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Reinforcing Non-University Sector at the Tertiary Level in Engineering and Technology to Support Thailand Sustainable Smart Industry

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WP4: Quality Control and Monitoring

Final Audit Report
(External Quality Control and Monitoring)

Project Acronym:	ReCap4.0
Project full title:	Reinforcing Non-University Sector at the Tertiary Level in Engineering and Technology to Support Thailand Sustainable Smart Industry
Project No.:	619325-EPP-1-2020-1-TH-EPPKA2-CBHE-JP
Work Package N° and title	4/Quality Control and Monitoring
Work Package title	Quality Control and Monitoring
WP Leader	Andrei Szuder
Deliverable (Task) N°/Title	4.3 Inviting independent external evaluation of the project results
Author responsible for the Deliverable	Ruzica Nikolic
Date of Deliverable submission	04.11.2024.
Status:	V3
Dissemination Level:	Internal/External

Disclaimer

Revision Sheet

Version	Date	Author (Partner/Person)	The revision reason
V1	24.10.2024.	Ruzica Nikolic	The first draft
V2	04.11.2024.	Ruzica Nikolic	Accepted remarks from the PC, PEC and QCMB members
V3	05.11.2024.	Ruzica Nikolic	Accepted remarks from the PC

Distribution List

Project Partner	Responsible (for dissemination)
QCMB	
UPB-P7	Andrei Szuder
KKU-P3	Danaipong Chetchotsak
AIT-P1	Huynh Trung Luong
KMUTNB-P2	Warapoj Meethom
MU-P4	Thananya Wasusri
MIC-P6	Julieanne McAuliffe
PSU-P5	Suriya Jirasatitsin
UMinho-P8	Rui Sousa

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Project Partner	Responsible (for dissemination)
PEC	
AIT	Pisut Koomsap
KKU	Kanchana Sethanan
KMUTNB	Athakorn Kengpol
MIC	Cathal de Paor
PSU	Thanate Ratanawilai
UMinho	Rui M. Lima
UPB	Manuela-Roxana Dijmarescu

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1. Executive Summary

Hereby is presented the report that contains data and conclusions on the conducted final audit process of the Project "Reinforcing Non-University Sector at the Tertiary Level in Engineering and Technology to Support Thailand Sustainable Smart Industry - ReCap 4.0", funded by the European Commission within the Erasmus+ program, KA2 – Cooperation for innovation and the exchange of good practices – **Capacity Building in the field of Higher Education**, Project number 619325-EPP-1-2020-1-TH-EPPKA2-CBHE-JP.

This is the Final audit, which covers the period of the project implementation from 01.10.2022. to 30.09.2024.

The audit process was realized in several phases. The first phase was conducted at University of Minho, Guimaraes campus, in Portugal, where the auditor was monitoring the training process conducted by the EU coaches delivered to the Thailand trainers. In the next phase of the auditing process the auditor has reviewed documentation on the project realization provided by the Project Management Team (PMT), and prepared and sent the questionnaires for all the categories of the project team members. The analysis of the provided answers served to the auditor as a basis for the interviews conducted in the third phase, with the project team members at Khon Kaen University in Khon Kaen, Thailand. Auditor was also in position to directly monitor three Project dissemination seminars, held at Mae Fah Luang University in Chiang Rai, on 23.09.2024., at Suan Sunandha Rajabhat University, Nakhon Pathom Campus, on 25.09.2024., and at Khon Kaen University in Khon Kaen, on 27.09.2024. All the phases and sessions of the audit process were realized according to Audit plan mutually agreed by the project management team and the auditor.

The auditor held the interview sessions with the project team members both in person and via the tele-conferencing. The interviewed team members included the Project Coordinator – professor Pisut Koomsap from Asian Institute of Technology, members of the Project Executive Committee (PEC) and the Work Package Leaders and Task Leaders, as well as the Members of the Quality Control and Monitoring Board (QCMB), and furthermore, with the Thailand trainers and trainees.

The main auditor's objective and task were to review and evaluate the actual status of the project realization at the end of its implementation. That assumed establishing the level of compliance of reported results with the criteria determined for the project success, verifying the content of the project documents and reports, establishing if there were the problems and/or delays in the project activities' realization, if and how were those problems dealt with, and what were the final outcomes of them.

The audit process assumed evaluation of the quality of the project realization in general, which included quality of the management process, quality of the planned activities implementation, as well as estimation of compliance of the achieved outputs and outcomes with the planned ones. Efficiency and quality of the presented project documentation were also evaluated, as well as the efficiency of the applied project management tools. Validity and sustainability of the project results - outcomes of the further tasks, were also estimated. Evaluation of the workload distribution across the work packages was done during the mid-term audit and was not included in this evaluation at the project final audit.

The objective of this audit was neither evaluation of the project implementation compliance with the legal regulations of the European Commission program Erasmus+, nor the financial matters (efficiency or correctness of spending the awarded resources). Actually, the mandatory financial auditing of the project realization was abolished by the EU program administration.

Based on the reviewed documentation, submitted answers of the team members to presented questionnaires, monitoring of the training process in March of 2024. at University of Minho in Guimaraes, monitoring of the project dissemination seminars in September of 2024. at universities in three regions of Thailand, the interviews with all the categories of the team members, as well as the trainees, the auditor was able to draw the conclusions on the project implementation, efficiency of the project management, quality

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control and quality level of the realized activities, executed outputs, outcomes and deliverables, i.e., in general, whether the project implementation produced the projected results and at which level of quality.

The auditor feels obliged to emphasize that all the problems that were noticed by different project team members in the project realization, were presented to the auditor frankly and without hesitation.

The general conclusion by the auditor is that the project was on the right track during the whole implementation period. It should be noted that almost the whole first part of the project realization was happening during the COVID-19 pandemic. There is no need to repeat all the kinds of problems that were caused by it. It suffices to say that the EU Erasmus + program administration acknowledged the difficulties that the project team was facing with, and granted one year extension of the project implementation period. The project team members were doing their best to implement all the project activities and remedy the eventual setbacks caused by pandemic, so that the project would be completed as planned. During the second part of the project realization, the project team members succeeded (mainly) in getting the project going as planned, without further delays and obstacles. That is why this audit report would contain the positive opinion of the project implementation, planned and executed activities. The impressive number of 442 trainees (who actually attended 770 trainings) from the non-university sector at the Rajabhat universities in all the regions of Thailand, testify to the successful reaching of the project main objective "… *to enhance the capacity and ability of the non-university sector at the tertiary level in Thailand for the effective delivery of engineering and technology knowledge and skills related to Industry 4.0 to support Thailand Sustainable Smart Industry* …".

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2. Introduction

Project:

"Reinforcing Non-University Sector at the Tertiary Level in Engineering and Technology to Support Thailand Sustainable Smart Industry"

Funded by the European Commission:

Project number 619325-EPP-1-2020-1-TH-EPPKA2-CBHE-JP

Erasmus+ programme, KA2 – Cooperation for innovation and the exchange of good practices – Capacity Building in the field of Higher Education

Audit period:

01.10.2022. – 30.09.2024. (Final audit)

Project is implemented by the following universities:

P1: Asian Institute of Technology (AIT)

P2: King Mongkut's University of Technology North Bangkok (KMUTNB)*

P3: Khon Kaen University (KKU)

P4: Mahidol University (MU)

P5: Prince of Songkla University (PSU)

P6: Mary Immaculate College (MIC)

P7: University Politehnica of Bucharest (UPB)**, Romania

P8: University of Minho (UMinho), Portugal

* Note: Original partner P2 was Chiang Mai University (Muang District, Chiang Mai, Thailand), who withdrew from the project after it was approved and was replaced by King Mongkut's University of Technology North Bangkok (Bangkok). This replacement was approved by the program administration.

**Note: Since July 2023 UPB has changed the name to "National University of Science and Technology POLITEHNICA Bucharest (NUSTPB)". In ReCap4.0 documents, including this report, is used the official name as of the date of the project start.

Project coordinator: Dr. Pisut Koomsap, Associate professor (AIT)

Auditor:

Professor *Ružica Nikolić*, PhD, SM, MSc, Dipl. Eng.

University of Žilina

Research Centre

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2.1. Basic information on the project

01_ReCap_Project proposal_2020.pdf

Project objective(s):

Wider Objective:

The objective of this capacity building project is to enhance the capacity and ability of the non-university sector at the tertiary level in Thailand for the effective delivery of engineering and technology knowledge and skills related to Industry 4.0 to support Thailand Sustainable Smart Industry and to strengthen a partnership among participating European and Thai universities as well as benefited non-university sector.

Specific project Objectives:

- *SO1 Improvement of competences and skills of teaching staff of non-university sector at the tertiary level in Thailand by training them with the Industry 4.0 competence development training program containing Industry 4.0 knowledge from the recently developed courses of MSIE 4.0 curriculum, teaching skills development and learning experience-focused course design and development.*

- *SO2 Development of innovative training modules, training materials, and delivery process for the Industry 4.0 competence development training program according to ECTS.*

- *SO3 Implementation of modern ICT tools and methodologies for effective training.*

- *SO4 Training trainers for Thai partner universities by EU partners for sustainability of the competence development training program.*

- *SO5 Establishment of an Innovative Teaching and Learning Center for Thailand Sustainable Smart Industry for continuing providing training, advice, forum and a channel of communication to support professional development and lifelong learning of the staff of academic institutes at the tertiary level as well as technical training for industry.*

- *SO6 Setup of training network among the members of partner universities and of associated partners around the Innovative Teaching and Learning Center for Thailand Sustainable Smart Industry to ensure the sustainability of the project results and to be in line with European policy and practice in Thailand.*

Project outputs and outcomes:

01_ReCap_Project proposal_2020.pdf

WP1 – Non-university capacity assessment

- A capacity assessment execution plan
- A capacity assessment form
- An assessment report on non-university capacity including recommendations on emphasis areas for the Industry 4.0 competence
  – Workload 8 %, Budget 2.8 % (27,970 EUR)

WP2 – Sustainable Development of Industry 4.0 Competence Development Training Program

- Approval of an Industry 4.0 Competence Development Training Program by PEC by M7
- 10 modules complete with innovative training materials are ready by M9
- A capacity training assessment form is approved by WP2 members by M3
- Completion of training sessions for the 12 Thai trainers by M29
- Completion of coaching sessions for the 12 Thai trainers by M30

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- An assessment report by M31
  – Workload 19 %,

WP3 – Capacity Training for Non-University Sector at Tertiary Level in Thailand

- A capacity training execution plan
- 60 trained teaching staff from non-university sector at tertiary level
- An assessment report on trained teaching staff from non-university sector at tertiary level
  – Workload 28 %,
  Budget for WP 2 and WP 3 is together 53.8 % 532,401 EUR)

WP4 – Quality Control and Monitoring

- A quality control and monitoring system
- Internal quality control and monitoring
- External quality control and monitoring
- External financial audit
  – Workload 14 %, Budget 15.5 % (153,826 EUR)

WP5 – Dissemination and Exploitation of Project Results

- A Dissemination, Exploitation and Sustainable plan (DESP)
- A project website,
- A list of registered trainees from the non-university sector at tertiary level in Thailand
- Dissemination materials (e.g., brochures, flyers, newsletters),
- Publications in professional journals, newspapers, magazines, brochures and social media,
- A list of the members of the Innovative Teaching and Learning Center for Thailand Sustainable Smart Industry
- Dissemination events,
- A dissemination-sustainability conference
  – Workload 17 %, Budget 14.7 % (145,329 EUR)

WP6 – Project Management

- Project management and communication plan (PMCP)
- Kick-off and regular consortium meetings
  Documents on daily project administration and coordination
- Midterm progress and final reports for the project
  – Workload 14 %, Budget 13.2 % (130,362 EUR)

Project budget:

01_ReCap_Project proposal_2020.pdf

Budget requested in the project proposal

Staff costs: 394,648 *EUR*

Travel costs: 271,480 *EUR*

Costs of stay: 245,760 *EUR*

Equipment costs: 43,000 *EUR*

Subcontracting costs: 35,000 *EUR*

Total budget: 989,888 *EUR*

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Budget awarded by the European Commission:

Staff costs: 394,648 *EUR*

Travel costs: 271,480 *EUR*

Costs of stay: 245,760 *EUR*

Equipment costs: 43,000 *EUR*

Subcontracting costs: 35,000 *EUR*

Total budget: 989,888 *EUR*

Partners in-kind contributions 10,520 EUR (calculated from 10 days of teaching staff for all partners.)

Allocation of staff costs:

Teaching staff: 62.65%

Technical staff: 15.73%

Managers: 15.62%

Administrative staff: 6%

Allocation of costs per partners:

P1 - AIT	21.45 %
P2 - KMUTNB	8.42 %
P3 - KKU	11.78 %
P4 - MU	8.54%
P5 - PSU	9.28 %
P6 - MIC	19.39 %
P7 - UPB	9.42 %
P8 - UMinho	11.72 %

Project implementation period:

15.11.2020.-14.11.2024.

2.2. Audit objectives

Since this is the final audit of this project, the objective was to review and evaluate the actual status of the project implementation at the end of the project realization period. That includes establishing what is the level of compliance of reported results with the criteria that were set for the project to be successful, verifying the content of the project documents and QCM reports, establishing at which level of quality were the project activities, outcomes and outputs realized, estimate the project results sustainability and possibility for its further influence in reinforcing the non-university at the tertiary level in engineering and technology in Thailand education system to support the sustainable smart industry.

To achieve the set main objective, several partial objectives were set:

- evaluation of the quality of the project management process,
- evaluation of the project activities implementation,

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- estimate the compliance of the reported project outputs and outcomes with the planned ones,
- review the efficiency and quality of the project documentation,
- evaluation of efficiency of the applied project management tools and
- assessment of the validity and sustainability of the project results.

Representatives of the audited project

The project is represented by the Project Coordinator, Professor Pisut Koomsap of AIT, The Project Management Team (PMT), consisting of The Project Executive Committee (PEC) and the Project Administrative Team (AM). Members of the PEC are representatives of all the partner universities – Partner Leaders (PL) – (Table 1) and the Administrative members are the Work-Packages Leaders and Co-leaders (Table 2). The quality control of the project realization is conducted by the Quality Control and Monitoring Board (QCMB), which has representatives of all the partner universities, as well, (Table 3).

