



**ENGINEERING and INDUSTRY
INNOVATIVE TRAINING FOR ENGINEERS
(ENGINITE)**

PROJECT NUMBER
2017-1-CY01-KA202-026728

IO4-TASK 1: The online training platform







Prepared by CUT



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1. The ENGINITE online training platform

The Cyprus University of Technology (P1-CUT) started the development of the ENGINITE online training platform (embedded in the project's webpage: <https://platform.enginite.eu/>) from the beginning of this intellectual output. The ENGINITE professionally designed online platform aimed at making all training courses widely available. In particular, the ENGINITE online training platform provided free access to the educational material developed by our project (e.g., educational content, training programme specifications, etc.). The platform was publicized and promoted in multiple ways by all partners involved throughout the lifetime of the project.

The development and finalization of the ENGINITE training platform was based on a multi-step procedure comprising three sequential stages as follows:

- Stage 1: Submission of the educational content (ENGINITE modules) by the project partners
- Stage 2: Design and development of the ENGINITE online training platform
- Stage 3: Evaluation of the ENGINITE online training platform

More information about each stage will be provided in the following sub-sections.

Stage 1: Submission of the educational content (ENGINITE modules)

As part of the first stage, each partner was requested to prepare and submit the assigned module(s) following a set of guidelines, aiming to ensure that all the ENGINITE courses would be based on the same structure and philosophy.

In particular as part of this stage, all partners were requested to organize and submit their ENGINITE modules description and training materials by completing six required parts in a *Module Submission JotForm* (<https://form.jotform.me/81043336063448>) prepared by the Cyprus University of Technology (P1-CUT), as follows:

- Part A: General information
- Part B: Module overview & Key learning outcomes
- Part C: Problem-based learning scenario
- Part D: Pre-module preparation
- Part E: Module (Training)
- Part F: Post-Module (Post-Training)

In the following sections, these parts are presented in combination with some basic instructions provided to the project partners for the submission via the structured JotForm.

Part A: General information

Part A is comprised of nine required fields (Figure 1). These fields are related to the general information of the ENGINITE modules, as follows.

Title: Indicate the name(s) of the persons who contributed to the development of the module

Author(s): Indicate the name(s) of the persons who contributed to the development of the module

Target group: Indicate the target group(s)

Duration: Indicate the estimated duration of the module

Language of materials: Indicate the language of the training materials

Type & number of sessions: Indicate the type and number of the sessions

Number of participating engineers: Indicate the number of participating engineers

Groups' setting: Describe the groups' setting

Keywords: Enter 4-5 keywords describing the module

ENGINITE MODULE SUBMISSION

Please fill in the form below.

Part A

GENERAL INFORMATION

Title *

Indicate the title of your module (e.g. Innovation, Entrepreneurial and Intrapreneurial skills)

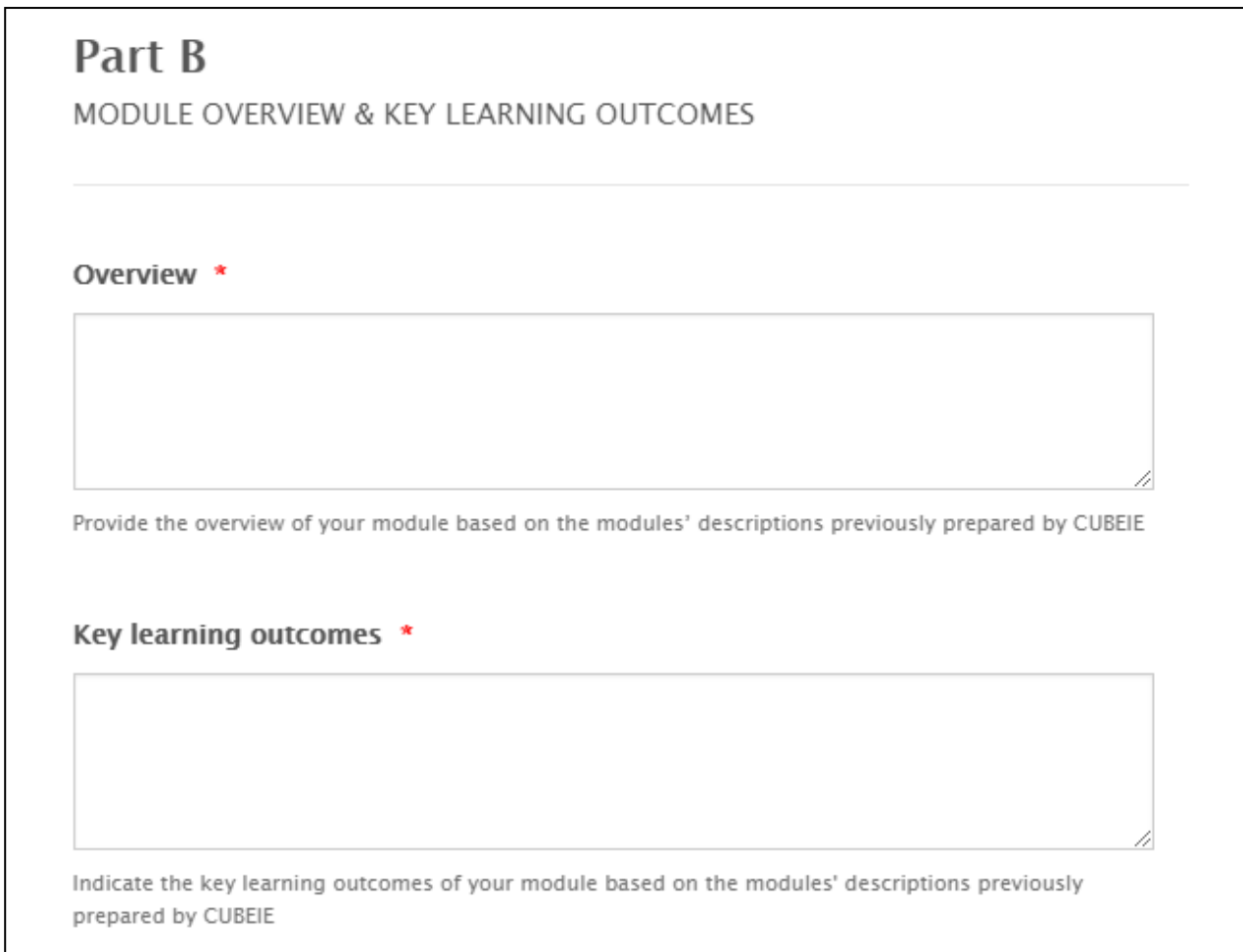
Author(s) *

Indicate the authors who developed this module (e.g. Developed by Christina Achilleos & Stephanie Apserou)

Figure 1. Screenshot of “Part A: General Information” from the *Module Submission JotForm*

Part B: Module overview & Key learning outcomes

Part B aims to provide the overview and the key learning outcomes of the module (Figure 2).



