ERASMUS PLUS
HIGHER EDUCATION CAPACITY BUILDING

Erasmus+ Project

Crisis and Risks Engineering for Transport Services (CRENG)

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WP3 - Quality Control

Quality Assurance Plan / Strategy

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1. Introduction

The Quality Assurance Plan/Strategy of the CRENG Project is intended as the Guide for the CRENG Quality Assurance. It is a practical document, a set of guidelines and instructions that will enable the project team to quickly identify the right formats, processes, and procedures to ensure that the project achieves the overall standards required to meet its objectives. It outlines criteria and processes, specifies the roles of partners, establishes performance indicators, provides relevant reporting forms, and provides detailed instructions for WP leaders, the task leader, and partners to carry out the relevant procedures. For this reason, the CRENG Quality Assurance Plan is a "living document" that is subject to change and may be modified during the life of the project, depending on operational needs and opportunities (e.g., identification of additional indicators, emergence of innovative assessment techniques and methodologies, etc.) that arise and are identified as relevant by the partners.

The CRENG Quality Plan includes the following chapters:

- Chapter 2 introduces the Project and Project Consortium, describes its management and coordination structure, and explains interactions between management and coordination and quality assurance;

- Chapter 3 describes the overall Quality Assurance Strategy, describing the relevant points to be achieved during the Project implementation;

- Chapter 4 gives an overview on Quality Assurance Indicators which deal as the measures for the progress of the CRENG Project;

- Chapter 5 describes the individual Quality Assurance procedures which should be performed during the Project lifetime;

- Chapter 6 describes specific methodology and tools of QA of CRENG Project;

- Chapter 7 describes the areas for the evaluation of the outcomes and impacts.

Questionnaires, forms and other tools, to be used in the Quality Assurance process, are included as annexes.

2. The CRENG Project

The CRENG Project brings together Higher Education Institutions (HEI), industrial associations and social partners to establish a platform for European Cooperation in engineering activities in transport services which aim to reduce any risks and crisis. The Project is dedicated to support the development of Crisis and Risks Engineering for transport services (CRENG) to ensure sustainability transport systems in Ukraine, Azerbaijan and Turkmenistan for their integration into Global transportation network. In order to contribute to the development of CRENG in the partner countries, the project aims to create an environment for the education of highly qualified specialists that is in line with the labour market and complies with EU best practices and the Bologna Process.

2.1. The Consortium of CRENG Project

The CRENG Project (Crisis and Risks Engineering for Transport Services) is implemented by a Partnership of 13 organisations from 7 countries representing Higher Education Institutions (HEI) and EU industry associations:

P1: Warsaw University of Technology (WTU); Warsaw/Poland
P2: Technische Universität Berlin (TUB); Berlin/Germany
P3: Université polytechnique des Hauts-de-France (UPHF); Hauts-de-France/France
P4: EXOLAUNCH GmbH (formerly ECM space technologies GmbH) (EXO); Berlin/Germany
P5: Pryazovskyi State Technical University (PSTU); Mariupol/Ukraine
P6: Dnipropetrovsk National University of Railway Transport named after Academician V. Lazaryan (DNURT); Dnipropetrovsk/Ukraine
P7: State University of Infrastructure and Technologies (SUIT); Kyiv/Ukraine
P8: Baku Engineering University (BEU); Baku/Azerbaijan
P9: Azerbaijan Technical University (ATU); Baku/Azerbaijan
P10: Azerbaijan Technological University (UTECA); Ganja/Azerbaijan
P11: Institute of Telecommunications and Information Technologies of Turkmenistan (ITIIT); Ashgabat/Turkmenistan
P12: International University for the Humanities and Development (IUHD); Ashgabat/Turkmenistan
P13: Turkmen State Architecture and Construction University (TSAKI); Ashgabat/Turkmenistan

The CRENG project also involves four organizations from four countries as *associated partners* from the public and private sectors. They are contributing to the implementation of specific tasks and activities and supporting the dissemination and sustainability of the project:

P14: The Ukrainian Railway (Ukrzaliznytsia) (UZ); Ukraine
P15: Baku Transport Agency (BNA); Baku/Azerbaijan
P16: The Ministry of Education of the Republic of Azerbaijan; Baku/Azerbaijan
P17: Ministry of Education of Turkmenistan; Ashgabat/Turkmenistan

2.2. Management and Coordination Structure

The overall evolution of the CRENG project is steered by a *Project Management Board (PMB).* It is composed of representatives from each partner organization and its members act also as local project coordinators. It is the decision-making body that takes decisions about how the project will be run and how the project consortium works together. It is responsible for carrying out tasks, monitoring the

progress of the project in relation to the main objectives, making decisions and resolving problems if any arise. The main goal of these actions is to ensure the smooth development of the project.