02_PCM Plan.pdf

Table 1. Project Executive Committee members

Partner	Member	E-mail
P1: Asian Institute of Technology (AIT)	Pisut Koomsap	pisut@ait.asia
P2: King Mongkut's University of Technology North Bangkok (KMUTNB)	Athakorn Kengpol	athakorn.kengpol@gmail.com
P3: Khon Kaen University (KKU)	Kanchana Sethanan	ksethanan@gmail.com
P4: Mahidol University (MU)	Tuangyot Supeekit	tuangyot.sup@mahidol.edu
P5: Prince of Songkla University (PSU)	Thanate Ratanawiliai	thanate.r@psu.ac.th
P6: Mary Immaculate College (MIC)	Cathal de Paor	cathal.depaor@mic.ul.ie
P7: Politehnica University of Bucharest (UPB)	Manuela Dijmarescu	manuela.dijmarescu@upb.ro
P8: University of Minho (UMinho)	Rui M. Lima	rml@dps.uminho.pt

02_PCM Plan.pdf

Table 2. Project Administrative Team members

WP	Role	Name	Partner	E-mail
1	WP-L[2]	Rui M. Lima	UMinho	rml@dps.uminho.pt
	Co-WP-L[3]	Athakorn Kengpol	KMUTNB	athakorn.kengpol@gmail.com
2	WP-L	Pisut Koomsap	AIT	pisut@ait.asia
	Co-WP-L	Cathal de Paor	MIC	cathal.depaor@mic.ul.ie
3	WP-L	Thanate Ratanawilai	PSU	thanate.r@psu.ac.th
	Co-WP-L	Kanchana Sethanan	KKU	ksethanan@gmail.com
4	WP-L	Andrei Szuder	UPB	szuder@yahoo.com
	Co-WP-L	Danaipong Chetchotsak	KKU	cdanai@kku.ac.th

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5	WP-L	Tuangyot Supeekit	MU	tuangyot.sup@mahidol.edu
	Co-WP-L	Pisut Koomsap	AIT	pisut@ait.asia
6	PC	Pisut Koomsap	AIT	pisut@ait.asia

¹ PC – Project Coordinator; ² WP-L – Work Package Leader; ³ Co-WP-L – Co-Work Package Leader

03_QCM Plan.pdf

Table 3. *Quality Control and Monitoring Board members*

#	Partner	Name	Role	E-mail
1	UPB	Andrei Szuder	Chair	szuder@yahoo.com
2	KKU	Danaipong Chetchotsak	Co-chair	cdanai@kku.ac.th
3	AIT	Huynh Trung Luong	Member	luong@ait.asia
4	KMUTNB	Warapoj Meethom	Member	tuktuk0178@gmail.com
5	MU	Thananya Wasusri	Member	thananya.was@mahidol.edu
6	MIC	Margaret Murphy	Member	margaret.murphy@mic.ul.ie
7	PSU	Suriya Jirasatitsin	Member	suriya.j@psu.ac.th
8	UMinho	Rui Sousa	Member	rms@dps.uminho.pt

2.3. List of the reviewed documentation

1. Project proposal **01_ReCap_Project proposal_2020.pdf**

2. Project Management and Communication Plan **02_PCM Plan.pd*f***

3. Quality Control and management plan **03_QCM Plan.pdf**

4. Work package Quarterly reports **04_ReCap 4.0 Quarterly reports_2024.pdf**

5. Reports on individual Work Packages, Tasks and Outputs

6. Meetings' minutes (PEC, QCM Board and Training sessions)

7. Document templates

8. Courses' syllabi

9. Courses' teaching materials

10. Video clips

11. List of held training seminars

12. Templates for various reports

13. Analysis of quarterly report of 21.08.2024

14. Summary of project realization as of 16.09.2024

15. ReCap 4.0 - Training Programe - Schedule

16. QCMB Trainings' evaluation reports

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17. List of Publications in professional journals

05_Publications in professional journals.pdf

18. ReCap 4.0 Training Status Report

19. Trainings' reports **06_QCM_Traning evaluation results.pdf**

20. Questionnaire's answers of the Project coordinator

21. Questionnaires' answers of the PEC members

22. Questionnaires' answers of the QCMB members

23. Questionnaires' answers of the team members

24. Questionnaires' answers of the trainees

2.4. Audit process overview

The audit process was performed in several phases, including monitoring the coaching process, studying the project documentation, analyzing the answers of team members to the corresponding questionnaires, interviews with all categories of team members, including the trainees and monitoring of the project dissemination events.

The first part of the auditing process consisted of the auditor's monitoring of a coaching sessions (within Task 2.5), held at University of Minho, in Guimaraes, Portugal, during the period 25. to 28.03.2024. The list of participants is shown in Table 4.

The auditor was present at presentations by the EU coaches and workshops and presentations by the Thai trainers. The questionnaires on the coaching sessions' issues were prepared by the auditor, both for the coaches and trainers, and their answers were analyzed.

Review of activities during the ReCap4.0 Coaching session at University of Minho in Guimaraes

25.03.2024.
9:25-10:30
Meeting opening
Partner representative from UMinho, Professor Rui Lima has welcomed the participants at School of Engineering. Opening note was from Mr. Pedro Arezes.

10:30-12:30
Visit to laboratories of School of Engineering

14:10-15:30
PEC meeting
WP leaders and co-leaders were reporting on each WP progress (Pisut Koomsap, Cathal de Paor, Thanate Ratanawilai, Kanchana Sethanan, Athakorn Kengpol, Andre Szuder, Danaipong Chetchotsak, Tuangyot Supeekit).

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Table 4. *A List of Participants for ReCap 4.0 Meeting at UMinho*

Partner	Name	Role	Key Purpose
P1-AIT	Dr. Pisut Koomsap	Project Coordinator/ WP2 Leader/ WP5 Co-Leader	Attending PEC Meeting
	Dr. Duangthida Hussadintorn Na Ayutthaya	Project secretary	Attending PEC Meeting
P2_KMUTNB	Prof. Athakorn Kengpol	Partner Leader/ WP1 Co-Leader	Attending PEC Meeting
	Dr. Warapoj Meethom	QCMB Member	Observing coaching activities and participating in discussion on final dissemination
	Dr. Siravit Swangnop	Thai Trainer	Attending Coaching Activities
P3-KKU	Prof. Kanchana Sethanan	Partner Leader/ WP3-Co-Leader	Attending PEC Meeting
	Dr. Danaipong Chetchotsak	QCMB Co-Chair	Observing coaching Activities with the external evaluator
	Dr. Krisanarach Nitisiri	Thai Trainer	Attending Coaching Activities
	Dr. Thitipong Jamrus	Thai Trainer	Attending Coaching Activities
	Asst. Prof. Thawee Nakrachata-amon	Thai Trainer	Attending Coaching Activities
P4-MU	Dr. Tuangyot Supeekit	Partner Leader/WP5 Leader/ Thai Trainer	Attending Coaching Activities
	Dr. Noppakorn Phuraya	Thai Trainer	Attending Coaching Activities
	Dr. Chawannat Jaroenkhasemmeesuk	Thai Trainer	Attending Coaching Activities
P5-PSU	Prof. Thanate Ratanawilai	Partner Leader/ WP3 Leader	Attending PEC Meeting
	Dr. Suriya Jirasatitsin	QCMB Member/ Thai Trainer	Attending Coaching Activities
	Dr. Chukree Daesa	Thai Trainer	Attending Coaching Activities
	Dr. Kunlapat Thongkaew	Thai Trainer	Attending Coaching Activities
	Dr. Wanida Rattanamanee	WP5 Member	Observing coaching activities and participating in discussion on final dissemination
P6-MIC	Dr. Cathal de Paor	Partner Leader/ WP2 Co-Leader	Attending PEC Meeting
	Dr. Kathleen Horgan	Coach	Attending Coaching Activities
P7-UPB	Dr. Manuela Roxana Dijmărescu	Partner Leader/ Coach	Attending PEC Meeting and running coaching sessions on Digital Manufacturing

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	Prof. Andrei Szuder	QCMB Chair	Observing coaching activities with the external evaluator
	Dr. Bogdan Felician Abaza	Coach	Observing coaching activities and running coaching sessions on Digital Manufacturing
P8-UMinho	Dr. Rui Lima	Partner Leader/ WP1 Leader/ Coach	Hosting a meeting
	Dr. Rui Sousa	QCMB member/ Coach	Hosting a meeting
	Dr. Anabela Alves	Coach	Hosting a meeting
External Evaluator	Prof. Ruzica Nikolic	External Evaluator	Observing coaching activities and interacting with trainers

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26.03.2024.
8:30-9:30
Visit to IKEA factory
13:00-14:00
Visit to University of Minho – Braga campus
(Andre de Carvalho Classroom for active learning)
19:25-21:25 Dinner

27.03.2024.
IM Module coaching

9:30-11:50
1 – Microteaching – Siravit Swangnop (KMUTNB)
14:02-17:00
2 – Business process Modelling and Notation – Krisanarach Nitisiri, Thawee Nakrachata-amon, Thitipong Jamrus
3 – The industry 4.0 Maturity level: Real Time Data – Suriya Jirasatitsin, Kunlapat Thonkaew, Chukree Daesa
4 – Agile in Project Management – Noppakorn Phuraya, Tuangyot Supeekit

28.03.2024.
DM Module Coaching

9:30-11:04
Module developers' introductory remarks – Manuela Dijmarescu and Bogdan Abaza

11:15-13:45
1 – Team 4 presentation (PSU) Chukree Daesa and Kunlapat
(1 – Simulation for jelly manufacturing process; 2 – Product improvement; 3 – Digital factory; 4 – Additive manufacturing – 3D printing; 5 – Coaching plan; 6 – Apply into my educational practice)
2 – Digital manufacturing – Noppakorn Phuraya (Digital manufacturing activities in NE region)

15:10 – Professor Pisut Koomsap explaining to trainers how to proceed to train their future students – trainees.
The new activities/results of the project were proposed – how to contribute to Thailand education in rural areas.

The auditor's opinion is that this coaching session was very well organized. The module developers, as well as all the coaches, were well prepared and presented their material efficiently. The Thai trainers demonstrated what they have learned and applied in their presentations. The concluding remarks of professor Pisut Koomsap could have served them as the very good guiding in their subsequent training sessions with Thai trainees. The 442 trainees who attended 770 trainings testify that both the coaches and their students at Guimaraes and at later trainings performed their activities in the best possible manner and produced adequate results.

The following phase of the auditing process was studying and analyzing the project documentation, which was provided to the auditor by the project coordinator and administrative staff. The auditor is expressing special gratitude to Professor Pisut Koomsap, the project coordinator, to professor Danaipong Chetchotsak (WP4 co-leader), and to Miss Duangthida Hussadintorn Na Ayutthaya, project administrator for providing all the documents and always being accommodating and helpful to all the posed requests, questions and demands for clarifications.

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The third phase assumed preparation for the interviews of the team members. The auditor has prepared the questionnaires for all the categories of the project team members, which were distributed to them, then analyzed the obtained answers, which served as a basis for conducted interviews.

The final phase of the auditing process was held in Thailand, and actually had two parts.

The first part consisted of monitoring the three project dissemination events/seminars held at Mae Fah Luang University in Chiang Rai, on 23.09.2024., at Suan Sunandha Rajabhat University, Nakhon Pathom campus, on 25.09.2024., and at Khon Kaen University in Khon Kaen, on 27.09.2024. The schedule of the Project Dissemination Seminars is given in Table 5.

It should be emphasized that all the coaching sessions were held in English language, while all the trainings were held in the Thai language.

The discussions during the panels and workshops were held mainly in Thai language, however some of those were held in English language, as well. The auditor was impressed by the abilities of the Panel discussion moderators, i.e., with what certainty and self-confidence the Thai trainers were leading the workshops. This illustrates the best that coaching by the EU coaches was successful, as well as the subsequent training by the Thai trainers, who demonstrated how easily they were delivering the workshops' reasons and materials and were motivating the present trainees/participating audience of the workshops.

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Table 5. *Schedule of the Project Dissemination Seminars on ReCap4.0 Outcomes "Empowering the Future: Education in Industry 4.0 Era"*

Thailand regions	Northern	Central	Northeastern
Date	Monday 23 September 2024	Wednesday 25 September 2024	Friday 27 September 2024
Location	Room 517, Fl. 5, "General Sampao Choosri" (E4) Building, MFU Learning Innovation Institute, Mae Fah Luang University	Room 305, Fl. 3, College of Logistics and Supply Chain Building Suan Sunandha Rajabhat University, Nakhon Pathom Campus	Conference Room 2, Fl. 9 Pianwichit Building Faculty of Engineering Khon Kaen University
Number of Attendance	20 lecturers	39 lecturers 24 students	42 lecturers
Special Talks and Presenters	**"Teaching Technology in Technology-Driven World"** by Dr. Manuela-Roxana Dijmarescu University POLITEHNICA of Bucharest (UPB), Romania **"Project-based and Problem-based Learning: Do or Don't"** by Assoc. Prof. Dr. Rui Lima University of Minho (UMinho), Portugal **"Educators' Roles in Constructivism Learning"** by Dr. Kathaleen Horgan and Dr. Cathal de Paor Mary Immaculate College (MIC), Ireland **"Ensuring Student Active Engagement in Learning"** by Dr. Duangthida Hussadintorn Na Ayutthaya, Asian Institute of Technology (AIT), Thailand		
Panel Discussion with Trainees from target groups Moderator: Dr. Duangthida Hussadintorn Na Ayutthaya, AIT	**"Lesson learned from participating in the ReCap4.0 Project"**		
	Asst. Prof. Dr. Watchara Watanawari, Faculty of Industrial Technology, Chiang Rai Rajabhat University Dr. Preeyapa Wangmanee Faculty of Humanities and Social Science, Chiang Rai Rajabhat University Dr. Anirut Songthanapitak Faculty of Business Administration and Liberal Arts, Rajamangala University of Technology Lanna, Chiang Rai	Asst. Prof. Piya Ronlaong, Faculty of Engineering, Bansomdej Chaopraya Rajabhat University Asst. Prof. Natnaree Sookseksun, Faculty of Technology and Industrial Management, KMUTNB Asst. Prof. Weerayut Lertbumrungsook, Faculty of Engineering and Industrial Technology, Silpakorn University	Dr. Rojana Muangsaen Dr. Wassana Saengthong Dr. Waraporn Chanwieng Faculty of Arts and Science, Chaiyaphum Rajabhat University

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Panel Discussion with Trainers from Thai partners Moderator: Asst. Prof. Tuangyot Supeekit, KKU	"Teaching and Learning in the New Era: Experiences from ReCap4.0 Project"		
	Asst. Prof. Dr. Thawee Nakrachata-amon,KKU Asst. Prof. Dr. Chayathach Phuaksaman, KMUTNB Dr. Noppakorn Phuraya, MU Asst. Prof. Dr. Kunlapat Thongkaew, PSU	Asst. Prof. Dr. Thawee Nakrachata-amon, KKU Asst. Prof. Dr. Siravit Swangnop, KMUTNB Dr. Noppakorn Phuraya, MU Asst. Prof. Dr. Kunlapat Thongkaew, PSU	Asst. Prof. Dr. Thawee Nakrachata-amon, KKU Asst. Prof. Dr. Siravit Swangnop KMUTNB Dr. Noppakorn Phuraya, MU Asst. Prof. Dr. Kunlapat Thongkaew, PSU Dr. Chukree Daesa, PSU
Workshop 1	Problem-Based Learning: Engaging Students through Real-World Challenges		
	Dr. Suriya Jirasatitsin, PSU Dr. Noppakorn Phuraya, MU	Dr. Suriya Jirasatitsin, PSU Asst. Prof. Dr. Thitipong Jamrus, KKU	Dr. Suriya Jirasatitsin, PSU Asst. Prof. Dr. Thitipong Jamrus, KKU
Workshop 2	Data Classification in Action: Empowering Learning through Engagement		
	Asst. Prof. Dr. Chayathach Phuaksaman, KMUTNB Asst. Prof. Dr. Kunlapat Thongkaew, PSU	Dr. Krisanarach Nitisiri, KKU Asst. Prof. Dr. Kunlapat Thongkaew, PSU	Dr. Krisanarach Nitisiri, KKU Asst. Prof. Dr. Chayathach Phuaksaman, KMUTNB

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The second part consisted of the interviews with all the categories of the project team members, as well as with the trainees who attended training in the project's ten modules (held at Khon Kaen University in Khon Kaen on 27.09.2024.).

Table 6 lists the project representatives, team members and trainees that were participating in interviews in the audit second phase.