Part B
MODULE OVERVIEW & KEY LEARNING OUTCOMES

Overview *

Provide the overview of your module based on the modules' descriptions previously prepared by CUBEIE

Key learning outcomes *

Indicate the key learning outcomes of your module based on the modules' descriptions previously prepared by CUBEIE

Figure 2. Screenshot of “Part B: Module overview & Key learning outcomes” from the *Module Submission JotForm*

This overview should be short/concise and should be based on the modules' descriptions and key learning outcomes that were previously prepared by CUBEIE (P3) as part of the IO3: Development of Educational Content and Relevant Guidebooks, e.g.

Overview: In this module the participating engineers will be introduced to the driving forces of our era: innovation coupled with creative business development. Participants shall be requested to foster their interpersonal skills with a creative utilization of their background. Communication, presentation and negotiation skills development is a core element and success facilitator within this module. A challenging and fascinating environment will be established by using motivating problems, team exercises, and guest speakers to turn the module into a lifetime experience. The learning outcomes will boost engineers in their future career. Engineers may employ the gained knowledge within a startup or a multinational company; in a cutting-edge project or in some

traditional sector challenged by present market conditions; during routine or crisis situations. Whatever the scenario, the engineers will be well equipped and ready to handle the situation with creativity and professionalism.

Key learning outcomes: Upon completion of the module, participants should be able to:

- Demonstrate the fundamental principles and methods of innovation, entrepreneurship and intrapreneurship.
- Develop and apply business models.
- Utilize tools to explore and create innovative business ideas.
- Develop and introduce of innovation and entrepreneurship/intrapreneurship culture in an organization.
- Communicate, finance, or market a new idea, product, or initiative.

Part C: Problem-based learning scenario

Part C aims to present the problem-based learning scenario (Figure 3). The scenario should be concise and relate to the content and the goals of the module (max. 250 words).



Part C
LEARNING SCENARIO

Problem-based learning scenario

Present your problem-based learning scenario of your module

Image 1 * No file chosen

Image 2 * No file chosen

Image 3 No file chosen

Figure 3. Screenshot of “Part C: Learning Scenario” from the *Module Submission JotForm*

The PBL learning scenario should be accompanied by 1-2 illustrative images.

What follows are some examples of problem-based learning scenarios from different contexts. Each scenario is expected to have the following length and format. E.g.

Example 1-Equipping Tiny Devices Ltd.

You have just been hired by the software development start-up firm, Tiny Devices Ltd, as an IT Support Specialist. You met the Chief Technology Officer, Mr. Chong, this morning as he welcomed you to the company and briefed you on your duties and job scope.

Tiny Devices Ltd is a brand-new setup located in Chai-Chee Techpark. The office space is about 2,000 sq. ft and other than the rooms being partitioned and furnished, it is still quite bare. You are brought to meet your immediate supervisor, Mr. Ong, who is the IT Support Manager, and the IT Support Team. The IT Support Team has 5 members, including yourself.

Mr. Ong gathered the team and said, "We have to get down to work fast. Amongst the many urgent tasks, we need to equip the office for staff IT needs. And we have only 3 weeks from today. We are a start-up and bottom-line is very important. I need a proposal with budget from the team in 1 week's time for me to vet. Once it is ok, you will have to present it to top management. Expect tough questions."

Example 2-Helping Uncle Sean

You received a call from your uncle, Sean Cheng, one afternoon and he asked if you know anything about computers. You know that Uncle Sean runs a car rental company called "Universal Car Rentals" in town. He went on to tell you his situation.

"You see, it is getting tougher to keep track of my cars and my customers. My business is growing and there is more and more paper-work to be done. You know lah, I hate paper-work! Ah Leng [his assistant] is not helping much, she just messes things up. I think she now has a boyfriend and so is very easily distracted! I also don't know what Ah Heng is doing at my airport branch. The booking chits and rental slips are always misplaced or lost. Anyway, I have been getting complaints from several clients recently and I really need to get things ironed out quickly. So, can you help me or not?"

Part D: Pre-module preparation

Part D aims to provide some additional material that will set the background for the module, will deepen into the problem-based scenario and introduce the engineers to their PBL investigation (Figure 4). As part of this section, each module will be accompanied by two different word files: (a) Background information, (b) Case study.

Part D

PRE-MODULE PREPARATION

Background information *

No file chosen

A word file about 3-4 pages providing background knowledge in relation to the content of the module

Case study *

No file chosen

A word file about 5-6 pages providing the main case study surrounding the problem-based scenario

Figure 4. Screenshot of “Part D: Pre-module preparation” from the *Module Submission JotForm*

In particular, in preparation of the training module young engineers will be asked to read:

- Background information (A word file using [the ENGINITE template](#) about 3-4 pages providing background knowledge in relation to the content of the module: Text with diagrams and images, Times New Roman 12, Single Space)
- Case study (A word file using [the ENGINITE template](#) about 5-6 pages providing the main case study pertinent to the problem-based scenario: Text with diagrams and images, Times New Roman 12, Single Space). As an example of what is expected you can visit the ARTISAN training modules (<https://www.artisan-platform.eu/>), scroll down the page in order to identify the “Transgenerational Family Entrepreneurship” module and select *Read more*. In the new page, please find and read the case study of OLEASTRO OLIVE PARK (https://docs.wixstatic.com/ugd/f4f22d_b5d71b08a3224734811701c4f327f499.pdf) as a good example. If there is possibility the case study can be also accompanied by a short video (about 3-4 min.), produced and funded by the partner who is responsible for the module.