The *Coordinator* of the CRENG Project is the Warsaw University of Technology (WTU) in Warsaw/Poland. The WTU leads the overall management of the project and is responsible for the concrete implementation activities and financial management. The main tasks of the project coordinator are described in the detailed CRENG project description.

Work Package Leaders (WPL) are coordinating the work in the 5 CRENG Work Packages (WP). They are responsible for planning, monitoring and reporting on the implementation of the planned activities in their respective WP. They report on M&E and QA for activities and deliverables in their respective work packages.

Work Package	WP Type	Work Package Leader
WP1	Preparation	P3
WP2	Development	P2
WP3	Quality Plan	P4
WP4	Dissemination & Exploitation	P5
WP5	Management	P1

3. The Quality Assurance Strategy

Every institution in the European Union that follows the standards of the European Higher Education Area has quality assurance (QA) as an integral part of its internal management. It helps to support teachers and build expertise and capacity in the higher education system in order to deliver positive outcomes for students. Through sharing, understanding and applying standards and expectations, quality assurance helps to raise standards, expectations, and levels of consistency across HEIs. Efficient and effective approaches to quality assurance will require building on local practices, developing working approaches across HEIs authorities and partners and linking this work at a national level.

To achieve the Quality Assurance, the list of objectives based on monitoring, self-evaluation and planning for improvement, was developed. These are:

- Ensure the maintaining of high standards of updated and modernized curricula
- Ensure the outcomes improving for students
- Meeting standards and expectations through the internal universties resources;
- Analysing and fulfillment of National Qualifications Frameworks;
- Ensuring assessment materials and exemplification, including those that will be available;
- Ensure that accreditation of developed curricula at national/institutional level, regulations and guidelines are followed and also applicable;
- Taining of target universities staff and academic faculty on quality improvement processes;
- Provide quality assurance approaches of other non-academic partners;
- Quality control as a part of external evaluation

To develop a proper Quality Assurance System, a list of special activities is to be performed:

- Development of the Internal quality assurance system. This means that in each partner university a quality group of responsible specialists should be created. That groups should have effective quality checks in place, define assessment tasks and activities, valid and reliable asessment decisions in line with national standards, and responsible for the internal verification of their assessments.

- Development the procedure for self-monitoring (including reports template, questionnaires, surveys plans and feedback reports from target students/academics/stakeholder groups)

- Peer-reviews regarding quality assessment of new curricula based on quality indicators (quantitative & qualitative assessment); recommendations for quality indicators and peer-review procedure are to be developed.

- Monitoring & Evaluation (M&E) including self-monitoring reports with necessary conclusions and recommendations every 6 months (including comparison with work plan of the project activities; evaluation of outcomes and their quality in form of special developed report template; interviews with stakeholders; online evaluation). It will ensure an appropriate focus on coherent planning, checking, sampling, reviewing and providing feedback for quality improvement.

- External monitoring: external quality evaluation provides information on strategy, operations and learning with focus on impartiality, usefulness, technical adequacy, stakeholder involvement, value for inputs and feedback. Mid-term independent project evaluation is planned in the middle of the 2nd year and upon project completion, which are being conducted as part of project's external evaluation. External expert (EE) will be responsible for midterm and final project evaluation. EE will conduct the evaluation session during the project's conference or partners' meetings to review and discuss M&E concept/tools and mid-results with target universities. Within this external evaluation mechanism, feedbacks on project quality or risks identified will be provided by an External Evaluator to the coordinator. Findings of the evaluation will be used to improve project's performance, continuous feedback and organisational and institutional knowledge and learning.

- Project approaches will include opportunities for collaboration both virtual and face-to-face (for example, through network groups and professional development workshops). Through the series of workshops curriculum planners and managers (faculty heads/principal teachers) of target universities will train to build on existing practices to ensure that quality assurance activities are fit for purpose, comparable, manageable and accessible. The workshops also will provide opportunities and support for staff working collaboratively on quality assuarnce, verification and contributing to the National Qualification Frameworks.

- During Quality Assesment process the following outputs/project products shold be examined: competence matrix, syllabuses, learning materials, tests, delivery and support system of Web-based courses, new BA/MA courses implementation and learning.

- Milestones: self-monitoring system established; feedback, questionnaire, annual reports; QA centres/responsible specialists in place; online evaluation in function; peer-reviews; the Inter Project Coaching and Evaluation Board established; report of inter project coaching; external M&E reports.