Table 6. Project team members present in person during the audit interviews

#	Team member	Partner	Function in the project
1	Pisut Koomsap	AIT	Project coordinator, WP2 Leader, WP5 Co-leader, WP6 leader
2	Athakorn Kengpol	KMUTNB	PEC member, WP1 Co-leader
3	Kanchana Sethanan	KKU	PEC member, WP3 Co-leader
4	Thanate Ratanawiliai	PSU	PEC member, WP3 leader
5	Cathal de Paor	MIC	PEC member, WP2 Co-leader
6	Manuela Dijmarescu	UPB	PEC member
7	Rui M. Lima	UMinho	PEC member, WP 1 leader
8	Andrei Szuder	UPB	QCMB member, WP4 leader
9	Danaipong Chetchotsak	KKU	QCMB member, WP4 Co-leader
10	Warapoj Meethom	KMUTNB	QCMB member
11	Rui Sousa	UMinho	QCMB member
12	Suriya Jirasatitsin	PSU	QCMB member, Coach
13	Tuangyot Supeekit	MU	WP5 Leader, Coach
14	Duangthida Hussadintorn Na Ayutthaya	AIT	Project administrator
15	Chukree Daesa	PSU	Coach
16	Thawee Nakrachata-amon	KKU	Coach
17	Thitipong Jamrus	KKU	Coach
18	Noppakorn Phuraya	MU	Coach
19	Kunlapat Thongkaew	PSU	Coach
20	Siravit Swangnop	KMUTNB	Coach
21	Chayathach Phuaksaman	KMUTNB	Coach
22	Krisanarach Nitisiri	KKU	Coach
23	Ms. Waraporn Chanvieng	Chaiyapoom Rajabhat University	Trainee (in person)

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24	Rojana Muangsan	Chaiyapoom Rajabhat University	Trainee (in person)
25	Wasana Sangtong	Chaiyapoom Rajabhat University	Trainee (in person)
26	Mr. Sutthisak Sukhamsri	Rajamangala University of Technology Lanna	Trainee (via teleconferencing)
27	Mr. Thanwit Naemsai	Rajamangala University of Technology Srivijaya	Trainee (via teleconferencing)
28	Mr. Napit Weerawong	Nakhon Ratchasima Rajabhat University	Trainee (via teleconferencing)

All the phases of this auditing process were realized according to mutually agreed audit plan. The final phase (in Thailand), which was originally planned to be held at the end of August 2024, had to be moved to end of September due to summer holidays at both EU partner universities and Thailand partners, as well as Rajabhat universities. This is also why this audit report due date was changed from 15.10.2024 to 25.10. 2024.

Professor Danaipong Chetchotsak was present at the interviews with trainees, acting as a translator from Thai to English language, since for some of them it was easier to communicate in Thai language.

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3. Audit findings

Before presenting the auditor's findings, there are two points that have to be made, which could have seriously affected the project realization.

The first problem was the change of one of the project partners. In the project proposal, there were 8 partner institutions: Thailand universities – Asian Institute of Technology (AIT), Chiang Mai University (CMU), Mahidol University (MU) and Prince of Songkhla University (PSU) and from European countries – Mary Immaculate College (MIC), Ireland, Politehnica University of Bucharest (UPB), Romania and University of Minho (UMinho), Portugal.

After the project was approved for funding by the Erasmus+ programme administration, the Chiang Mai University withdrew as a partner, and it was replaced by the King Mongkut's University of Technology North Bangkok (KMUTNB). This substitution was approved by the Erasmus+ programme administration.
07_Partner change documents.PDF

The auditor's opinion is that this change of partners did not affect the project realization.

The second problem, which of course, cannot be easily forgotten, was the COVID 19 pandemic. That was a serious threat, and it actually affected the project implementation. Due to restricted or practically nonexistent person to person communication, and a ban on any kind of travel for the full year, the project has been realized with difficulties. The very beginning of the project implementation had to be moved to year 2021, so that actual start of the project was 01.02.2021. Some project team members were actually sick and some practically lost interest to participate in the project activities. Due to such a situation the project management team has approached the Erasmus+ programme administration with a request for the implementation period extension. The extension was granted for one year period, so this project actually lasts (lasted) four years, from 15.11.2020. to 14.11.2024.

As opposite to the first problem mentioned, the pandemic did seriously affect the project realization. The project management and all the team members have made additional efforts to overcome all the obstacles caused by this, definitely unexpected risk.
The auditor's opinion is that they succeeded in implementing the project in full, realizing all the set objectives and producing the planned outcomes and outputs.

3.1. Findings based on the reviewed project documentation

Note: In this part on findings based on the project documentation, some (minor) portions of the text are taken from the midterm audit report. Wherever it was possible, the link is referred to that report (with the precise page, when necessary).

08_Mid-term audit report.pdf

*Project realization was executed according to the **Adjusted Work Plan**, which was the substitute for the **Initial Work Plan** from the project proposal – QCM Plan – pages 26-33.*
03_QCM Plan.pdf
The changes in the work plan were inevitable due to delays caused by the COVID-19 pandemic. The whole project realization was postponed, started with a delay of two and a half months, instead of predicted starting date 15.11.2020., the realization started on 01.02.2021.

09__Workplan(s).pdf

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3.1.1. Project progress management

As it was pointed out in the Mid-term report, based on review of the project documentation, answers to corresponding questionnaires by the Project management team and Quality Control and Monitoring Board (QCMB) members, all the aspects of the project realization were conducted according to the adequate established procedures, supported by the corresponding documents (templates, forms, reports etc.).

The relevant documentation for this section of the audit report includes the following documents:
-   The project proposal **01_ReCap_Project proposal_2020.pdf**
-   The Project Management and Communication Plan **02_PCM Plan.pdf**
-   The Project Quality Control and Monitoring Plan **03_QCM Plan.pdf**
-   The Work package quarterly report(s)

as well as some other documents.
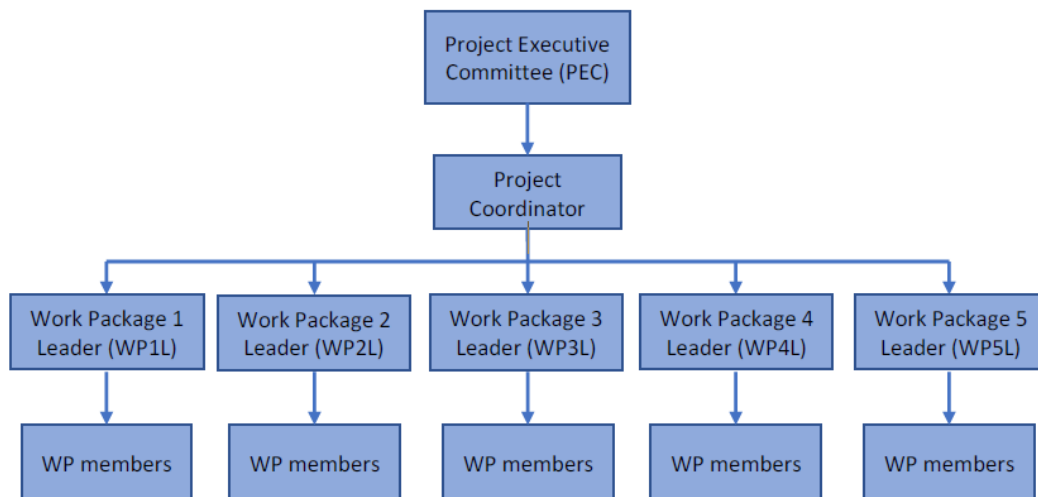The project management structure is presented in Figure 1. **02_PCM Plan.pdf**

Figure 1. *The project management structure*

The project management is executed by the ***Project Management team*** *that consists of* ***Executive Committee (PEC)*** – members of which are representatives of all the participating universities and is led (chaired) by the ***Project Coordinator***, Professor Pisut Koomsap from Asian Institute of Technology (AIT) in Pathum Thani and of the ***Project Administrative Team***.

01_ReCap_Project proposal_2020.pdf

The Project Coordinator, as well as members of the PEC and QCM Board, were appointed by their respective institutions (universities). Each member of these bodies was fully aware of his/her responsibilities, tasks, competencies, as well as their extents.

Roles and responsibilities of all the project managing bodies, Work Package Leaders, and team members, were strictly defined in the Project Management and Communication Plan, and briefly presented in the Mid-term audit report (pages 17-18).

02_PCM Plan.pdf

08_Mid-term audit report.pdf

All the operational tasks are initiated by the Work Package Leaders (WPLs) who allocate the tasks to the task members nominated by the partner leaders (PLs). The WPLs are responsible for updating the PC on the status

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of ongoing tasks on a quarterly basis (by the 21st of the last month of a quarter). For each completed task, the responsible WPL submits a deliverable to his/her representative in the QCMB for the initial evaluation.

The deliverable is then sent to QCMB for endorsement. It is then submitted to PEC via the PC for the final approval. In the case that the deliverable gets rejected at any stage, the WPL is informed immediately.

According to the quarterly reports from the WPLs, the PC is submitting the progress report to PEC and informs the QCMB. For the WP4 tasks (quality control and monitoring), the chair of the QCMB initiates all the tasks. With the endorsement of QCMB, the chair submits the deliverables to PEC via the PC for the final approval. Appointments of external audits require the PEC approvals, as well. For the WP6 tasks (project management), the PC submits the progress reports to PEC directly for approval and informs the QCMB.

All the Work Package Quarterly Reports (WQR) are available at the project web-site

04_ReCap 4.0 Quarterly reports_2024.pdf

Auditor was informed that communication within the project managing bodies, between them and with other team members, was going on without major problems during the whole project implementation period. The channels for communications that in the first half of the project implementation were restricted to mainly online meetings, teleconferences, E-mail, and written messages due to the COVID-19 pandemic, were reestablished to person-to-person communications, meetings, and above all, the coaching and trainings.

The Project Executive Committee was meeting regularly, according to the Workplan presented in the project proposal. In addition, besides those scheduled meetings, the members of the PEC were communicating with each other if there was a need for that, however, by teleconferencing and/or e-mail.

02_PCM Plan.pdf

The project management was executed according to adopted procedures in accordance with the adopted Project Management and Communication Plan.

3.1.2. Project progress quality control and monitoring

Project progress was monitored by the Quality Control and Monitoring Board according to the QCM plan.
02_PCM Plan.pdf

https://drive.google.com/drive/folders/1zgqKY55p9mEG7nFxZZizdZhYkfm3r8-A?usp=drive_link

The QCM Board consists of representatives of all the partner universities and is chaired by Professor Andrei Szuder of University Politehnica of Bucharest (UPB) and co-chaired by Dr. Danaipong Chetchotsak of Khon Kaen University (KKU).
The QCM Board has held regular meetings according to the project proposal and the QCM plan and was preparing the Minutes and Reports on those meetings accordingly.

Table 2 in the QCMP presents the quality assurance of the deliverables (QCM Plan – pages 9-13) For each task are defined deliverables, type of documents to be created, target groups and task leader responsible within the work package.

The details on the QCM procedures are presented in QCM Plan – pages 15-16 and in the Mid-term audit report, page 19.

08_Mid-term audit report.pdf

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The internal quality of the project processes and quality assessment was performed through the self-evaluation by project partners using the Project Quality Assessment Template PQAT – ANNEX 8 of the QCM Plan.

The evaluation of the project activity was organized by a person responsible for that activity and completed by those who would participate and/or benefit from the activities. That was done by answering to specific questions according to specific evaluations forms (questionnaires) and procedures.
Evaluation of the events within the project WP's was performed using the Event Evaluation Template (EET) – ANNEX 9 of the QCM Plan, according to the Event Evaluation Procedure (EEPR) – ANNEX 10 of the QCM Plan.

The training activities evaluation was performed using the Training Evaluation Template (TET) – ANNEX 11 of the QCM Plan, according to the Training Evaluation Procedure (TEPR) – ANNEX 12 of the QCM Plan.

The QCMB Chair then produced a Quality Control and Monitoring Board Report (QCMBR) – ANNEX 14 of the QCM Plan (twice a year before the two annual PEC and QCMB meetings). The QCMBR was then sent to the PC for approval.

The PC then submitted the QCMBR to the project Executive Committee (PEC) who was responsible for the final approval within the project.
Once approved by the PEC, the QCMBR was considered as being adopted.
List of the quality control procedure templates is given in Table 6 (QCM Plan – Tables 3 and 4 – pages 20-21).
03_QCM Plan.pdf

http://recap4.ait.ac.th/wp-content/uploads/sites/58/2021/09/Quality-Control-and-Monitoring-Plan-V2.2.-WP4-D4.1-P7.pdf

All the QCM documents were at auditor's disposal. Based on those documents, as well as answers of the QCM Board members to questionnaires, and conducted interview, the auditor has concluded that the project progress, its management and quality of those actions, were monitored constantly according to established plan and procedures.

Some observations based on Workpackage quarterly report of August 21.2024
(Here are presented few important points noticed by the auditor when reviewing this particular report.)
- Page 19 – Within WP2 – task 2.7 – Setting up an Innovative Teaching and Learning Center for Thailand, a request was submitted to AIT (Project leading partner institution) for opening of a Capacity Building Center for Human-Centric Sustainable Smart Industry (CBC 5.0). AIT administration has approved the request for opening CBC 5.0. Financial support was sought for a 100+ for more pilot project to build and deliver 30 3D printers to schools in pilot area. SCG provided financial support for a 100+ for more pilot projects. Preparing was also done for the new training module on Digital Twin.
10_Pilot Project 100+.pdf
- Page 39 – WP3 – Example of problem/challenges due to COVID pandemic – Scheduling of training during the pandemic has been dependent upon the situation and the availability of the trainees. The trainings were mostly conducted from Friday to Sunday on the weeks that most of them were available. There were also cases where some registrants confirmed to attend but could not because of testing positive.
- Pages 41-43 – WP4 - Data was updated of the task deadlines, responsible and the current stage of WP's in the Quality Control and Monitoring Templates (QCMR).
The Consolidated Quality Control and Monitoring Report (QCMR) was produced, as well as The consolidated reviewed reports on numerous deliverables (WP1-1.1, deliverable WP5-5.1, deliverable WP4-4.1, deliverable WP1-1.4.0, for course modules WP2, etc.
04_ReCap 4.0 Quarterly reports_2024.pdf
This is an example of how the project management and quality control were conducted during the project implementation. This report covers the period June-August 2024.

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3.1.3. Project risk management

The project risks were defined in the Project Proposal, for each Work Package, activity and outcome.

Project risk was defined as an event or a condition that has a potential to affect the achievement of the project negatively.

All events, conditions and conflicts that had a potential to delay the delivery of deliverables, or to lower the quality of those deliverables, were considered as the project risks.

The risk management procedure was defined and the risks for all the aspects of the project realization were monitored by the **Risk Management Committee (RMC)**, which was composed of all the WP Leaders and Co-WP Leaders and was chaired by the Project Coordinator (PC).

All the RMC members were asked to consult with their Work Package team members to perform the risk assessment on an annual basis. The risk eliminating procedure consisted of the risk identification, risk assessment (according to the risk assessment form) and response planning. The Risk Assessment Form was available on the internal project website within the WP6 (Table 13, page 47 of the PMC Plan).

02_PCM Plan.pdf

The likelihood of risks occurring was categorized into three levels, as the most likely – with probability of occurrence greater than 70%, likely – with probability of occurrence between 30% and 70 % and unlikely – with probability of occurrence below 30 %. According to likelihood and impact, the risk level was determined from the risk assessment matrix given in Table 14 in PCM Plan.

Priority in resolving the critical situations was given to the critical and significant risks.

02_PCM Plan.pdf

Thus, the risk managing procedure was defined in detail, what made it possible for all the potential risks to be dealt with and/or eliminated in time, so that they should not cause any of the possible negative impacts on the project realization (delaying and/or reducing the project outcomes (benefits), reducing the quality of the project outputs, extending the project activities' time-frames or increasing any type of costs in project realization).

The risks that appeared due to the COVID-19 pandemic could not have been predicted in the project proposal in 2019. However, they were dealt with by the project team, according to regulations prescribed by the health authorities of the project consortium members respective countries. For example, for trainings held in Thailand all the trainees and trainers had to produce the negative COVID-19 test to be able to participate.

With the pandemic slowing down and ending, the situation has returned to normal. One of the positive trends that was noticed by the project management was that the interest for the project realization was gradually returned to previous level and then even raised. The number of trainees, that attended the trainings in 10 project modules of 442 testifies to that fact. The originally planned number of trainees was only 60.

The original auditor's remark, made in the Mid-term audit report, on another type of risk (originally supposed in the project LFM) – insufficient quality of trainers, was that such a risk should not have appeared in the project proposal. However, it turned out that this assumption was justified, to some extent. There were a few occasions that some EU trainers prepared the course materials at too high a level, without taking into consideration that the trainees did not have the prerequisite knowledge to be able to follow the lecturing, while some of the course materials were prepared at too a lenient level. So, the Thai trainers had to adjust/change some course materials, which they successfully did. This is explained in more details in Sections 3.3.1 and 3.3.3 of the Mid-term audit report (pages 41 to 45).