Part E: Module (Training)

Part E aims to provide the indicative structure of module (training) along with some additional material (Figure 5). As part of this section, each module will be accompanied by three different word files: (a) Introductory-presentation, (b) Discussion questions, (d) Useful Resources. In particular, what we asked from you is:

- An introductory presentation (build on the [ENGINITE PPT template](#)) about 50-60 slides of "lecture" which can be read by the students/ or be used by the instructor as a mini lecture in case it is needed during the PBL module. As an example of what is expected, you can visit the ARTISAN training modules (<https://www.artisan-platform.eu/>), scroll down the page in order to identify the “Transgenerational Family Entrepreneurship” module and select *Read more*. In the new page, please find presentation for OLEASTRO OLIVE PARK (https://docs.wixstatic.com/ugd/f4f22d_ec224020323943d3b93de44b11ea9cc9.pdf). This presentation can serve as an example of what is expected from you.
- A word file with 5-10 Discussion questions (build on the [ENGINITE word template](#)) structured around the PBL scenario and the case study that you will provide to the young engineers for engaging them with their PBL investigation. e.g.

For the *Example 1-Equipping Tiny Devices Ltd.* previously presented “Discussion questions” could include:

- Define the specific problem that your team has at hand.
- In what way(s) can the problem be solved? Elaborate each one.
- What further information would your team need in order to accomplish the job well? Where can this information be found?
- What do you think is expected in the budget proposal?
- How would your team prepare to present to the company's Top Management?
- What will be your team's action plan?

For the *Example 2-Helping Uncle Sean* previously presented “Discussion questions” could include:

- What exactly is Uncle Sean's problem?
 - In what way(s) can the problem be solved? Which is most appropriate?
 - Is it possible to solve such a problem permanently?
 - What further information do you need in order to help him?
 - How would you explain your solution/proposal, if any, to Uncle Sean?
- A word file (build on the [ENGINITE word template](#)) with at least 10-15 Resources around the PBL scenario and the case study that you will provide to the young engineers for supporting their PBL investigation. These resources can be journal articles, reports, webpages, YouTube videos etc.

Part E

MODULE (TRAINING)

Introductory presentation *

No file chosen

A introductory presentation (build on the ENGINITE PPT template) about 50–60 slides of lecture which students can advise / or instructor can use to mini lecture in case it is needed

Discussion questions *

No file chosen

A word file with 5–10 Discussion questions (build on the ENGINITE word template) structured around the PBL scenario/the case study

Resources *

No file chosen

A word file (build on the ENGINITE word template) with at least 10–15 Resources around the PBL scenario and the case study that you will provide to the youngengineers for supporting their PBL investigation

Figure 5. Screenshot of “Part E: Module (Training)” from the *Module Submission JotForm*

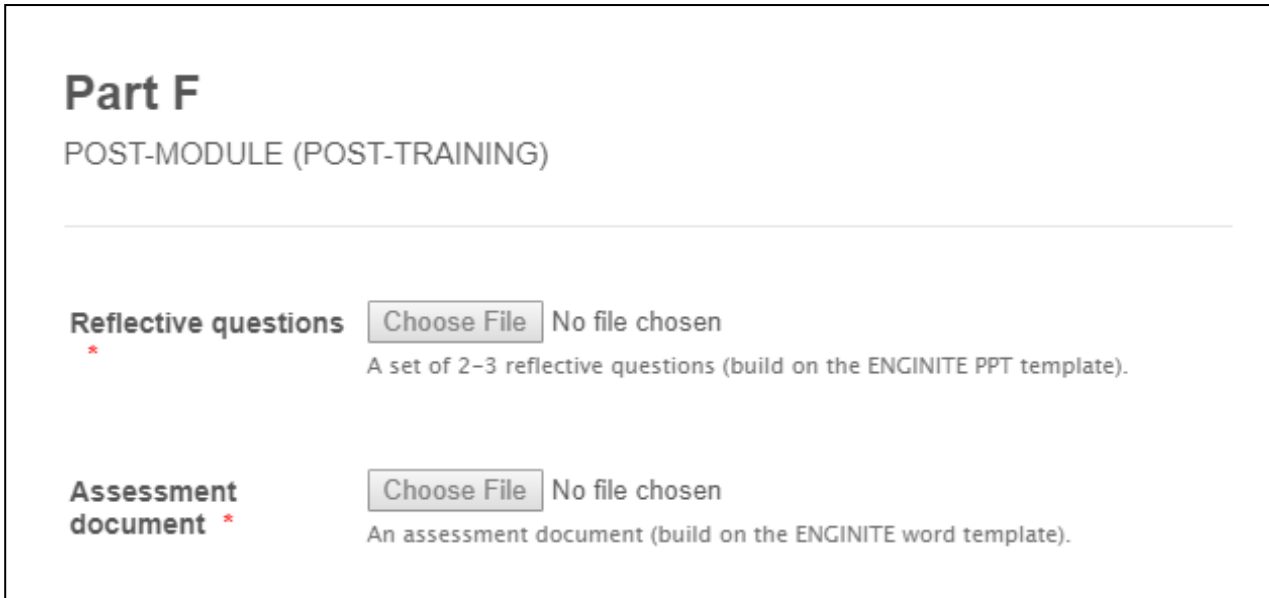
Part F: Post-Module (Post-training)

Part F is composed of two main activities taking place by the end of the module: (a) A set of reflective questions related to the problem-based investigation and (b) The module assessment (Figure 6).

In particular, what we asked from you is:

- A set of 2-3 reflective questions (build on the [ENGINITE PPT template](#)). As an example of what is expected you can visit the ARTISAN training modules (<https://www.artisan-platform.eu/>), scroll down the page in order to identify the “Transgenerational Family Entrepreneurship” module and select *Read more*. In the new page, find the [self-reflection document](#). This document can serve as an example of what is expected from you.
- An assessment document (build on the [ENGINITE word template](#)). Please note that the participants will be evaluated by the end of each module in order to ensure that have met

the expected learning outcomes e.g. participants to submit a short technical report (regarding their problem solution) after the end of each module.



Part F
POST-MODULE (POST-TRAINING)

Reflective questions * No file chosen
A set of 2-3 reflective questions (build on the ENGINITE PPT template).

Assessment document * No file chosen
An assessment document (build on the ENGINITE word template).

Figure 6. Screenshot of “Part F: Post-module (Post-Training)” from the *Module Submission JotForm*

Stage 2: Design and development of the ENGINITE online training platform

As part of this stage the ENGINITE online training platform (<https://platform.enginite.eu/>) was created (Figure 7).



