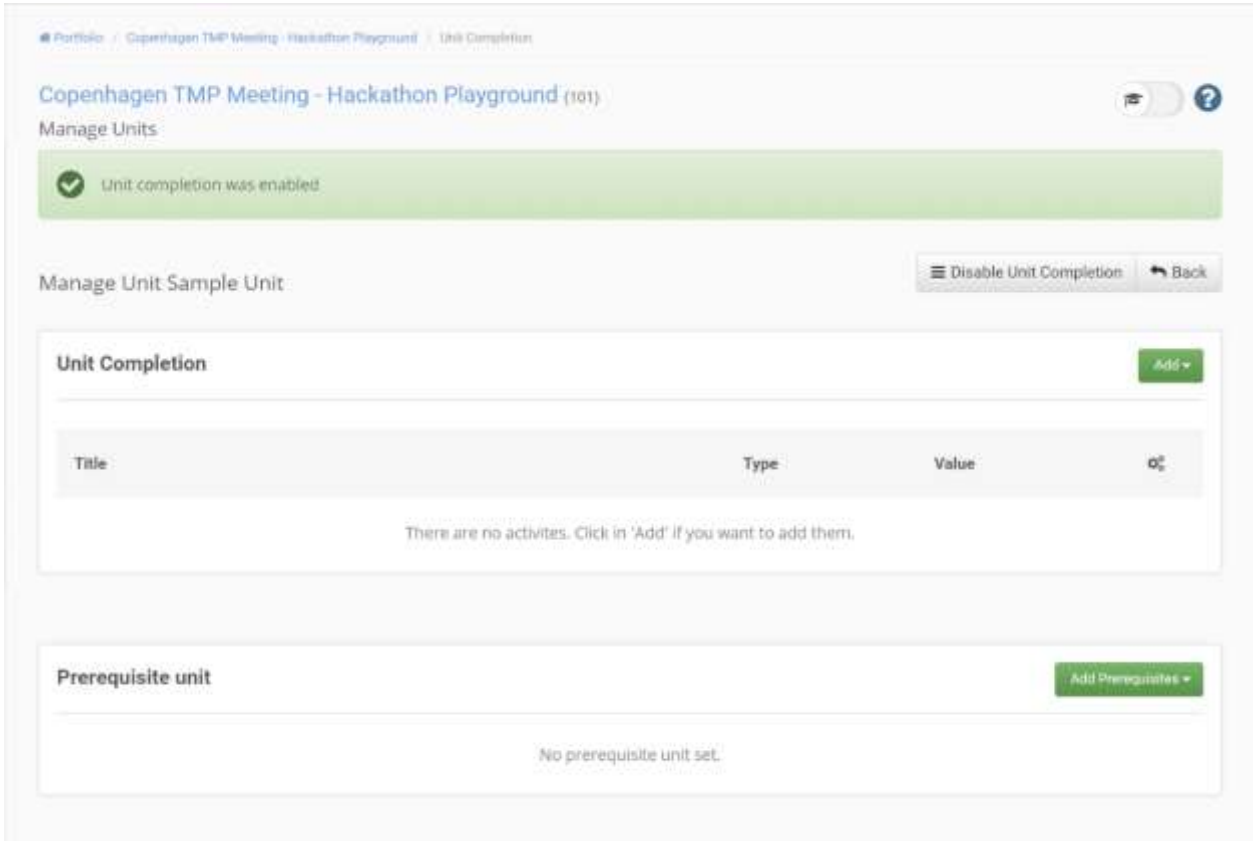


Figure 27: Platform Manage Unit cont.