08_Mid-term audit report.pdf

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3.1.4. Project results management

From the presented reports auditor was able get a clear picture about the project results. The WP 1 is completely finished, the WP4, WP5 and WP 6 were ongoing in the time of this report writing, which is normal considering their nature (quality control, dissemination and exploitation of the project results and the project management, respectively). Those Work packages are going to be finished with the very end of the project implementation itself. The WP2 and WP3 are almost completed, some unplanned activities were additionally

included, after the plan was accepted, and those are still ongoing, with prospective to be finished by the project implementation end, what would be stated in the Project coordinator's final report.

During the interviews, and in their answers to corresponding questionnaires, all the team members emphasized that they took seriously remarks that were put by the auditor during the mid-term auditing process, and stated that they did their best to follow some instructions, as well as to eliminate the delays in the project implementation due to COVID 19 pandemic, so that the project would be completed in time as planned.

The following table on project results was prepared by the project coordinator, professor Pisut Koomsap.

Table 7. *Summary of project realization as of 16.09.2022.*

WP/task/Dev #	WP/task/Dev Title	WP/task/Dev Planned due date	WP/task/Dev Status	WP/task/Dev End date
WP 1	Non-University Capacity Assessment			
Task 1.1	Developing a capacity assessment execution plan	Dec 2020	Completed	Aug 3, 2021
Dev 1.1	A capacity assessment execution plan	Dec 2020	Completed	Aug 3, 2021
Task 1.2	Designing capacity assessment	Jan 2021	Completed	June 1, 2021
Dev 1.2	A capacity assessment form	Jan 2021	Completed	June 1, 2021
Task 1.3	Conducting non-university capacity assessment	Apr 2021	Completed	June 30, 2021
Task 1.4	Summarize, interpret results and recommendations	May 2021	Completed	Jan 20, 2022
Dev 1.3	An assessment report on non-university capacity, including recommendations emphasis areas for the Industry 4.0 competence development training program	May 2021	Completed	Jan 20, 2022
WP 2	Sustainable Development of Industry 4.0 Competence Development Training Program			
Task 2.1	Designing an Industry 4.0 Competence Development Training Program	Aug 21	Completed	June 7, 2024
Dev 2.1	An Industry 4.0 Competence Development Training Program	Aug 21	10 modules completed	June 7, 2024
Task 2.2	Developing innovative training materials	Dec 21	Completed	June 7, 2024
Dev 2.2	Innovative training materials for 10 modules	Dec 21	10 modules completed	June 7, 2024

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Task 2.3	Developing a capacity training assessment	Apr 21	Completed	June 7, 2024
Dev 2.3	A capacity training assessment form	Apr 21	10 modules completed	June 7, 2024
Task 2.4	Training the Thai trainers	Mar 23	Completed	Nov 1, 2023
Dev 2.4.1	12 Thai trainers trained in program design	Mar 23	12 Thai trainers were trained for 7 modules.	Nov 1, 2023
Task 2.5	Coaching the Thai trainers	May 23	Completed	May 27, 2024
Dev 2.4.2	12 Thai trainers coached in program design	May 23	12 Thai trainers were coached for 7 modules.	May 27, 2024
Task 2.6	Assessing the Thai trainers	Jun 23	Ongoing	
Dev 2.5	An assessment report of the Thai trainer's competence in the use of knowledge and skills gained in higher education teaching		Assessments are available for 3 modules	
Task 2.7	Setting up an Innovative Teaching and Learning Center for Thailand Sustainable Smart Industry	Jun 23	Ongoing	
Dev 2.6	An Innovative Teaching and Learning Center for Thailand Sustainable Smart Industry		Active Learning Classrooms have been set up and used for training AIT administration approved the request for opening CBC 5.0 SCG provided financial support for a 100+ for more pilot project	
WP 3	Capacity training for non-university sector at tertiary level in Thailand			
Task 3.1	Developing capacity training execution plan	July 21	Ongoing	
Dev 3.1	A capacity training execution plan	July 21	Training activities have been scheduled for all 10 modules	
Task 3.2	Conducting capacity training on Industry 4.0 competence development	Sept 23	Ongoing	
Dev 3.2.1	60 trained teaching staff from non-university sector at tertiary level	Sept 23	Training activities have been offered for all 10 modules. However, additional sessions will be offered to two modules that the numbers of trainees have not reached 60 yet.	
Task 3.3	Coaching trained capacity	Oct 23	Ongoing	
Dev 3.2.2	60 coached teaching staff from non-university sector at tertiary level	Oct 23	Coaching has been completed for 5 modules.	
Task 3.4	Assessing trained capacity	Oct 23	Ongoing	

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Dev 3.3	An assessment report of trained teaching staff from non-university sector at tertiary level		Ongoing	
WP 4	Quality Monitoring and Control			
Task 4.1	Developing a quality control and monitoring system	Dec 2020	Completed	Sep 13, 2021
Dev 4.1	A quality control and monitoring system	Dec 2020	Completed	Sep 13, 2021
Task 4.2	Implementing the internal quality control and monitoring of the project	Nov 2023	Ongoing	
Dev 4.2	Internal quality control and monitoring (on a regular basis until the end of the project)	Nov 2023	Ongoing	
Task 4.3	Inviting independent external evaluation of the project results	Nov 2023	Ongoing	
	External quality control and monitoring	Nov 2023	Ongoing	
Task 4.4	Inviting independent external financial audit	Nov 2023	Cancel Internal audit	
WP 5	Dissemination and Exploitation of Project Results			
Task 5.1	Development of a Dissemination, Exploitation and Sustainable plan	Dec 2020	Completed	Jan 23, 2022
Dev 5.1	A Dissemination, Exploitation and Sustainable plan (DESP)			
Task 5.2	Creating a project website and maintaining it throughout the project lifetime to support the	Nov 2023	Ongoing (The website was created since the beginning of the project)	
Dev 5.2	A project website, Facebook, YouTube	Nov 2023	Created	
Task 5.3	Inviting non-university sector to participate in the training program and preparing for online training registration	Feb 2021	Ongoing	
Dev 5.3	A list of registered trainees from the non-university sector at tertiary level in Thailand		442 registered	
Task 5.4	Production of dissemination materials	Nov 2023	Ongoing	
Dev 5.4	Dissemination materials		Flyer, E-newsletter	
Task 5.5	Publications in professional journals, newspapers, magazines, brochures and social media	Oct 2023	Ongoing	
Dev 5.5	Publications in professional journals, newspapers, magazines, brochures and social media		3 journal papers 14 conference papers 1 journal submission under review	

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Task 5.6	Setting up training network among the members of partner universities and of associated partners	Oct 2023	Ongoing	
Dev 5.6	A list of the members of the Innovative Teaching and Learning Centre for Thailand Sustainable Smart Industry		Trainees will be automatically invited to join the center	
Task 5.7	Organizing dissemination events with relevant stakeholders	Sep 2023	Ongoing	
Dev 5.7	Dissemination events		One dissemination was conducted online	
Task 5.8	Organizing the final dissemination-sustainability conference	Sep 2023	Completed	July 2023
Dev 5.8	A dissemination-sustainability conference		An International Conference on Transdisciplinary Engineering (TE 2023)	
WP 6	Project Management			
Task 6.1	Finalizing management structure	Nov 2020	Completed	Jan 21, 2022
Dev 6.1	Project management and communication plan	Nov 2020	Completed	Jan 21, 2022
Task 6.2	Organizing kick-off and regular meetings	Sep 2023	Ongoing	
Dev 6.2	Kick-off and regular consortium meetings	Sep 2023	Kick-off meeting (online) PEC and WP leader meetings both online and in-person	
Task 6.3	Monitoring and controlling the project	Nov 2023	Ongoing	
Dev 6.3	Documents on daily project administration and coordination		All partners do their records	
Task 6.4	Closing project	Nov 2023	Ongoing	
Dev 6.4	Midterm progress and final reports for the project		Preparing for midterm progress	

3.1.5. Project communications management

Internal Communications (within the project consortium members)

This type of communications was planned to be conducted through the usual channels: Person-to-person communication, Meetings, Electronic Channels, Written Messages and the Project Website. The person-to-person communications were practically non-existing during the first half of the project implementation, except for the Thailand partners and mainly for the AIT team. All the other communications were held online, including the meetings and coaching sessions; all the trainings were delivered in the in-person, which is commendable.

Communications with the general public

The two project web sites were created at the beginning of the project realization:
- official project website (**http://recap4.ait.ac.th/**) for public and
- internal project website (**https://sites.google.com/ait.asia/resource-for-recap-4-0/home**) to facilitate the project management, the exchange of project documentation and for dissemination and exploitation of the project results.

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The web sites were maintained by the project coordinating partner (AIT) with the consultation with P4 (Mahidol University) who was the WP5 leader for the project results dissemination and exploitation and provision of materials from all other partners.

The Facebook page and the YouTube channel for the project were created, as well as the virtual exhibition of the project.

https://www.facebook.com/ReCap4Thailand/?ti=as
https://www.youtube.com/watch?v=RFB0u2V-u4U&ab_channel=DepartamentTCM
https://spatial.io/s/ReCap-4-0-62a58e5756c7600001ef7147?share=4273334245594309615

External communications

External communications of the Project Management team with the European Commission were the responsibility of the PC. That type of communications took place mainly by e-mail and telephone conversations (planned face-to-face discussions if needed, as supposed by the QCM Plan were not necessary, yet).

The Project Coordinator had to approach the EACEA for approval of the partner change, and with request for the project implementation period extension.

3.1.6. Project Dissemination, Exploitation and Sustainability Management

Dissemination and Exploitation of the project results was done according to the Dissemination, Exploitation and Sustainability Plan (DES).

11_ReCap_DES Plan.pdf

The leader of the Work Package 5 was Mahidol University (MU) and Asian Institute of Technology (AIT)is co-leader. The ReCap4.0 management structure included the position of WP5 leader filled by Dr. Tuangyot Supeekit. The roles of individual project partners and their representatives are shown in Table 8.

Table 8. Partnership and Roles in Project Dissemination, Exploitation and Sustainability Management

#	Project Partner	Role	Person in-charge	E-mail
1	Asian Institute of Technology (AIT)	Co-leader	Pisut Koomsap	pisut@ait.asia
2	Khon Kaen University (KKU)	Member	Thitipong Jamrus	thitja@kku.ac.th
3	King Mongkut's University of Technology North Bangkok (KMUTNB)	Member	Athakorn Kengpol	athakorn.kengpol@gmail.com
4	Mary Immaculate College (MIC)	Member	Cathal de Paor	cathal.depaor@mic.ul.ie
5	Mahidol University (MU)	Leader	Tuangyot Supeekit	tuangyot.sup@mahidol.edu
6	Prince of Songkla University	Member	Wanida Rattanamanee	wanida.r@psu.ac.th
7	University of Minho (UMinho)	Member	Cristiano de Jesus	cristiano.jesus@gmail.com
8	University Politehnica of Bucharest (UPB)	Member	Manuela-Roxana Dijmarescu	manuela.dijmarescu@upb.ro

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The dissemination exploitation and sustainability activities were divided in three stages, each having different purposes: 1) Initial stage – the first year – the DES activities were arranged with a focus on raising awareness of the project and informing the prospective audience about the ReCap4.0 project; 2) Middle stage – the second year – the DES activities were planned with the purpose of informing audience about the past activities, as well as about the upcoming activities and progress of each work package and intermediate results of the project; 3) Final stage – the third and fourth year – the DES activities in the final stage were focused on informing about the previous project years' results, and ensuring in their sustainability.

The DES strategy was defined in the DES plan, and briefly described in the Mid-term audit report (page 24).

11_ReCap_DES Plan.pdf

08_Mid-term audit report.pdf

Objectives of the dissemination activities were defined, as well as main focal points of the project results dissemination and the target groups. The database with target groups was developed by the project's partnership, which was used for dissemination and sustainability activities.

The dissemination levels were defined for different activities, i.e., which activity's results should be disseminated at the institution, local or international level, and the dissemination methods, tools and channels were defined, as well.

Dissemination activities included creating: a project website, public seminars for project promotion, posters with the ReCap4.0 project information and training program, leaflet of a similar format and content with the poster, short presentations videos on the ReCap4.0 project, e-newsletters, leaflets with information on the project activities, training courses, coaching activities, publications in professional journals, newspapers, magazines, brochures and social media, etc.

The planned Dev 5.8 - the dissemination-sustainability conference was planned as the final dissemination event, for one of the final months of the project implementation, August of 2023. However, due to the COVID pandemic, the whole project implementation period was extended for the whole year. As the conference planning usually takes a longer time, with all the necessary activities (first announcement, call for papers, review and acceptance of papers, inviting the keynote speakers, reserving the conference venue, inviting guests and dignitaries), once the Conference dates were announced, it was not possible to "move" it to the next year.

The conference was held as "TE2023 – Conference on Transdisciplinary Engineering", on July 11-14, 2023, at Dusit Thani Hotel in Hua Hin Cha Am, Thailand. There were 5 keynote speakers, 165 abstracts submitted from 32 countries on 6 continents, out of which 140 abstracts were accepted for full paper submission. Total of 117 papers were submitted, out of which 102 were accepted for oral presentations. The remain 15 papers were accepted for poster presentation. The conference was attended by 120 participants, from more than 20 countries, among others from USA, UK, Sweden, Germany, Mexico, Brazil, Japan, Taiwan, Hong Kong, Australia, etc. The Conference proceedings were published as "Proceedings of the 30th ISTE International Conference on Transdisciplinary Engineering, Hua Hin Cha Am, Thailand, July 11–14, 2023" (https://ebooks.iospress.nl/ISBN/978-1-64368-441-3).

The special emphasis should be placed on project teams members participation at the Conference. The Conference Scientific committee consisted of 18 members from 13 countries, out of which 1 was the ReCap4.0 team member, while the Conference Organizing committee consisted of 7 members, out of which 6 were the ReCap4.0 team members. The ReCap4.0 25 team members also participated with 11 papers and 4 posters, which were highly regarded by the conference audience.

Instead of the "final" conference, which had to be held a year or so "too early", the project management team organized the final dissemination seminars.

Auditor was present at Dissemination Seminars held in September of 2024.

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3.1.7. Project changes and project documentation management

During the project realization some changes had to be done, due to various reasons. As for all the other activities in the project implementation, the processes of proposing, approving and conducted the necessary or the newly proposed changes, were completely regulated, covered with the necessary procedure and corresponding documents.

Changes were possible to be proposed by the Project Coordinator, PEC and QCMB members or by any regular team member. Changes proposed by the project (managing) bodies were first discussed at their meetings and then adopted either by consensus or by majority; the former practically being a rule. Changes proposed by the team members were submitted either to the Team leader (of the particular Partner) or to the Work Package Leader and then either accepted/rejected or forwarded to the proper managing body (PC, PEC, QCMB), depending on the nature of the proposed change, for the further decision.

02_PCM Plan.pdf

The project documentation contains all the details on the project realization, and it includes various documents regarding not only changes in the project realization, but other activities, as well.

The project management developed coding of all the documents. There were three types of documents: plan, form and document. The coding of documents was done according to six work packages: **G** – for the WP1; **C** – the WP2 and WP3; **Q** – for the WP4; **D** – for the WP5; and **M** – for the WP6. All the details are briefly described in the PCM plan and the Mid-term audit report (page 24).

02_PCM Plan.pdf
08_Mid-term audit report.pdf

The project documentation is extremely voluminous, and it is practically impossible to actually count all the documents that were created up to the conclusion of this report. However, it must be emphasized that ALL the items of the project documentation are well kept in several ways and places. The Project Coordinator keeps all the project documents and soft copies of all the partner documents, both in his personal server and computer, and on the project website. Hardcopies are kept in his office. Members of the PEC and QCMB also kept all the records of their activities, reports, meeting minutes, etc. Some individual team members also kept their own records and documentation.