Figure 7. Screenshot of the ENGINITE online training platform

The platform was linked to the project's website, and comprised five main sections as follows:

- Home (Landing page of the Online training platform)
- Project platform (Providing an introduction to the ENGINITE online platform, its target groups and its learning modules)
- Training modules (Providing access to the ENGINITE training modules)
- Contributors (Presenting all the partners who contributed to the development of the platform)
- Contact (Providing contact details for requesting more information, as needed)

As part of the online training platform, all the ENGINITE modules took the form of interactive e-learning content (Figure 8) using the Articulate software (<https://articulate.com/>).

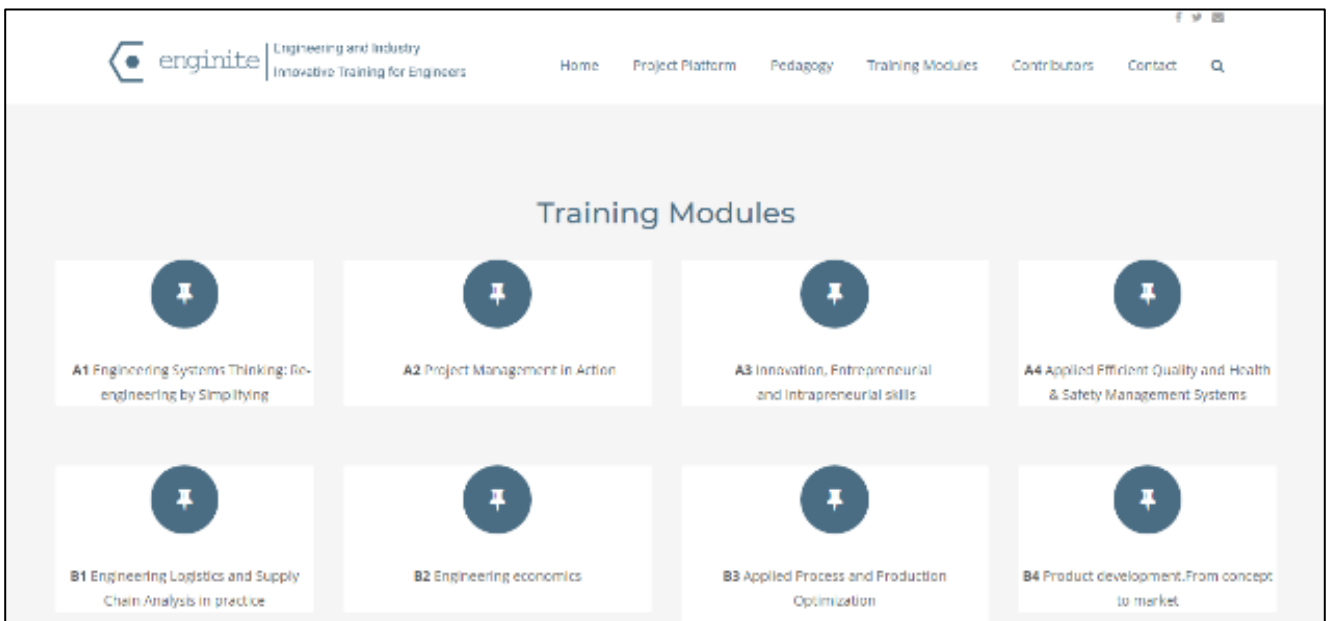


Figure 8. Screenshot of the ENGINITE online training courses

In particular, the Articulate software allowed us to transform each one of the ENGINITE modules into highly interactive online and mobile courses, with templates, storyboarding, animation, multimedia support, character templates, and advanced editing features.

As a result, each of the ENGINITE course featured an elegant, intuitive user interface, displaying interactively e-learning content created and structured, as part of the previous stage (Stage 1: Submission of the educational content).

For instance, an ENGINITE training e-course typically included:

- The “Course syllabus” e.g. Course description, key learning outcomes, course material/software etc. (Figure 9)

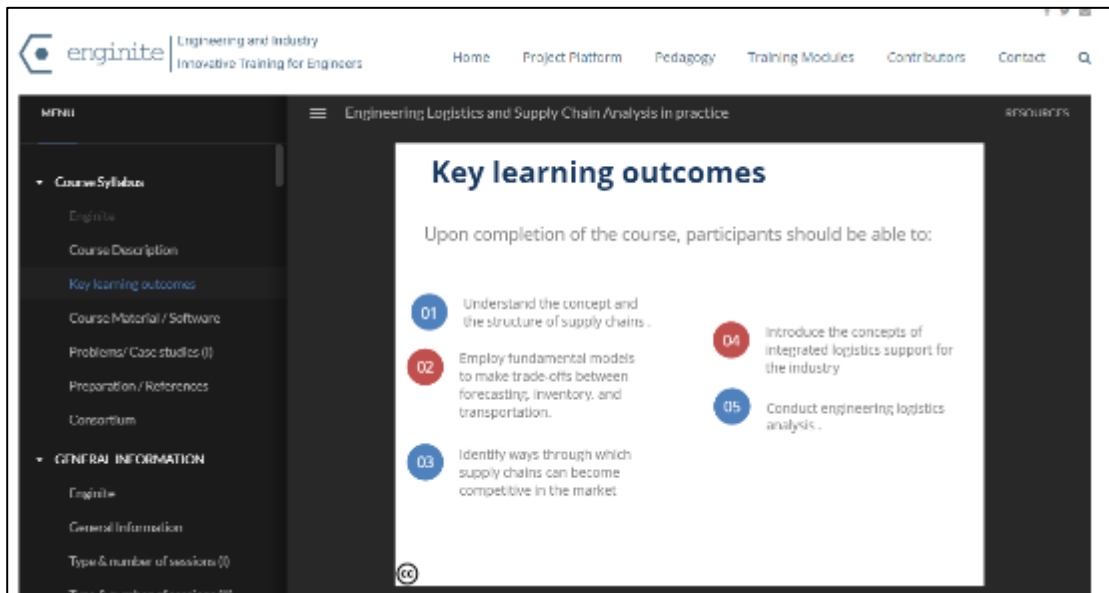


Figure 9. Screenshot from the *Engineering Logistics and Supply Chain Analysis* course

- “General information” e.g. Type & number of sessions (Figure 10)