- <u>Indicators</u>: number of self-monitoring reports, number of IEB meetings; number of questionnaires and surveys; number of reports of inter project coaching; external M&E reports; number of internal QA groups; number of specialists trained in QA.

4. Quality Assurance Indicators

The Logical Framework Matrix from the project application form (Annex 1) contains several indicators of progress. A list of formalised more detailed progress indicators, broken down into work packages, has been developed to allow reliable monitoring of the achievement of the main objectives.

WP1: Preparation	
PI Code	**PI Title**
WP1PI1	Number of internal work plans of the project
WP1PI2	Number of questionnaires for analysis of existing curricula/disciplines
WP1PI3	Number of existing curricula reviewed
WP1PI4	Number of University specialists involved in the review process
WP1PI5	Number of courses/modules selected for modernization
WP1PI6	Volume of courses/modules selected for modernization in ECTS credits
WP1PI7	Percentage of academic hours in new curricula implying the use of new Educational Technologies (Average)
WP2: Development	
PI Code	**PI Title**
WP2PI1	Number of teaching/administrative staff involved in the new courses development
WP2PI2	Number of new courses/modules developed
WP2PI3	Number of new courses/modules accredited
WP2PI4	Number of existing courses/modules updated
WP2PI5	Volume of teaching/methodological materials developed for the new curricula (in pages)
WP2PI6	Number of teaching staff members re-trained by the project on new curricula and IPBL
WP2PI7	Number of master classes conducted
WP2PI8	Number of students involved in pilot teaching on CRENG
WP2PI9	Number of equipment units purchased and installed
WP2PI10	Organizational documents for establishing Service Offices VCR and CRENG Labs developed and approved
WP2PI11	Number of "CRENG+" agreements signed by organizations
WP2PI12	Number of workshops conducted in CRENG Lab
WP2PI13	Number of courses/modules that use CRENG Lab
WP2PI14	% of the new curriculum taught in foreign language of the total of new curriculum developed by the project

WP2PI15	Number of partner country "HEIs' students" trained
WP2PI16	Number of students participated in Skills Wallet
WP2PI17	% of students satisfied with learning process
WP2PI18	Number of people re-trained to operate Service Offices

WP3: Quality Plan

PI Code	PI Title
WP3PI1	Number of specialists involved in the quality group
WP3PI2	Number of quality indicators developed
WP3PI3	Number of feedback items collected
WP3PI4	Number of external experts involved in the project evaluation
WP3PI5	Number of peer-reviews carried out

WP4: Dissemination & Exploitation

PI Code	PI Title
WP4PI1	Number of Dissemination events (conferences, workshops, symposia, etc.) organized
WP4PI2	Number of Dissemination events participants
WP4PI3	Number of Summer Schools organized
WP4PI4	Number of website visitors
WP4PI5	Number of media echoes
WP4PI6	Number of promotional materials developed

WP5: Management

PI Code	PI Title
WP5PI1	Number of staff members involved in Management and Coordination
WP5PI2	Number of coordination events (meetings)
WP5PI3	Number of internal management teleconferences
WP5PI4	Number of internal reports prepared and submitted

5. Quality Assurance during the Project

5.1. Internal QA system: Self-Monitoring Procedure

Partner universities are responsible for the activities assigned in the different WPs and Tasks, including the related M&E (Monitoring & Evaluation) and QA activities. Partners are also responsible for periodical monitoring and self-assessment of the Project implementation, also contributing with comments and inputs related to management, communication and impact issues.

As WP Leader, EXOLAUNCH coordinates and oversees the implementation of the Project's M&E and QA strategy, including the drafting of the QA Plan, and of the Interim and Final Quality Reports (Deliverables).