All the project official documents were available to any team member, without any restrictions, as well as to authorities of the partner universities.

3.1.8. Project Financial Management

The project budget handling was not within the scope of this auditing process. All the details on the project financial management procedures, including the general provisions, financial reporting, exchange rates, staff costs, travel costs and costs of stay, equipment costs, reimbursement procedures and budget transfer procedures, are described in detail in the Project Management and Communication Plan, Section 5, pages 36 to 44.

02_PCM Plan.pdf

It should be also mentioned that external financial auditing of the project was cancelled by the Erasmus+ programme administration.

3.2. Findings based on answers to questionnaires sent to all categories of the project team members and trainees

To prepare for the audit interviews, auditor has prepared questionnaires for all the categories of the project participants: the PC and the PEC members, the QCMB members and for the team members, as well as for

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the Thai trainees. The blank forms were sent to Dr. Danaipong Chetchotsak, the WP6 Co-leader, who then distributed them to team members and collected answers.

18_Questionnaires forms.pdf

Answers were obtained from the PC and all of the PEC members (7) and QCMB members (8), as well as 16 answers from the team members (some of the team members were involved in activities of the two or even three Work Packages, so they considered as appropriate to provide multiple answers), 6 answers from the Thai coaches/trainers and 43 answers from the Thai trainees (out of 442).

Questionnaires were intended to be anonymous (except for the PC), however almost all the team members did "personalize" their answers.

The questionnaires for the PC and the PEC and QCMB members contained questions regarding the project implementation within the period from the project mid-term evaluation stage up to end of September 2024. Based on the answers obtained from all the team members and trainees, the auditor was able to form the conclusions on the project implementation key issues, which were addressed during the auditing interviews.

The following is the analysis of the answers obtained. It contains auditor's general remarks on answers obtained on each posed question and some of illustrative answers by the team members.

Some answers were not commented on since they were simple "yes or no" or did not require any further elaboration by the auditor.
A: denotes the auditor's remarks.

3.2.1. Analysis of answers obtained from the project coordinator

	Project final audit stage	
1	Were there any changes or problems in the project team communications since the mid-term audit?	No. We have used various channels of communication to ensure the delivery of all tasks, that include but not limited to, quarterly report, email, video communication (zoom meeting), mobile applications, phone. **A.C.** The PC was not quite precise with this answer. Since the situation with the COVID pandemic was overcome, the communications could have been restored to "normal" ways in full, what actually did happen.
2	Did the Project Executive Committee meetings take place in accordance with the adopted plan since the mid-term audit? How many meetings were held and when?	We have tried to meet every six months and been able to successfully organize four in-person PEC meetings since the midterm audit. We will organize one more in-person PEC meeting in September 2024. Below is the list of the meetings. 1. MIC: Jun 2022 2. PSU: Jan 2023

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		3. AIT: Jul 2023 4. UMinho: Mar 2024 5. KKU: Sep 2024 **A.C.** Obviously, the meetings were held regularly.
3	Did the project team meetings take place in accordance with the adopted plan since the mid-term audit? How many meetings were held and when?	So far, we could organize three official project meetings during the same periods we organized the PEC meeting, except for Jul 2023 when we hosted TE2023 conference. During the event the members met and worked together. We did not hold a separate meeting for our team members. 1. MIC: Jun 2022 2. PSU: Jan 2023 3. AIT: Jul 2023 (unofficial gather assigned for project meeting) 4. UMinho: Mar 2024 5. KKU: Sep 2024 **A.C.** No comment necessary.
4	Were there any changes in the project team since the mid-term audit? If yes, what has changed and why? Please, elaborate.	No
5	Were the quality and quantity of achieved outputs monitored as prior to the mid-term audit? Were there any changes or problems? Please, elaborate.	Yes, we did. We delivered many more of good-quality outputs after the midterm audit through our collaboration. The most significant one was the result of our train the trainer program. Our twelve Thai trainers have actively contributed to the success of our project. They have performed both trainee and trainer roles simultaneously. While being trained on new modules, they have also offered training and coaching on the modules they completed their training. **A.C.** Training evaluations and reports are available on the project web-site. **https://drive.google.com/drive/folders/1El8uCUdsl0cdR99jEaoSQVhDPueZfM4L?usp=drive_link**
6	Did any predicted risks appear since the mid-term audit? If yes, how did you handle those?	As a result of COVID-19 at the beginning of the project, activities in WPs 2 and 3 were delayed. We did our best to speed up the

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		delivery of their activities. However, scheduling activities, especially training and coaching, became challenging as all involved also had other responsibilities. As a result, we could only finish some of the tasks during the three years. Therefore, we requested an extension of the project eligibility period for one more year and received approval from EACEA. The project will end on Nov 14, 2024. In addition, we did compress the training from two and half days to only two days to fit with the availability of trainees. **A.C.** This "compression" of trainings was also required from trainees, since it was not convenient for some of them to travel to the training venue three times.
7	Did any new risks appear since the mid-term audit? If yes, how did you handle those?	No clear new risk appears.
8	Were there any problems recorded related to compliance with contractual obligations since the mid-term audit? If yes, what were they? Were those problems eliminated? If not, why? Please, elaborate.	The main problem is the completion of tasks during the eligible period and as aforementioned, we requested for one year extension and received approval. **A.C.** The project duration was approved by the Erasmus+ program administration.
9	Did the Coordinator follow recommendations from the mid-term audit report for improving the project realization efficiency? If yes, which measures were implemented? Please, elaborate.	Yes, we did. We focus on accomplishing task promised in the proposal and tried to run activities in parallel when possible. **A.C.** The PC did not elaborate on those recommendations, however some of the PEC members did.
10	Were all the predicted project objectives met? If not, why? Please, elaborate.	Yes. We have helped improving the competences and skills of more than 350 Thai faculty members nationwide. In achieving that, we developed 10 innovative training modules for our competence development program, and equipped them with modern teaching and learning methods and facilities for effective training. Twelve Thai trainers went to train the trainer

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		program and distributed their knowledge and skills to Thai faculty members. So far, we have offered our training program including 10 modules <u>to more than 350 Thai faculty members nationwide</u>*. AIT admi station approved the opening of Capacity Building Center for Human Centric Sustainable Smart Industry (CBC 5.0). AIT team submitted a proposal to SCG and received financial support for "100+ for More Pilot Project" to build 30 3D printers for Thai schools. **A.C.** *The actual number is 442 trainees who attended 770 trainings.
11	Which parameters of those project objectives were met? If not, why? Please, elaborate.	On average, there were 72 Thai faculty members participated in the 10 modules for the target of 60 participants. As of now, 8 out of 10 modules have more than 60 participants. We expect the other two modules will reach 60 before the project closes. We successfully developed 10 training modules equipped with course materials. We trained 12 Thai trainers. We got approval for the CB center. Some partners submitted together a joint proposal for the 2024 call for proposal for CBHE. **A.C.** So, the actual number of trainees was 442 and the planned was 60. **Quite an improvement of DEV 3.2.**
12	Were all the planned project outputs implemented? In what amount and quality? If not, why? Please, elaborate?	All the major outputs are completed or in a process of completing. The only one major output that may not be completed is coaching activities due to time constrains. Both trainers and trainees have tried to find time slots for coaching sessions. They all dedicate their personal time after office hours and weekend to attend ReCap 4.0 activities.

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		A.C. The percentage of completion of the unfinished coaching activities at the time of the audit interviews (September 2024) was over 85% by the PC's assessment. It was his impression that all the trainings will be completed by the end of the project.
13	Were all the planned project products realized? If not, why? Please, elaborate.	Yes
14	How were the project outputs promoted to stakeholders? Please, elaborate.	We have promoted the outputs in various channels. • We disseminated the project outputs at two target universities in the South when we had project meeting at PSU • We published activities on social media, e-newsletters and web-site. • We will organize ReCap 4.0 dissemination tour week in September 2024 at three universities in three different regions. **A.C.** *The PC sent these answers long before the actual dissemination events happened and this report was written. So, the project output promotions were reaching the wider audience far beyond the predicted one.* The "dissemination tour week" was held from 23.09.2024. to 27.09.2024. as three dissemination seminars. (already described in Section 2.4, pages 15-18).
15	How were the project outputs promoted to the general public? Please, elaborate.	We have promoted the outputs in various channels. • We organized ReCap 4.0 exhibition in TE2023 international conference • We visited universities. • We presented the project outcomes at conferences. • We published articles in international journals and conference proceedings • We published activities on social media and website.

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		• We will organize ReCap 4.0 dissemination tour week in September 2024 at three universities in three different regions. **A.C.** These promotion activities were completely in accordance with the project plan.
16	Were the project records kept as before the mid-term audit? Were there any changes or problems? If yes, please, elaborate.	Yes There is no change or problem.
17	Is the documentation on the project management available?	Quarterly reports are available on the project website.
18	Are all the project documents archived?	Yes
19	Have you enough elements to start preparing the final report on project realization?	Yes
20	Have you informed all the project team members that the project is about to be completed?	Yes
21	*Is there anything you would like to add?*	Timing is critical when activities require the involvement of several parties. It posed a significant challenge to us. However, the project has made progress this far despite the big hurdle to overcome initially, because all the parties have seen the project's value. Trainees could easily give up and disappear, but they did not. Many of them have shown a solid commitment to our project. They were willing to find the free time from their busy schedules to join our activities. It is a testament to dedication and resilience. If there is a will, there is a way. And it holds in this project. Our commitment and willingness have overcome all odds. **A.C.** There is no comment needed for this statement.

3.2.2. Analysis of answers obtained from the Project Execution Committee (PEC) members

Project final audit stage

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1	Were there any changes or problems in the project team communicating since the mid-term audit?	All the PEC members stated that there were no problems in any types of communications. Actually, one answer describes the situation the best: *"In my opinion the communication within the project team has improved since the mid-term audit and this is mostly a consequence of the fact that we had the opportunity to reflect at what happened before, but also to meet and discuss face to face".*
2	Did the Project Executive Committee meetings take place in accordance with the adopted plan since the mid-term audit? How many meetings were held and when?	All the PEC members stated that the PEC meetings were held regularly since the mid-term audit, according to the work plan (Dec. 2022, Jan 2023, March 2023, June 2023, Mar 2024, Sep. 2024).
3	Did the project team meetings take place in accordance with the adopted plan since the mid-term audit? How many meetings were held and when?	After the mid-term audit, project team meetings always took place in accordance with the scheduled plan.
4	Were there any changes in the project team since the mid-term audit? If yes, what has changed and why? Please, elaborate.	There were no major changes, except that one of the KMUTNB team members was pregnant so it was decided "not to engage her outside of the university, however, she still continuously worked in the team". In addition, at PSU, couple of Thai trainers requested for a break in their training activities for private reasons. At University of Minho, they had more meetings related to WP2 and since the mid-term audit, they added three new members to the team, Anabela Alves for WP5 and Bruno Goncalves and Erik Lopes for WP2 activities.
5	Did any predicted risks appear since the mid-term audit? If yes, how did you handle those?	The PEC members stated that no predicted risks appeared.
6	Did any new risks appear since the mid-term audit? If yes, how did you handle those?	The PEC members stated that there were no new risks for the project implementation since the mid-term audit.
7	Were there any problems recorded related to compliance with contractual obligations since the mid-term audit? If yes, what were they? Were those problems eliminated?	Since the mid-term audit, none of any problems recorded related to compliance with contractual obligations did happen.

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	If not, why? Please, elaborate.	The extension of the project duration was requested and granted for one year, by the Erasmus+ program administration.
8	Did the PEC members follow recommendations from the mid-term audit report for improving the project realization efficiency? If yes, which measures were implemented? Please, elaborate.	One of the PEC members described how the instructions from the mid-term audit report were followed: *"Yes, we tried to have more frequent meetings, so that we can update communications among the team members. Sustainability of the project was particularly in focus, to ensure to achieve what was suggested".*
9	Were all the predicted project objectives met? If not, why? Please, elaborate.	Yes, in general. However, one PEC member stated the following: "According to the last quarterly report (End of May 2024), SO1 and SO5 have not yet been met, but they will be achieved until the end of the project. SO1: At this moment (august 2024), there are still some training and coaching activities for the final target group on-going. However, as I am aware, they will be finished by the end of the month*. SO5: The PC started the implementation of the Innovative Teaching and Learning Center for Thailand Sustainable Smart Industry at AIT.**" **A.C.** *That was achieved by the end of September 2024. **That was achieved in August 2024.
10	Which parameters of those project objectives were met? If not, why? Please, elaborate.	All the PEC members felt that all the project objectives were or will be met by the end of the project implementation. *"Learning objectives were achieved through practical training among participants".*
11	Were all the planned project outputs implemented? In what amount and quality? If not, why? Please, elaborate?	The PEC members expressed opinion that majority of the planned project outputs were implemented, however, *"at different Universities and location areas, the number of outputs was varied due to specific limitation of skill and time constrains".*
12	Were all the planned project products realized? If not, why?	Definitely yes.

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	Please, elaborate.	One PEC member gave the number of 397 registered trainees, at that point in time, as the proof for positive answer.
13	How were the project outputs promoted to stakeholders? Please, elaborate.	The project outputs were promoted to the Central, North, North East, and South of Thailand locations. The lecturers could adapt the content of trainings to meet the students' requirements. The PEC members also cited the "upcoming dissemination seminars to be held in September".
14	How were the project outputs promoted to the general public? Please, elaborate.	For general public, the project outputs are promoted to Central, North, North East, and South of Thailand locations. The students who are members of communities can apply the outcomes from the learning contents and adapt to local needs.
15	Were the project records kept as before the mid-term audit? Were there any changes or problems? If yes, please, elaborate.	The project records are kept through-out the project time. Apart from the Covid effect, the project was run smoothly. One member stated: *"For example, we provide all members with access to our training status".*
16	Is the documentation on the project realization available?	All the PEC members stated that the project documentation was available to all of them.
17	Are all the project documents archived?	Yes, it is all archived.
18	Have you enough elements to participate in preparation of the final report on project realization?	All the PEC members stated that they did contribute to provide necessary information and data for preparation of the project final report.
19	Are all the project team members informed that the project is about to be completed?	Yes, all the project team members were informed about it.
20	*Is there anything you would like to add?*	Some PEC members were expressing gratitude to all the team members for working hard on the project implementation; some congratulated the project coordinator, professor Pisut Koomsap on his commitment and hard work on leading such an important project.