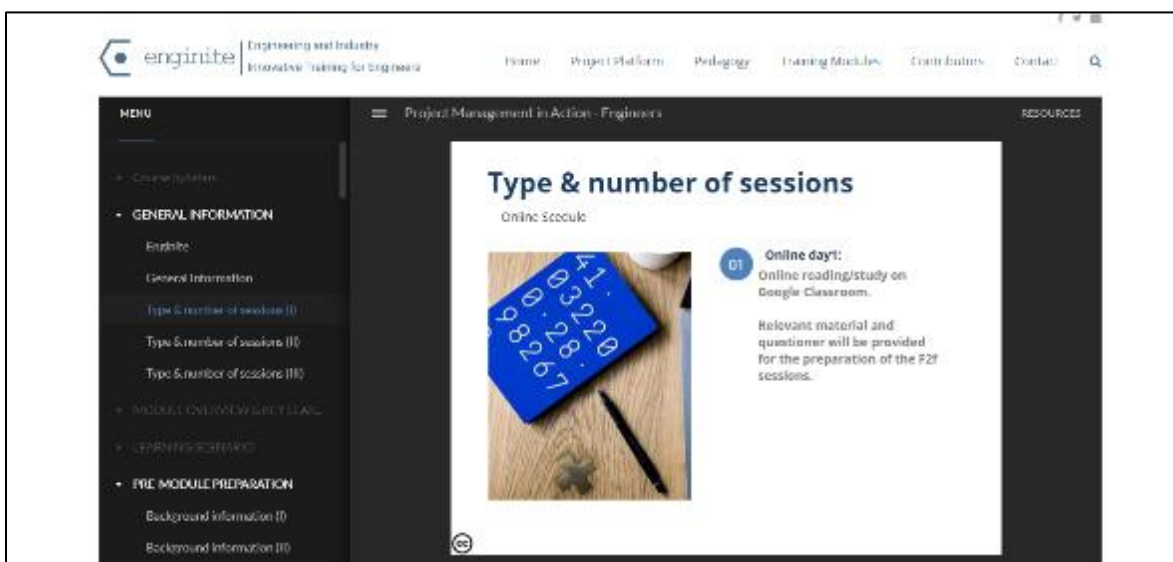


Figure 10. Screenshot from the *Project Management in Action* course

- “Module overview & Key learning outcomes” (Figure 11)

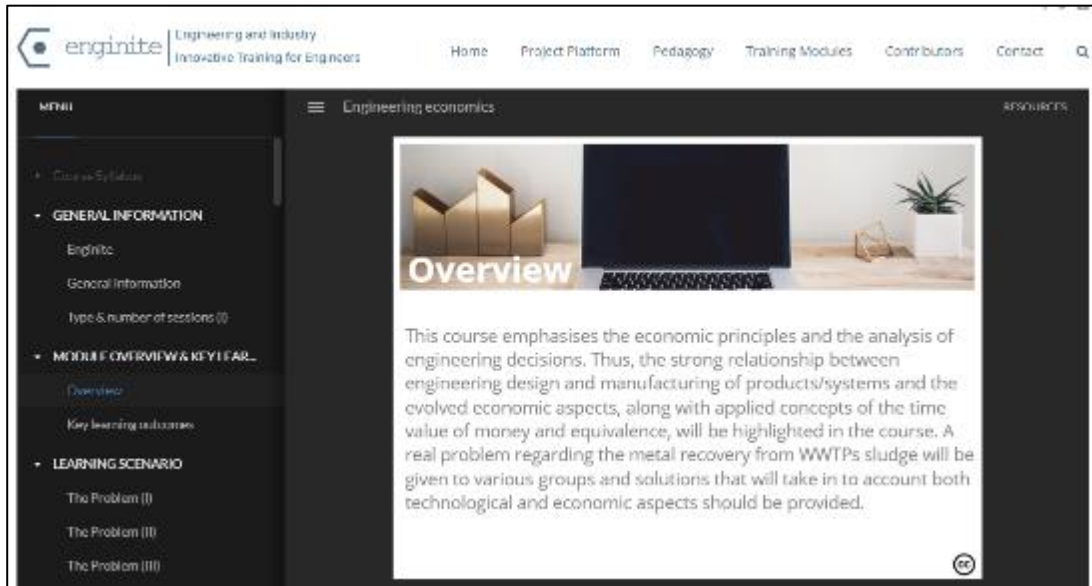


Figure 11. Screenshot from the *Engineering economics* course

- “Learning scenario” introducing the problem-based case (Figure 12)

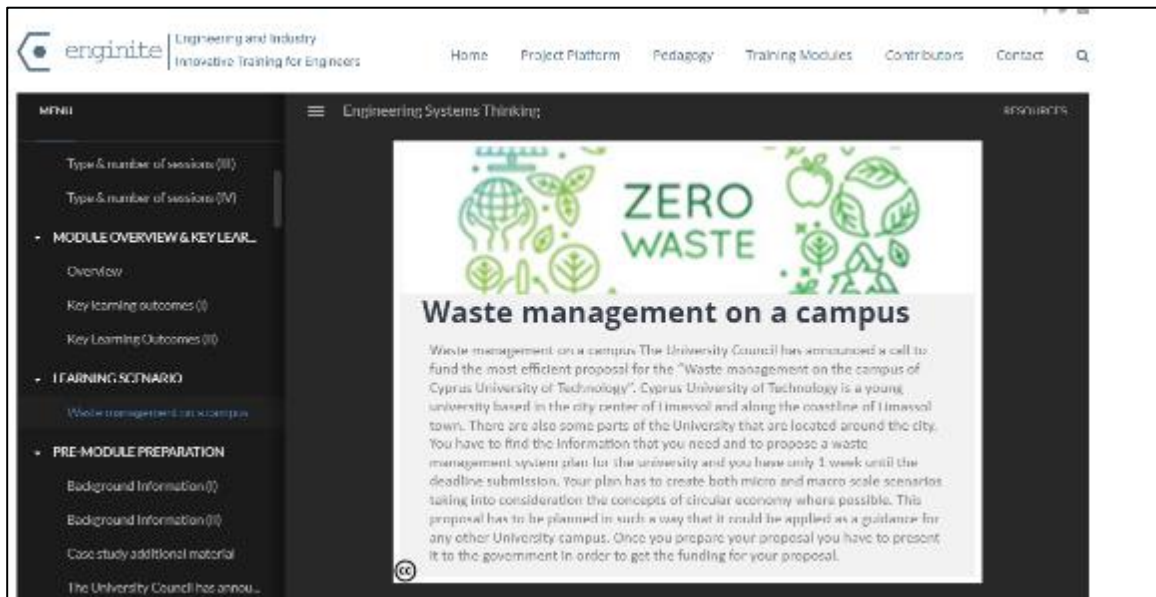


Figure 12. Screenshot from the *Engineering systems thinking* course

- “Pre-module preparation” providing background information and resources (Figure 13)

