



WP4 – Quality Plan for the Implementation of the Project

Quality Control and Monitoring Plan

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ERASMUS+ CBHE PROJECT

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Industrial Engineering for Thailand Sustainable Smart Industry**

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REVISION SHEET

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1 Executive Summary

In the scope of the MSIE 4.0 project, and particularly according to what is foreseen in the WP4 Project assurance and efficiency, the consortium decided that it is to the benefit of the satisfaction of its quality objectives to prepare a Quality Control and Monitoring Plan (QCMP), to ensure the production of concrete and high-quality results in line with the project plans.

In this context, the main purpose of the QCMP is to define:

- the evaluation criteria and evaluation mechanisms for internal and external QCM as well as the number and structure of QCM reports
- the list of the methods that will be used to ensure the required level of quality, project quality policies and procedures, project standards/checklists for reviews, project metrics to measure deliverable or process quality and project quality goal.

2 Introduction

Quality control and monitoring is essential to ensure that project objectives and results defined in the project proposal can be achieved and delivered within the project implementation period at a high-quality level.



Therefore, it is of utmost importance for the quality of the project as a whole, to set up quality control mechanisms and procedures to be followed throughout the whole project implementation and by all partners.

The WP leader, as defined in the project proposal, University POLITEHNICA of Bucharest (UPB), is responsible for outlining the first draft of the QCMP in cooperation with the Co-Work Package Leader Prince of Songkla University (PSU). After consultation with the Project Coordinator and other partners responsible for specific deliverables, additional procedures will be defined in the revised version of the QCMP.

The QCMP:

- defines the quality expectations for project deliverables (outcomes and outputs)
- defines the internal monitoring and quality management
- defines the content, format, review and approval process of the project deliverables;
- defines the responsibilities of the project partners regarding those deliverables.
- identifies all the different tools and means to be applied throughout the project duration
- provides guidelines for adequate implementation and thereby assure that certain quality standards in the performance of our tasks are fulfilled.
- define the quality requirements that must be obtained throughout the project lifecycle, those that the deliverables, actions and results must conform to.

The QCMP constitutes a working document which can be adapted and revised throughout the implementation of the project upon agreement by all parties. This may apply in cases such as where e.g. the procedures laid out in the QCMP turn out to be not feasible for their purpose.

3 Quality Control Monitoring Board (QCMB)

In order to achieve the quality objectives of the project, a Quality Control and Monitoring Board (QCMB) will be established during the Kick-off Meeting, which will consist of persons from consortium universities: 6 from the Kingdom of Thailand (PSU, AIT, CMU, KMUTNB, TU, KKU) and 3 from UE (UPB, Uminho, CUT). UPB will chair the QCMB as WP4 Leader.

The duty of the QCMB is to monitor and evaluate the progress of the project and to ensure that all its activities are carried out properly according to European Standards and Guidelines for Quality Assurance and ensuring proper execution of the project to achieve its objective. The QCMB will design a proper evaluation process and be responsible for creating a set of indicators.

As such, the QCMB, through the QCMP, will define the following milestones:

- reports from partners on the quality of the implementation of work packages.
- QCM reports of the QCMB based on individual reports by consortium members who are responsible for internal monitoring and quality control of the implementation status of tangible results including recommendations and corrective measures related to the strategic project achievements and overall management of the grant.
- bi-annual QCM reports with achieved/planned outcomes, based on evaluation of partner QCM reports. The QCMB will also report to the PMB the outcome of the evaluation, the identification of deficiencies, and delays so that appropriate countermeasures can be taken.
- an impact report, as a part of final project report, on the broader impact and the relevance of the project in the national context towards the needs of major stakeholders, adopted at the end of the project life by the consortium members.

The QCMB will monitor the project at different points using different types of evaluation practices and tools, such as report analyses, surveys, questionnaires, checklists and QCM visits, devised to assess on an ongoing basis project relevance, efficiency and impact, to measure progress throughout its life cycle, to determine if the project responds to main target groups' needs, to measure the level of satisfaction of beneficiaries of project activities, and to evaluate unexpected results and control all processes. QCM activities will include evaluation of offered new courses, improved teaching and lab facilities, training of teaching staff, student feedback, achievement of objectives, and impact of the project at the single universities and at national level.

The monitoring and evaluation procedures will monitor the project execution through monitoring reports which will be edited every 6 months. Additional to the two annual internal QCM reports elaborated by the QCMB, there will be two external reports delivered by sub-contracted external expert.