3.2.3. Analysis of answers obtained from the Quality Control and Monitoring Board (QCMB) members

Project final audit stage

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1	Was the communication within the QCMB without any major problems since the mid-term audit? If there were some problems, please elaborate.	Since the Mid Term, communication within the QCMB took place without any problems according to the Quality Control and Monitoring Plan
2	Was the communication of the QCMB members with the Project Coordinator without any major problems since the mid-term audit? If there were some problems, please elaborate.	Since the Mid Term, QCMB members' communication has developed very well. There were no problems to report.
3	Was the communication of the QCMB members with the Project Executive Committee without any major problems since the mid-term audit? If there were some problems, please elaborate.	QCMB members had relations/communications with the Project Executive Committee through the Project Coordinator.
4	Was the communication of the QCMB members with the project team members without any major problems since the mid-term audit? If there were some problems, please elaborate.	Communication with project team members was very good in all respects. One QCMB member stated: *"QCMB Co-Chair typically communicates to team members, like coaches or trainers, on a regular basis. The team members were very responsive."*
5	Did the QCMB meetings take place in accordance with the adopted plan since the mid-term audit? How many meetings were held and when?	The QCMB meetings were conducted as per the revised schedule. These meetings were informal and held through online platforms, such as Line or Zoom. The focus was on completing the remaining tasks, including the training evaluation report and project impact report. For the quality-related decisions, the QCMB utilizes the Deliverable Evaluation Template (DET) to gather feedback and input from each member." "What concerns the Thai Trainers, the QCMB Co-Chair could consult QCMB members in Thailand since most of them are the Trainers and they could help to connect with the other trainers as well.
6	Did the project team meetings take place in accordance with the adopted plan since the mid-term audit? How many meetings were held and when?	Yes. The meetings were held according to the plan, but not many times because each team member had its own duty and worked as a group in the form of Work Package. They had meetings within their own WP. The project team meeting took place once in a while (when needed), and like the meeting in Guimaraes and the dissemination events in September.
7	Did any predicted risks appear since the mid-term audit? If yes, how did you handle those risks? Did those risks affect the quality of the project realization?	The QCMB chair stated that there was a risk related to the training and coaching of some modules. That risk was overcome by the trainers holding several additional

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	If yes, how were they eliminated?	training sessions, not only the scheduled ones. One QCMB member stated that the risk was in the fact that some of the trainings were not held in the close proximity of potential trainees, what could have resulted in fewer participants in some subjects.
8	Did any new risks appear since the mid-term audit? If yes, how did you handle those risks? Did those risks affect the quality of the project realization? If yes, how were they eliminated?	All the QCMB members were unanimous that no new risks appeared in the period after the mid-term.
9	Were the quality and quantity of the achieved outputs monitored as before the mid-term audit?	All the QCMB members stated that all the deliverables were assessed and monitored by QCMB members, through the QCM report(s).
10	Which measures have been taken by the QCMB to assure the quality of the project outcomes and products since the mid-term audit?	Quarterly QCMRs were prepared to track the project's progress. The QCMB Consolidated DETs were also compiled, with the indicators for each work package being assessed on a quarterly basis. For example, QCMB monitors the quality of all the training events. If the quality score of any training event is below 4 (scale 1 to 5), the QCMB will notify PEC and PC.
11	Which measures, proposed in the mid-term report to improve the quality of project realization, were implemented by the QCMB? Were those measures implemented at a standard level of quality? If not, why? Please, elaborate.	The feedback gathered from the QCMB Consolidated DETs enabled the enhancement of the deliverables. The QCMB conducted the training evaluations, adhering to the QCMP throughout the process. After the training, the designated QCMB members collected the questionnaires and forwarded the information to the QCMB chair. The feedback provided by the QCMB Consolidated DETs allowed the improvement of deliverables, both in terms of form and content.
12	Were all the planned tasks implemented at a standard level of quality as before the mid-term audit? If not, why? Please, elaborate.	All the planned tasks were executed with the same high standard of quality as before the mid-term audit.
13	Were all the planned outputs executed at a standard level of quality as before the mid-term audit??	All the planned outputs were delivered with the same high level of quality as prior to the mid-term audit.

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	If not, why? Please, elaborate.	The key output was the quality of the training sessions, which was reflected in the training satisfaction surveys. The feedback indicated that the trainees were pleased with the training provided.
14	Were all the planned products realized at a standard level of quality as before the mid-term audit?? If not, why? Please, elaborate.	All the planned products, like the teaching materials for the trainees, were realized at a standard level of quality as before the mid-term audit.
15	Were the project records kept as before the mid-term audit? Are the data being backed up?	The project records continue to be maintained on Google Drive as they were before the mid-term audit. The shared folder titled "WP4" contains all the relevant QCMB working files. **https://drive.google.com/drive/folders/1zgqKY55p9mEG7nFxZZizdZhYkfm3r8-A**
16	Is the documentation on quality control and monitoring at this stage available?	The documentation on quality control and monitoring at this stage is available on shared folder "WP4".
17	Is that documentation at the standard level of quality?	The documentation is the high level of quality.
18	Do you consider, from the quality aspect, that the project is a success *in general*, i.e., are the project objectives met at a standard level of quality? Please, elaborate.	The QCMB members were unanimous in stating that the project is *"Indisputably a success; from the point of view of quality, the project has reached and exceeded the objectives of training a greater number of trainees at a high level of professional training quality, with a very good dissemination and having an important impact both on the target group, of the participating universities and the education system in Thailand".*
19	*Is there anything you would like to add?*	The QCMB Chair, professor Andrei Szuder felt compel to: *"Emphasize first the dedicated activity of the QCMB members who fulfilled their tasks in an exemplary manner and collaborated successfully. A great merit in the coordination and achievement at a high-quality level is due to the very good collaboration between Chair and Co-Chair and especially to the dedication and activities of Co-Chair Dr. Dainapong Chetchotsak. QCMB's collaboration with Project Coordinator Dr. Pisut Koomsap was very good and efficient, as well as with PEC, which I consider led to the realization of a successful project".*

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3.2.4. Analysis of answers obtained from the Team members

	Project final audit stage	
1	How many meetings of the project team were held and how many did you attend? Please elaborate.	To this question came many different answers (see the examples below), which testifies on dedication of different team members, from the PC, WP leaders and co-leaders, to administrative secretary, and others. They were all present at numerous meetings, not only the scheduled ("mandatory") ones, but whenever the work on project required some kind of consultations, discussions or problem solving.
2	Did you regularly communicate the actual status of your project activities and individual outputs to the project management? How? Did you prepare reports? Please elaborate.	Yes, there were quarterly reports describing the WPs progress submitted to the Project Coordinator. Here were also multitude of answers, depending on the task that particular team member was executing.
5	If it was necessary to make the changes, do you know which procedures are involved in that process?	Team members did communicate with Team leaders, WPs leaders and the PEC leader.
6	Have you proposed/requested any changes? Did you know if those changes were approved/turned down? How were the changes approved? Why were they turned down?	Here were also very different answers. Some team members did not propose any changes at all, while some did and followed the prescribed procedure for that. For example: *"Yes, we had a few changes in WP1 that were approved internally and then approved by PEC and QCMB".*
7	How did you monitor the results achieved and their qualitative characteristics?	One team member stated that he analyzed the documents and the quality of decisions that were taken. The other stated the following: *"I normally have a closed monitor the project progress with all members in all WPs. As we are a member in nearly all WPs, I set up monitoring meeting with all members in KMUTNB team frequently so if some difficulties happened, we can solve it quickly."*
8	Are you satisfied with your role in the project realization? Please elaborate.	Generally, all the team members felt satisfied with the assigned roles and tasks within the project realization. On the other hand, some would have liked to have "more freedom" in developing the work related the module developments.

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		"I believe that a higher degree of freedom would benefit the diversity of approaches and ultimately the quality and efficiency". In addition, some more experienced team members felt that they could have been engaged even more in realization of various project tasks.
9	Were the tasks assigned to you adequate with respect to your qualifications?	Generally, all the team members felt that they were up to the level to perform the assigned tasks, and cold even work better on some other, as well.
10	Do you think that you could execute some other tasks better? If yes, which one(s)? Please elaborate.	Some team members were satisfied with the assigned tasks, some thought that they could perform better in some other areas (like the project dissemination). One team member stated that working on the project helped him to improve his abilities: *"Being a team leader is new to me and I think that I need to improve in some aspects of leadership especially task assignment and team communication. Though it is almost the end of the project, I still need improvement in leadership and decision making for being a leader."*
11	What is your general opinion on the project realization so far? Please elaborate.	All the team members stated, without exception that they considered that the results of the project are excellent, that they were able to achieve all objectives and develop modules that will have impact in future training of HE teachers in Thailand.
12	Any suggestions on what you think could have been improved/changed in project tasks/outputs? Please elaborate.	Here were also very diversified answers. Some team members would not add or change anything, some others felt that they could contribute to improvement of some project realization aspects. For instance: *"The training schedule for the target group could have been altered to suit with the trainees' schedule since many training periods provided to the trainees were during semester when they have classes to conducted."* or *"It is not easy to manage a project with so many people/institutions involved, but one could think of a way to reduce the bureaucratic burden (too many reports/ documents). With less time spent on this,*

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		more attention could be paid to the content of the project itself." and: *"One suggestion for improvement in the CBHE ReCap4.0 project would be expanding the dissemination efforts to include more targeted stakeholder engagement, particularly with industry partners or local governments, could also enhance the project's impact and sustainability. Finally, providing more flexible resources for unforeseen challenges could improve overall project adaptability."*
13	*Is there anything you would like to add?*	Majority of team members did not add any new thought here, just answering "no". Some other were grateful for being able to participate in realization of such a did project and some simply congratulated the whole team on great effort put in the project implementation. The following opinion describes the best how mainly Tahi team members felt about this project: *"This was a challenging project with excellent results that will have impact in Thailand and European Higher Education".*

Examples of answers to question #1

Some said "numerous meetings"
Some said concrete numbers, like 4 meetings,
I do not remember exactly how many meetings
Or:
WP leader:
We had project meetings for different work packages, as reported in the detailed worksheets and financial statements. As far as I remember I participated in all the PEC meetings, one for each consortium meeting and additional 3 online meetings. I conducted 5 WP1 meetings, mainly online. I participated in a couple of WP2 team meetings. I participated in 6 peer meetings with WP2 leaders. I conducted more than 20 UMinho team meetings and reported on them for only one person.
WP co-leader:
I was active very much on WP1 to help Prof. WP leader collected data, we did have many meetings until WP 1 was completely finished. For WP2, I did not have many meetings with the team. For WP3 and WP5, I was very active with the WP leaders in all meetings so that we can meet the target participants in all parts of Thailand. For WP4, the co-leader was very active so I did not to be on all the meetings, however he always informed me about the results of the meetings.
WP leader and co-leader:
I attended numerous meetings for WP2 as the WP2 leader and as three module developers.
As the WP leader, the meetings were to develop a plan, explain our plan and follow up on modules that may need additional attention to move them forward.

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As a developer of modules, the meetings were to exchange ideas, share thoughts collectively and collect feedback for improvement.

WP co-leader:

At the early stage, the meetings were called quite often and later the communication among the members were mostly made via email.

In addition, start of every year of the project, e.g., starting of project year 2, 3, and 4, the meetings were held in various places. I attended all the meetings, including various activities during the meetings' weeks.

Administrative team member:

It is really hard to recall the number of meetings I attended under the role of admin and staff. There were so many - formal and informal - with the teams. I did attend all the meetings, I "had to".

Team member:

The project team meetings took place as often as necessary. First meetings on WP2 were held online; Matters regarding WP2 were discussed during the project meetings that were held in person and in which I participated. We also had internal meetings within UPB team, each time it was necessary. Communication was held regularly and was used to discuss and agree upon urgent matters during the development, training and coaching for the Digital Manufacturing Module.

Team member:

In addition to the planned meetings, other meetings were held whenever necessary (to deal with decisions/actions, mainly related to deliverables and training sessions). I do not have an exact record of how many meetings were held (nor when), also because some of them were informal.

3.2.5. Analysis of answers obtained from the Trainees

For this analysis one could easily write the whole page or even more for each answer. Firstly because, there were many answers (43), and secondly because those answers were both different and long.

So, here are given just the most representative answers, as well as answers that were given by numerous trainees.

	Project final audit stage	
1	How much do you know about this project? Please elaborate.	Some trainees heard about the offered trainings from colleagues, some were informed by their lecturers, and as some put it from the "road show" on ReCap4.0 by professor Pisut Koomsap, while some trainees did not know in advance on the trainings being offered, but signed in for them to learn something new. Here is one example: *"I found out about the project, called ReCap4.0, from information provided by Khon Kaen University".* and another: *"I learned about this project from a colleague who is directly involved in the project team".* and yet another: *"From the roadshow of Recap4.0 project and from the training event, there was an announcement for the next training."*
2	How many trainings were held and how many did you attend?	Here were also some interesting answers. Some trainees attended only

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	Please list all the trainings that you attended.	one or two trainings, while some attended several trainings, 5, 7 or even 10. *"Training in Lampang for 2 and a half days, and there were several online coaching sessions afterwards (I can't remember how many times, but I attended all of them)"*. *"6 courses."* *"1 course"* *"Three modules".* etc.
3	How do you evaluate the training/trainings you did attend? Please grade: From 1 (poor) to 5 (excellent). Please evaluate all the trainings that you attended.	The grades given ranged from 3 to 5, generally the majority of grades were 4 or 5. What is interesting is that no answers from those who attended several courses were 'all 5s". It appears that trainees graded courses/trainings very objectively.
4	Were the conditions for the trainings adequate? 1) Number of trainees in the class? 2) Teaching equipment? 3) Course materials? 4) Were the course materials provided? (In advance, in time, later). 5) Coaches' attitude? 6) Grades? Please, elaborate on each issue.	1) No trainee has stated that the number of attendants was too high or too small, *"just right"*, was the general opinion. 2) *"Everything was ready"; "Excellent, distributed on time"; "The teaching equipment was satisfactory"*; etc. 3) *"Teaching materials were comprehensive"; "It's quite a lot for the training, so we had to skip back and forth sometimes, which led to a lack of continuity and related reasoning"*; etc. 4) *"In time"; "Supporting documents were provided in the classroom on the training day, so we didn't know in advance what topics would be covered or how to prepare"; "Sufficient and up-to-date"*; etc. 5) *"The instructor was very dedicated to teaching and gave good advice"; "Coaches were supportive"; "Coaches attitude adequate and awesome"*; etc. 6) This question was not properly understood by the trainees, so some graded the courses, some graded the coaches, and some actually answered right i.e., what was their opinion on grading of their achievements.

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5	What would you change/improve?	Here were some really useful remarks that the trainers/coaches could use in the further trainings: *"There should be more sample data for real-world practice".* *"The duration should be extended, and more details on tools should be provided, especially terms and definitions related to Data analytics".* *"The course was informative still excellent in my opinion, but perhaps too condensed"; "Online Coaching session was good, suitable for people who have busy schedule, but off-line coaching is more effective."; "For Innovative Product Design and Development* *- design methodologies to ensure products meet real-world needs and preferences.* *For Innovative Teaching and Learning Methods* *- Use adaptive learning platforms and tools to address individual student needs and learning styles.* *For Digital Manufacturing* *- Explore additive manufacturing techniques, like 3D printing, to enable rapid prototyping, customization, and production of complex geometries.";* etc.
6	Did you find the training(s) that you attended useful for your further studies/career/ employment? Which one(s) and how?	*"It was very beneficial because it helped me understand Data Analytics better.";* *"The trainings were useful to apply this knowledge in my career e.g., optimization used for research projects."; "Digital Manufacturing - I can implement Industry 4.0 technologies such as IoT, big data analytics and cloud computing to create smart factories and optimize manufacturing processes.";* etc.
7	Would you suggest some new trainings to be held? Or the new topic to be considered within the ones that were held?	*"Training about using AI that would be beneficial for application in the near future, that would be great."; "Application of AI in terms of academics"; "The project should be expanded to other learners from different groups of people because this is good for students and the country in the future."; "Environmental topic related to industrial, e.g. carbon footprint.";* etc.

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8	What is your general opinion on the project realization so far? Please elaborate.	*"The instructor was very dedicated to teaching and gave good advice, but there was a limitation in terms of time, which was still too short"; "Evaluation of the project's achievements against industry standards, best practices"*; etc.
9	Any suggestions on what you think could have been improved/changed in the project? Please elaborate.	*"Time of training should be within 1-2 days."; "Training period It might take place on a day when I have spare time such as end of semester."; "The coaching period for each module should be spaced apart because the coaching is held next to each other for a close period of time."*; etc.
10	*Is there anything you would like to add?*	"***I love all courses in this project. Please organize more projects like this, but please don't let too much time pass between them***". In general, not many trainees have to add some thoughts here. However, this that is cited is the best testimony of the project's success.

Some of the trainees provided their answers in Thai language and Dr. Danaipong Chetchotsak was kind enough to translate those answers to English language. Auditor expresses gratitude for his efforts.