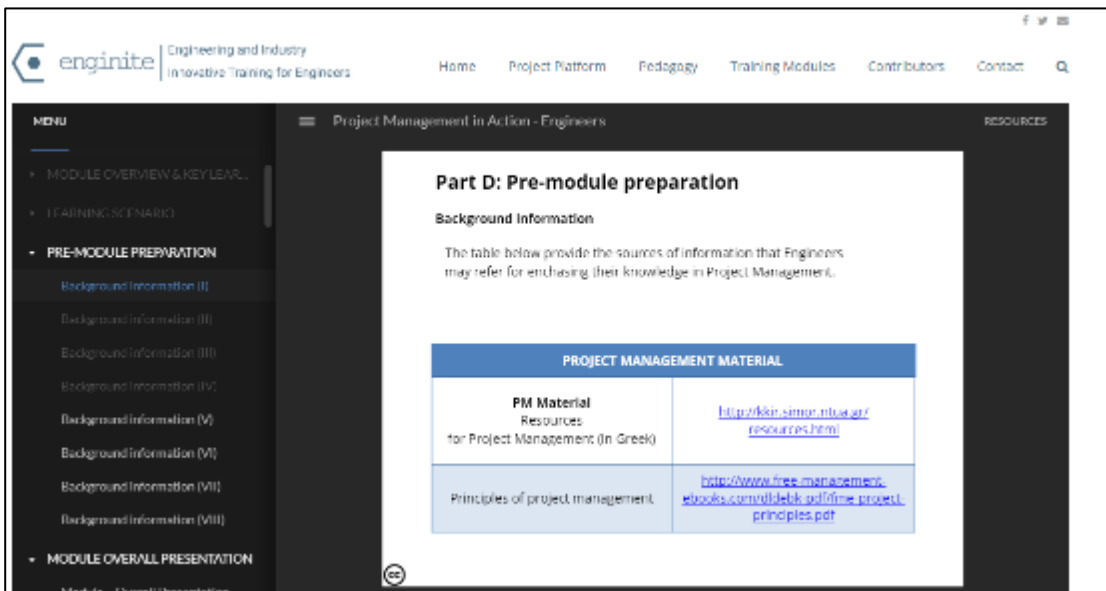


Figure 13. Screenshot from the *Project Management in Action* course

- “Module overall presentation” providing insightful presentations/slides on the topic (Figure 14)

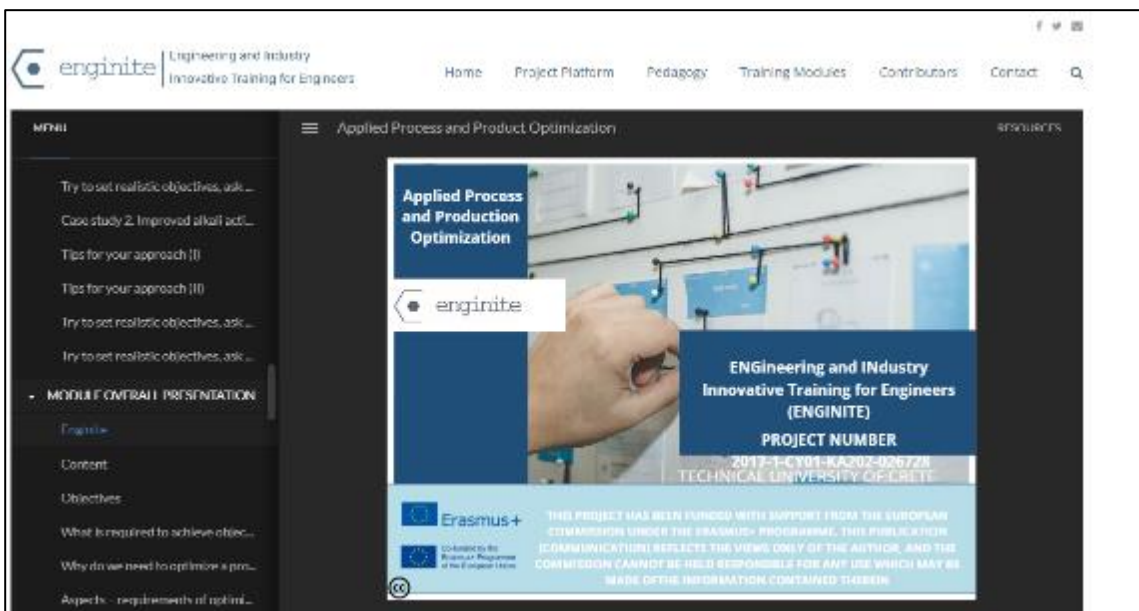


Figure 14. Screenshot from the *Applied process and production optimization* course

- “Post-module (Post-training)” including reflective questions and assessment surveys (Figure 15)