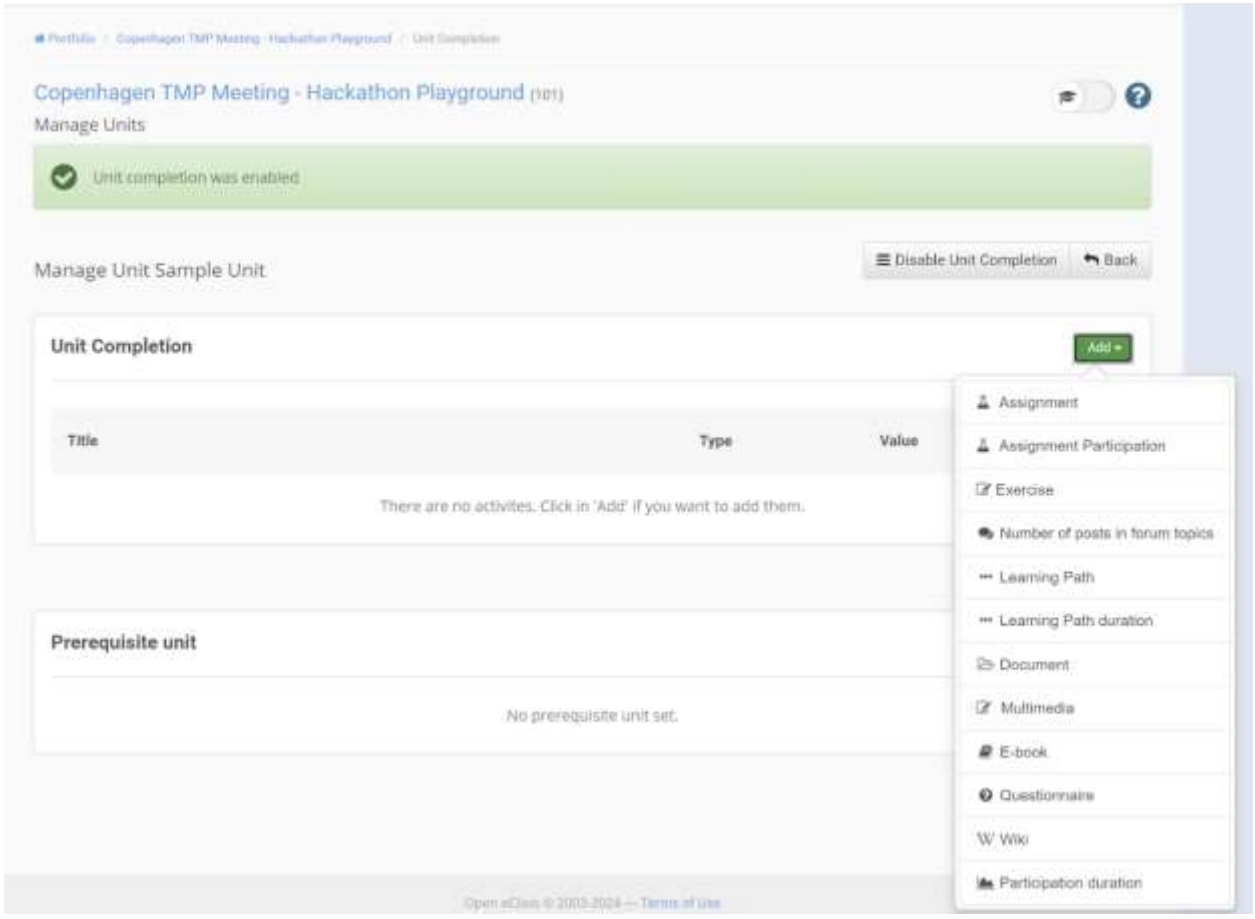


Figure 28: Platform Manage Unit cont.2

Figure 29: Platform Hackathon Add Activity

6 References

[1] HackerEarth, "The ultimate guide to organizing a successful hackathon," [Online]. Available: https://www.hackerearth.com/community-hackathons/resources/e-books/guide-to-organize-hackathon.

[2] Wikipedia, "Hackathon," [Online]. Available: https://en.wikipedia.org/wiki/Hackathon.

[3] Pristine Agency, "Structure of a hackathon: Key elements for success," [Online]. Available: https://pristineagency.eu/blog/structure-of-a-hackathon.

[4] Fliplet, "What is a hackathon? The ultimate guide," [Online]. Available: https://fliplet.com/blog/what-is-a-hackathon-ultimate-guide/.

[5] B. A. Camburn, V. K. Viswanathan, J. Linsey, D. Anderson, D. Jensen, R. H. Crawford, and K. N. Otto, "Design at hackathons: New opportunities for design research," Design Science, vol. 6, p. e24, 2020. [Online]. Available: https://www.cambridge.org/core/journals/design-science/article/design-at-hackathons-new-opportunities-for-design-research/196DA8E40D4F789288EC2320B16CD007.

[6] A. Filippova, E. H. Trainer, and J. D. Herbsleb, "From diversity by numbers to diversity as process: Supporting inclusiveness in software development teams with brainstorming," Proc. ACM Hum.-Comput. Interact., vol. 5, no. CSCW1, pp. 1–20, 2021. [Online]. Available: https://dl.acm.org/doi/10.1145/3411764.3445198.

[7] M. Komssi, D. Pichlis, M. Raatikainen, K. Kindström, and J. Järvinen, "What are hackathons for?," IEEE Software, vol. 32, no. 5, pp. 60–67, 2015. [Online]. Available: https://dl.acm.org/doi/10.1145/2839509.2844590.

[8] The Innovation Mode, "How to run a successful corporate hackathon," [Online]. Available: https://www.theinnovationmode.com/the-innovation-blog/how-to-run-a-successful-corporate-hackathon.

[9] HackerEarth, "Hackathon planning kit," [Online]. Available: https://hackathon-planning-kit.org/files/hackerearth.pdf.