3.2.6. Analysis of answers obtained from the Coaches

	Project final audit stage	
1	How much do you know about this project? Please elaborate.	All the Thai trainers stated that they knew about the project implementation, its objectives and purpose.
2	How many trainings have you held? Please list all the trainings that you held.	Some trainers provided only one training, some did several trainings, and some had the dual role, they were both trainers and trainees. *"I provided three trainings in data analytics modules"; "For PBL module 4 trainings, For Coaching and Mentoring 3 times";* *"I held 9 trainings so far:* *27-29 Mar 23 Innovative Teaching and Learning Methods (ITM) at South* *8-10 May 23 Project-Based and Problem-Based Learning (PBL) @South* *29-31 May 23 ITM at Northeast* *9-11 Jun 23 ITM at Central* *23-25 Jun 23 PBL at Central* *29-30 Jun, 1 Jul 23 PBL at Northeast* *10-12 Jun 24 Industrial Management in Industry 4.0 Era (IM4) at Northeast*

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		24-26 Jul 24 IM4 at South *10-12 Sep IM4 at North,* *One upcoming IM4 at Northeast #2";* *"I held two trainings: 1. Module: Innovative Teaching and Learning Methods and 2. Module: Industrial Management in Industry 4.0 Era, and I attended seven trainings:* *1. Communication and People Skills Development, 2. Innovative Teaching and Learning Methods, 3. Project-Based and Problem-Based Learning, 4. Coaching and Mentoring Skills Development, 5. Industrial Management in Industry 4.0 Era, 6. Digital Manufacturing, 7. Data Analytics."*. etc.
3	How do you evaluate the training/trainings that you held? Please grade: From 1 (poor) to 5 (excellent). Please evaluate all the trainings that you attended.	One coach actually explained how he evaluated the trainings that he held: *"I used various methods to evaluate the effectiveness of the trainings, such as trainee reflections and feedback, assessments of skills acquired from projects in coaching sessions, and comparisons of pre- and post-training knowledge levels."* Others simply gave grades in the range 3 to 5. Again, the grading seemed very objective, no extremely all god or all bad grades were given.
4	Were the conditions for the trainings adequate? 1) Number of trainees in the class? 2) Teaching equipment? 3) Course materials? 4) Were the course materials provided? (In advance, in time, later). 5) Trainees' attitude? 6) Grades? Please, elaborate on each issue.	1) Majority of coaches considered that the number of trainees in the class is adequate. 2) Teaching equipment was evaluated as suitable, as the trainings were conducted at the training center(s). 3) Some were satisfied, and some were not with the provided course materials obtained from the module developers. *"For Data Analytics, the available course materials were not suitable for the training. Therefore, we (four Thai trainers) had to re-develop and reorganize the materials before delivering the training"*. 4) All coaches agreed that the course materials were provided in time. 5) *"The trainees' attitude is positive. They demonstrated strong engagement during the training."; "They were interested and want to learn more*

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		modules."; "Positive attitude"; "I felt that some trainees were not so eager to learn and to participate in the learning activities."; etc. 6) *"The grading procedure was clear and aligned well with the learning outcome"*.
5	What would you change/improve?	*"I would improve my teaching time management for some topics."; "Schedule of the training at each location to be arranged in advance so that the target groups can manage their working hours to be able to join the training."; "Nothing"*; etc.
6	Did you find that the training(s) which you held were useful for trainees' further studies/career/ employment? Which one(s) and how?	*"Yes, for the data analytics module. This module introduces trainees to managing data and utilizing relevant analytics tools. The knowledge and skills acquired are important and can be applied to further studies or research."; "In my opinion, the teaching skill topics are interesting to be more modules in future."*;
7	Would you suggest some new trainings to be held? Or the new topic to be considered within the ones that were held? (Not only by you, but in general).	*"I would recommend new trainings focused on tools for Industry 4.0, such as automation, artificial intelligent, and IoT."; "New topics related to industry 5.0 or adaptive teaching."; "Yes, I suggest the Digital Factory module as a new topic for training."*; etc.
8	What is your general opinion on the project realization so far? Please elaborate.	*"The concept of this project is good. The training module is divided into two parts: industrial skills and teaching skills, which helps improve trainees in both areas— technical competency and teaching proficiency. However, the target group is limited, resulting in fewer trainees in some modules."; "It's useful for trainees and me that are professional development, particularly in improving their teaching and technical skills."; "The projects are beneficial to all trainers and trainees; however, with the busy schedules of both trainers and trainees made it difficult to arrange the training times that suit for both parties."*; etc.
9	Any suggestions on what you think could have been improved/changed in the project? Please elaborate.	All the coaches suggested that the trainings' duration should be either 2 or 3 days, and that 2.5 days is not good, since I t requires significant travel time, which can be inefficient for participants.

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10	*Is there anything you would like to add?*	"N/A" was almost unanimous answer, except for those who left this question unanswered. That means that the coaches felt that they explained enough through the previous questions and needed not to add anything else.

3.3. Findings based on the monitoring of the coaching session and the dissemination events

This part of the auditing report findings has two parts, as the title suggests. The first part is related to auditor's monitoring of the coaching session held at University of Minho, in Guimaraes, Portugal, during the period 25. to 28.03.2024. List of participants is shown in Table 4, section 2.4.

The EU coaches obtained questionnaires concerning their previous (if any) engagements in coaching, as well as the current coaching session in Guimaraes. Their answers to those questionnaires served as a good basis to the auditor to get impression on their motivation and dedication to the performed tasks. Here is the analysis of some of the most revealing answers.

Previous training/coaching sessions	
1	Did you perform any training/coaching sessions before? If yes, please list them all.	All the coaches were involved in previous coaching sessions, on Digital manufacturing module and the Problem based learning module.
2	What was your opinion on usefulness of those sessions to Thai trainees/trainers?	Here are some opinions on the usefulness/success of the previous coaching sessions: *"Based on the feedback and engagement observed, the training/coaching sessions on Digital Manufacturing module appeared to be beneficial for the 12 Thai trainers. They gained valuable insights and knowledge related to digital manufacturing concepts such as manufacturing simulation and additive manufacturing and how they can be applied in industrial practice."*; *"It was very useful for the trainees as it provided them with knowledge and experiences on active learning, which will be very important in their role as trainers."*; etc.
3	Were you satisfied with their approach to training/coaching sessions?	All the coaches were satisfied with the Thai trainers' attitude towards trainings. *"Yes. In general terms, they always showed great motivation and involvement during the sessions."*; *"Yes, I was satisfied with the 12 Thai trainers' approach to the training/coaching sessions. They demonstrated a high level of engagement, enthusiasm, and commitment throughout the sessions. Their proactive participation, willingness to learn, and collaborative spirit contributed positively to the overall learning environment and effectiveness of the training/ coaching sessions held on Digital Manufacturing module."*; *"Yes. In general terms, they always showed great motivation and involvement during the sessions."*; etc.

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4	Did they show satisfactory understanding of the topic(s) in those sessions?	Again, all the coaches agreed that the Thai trainers were well prepared for the coaching sessions. *"Yes. The trainees made observations and asked several questions, the relevance of which revealed a good understanding of the session's topics."; "Yes, the 12 Thai trainers demonstrated a satisfactory understanding of the topics covered during the training/coaching sessions held on Digital Manufacturing module. They actively participated, asked insightful questions, and showcased their ability to apply the learned concepts in real-world scenarios."*; etc.
5	Did you evaluate/grade their results/knowledge after those sessions?	The trainees' results at previous coaching sessions were evaluated. *"Yes, and the results indicated a positive learning outcome with significant improvement in their understanding and skills related to the covered digital manufacturing topics."; "Yes, although not quantitatively. Formative assessment was used (feedback, discussion, and proposals for improvements for each of the deliverables)."; "Yes, we did. There is a table with the results that we used to select trainers for that module."*; etc.
6	Did the Thai trainees/trainers have any objections/remarks/ suggestions about those sessions?	The Thai trainers did provide some feedback to their coaches at previous sessions, which were quite diversified. *"Yes, the 12 Thai trainers provided constructive feedback and suggestions for improvement."; In terms of content/teaching/learning process, the feedback was very positive."; "They interacted with difficulties and suggestions for improvement for the course materials' context."*; etc.
7	What was your opinion of success of those sessions? Were you satisfied with their outcomes? Please, elaborate.	All the coaches considered that previous sessions were successfully conducted. *"I consider the training/coaching sessions held on the Digital Manufacturing module to be successful. I base my answer on the positive feedback received, the active participation and engagement of the participants, and the measurable improvement in their knowledge and skills in digital manufacturing. While there is always room for improvement, personally, I am satisfied with the outcomes and believe that the sessions have effectively contributed to the professional development of the Thai trainers in the field of digital manufacturing."; "I was satisfied with the results obtained. The trainees showed a high level of commitment and demonstrated that they had developed important competences in terms of active learning. I am confident that they will be able to perform well their role as trainers."*; etc.

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Current coaching session		
8	What is your opinion on this training session? Do you find it useful for trainers?	All the coaches found the session held in Guimaraes as useful for the Thai trainers. *"The current coaching session was intended to wrap up, reflect and give a valuable insight on the Digital Manufacturing coaching. My opinion is that it was useful for both of us as coaches and for the 12 Thai trainers."; "Yes, it was useful as they are fast approaching the time to deliver training to Thai colleagues. The developed and delivered micro-teaching on specific parts of the IM4 module."; "This coaching session in Portugal was useful to the Thai Trainers has they had the opportunity to clarify doubts, to consolidate the acquired knowledge (in the first coaching sessions) and to conduct microteaching events."*; etc.
9	What is your impression on trainers' approach to this coaching? Did they show enough interest in this topic?	Again, all the coaches had the positive attitude towards the Thai trainers' behavior during the coaching session. *"Overall, I appreciated the trainer's approach regarding this coaching session. Even if in the first part they were not very communicative, in the second part the teams that were selected for delivering the training on this subject showed significant interest in the topic and prepared well-structured and informative presenta-tions."; "Yes, they prepared the micro-teaching approaches using new activities beyond what was delivered by us (European trainers)"; "The levels of interest and engagement were very good. Also, the interaction between them was very productive, with much feedback/discussion."*; etc.
10	What is your impression on the trainers' benefits from this coaching?	EU coaches were satisfied with Thai trainers' presen-tations (microteaching events). *"Since this coaching session was specifically tailored to reflect on the training and coaching sessions conducted for the Digital Manufacturing module, my impression of the trainers' benefits from this coaching is quite positive. The trainers had the chance to explore the detailed aspects of digital manufacturing enhancing their understanding and expertise in the subject matter."; "The four microteaching events (one per university) were well prepared and presented by the teams of trainers and addressed different aspects of Industrial Management in the Industry 4.0 Era. The discussion/ interaction between teams was fruitful as it gave rise to several suggestions for improvement."; "They have the opportunity to interact in detail with the EU trainers. During the online sessions before these F2F sessions, they developed a questionnaire to be allied in industries about I4.0. Thus, we have been applying a PBL approach called Research-Based Learning."*; etc.

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11	Do you think that the trainers would need some more coaching on this topic? If yes, why?	Here coaches provided different, somewhat contradictory, answers. *"No, the 4 Thai trainers selected for delivering the Digital Manufacturing module are very well prepared for this task."; "Yes, they prepared the micro-teaching approaches using new activities beyond what was delivered by us (European trainers)"; "The coaching on M4 has not yet ended. The final sessions will serve to conclude pending aspects, including those resulting from the feedback received in this session, and consolidate the knowledge acquired."*; etc.
12	Was there any point in training that you would like to be changed? Extended? Shortened? Please, elaborate.	Again, some coaches were satisfied, some had ideas for improvements. *"I believe extending the hands-on practical exercises and real-world case studies could further enhance the learning experience, enabling trainers to gain more practical insights and confidence in applying the concepts learned."; "No, I think this is ok, as the planning was adjusted for the number of hours."; "Perhaps devote more time to the preparation and presentation of microteaching events, so that they are not so "micro". I say this because I felt that they were very important moments for sharing knowledge, clarifying doubts, and proposing improvements, in other words, there really was a lot of added value."*; etc.
13	Did you evaluate the knowledge that they gained from this coaching?	Some coaches did evaluate trainers' performances, some were going to, and some thought that it was not necessary to do that. *"No, because this was the last session intended to reflect on the coaching performed."; "We will do that mainly based on their micro-teaching and the reflexive portfolios they will deliver."; "Yes, using formative assessment (feedback, discussion, and improvement proposals after each microteaching session)."*; etc.
14	Are you satisfied with the coaching session as a whole? Please, elaborate.	All the coaches were unanimously satisfied with this coaching session. *"Yes, I am satisfied with the coaching session. The collected feedback, and measurable improvement observed among the trainers validate the effectiveness and impact of the coaching in enhancing their knowledge, skills, and confidence in digital manufacturing."; "Yes, I am."; "Yes. I feel that the trainers are increasingly better prepared for their next tasks. The environment established was very pleasant, with a lot of interaction and enriching discussions."*; etc.
15	*Is there anything that you would like to add?*	Some coaches opted to give additional thoughts, some did not. *"I want to emphasize the commitment of the 12 Thai trainers during all training and coaching sessions performed on Digital Manufacturing. I really appreciate*

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| | | *their effort and achievements since, besides this project activities, they also need to prepare their day-by-day lectures. Of course, continuous learning and upskilling are essential in the rapidly evolving field of digital manufacturing and there is always room for improvement, but I am sure they will stay updated with the latest industry trends, technologies, and best practices concerning digital manufacturing field.”; “Face-to-face meetings/sessions are still much more productive than remote sessions.”; “No, thank you.”; etc.* |

Based on these answers, and being present at the Thai trainers' micro teaching sessions, the auditor is convinced that this particular coaching session was very useful for the Thai trainers and very successful, as well. Auditor was impressed how they were delivering their "micro lectures" with ease and even enjoying them, what proved that they were well prepared and gained adequate knowledge and experience through the previous coaching sessions (same as during this one).

The second part of auditor's monitoring of the project implementation consisted of being present at the dissemination events at three Thailand universities, form 23.09.2024. to 27.09.2024. The schedule of those dissemination events is presented in Table 5, section 2.4.

As already mentioned in concluding remarks on those dissemination events, the auditor was impressed with skills of the Thai trainers in presenting their lectures and in organizing and delivering very interesting workshops. The panel discussions were mainly in the Thai language, but for the parts that were in English, auditor was very satisfied with live discussions and opinions exchange between the moderators and the participants. Thus, in conclusion, these dissemination events were very successful, and this justifies the decision of the Project management team to hold them, instead of the "final" project conference, which is the usual closing event of this type of projects. Since the (previously planned) TE2023 conference was held in 2023, it would be senseless to organize another conference. In this way, having the dissemination events at three different towns/regions of Thailand, the disseminating effects of the project implementation and results were presented to much wider public, what in fact is the definition of "disseminating" some project's content and results.

3.4. Findings based on interviews with team members and trainees

There were four different interview sessions; a separate one with the Project Coordinator, held on 20.09.2024. in Bangkok, the second with coaches/trainers, the third with the team members and the fourth with trainees. The interviews with team members and trainees were held at Khon Kaen University on 27.09.2024. The list of present team members and trainees is shown in Table 6, section 2.4. Present were 14 team members, including the Project Coordinator, PEC and QCMB members, WP leaders and Co-leaders, and the project administrator, 8 coaches and 6 trainees (3 were present in person and 3 via teleconferencing).

3.4.1. Interview with the Project Coordinator

The interview with the project coordinator was held to clarify some points from his answers to the sent questionnaire and noticed in the project documentation.

He explained why the project final conference was substituted by the three dissemination events/seminars. There was no point in holding just another conference for practically limited number of public, when the project management team felt that three planned dissemination events (they were actually held after the interview with the PC) would be more useful for the project implementation and results being presented to the wider audience.

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Auditor fully concurred with that opinion and the project management team decision.

Relating to answer to question #3, PC explained that separate meetings of the project team were not held during the TE Conference, since practically all the team members were involved in the conference organization.

Concerning the questions #8 and 9, the PC explained that the problems in delivering all the trainings and coaching appeared mainly due to COVID 19 pandemic. The solution for the delays was found in parallel holding trainings and coaching for different modules, not just one after the other. Thus, the delays were mainly eliminated. Additionally, the project duration was extended for one year, what made possible to realize all the project objectives.