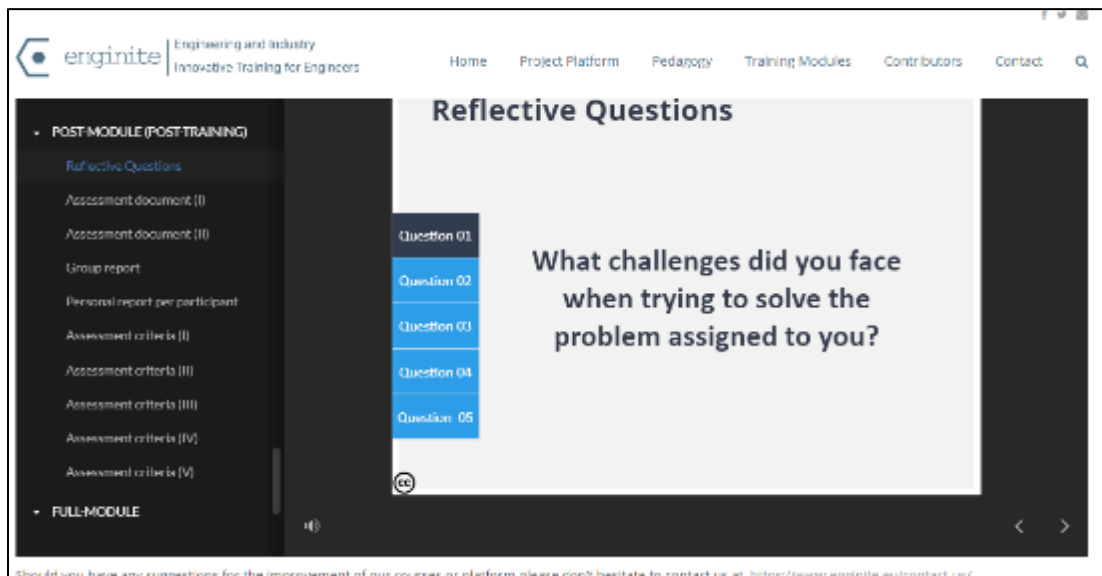


Figure 15. Screenshot from the *Innovation, Entrepreneurial & Intrapreneurial skills* course

Finally, the ENGINITE online training platform was developed so, at the minimum, to keep basic analytic data on platform use, which would be used for calculating the impact effect and visibility of the platform. This data was also employed in the third stage, presented below, focusing on the evaluation of the ENGINITE online training platform.

Stage 3: Evaluation of the ENGINITE online training platform

The evaluation of the ENGINITE online training platform was based on two different strands.

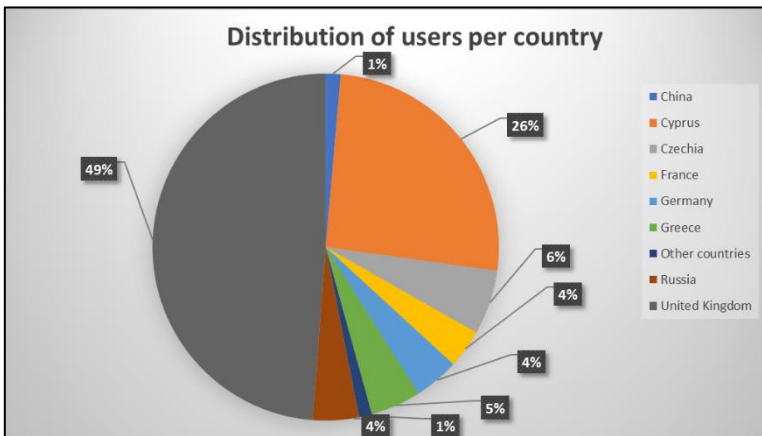
Firstly, we were interested in investigating the use of the platform according to web statistics, dynamics of user and usage numbers. As already mentioned, this was made possible as the ENGINITE training platform was designed to keep basic analytic data on platform use, such as the numbers of users accessing and using the platform.

Secondly, the ENGINITE online training platform was evaluated and validated by the participating partners and trainers. In particular, the ENGINITE trainers and the consortium partners were asked to complete a short survey (see appendix) to evaluate the platform taking into account a set of quality dimensions (e.g. general usefulness, richness of material, usability, interactivity, innovativeness etc.)

What follows below is the presentation of the main findings derived from the evaluation of the ENGINITE training platform per strand.

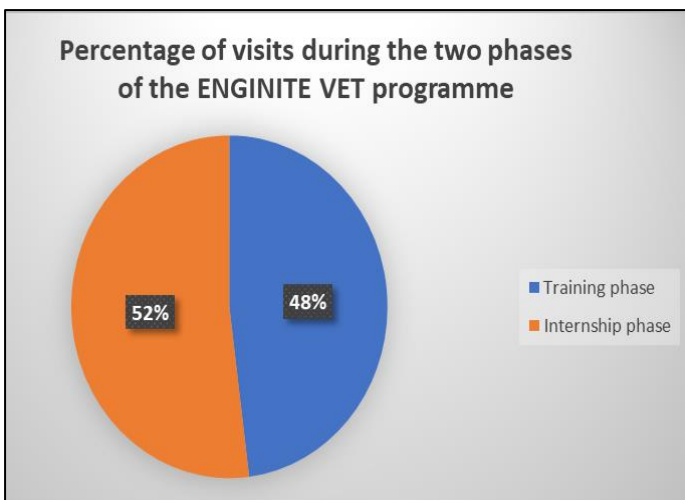
Part A: Platform usage rates

The ENGINITE online training platform analytics indicated that the ENGINITE training platform received 1245 visits from the beginning until of the end of the ENGINITE Vocational Education & Training (VET) programme (October 2018-June 2019). In particular, the platform was visited by more than 414 unique users.



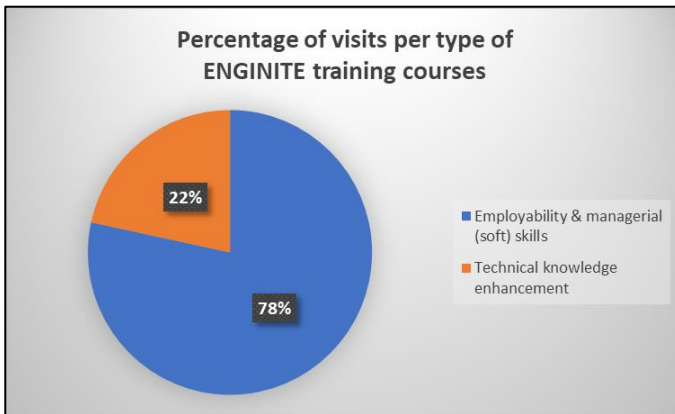
As presented in Figure 16, focusing on the distribution of the users per country 49% of the users came from United Kingdom, 26% from Cyprus, 6% from Czechia, 5% from Greece and 4% from Russia, Germany and France respectively. Last, 1% of the users came from China and another 1% from other countries (e.g. Italy, Pakistan, United States).

Figure 16. Distribution of users per country



As presented in Figure 17, the platform received almost an equal number of visits during the two phases of the ENGINITE VET programme. In particular, the platform received 598 visits (48%) during the first phase of the VET programme, namely the Training phase (October-December 2018), and 649 visits (52%) during the second phase of the VET programme, namely the Internship phase (January-June 2019). This indicated that the platform was equally useful in both phases of the ENGINITE VET programme.