4 Project Quality Assurance

4.1 Quality of the project processes

The aim of the evaluation is to support project coordinator and WP leaders in ensuring highest quality of project outputs, activities and results, as well as in improving project performance. It should support decision making by delivering necessary evidence to introduce any significant changes, should they be needed. The evaluation will increase the quality of project activities and outputs and measures to what extent they reach the short-term project goals and results set in the application.

The quality of the project processes will be done through self-evaluation of the consortium by the project partners themselves, using the Project Quality Assessment Form QF-PQA. For the evaluation of the project as a whole, a set of indicators have been established, which can be measured on a scale from 1 to 5, where 5 is very positive and 1 is very negative. The indicators are generally relevant to the quality of the project management, coordination, structure, support mechanisms, content, and resources.

The evaluation is primarily done by each partner, who must answer each question with an assessment of the performance of the consortium. The WP4 Leader will collect all the answers from the partners and integrate them into a report, using the technique and the approval limit described in 4.2.1.3, which will reflect the views of the consortium on its progress. In case the WP4 Leader, upon processing the results, finds that one or more are below the expected performance, notifies the PC in order to set forth problem-solving procedures.

The evaluation will be performed twice a year, every year, during the lifecycle of the project.

The following table presents the project's work package leaders:

Work Package No.	Type of Work Package	Title of Work Package	WP Leader
WP1	Preparation	Gap Analysis	P2-CMU (Activities in Thailand), P8-UMinho (Activities in Europe)
WP2	Development	Curriculum Development I: Curriculum Structure And Courses	P9-CUT (Leader) P1-AIT (Co-Leader)

WP3	Development	Curriculum Development II: Modernisation of Teaching Methods and Tools for Msc Programmes	P1-AIT (Leader) P8-UMinho (Co-Leader)
WP4	Quality Plan	Quality Plan for The Implementation of The Project	P7-UPB (Leader) P6-PSU (Co-Leader)
WP5	Dissemination & Exploitation	Dissemination And Exploitation Of Project Results	P5-KKU (Leader) P7-UPB (Co-Leader)
WP6	Management	Project Management	P1-AIT

4.2 Quality of deliverables

The deliverables of MSIE 4.0 project consist of the results of the 6 Work packages. 1 – Gap Analysis, 2- Curriculum Development I: Curriculum Structure and Courses, 3 – Curriculum Development II: Modernization of Teaching Methods And Tools For Msc Programmes, 4 – Quality Plan For The Implementation Of The Project, 5 – Dissemination And Exploitation Of Project Results, 6 – Project Management. Each WP may contain one or more subtasks.

In order to assure a high level of quality regarding the results of the project, each deliverable is evaluated for its completion in due time as well as for its completeness, clarity and comprehensiveness.

Regarding the on-time completion and the monitoring of the WPs, the PC uses the QF-WPM: Work packages monitoring form.

Having in mind the structure and objectives of the MAIN project, deliverables to be produced during its lifetime are classified into:

- Teaching material (presentations, lectures, exercises, books etc.)
- Learning resources
- Trainings
- Methodologies
- Reports
- Events (conferences, seminars, workshops etc.) and
- Other products

General expectations for all deliverables regarding their quality are their relevance to the achievement of main and specific objectives of the project as well as the compliance with the time framework set in the MAIN project Application Form.

Specific requirements are described in more details in the following sub-sections.

4.2.1 Quality evaluation

Depending on the nature of the activity implemented, for each WP and its subtask(s), the evaluation can be of two kinds: a. Internal or b. external. “Internal” means that responsible for the review of the document are specific or all the members of the consortium, while “external” means that the persons other than the partners of the project (e.g. the public, participants, trainees, beneficiaries etc.) evaluate the result. The evaluation is made with the aid of specific documents that are included as annexes to this QCMP. Some WPs may include inherent evaluation tools, that are used for the evaluation instead of the specific documents included in the QCMP.

Besides this evaluation, each WPL takes also into consideration the indicators and respective objectives that are described in the Logical Framework Matrix (LFM) as well as the qualitative and quantitative indicators listed in the chapter “Overview of short and long-term impact indicators” of the approved proposal. The result of this evaluation that is made by the WPL is included in the deliverable report.

In case the deliverable/WP result is not considered as accepted, necessary corrective actions are initiated by the WPL according to the results of the evaluation.

4.2.1.1 Internal evaluation

Many of the deliverables of MSIE 4.0, like the survey for the identification of training needs or the preparatory phases for the development of the training courses etc., are addressed to the partners of the consortium.