Relating to question # 13, the PC explained that only two or three project products were not realized just yet, since there were some trainings and coaching still in progress. It was planned that all the project activities would come to the conclusion by the project implementation's end, and that all the project's outputs and outcomes would be realized.

The auditor hopes that this will be true and will be shown in the PC's final report to the Erasmus+ program administration on the project realization.

The PC also elaborated on the project aspects, that were not originally planned as the outputs. Financial support was sought for a 100+ for more pilot project to build and deliver 30 3D printers to schools in pilot area. The SCG provided financial support for a 100+ for more pilot projects. Preparing was also done for the new training module on Digital Twin.

The general auditor's conclusion on the Project Coordinator actions and leading of this project is that he was doing a great job. That was confirmed by the team members as well. Some of them in answers to their respective questionnaires, at the last (usual) question to add some personal thoughts about the project, used the opportunity to express gratitude to his leadership and efforts and congratulated him on the job well done.

3.4.2. Interview with coaches

There were 6 coaches present at this interview. Some of them has filled and submitted in the questionnaire before this interview. The analysis of their answers is given in section 3.2.6. So, only a few points could have been discussed there. However, the present coaches participated in the discussion.

One coach was asked why he did not provide any answer to question #5 what would/could be changed and/or improved. So, he elaborated that the collaboration between the Thai institutions (both project partner Universities and Rajabhat universities) should be improved, especially among the Rajabhat universities that were the target group for this project.

Another point made by several coaches is that the planned schedule for the trainings must take into account various aspects, the distance the trainees have to travel, classes schedule (not compromising their regular classes) for both trainers and trainees, etc.

The point was also made that some course materials were not at the adequate level for the Thai trainees, so the Thai trainers had to adjust their contents to the prospective attendants.

Auditor was interested how the coaches were dealing with the relatively new and unknown terminology (of Industry 4.0, PBL, Active learning, etc.) that was originally in English language and the courses to Thai trainees were delivered in the Thai language. The coaches said that they were translating some terms that they thought had the adequate counterparts in the Thai language, and other they kept in original (English) versions and then they explained them to trainees.

Some coaches pointed that trainees were interested in the new topics in the trainings, requesting new lectures on adaptive teaching, for instance.

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The auditor's opinion is that the Thai coaches were executing their trainings very well, with dedication and great efforts to "teach" their students all the skills planned within the 10 project modules.

3.4.3. Interview with the project Team members

This interview was held together for publics the PEC and QCMB members and WP Leaders and Co-leaders. The Project Coordinator, professor Pisut Koomsap and the project administrator Ms. Duangthida Hussadintorn Na Ayutthaya.

The auditor was "going through" some answers to questionnaires of all the present team members, and all others were eager to participate in the discussion. For instance, for clarification of answer to question #7 of one QCMB member, he said that the Thai coaches would explain the problem better. That concerns the somewhat inadequate (original) course materials provided by the module developer(s) that Thai trainers adjusted for better delivering to Thai trainees.

Another point made by the PEC members was the "volume" of the conducted trainings. In the project proposal, it was planned that 60 Thai trainees would be trained in ReCap4.0 skills. The project outcome is remarkably better, since 442 trainees received trainings, some in one, some in several topics, so actually they attended 770 trainings. The 442 trainees came from all regions of Thailand - 138 from the North, 121 from the Northeast, 87 from the South and 96 from the Central, West and East regions. It should be also emphasized the 160 trainees were the so-called external, i.e., they were not attending any of the Rajabhat universities. That result is the best "certificate" of the project general success.

One QCMB member explained what he considered as risk "holding trainees in close proximity", since it was not defined which close proximity he meant. He explained what he was referring to was the close proximity of the (original) project end date and that this particular risk was eliminated by the granted project duration extension.

The Project Coordinator also explained why the PEC member from Mahidol University has withdrawn from the project realization. He was actively participated for a while, but he was assigned to some important position at Mu and was not able to dedicate his time to the project. Instead of him, the MU representative, professor Tuangyot Supeekit was acting as a PEC member, as well. That did not negatively affect the PEC functioning, on the contrary.

At the end, the QCMB Chair, professor Andrei Szuder expressed thanks to Dr. Danaipong Chetchotsak, the WP4 Co-leader for his effort in executing the tasks within WP4 and all the help he provided to QCMB members in their tasks.

Auditor was very satisfied with this interview, since several points were clarified and ambiguities explained. The opinion of professor Szuder is that the numbers of people participated in the project realization, from partner universities and Rajabhat universities, including team members, coaches/trainers and trainees, are impressive and that the "project is closing to a successful end".

3.4.4. Interview with the trainees

The problem with low number of trainees present at the interview lies in the fact that they come from different and distant regions of Thailand, have their own other duties and obligations (classes mainly), so they were not "at disposal" for the interview. However, since the auditor has received 43 answers to the sent questionnaires, it was easy to form the opinion on the trainees' engagement in the project realization, what is explained in section 3.2.5. where their answers were analyzed.

The present trainees were answering in Thai language and Dr. Danaipong Chetchotsak, was being kind to translate their answers to English language for the auditor.

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They emphasized that the trainings were useful for them, for instance in combining the theoretical and practical training; that the trainings helped them to improve their own teaching methods; that they learned how to "open" the students for discussions in class; etc. Some of the trainees attended several trainings and were eager to attend more if the new ones would be offered. The general remark was (as in the questionnaires) that any type of the training should be held during the semester break, so that they would be free to attend and not forced to reschedule their own classes.

The auditor was satisfied with openness of the trainees to freely present their opinion, on good and not so good points of the project realization, as well as how grateful they were for the given chance to participate in this project.

The auditor considers that at this point, one trainee answer to the last question, already emphasized in analysis in section 3.2.5., should be repeated: "*I love all courses in this project. Please organize more projects like this, but please don't let too much time pass between them*".

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4. Audit conclusions

This is the audit report on the final evaluation of implementation of the project "Reinforcing Non-University Sector at the Tertiary Level in Engineering and Technology to Support Thailand Sustainable Smart Industry - ReCap 4.0", funded by the European Commission within the Erasmus+ program, KA2 – Cooperation for innovation and the exchange of good practices – Capacity Building in the field of Higher Education, Project number 619325-EPP-1-2020-1-TH-EPPKA2-CBHE-JP. The data on the project realization up to 16.09.2024. were available to the auditor, provided by the project Management Team (PMT).

The help from the PMT was invaluable and is greatly appreciated.

Based on reviewing the documentation presented by the PMT, and downloaded from the project's website, obtained from the members of the PEC and QCMB, and by the team members and trainees, as well as based on the audit interviews with all the categories of the project team members, and on monitoring the coaching session and the dissemination events, the auditor was able to get the full picture on the project realization and draw the conclusions presented below. They are related to timing of the project activities, project management, quality control, as well as the dissemination and exploitation of the project results.

This evaluation does not include evaluation of the project implementation compliance with the legal regulations of the European Commission program Erasmus+, nor the control of the financial matters related to the project realization.

The audit objectives, related to interviews with project management and the team members, as well as monitoring the coaching session, held at University of Minho (25.03.2024 – 28.03.2024) and the three project dissemination events held in Thailand (23.09.2024, 25.09.2024.27.09.2024), were met in accordance with the mutually agreed audit plans.

The Project Consortium consists of 8 partners, five Thailand universities: Asian Institute of Technology (AIT) as the coordinating institution, King Mongkut's University of Technology North Bangkok (KMUTNB)*, Khon Kaen University (KKU), Mahidol University (MU), Prince of Songkla University (PSU) and three EU universities: Mary Immaculate College (MIC) from Ireland, University Politehnica of Bucharest (UPB) from Romania and University of Minho (UMinho) from Portugal.

*Originally (in the project proposal) Partner #2 was the Chiang Mai University (Muang District, Chiang Mai, Thailand), which withdrew from the project after it was accepted for funding. That partner was replaced by the King Mongkut's University of Technology North Bangkok (Bangkok), KMUTNB. All the EACEA procedures for this substitution were followed and the substitution was approved. All the documentation on this substitution is available.

The Project coordinator is Dr. Pisut Koomsap, Associate professor from Asian Institute of Technology (AIT).

The project is realized through the following six Work Packages: WP1 – Non-university capacity assessment, WP2 – Sustainable Development of Industry 4.0 Competence Development Training Program, WP3 – Capacity Training for Non-University Sector at Tertiary Level in Thailand, WP4 – Quality Control and Monitoring, WP5 – Dissemination, Exploitation and Sustainability of Project Results and WP6 – Project Management.

The Workload distribution between the Work Packages and activities is the following: WP1 – 8 %, WP2 – 19 %, WP3 – 28 %, WP4 – 14 %, WP5 – 17 % and WP6 – 14 %, and it is well balanced.

The work load distribution between the staff categories is the following: Teachers/trainers – 57 %, Technical – staff 22 %, Administrative staff – 11 % and Management staff – 10 %.

The budget distribution between the project partners is the following: P1 (AIT) – 21.45%, P2(KMUTNB) – 8.42 %, P3(KKU) – 11.78 %, P4(MU) – 8.54 %, P5(PSU) – 9.28 %, P6(MIC) – 19.39 %, P7(UPB) – 9.42 5, P8(UMinho) – 11.72 %. The allocation of funds is done according to the tasks that were assigned to each of them.

The budget distribution to Work Packages is the following: WP1 – 2.8%, WP2 and WP3 – 53.8 %, WP4 – 15.5 %, WP5 – 14.7 %, WP6 – 13.2 %. That is also commendable, since the largest amount is allocated to the two most important Work Packages – WP2 and WP3.

The original Workplan from the project proposal had to be adjusted due to the COVID-19 pandemic, thus the project realization started only on 01.02.2021., which has caused the initial delay of two and a half months,

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what inevitably caused delays in the project implementation. Additional small adjustments were also inevitable for such a voluminous and complex project. For instance, since the target group of the project realization – the non-university sector at the tertiary level of education – consists of the Rajabhat universities that are spread all over the Thailand territory, only traveling of trainers and trainees to the training sites required long journeys, which also contributed to some delays.

The Project Management Team has approached the Erasmus+ programme administration with request for the project execution period extension. The required extension was granted for one more year, so the project realization period is actually four years, from 15.11.2020. to 14.11.2024.

This project is considered as a sort of continuation of the project "Curriculum Development of Master's Degree Program in Industrial Engineering for Thailand Sustainable Smart Industry (MSIE4.0)", also of the Erasmus+ programme, its results were used for creating curricula and teaching materials for the training programs of WP2 and WP3 of this project.

The project management is executed by the Project management team (PMT) according to procedures adopted in the Project Management and Communication Plan (PMCP). The PMT consists of the Project Executive Committee (PEC), whose members are the Partner Leaders (PL) – representatives of the project consortium members, and of the Administrative Members. The PMT is chaired by the Project Coordinator, professor Pisut Koomsap (from AIT).

The project quality control is executed by the Quality Control and Management Board (QCMB), chaired by Professor Andrei Szuder (from UPB), according to procedures adopted in the Quality Control and Management Plan (QCMP).

The risks to project realization are dealt with by the Risk Management Committee (RMC), according to procedure adopted in the Risk Management Plan (RMP). The RMC consists of the Partners' Leaders (PL) and is chaired by the Project Coordinator, professor Pisut Koomsap (from AIT).

The project results dissemination, exploitation and sustainability are executed by the Dissemination, Exploitation and Sustainability Committee (DESC), chaired by Dr. Tuangyot Supeekit (from MU) according to the Dissemination, Exploitation and Sustainability Plan (DESP).

As was noticed in the Mid-term report, despite the efforts of the project management and the team members, realization of the Work Packages 2 and 3 was delayed. The main reason was the COVID-19 pandemic. The Workplan had to be adjusted since the project implementation started with two and a half months delay. The health authorities in Thailand imposed restrictions that were extremely strict, so no travel was allowed for more than a year since the project realization started. All the communications and seminars, as well as some trainings, had to be held online only. That was another source for delays. It should also be mentioned that the EU partners were prevented to travel to Thailand until the beginning of 2022. After the situation with health risks returned to normal, the project implementation was carried out without further delays and with efforts to make-up for the lost time. The granted extension of the project duration was of the great help, so the project could continue without risks that some activities would not be able to be executed on time.

The auditor's conclusion is that the Project Coordinator, professor Pisut Koomsap, was (is) running this project very well, with extreme responsibility, paying attention to all the details, as well as to the project as a whole. It should be emphasized that the team members had great confidence in his leadership, and praised him for his commitment to this project. That was even mentioned in some answers to the sent questionnaires, where some team members used the opportunity to express their thanks for his skillful managing of the project.

The whole Project Management Team deserves the praise, as well and so do the ALL the other team members for devoting their time and efforts to realization of this project in extraordinary circumstances, and after that challenging period. For instance, the team from Minho added three new team members to be able to fulfill all the tasks related to module development; the team at UPB held meetings "whenever it was necessary" regardless of the schedule; the project coordinator Professor Pisut Koomsap and Dr. Danaipong Chetchotsak were at disposal practically 24/7 to solve any problematic situation and offer help.

The conclusion of the auditor is that the QCMB was doing a great job in keeping the execution of all the activities, as well as of all the outcomes and deliverables, at the required level of quality. The controlling of

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the project realization and results quality was the most responsible task, which they executed in the best possible manner.

The DES Committee was successfully fulfilling their tasks in the project and its results promotion and dissemination. Two project web-sites were created, as well as the Facebook page and the YouTube Channel. The predicted "final" conference for the project results dissemination was planned before the COVID 19 pandemic and the dates were set well in advance. When the project realization was delayed, the conference (TE 2023) was held more than a year before the project closure. So, the project management team has organized three dissemination seminars in September of 2024., which actually better served for the project dissemination purposes, since they were held at three different locations in Thailand what made it possible for numerous participants to attend them, which probably would not have a chance to attend the conference held in Bangkok.

Auditor must admit that all the team members, were more than willing to help in preparing this evaluation report, starting from providing the auditor with all the required and available documents, organizing the audit interviews, informing of any changes, while all the problems were dealt with without hesitation and with commendable responsibility.

It is extremely important to emphasize that all the team members contacted, either through questionnaires or interviews, provided their answers sincerely and honestly without hesitation. Thus, the auditor was in a position to get a real picture of the project implementation results, the team members attitudes and responsibilities. That is why this report presents the real situation of the project implementation, without any embellishment and/or false representation.

For instance, the problem existed, mainly in the first part of the project realization, that some trainings were not so successful due to possible different backgrounds and insufficient prerequisite knowledge of the potential trainees. This problem appeared in somewhat different form in the second part of the project duration. Some of the course materials that the trainers obtained from the module developers were not at the adequate level for the trainees to be able to follow the lectures. So, the Thai trainers themselves adjusted the training materials and presentations to the present audience and the trainings were successful. This testifies both for the sincerity of the reports that were presented to the auditor and to efforts of the Thai team members to fulfil their tasks with diligence and successfully.

It is also important to point out that no team member was using the COVID-19 pandemic as an excuse for problems in realizing his/her own tasks within the project. The pandemic was blamed for lack of person-to person communications and restrictions on traveling.

At the end, the auditor must express satisfaction with the way the team members, led by the project coordinator, were conducting their tasks, how seriously they approached any problem or risk, and how they were actually happy with any successfully fulfilled task, delivered deliverable or finished outcome.

As an illustration, a letter from one of the Thai trainers on his students' attitude testifies the best of the said before:

"I share the experience from training Thai trainees. I had discussions with trainees after the training and felt that the trainees have changed their perspective from only lecturing to add some active learning activities. They felt that the activities during training can encourage their students to be more interactive. They also plan to use these learning techniques for their course works".

Auditor is grateful to the ReCap 4.0 team members for all the help they provided that was necessary to evaluate the project implementation and to prepare this report. The special thanks are offered to Project Coordinator Professor Pisut Koomsap, to Dr. Danaipong Chetchotsak and to Ms. Duangthida Hussadintorn Na Ayutthaya.

Ružica Nikolić

Auditor

Professor Ružica Nikolić, PhD

In Žilina, 05.11.2024.