Figure 17. Percentage of visits during the two phases of the ENGINITE VET programme



However, an interesting finding was that, as presented in Figure 18, the ENGINITE courses which were included in the category of Employability & managerial (soft) skills received much more visits (976 visits, 798%) in comparison to the ENGINITE courses which were included in the category of Technical knowledge enhancement (269 visits, 22%).

Figure 18. Percentage of visits per type of ENGINITE training courses

Table 1 presents the number of visits and unique users per ENGINITE course.

Table 1: Number of unique users per ENGINITE course

	N of users	N of visits
Employability & managerial (soft) skills		
Project Management in action	80	291
Efficient quality and health and safety management systems	107	250
Engineering systems thinking: Re-engineering by Simplifying	57	235
Innovation, Entrepreneurial and Intrapreneurial skills	55	200
Technical knowledge enhancement		
Concept to market product development	49	72
Supply chain in a rapidly changing environment	20	70
Applied process and production optimization	31	68
Engineering Economics	15	59

This difference between the number of visits and unique users visiting the ENGINITE courses could be attributed on two plausible explanations. Firstly, as the Employability & managerial (soft) skills were the first ones to be delivered during the ENGINITE Vocational Education and Training (VET) programme, it might be the case that the young engineers needed more time to familiarize themselves with the ENGINITE platform. As such they did also visit more often the platform. Secondly and more importantly, while some courses related to the technical knowledge might be already included in the undergraduate studies of the participating engineers, none of the Employability & managerial (soft) skills courses were included in their previous studies in such form. As such, this could explain the increased interest (in terms of users and visits) in the Employability & managerial (soft) skills courses, hosted on the ENGINITE training platform.

Part B: Evaluation by the participating partners and trainers

The evaluation of the ENGINITE training platform by the participating partners and trainers focused on two different aspects: (a) the evaluation of the educational content hosted on the ENGINITE training platform and (b) the evaluation of the training platform itself.

The ENGINITE educational content was ranked very highly.

In particular, as it appears in Table 2, the ENGINITE trainers and partners highlighted that the educational content was informative ($\bar{x}=4.50$, $SD=0.67$), rich ($\bar{x}=4.42$, $SD=0.51$), well-organized ($\bar{x}=4.33$, $SD=0.65$), contributed to development of managerial (soft) skills ($\bar{x}=4.33$, $SD=0.65$) and technical knowledge ($\bar{x}=4.08$, $SD=0.79$).

Table 2: Evaluation of the educational content

	Mean	SD	Min.	Max.
The educational content is informative	4.50	0.67	3.00	5.00
The educational content is rich	4.42	0.51	4.00	5.00
The educational content contributes to development of managerial (soft) skills	4.33	0.65	3.00	5.00
The educational content is well-organized	4.33	0.89	3.00	5.00
The educational content contributes to the development of technical knowledge	4.08	0.79	3.00	5.00

Likewise, the ENGINITE training platform itself was also ranked very highly.

In particular, as it appears in Table 3, the ENGINITE trainers and partners highlighted that the ENGINITE training platform was useful ($\bar{x}=4.42$, $SD=0.51$), met their expectations ($\bar{x}=4.17$, $SD=0.58$), was novel ($\bar{x}=4.08$, $SD=0.67$), interactive ($\bar{x}=3.92$, $SD=0.79$) and user-friendly ($\bar{x}=3.83$, $SD=0.83$).

Table 3: Evaluation of the ENGINITE online training platform

	Mean	SD	Min.	Max.
The ENGINITE online training platform is useful	4.42	0.51	4.00	5.00
The ENGINITE online training platform meets my expectations	4.17	0.58	3.00	5.00
The ENGINITE online training platform is novel	4.08	0.67	3.00	5.00
The ENGINITE online training platform is interactive	3.92	0.79	2.00	5.00
The ENGINITE online training platform is user-friendly	3.83	0.83	3.00	5.00

Overall, the ENGINITE training platform and its educational contents received high evaluation by the participating partners and trainers.

APPENDIX

1. Questionnaire for the evaluation of the ENGINITE training platform

Questionnaire

Dear ENGINITE friends and colleagues,

The purpose of this questionnaire is to collect your views and perceptions about the ENGINITE online training platform (<https://platform.enginite.eu/>).



The ENGINITE online training platform was developed by the outset of the ENGINITE European project to support the training of the participating graduated engineers and to contribute in the development of their technical knowledge and managerial skills.

As part of this questionnaire we would kindly ask for your feedback about the ENGINITE training platform about a set of quality dimensions (**general usefulness, richness of material, usability, interactivity, innovativeness, educational value**)

The completion of the questionnaire is anonymous, and your answers will be used for the purpose of evaluating the ENGINITE online training platform.

Thank you for your collaboration!

PART A: Please evaluate the statements below

In each statement circle:

- “1” if you *Strongly disagree*
- “2” if you *Disagree*
- “3” if you are *Neutral*
- “4” if you *Agree*
- “5” if you *Strongly agree*

Please, ensure that you have evaluate all 10 statements. If you change your mind about a response, simply delete your choice and circle another number.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. The educational content on the ENGINITE online training platform is rich	1	2	3	4	5
2. The educational content on the ENGINITE online training platform is informative	1	2	3	4	5
3. The educational content on the ENGINITE online training platform is well-organized	1	2	3	4	5
4. The educational content on the ENGINITE online training platform contributes to the development of technical knowledge	1	2	3	4	5
5. The educational content on the ENGINITE online training platform contributes to development of managerial (soft) skills	1	2	3	4	5
6. The ENGINITE online training platform is interactive	1	2	3	4	5
7. The ENGINITE online training platform is user-friendly	1	2	3	4	5
8. The ENGINITE online training platform is novel	1	2	3	4	5
9. The ENGINITE online training platform is useful	1	2	3	4	5
10. The ENGINITE online training platform meets my expectations	1	2	3	4	5

PART B: Please provide any additional comments in relation to the ENGINITE online training platform (e.g. suggestions, recommendations etc.)

PART C: Please select with \surd what matches to your case.

1. Age

- 25-30
- 31-35
- 36-40
- 41-45
- 46-50
- 51-55
- 56-60
- Other

2. Gender

- Male
- Female

3. How often do you use/do you intend to use the ENGINITE online training platform?

- Never
- Rarely
- Occasionally
- Frequently
- Always
- Other.....