These deliverables of the WPs and subtasks undergo an internal evaluation. The specifics of the internal evaluation, as regards to the tools/forms used, the reviewer, the date of review, indicator(s) etc, are described in the QF-WPM spreadsheet.

When a deliverable is finished, the WPL sends the “draft version” of the relevant deliverable to the Project Coordinator (PC) for an initial, more formal evaluation. The PC examines the deliverable for its compliance with the QF-DTM reporting template and the general objectives of the project. After the document is approved by the PC, it is sent by the WPL to the reviewer(s) who check it for its completeness, clarity and comprehensiveness. The evaluation, depending on the nature of the deliverable is made primarily with the use of QF-DES document or other means as minutes of the meetings, contracts, lists of equipment, proof of purchase etc (as described at the QF-WPM spreadsheet). When the QF-DES document is used, it is filled in and sent by the reviewer(s) to the WPL, who is then responsible for amending the document according to the review results, if needed. The time for this amendment is agreed between the WPL and the PC.

Once the document is amended (if needed) its revised version is sent by the WPL to all members of the consortium. This procedure can last two weeks maximum and the WPL is responsible for any changes or additions to the document.

In case the WPL considers the suggested improvements (by the reviewer(s)) as not relevant he has to present his reasons to the respective evaluator and ask for his agreement.

The document that is finally approved takes the status of “final version/version 1” and is included by the PC in the formal progress report/s of the project.

4.2.1.2 External evaluation

MSIE 4.0 project includes several deliverables that are addressed to people out of the core of the consortium. These deliverables of the WPs and subtasks undergo an external evaluation. The specifics of the external evaluation, as regards to the tools used, the reviewer, the dates of review, the indicator(s) etc, are described in the QF-WPM spreadsheet.

The evaluators of these activities are: staff of the CTIs that will be trained, teaching staff, staff of the CTIs that will participate in the consultation activities, users of the project website and the developed database and different stakeholders that will attend the training and dissemination activities. In general the evaluation is done by beneficiaries of the activities, which are asked to evaluate them by answering specific questions using the forms which are attached as annexes to this quality manual (i.e. QF-TES, QF-CCE, QF-EES, QF-EEC, QF-STE, and QF-DWQ).



4.2.1.3 Elaboration of the questionnaires

The questionnaires consist mostly of questions that can be answered with the aid of:

- a) a five points rating scale where 1 is poor and 5 is very good and
- b) a 4 points rating scale (1 strongly disagree, 2 disagree, 3 agree, 4 strongly agree)

The elaboration of the answers to the questionnaires is made by the WP/subtask leader and circulated to the members of the consortium.

The formula for the evaluation of results rated with the five point scale is the following

$$[(1a + 2b + 3c + 4d + 5e)/5 (a+b+c+d+e)] \%$$

Where:

a, b, c, d, and e are the numbers of questionnaires that rated the activity with 1, 2, 3, 4 and 5 respectively.

The activity is considered successful if the percentage of satisfaction is more than 75%. In case the percentage of satisfaction is less than 75%, the WPL proposes proper corrective actions (repetition of activity, distribution of more training or informative material, improvements of the database and the website etc.) which should be agreed with the PC.

Regarding questions that are rated with a 4 points rating scale, the threshold for a successful evaluation is 70% of answers with score ≥ 3 . Scores less than this will require corrective actions as above.

5 General Quality Issues

5.1 Document Control

This section describes the control system for preparing, reviewing, approving, distributing, revising and updating documents that are required for the Quality Plan of MSIE 4.0 project. These documents include but are not limited to the following:

1. Quality Plan Manual
2. Quality forms (as annexed to the Quality Plan Manual) (QF-DES, QF-TES etc)
3. Minutes of the meetings
4. Reports on deliverables of WPs
5. Progress reports
6. External documents like the Erasmus plus program guide or other instructions by the National Agency of Jordan or the European Commission, the partnership agreements (PA) between the PC and the partners etc.

The Quality Manager with the contribution of the Quality Committee is responsible for drafting and issuing the Quality Plan Manual and the Quality forms annexed to it. The partners who are responsible for the review of the above documents are mentioned in the QF-WPM.

All the internal documents (except quality forms) are drafted using the QF-DTM (document template). Draft versions are numbered with 0.1, 0.2 ... in order to be distinguished from the released versions which are numbered with 1, 2 Quality forms are drafted using the QF-QFT (Quality form template).

5.1.1 Revision of documents

Responsible for the revision of the different documents are the respective WPLs who are also responsible for distributing to all partners the last approved version of each document.

The last approved version (controlled copy) of MSIE 4.0 documents is also uploaded to the web-based collaboration platform (dropbox) by the WPL who is also responsible for its substitution in case of revision (new version).

External documents that are not available on the web-based platform shall be properly collected and maintained by the MT (Management team).

5.1.2 Abbreviation System for the naming of documents

The abbreviation system for the naming of Quality Plan documentation is as follows :

1. Quality Plan Manual: QPM
2. Quality Form : QF-three initial capital letters of the form (e.g. QF-DES)

All the documents of MSIE 4.0 are elaborated in MS Word™ format (or equivalent) for documents, MS Excel™ format (or equivalent) for spreadsheets and MS Power Point™ (or equivalent) format for presentations.

5.1.3 Documents for public use

Documents or other material that is addressed to the public (informative material, brochures, leaflets, posters, presentations, DVDs etc) must bear:

- The logo of MSIE 4.0 project
- The logo of the Jordanian National Agency
- The logo of ERASMUS PLUS
- The title and reference number of the project
- The following disclaimer:
“This project has been funded by the Erasmus+ Program of the European Union.

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The same logos and disclaimer shall be also mentioned in the web-site of the project.

5.1.4 Master List of Quality Plan Forms

The templates of the Quality forms that are described in the following table are annexed to this Quality Plan Manual.

Abbreviation	Full name of document	
QCMP	Quality Control and Monitoring Plan	-
QF-DTM	Derivable template	Annex I

Abbreviation	Full name of document	
QF-QFT	Quality Form Template	Annex II
QF-WPM	Work packages monitoring	Annex III
QF-PQA	Project Quality Assessment	Annex IV
QF-TES	Training evaluation sheet	Annex V
QF-CCE	CTI’s consultation evaluation sheet	Annex VI
QF-EES	Event evaluation Sheet	Annex VII
QF-EEC	Evaluation Sheet for the Establishment of CTIs	Annex VIII
QF-DES	Deliverable evaluation sheet	Annex IX
QF-STE	Staff evaluation of host organizations	Annex X
QF-DWQ	Database and website questionnaire	Annex XI

5.2 Communication

Communication between the members of the consortium, between the PC and the National Agency and between the PC and the European Commission is very crucial for the successful implementation of MSIE 4.0 project.

Day by day communication is conducted by e-mail, telephone conversations and skype meetings when deemed necessary. For the avoidance of any confusion, special attention is paid to the clear drafting of the subject of the e-mail.

In general, all information relevant to the project is sent to the PC, who then forwards it to the partners involved in the specific action(s).

Direct partner/partner communications flows will be set up in those cases where an increase in efficiency can be achieved.

Dropbox, a web based collaboration platform is implemented by the coordinator for the project. This Internet site is secured, and enables the consortium to have a very efficient diffusion of the information connected to the release of minutes, deliverables, reports and exchanges between partners.

External communication with the National Agency for ERASMUS+ and with the European Commission is the responsibility of the PC. This communication takes place mainly by e-mail, telephone conversations and face-to-face discussions when it is needed.

6 Reporting

Each WPL is responsible for reporting the progress of the specific WP every six months and at the end of the WP by sending the report to the PC. The progress of the WP is also presented during the every-six-months meetings of the consortium. The same stands for the mid-term and final reporting.



The Project Coordinator will consolidate and distribute to the consortium the progress reports as well as the detailed mid-term and final reports that will also be sent to the European Commission.

Reports will be drafted using the document template (QF-DTM) and will be distributed for review to all partners of the consortium according to 5.a (Document control).

The PC will be responsible for the approval of WPs progress reports and the StC will be responsible for the approval of six months, mid-term and final reports.

7 Annexes



Annex I: QF-DTM-Document template



Annex II: QF-QFT-Quality Form Template



Annex III: QF-WPM-Work packages monitoring



Annex IV: QF-PQA-Project Quality Assessment



Annex V: QF-TES-Training evaluation sheet



Annex VI: QF-CCE-CTI's consultation evaluation sheet



Annex VII: QF-EES-Event evaluation Sheet



Annex VIII: QF-EEC-Evaluation Sheet for the Establishment of CTIs



Annex IX: QF-DES-Deliverable evaluation sheet



Annex X: QF-STE-Staff evaluation of host organizations



Annex XI: QF-DWQ-Database and website questionnaire