The Project Coordinator is responsible of the overall supervision of M&E and QA activities at Project level. In close cooperation with the M&E and QA Leader and the PSC, the task of the Coordinator is to ensure compliance with the overall Project plans, and to avoid deviation, anticipate risks and devise mitigation measures.
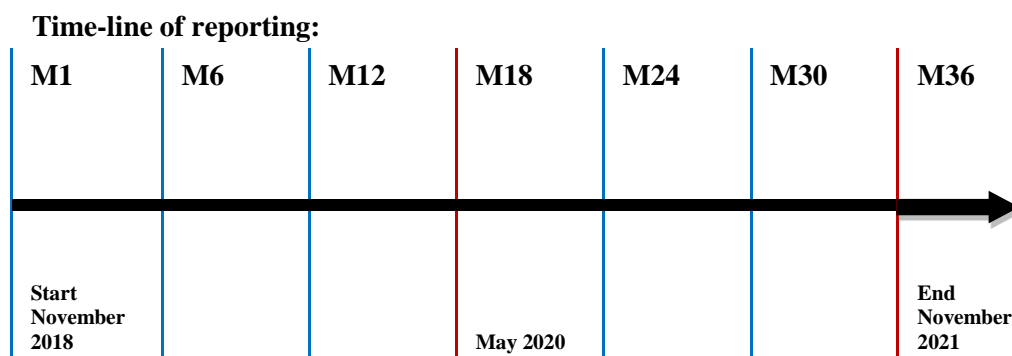
WP leaders are responsible for the quality of the activities carried out in their respective WP and of the quality of the results and the deliverables. They ensure that monitoring, evaluation and quality activities are implemented coherently, reporting on them to the WP3 Leader. They also monitor KPIs and report to the WP3 Leader and the Project coordinator about possible risks, deviations and low-quality results. M&E and QA responsibility can be taken over directly by the WP Leader or, if deemed appropriate, be delegated to a WP team member.

Partners are responsible for the activities assigned in the different WPs and Tasks, including the related M&E and QA activities. Partners are also responsible for periodical monitoring and self-assessment of the Project implementation, also contributing with comments and inputs related to management, communication and impact issues.

Self-Monitoring reporting is consisting of:
1) Completed report on implemented project activities (provided by EXOLAUNCH each 6-9 months)
2) Presentation based on the report
3) Feedback questionnaires from students/academics/stakeholders
4) Peer-reviews

Each partner university is responsible for periodic monitoring and self-evaluation of project implementation, and contribute with comments and input on management, communication and impact issues. Self-monitoring reports **(M9, M18, M24, M30, M36)** should be sent to the project coordinator and EXOLAUNCH.

Time-line of reporting:

M1	M6	M12	M18	M24	M30	M36
Start November 2018			May 2020			End November 2021

Plan of monitoring of the project activities:

	2019		2020		2021	
Periodic reporting on the project achievements based on self-monitoring reports	15/05	15/11	15/05	15/11	15/05	15/11

Field monitoring visits (will be defined by the NEO of partner countries):						
	2019		2020		2021	
Azerbajan						
Turkmenistan						
Ukraine						
Interim reporting			15/05			
Final reporting					15/11	
Annual reporting*	15/11		15/11		15/11	

* This is the date of submitting final corrected version of report

5.2. Peer evaluation of new/modernized modules/courses/curricula

The quality assessment of new or modernized modules, courses or curricula should be conducted by peer reviewers. Potential peer reviewers can be identified in the following ways:

- Create a list of potential peer reviewers (organizations or persons) that the target university considers competent enough to conduct a peer review of the new/modernized modules/courses/curricula. These could be representatives of research centers, universities in the country and outside the country, hospitals, ministries, etc.

- Define 1-3 peer reviewers and conduct negotiations with them of when to send them materials for a peer review

Suggested template of the list:

Organization (Name, Surname)	Contact info (email)	Planned date of peer review

What to provide for a peer review?

The target university has to provide at least:

1) Curricula description
2) List of quality indicators
3) Selected documents, which will correspond and support your quality indicators. You have to decide YOURSELF which accompanying documents suit best.

Annex 2 shows a template for a Peer review which will help to assess the quality of implementation of each curricula module (new and modernized modules/courses/curricula).

Award system of the peer review:

- Each module is assessed by each of your quality indicators;
- Five-point grading scale is used for the assessment (5 is the highest (excellent) point, 0- the lowest). This five-point grading scale should assess each indicator;
- After the assessment of all indicators, all points that they received should be summarized and divided by the number of indicators. Therefore, an arithmetic mean, which will be a "grade" for the module;
- Besides, peer reviewers should explain in detail their scores and leave their recommendations, suggestions about what should be done better in order to improve a module.

5.3.   Questionaries

In addition to the peer reviews, it is recommended that further surveys or questionnaires are used to capture the opinions and range of satisfaction with the project from other stakeholders/target groups. The questionnaires for evaluation of the content of educational disciplines can be prepared for:

1) Teachers, academic staff, experts:
   - To determine the methodological relevance of the new and modernized modules/courses/curricula and the higher education degree standard
   - To determine the relevance and effectiveness of educational content to obtain competencies according to the labour market
2) Employers
   - To determine the level of necessity and the level of practical application of knowledge and skills acquired as a result of studying the new and modernized modules/courses/curricula, from the point of view of the employer
   - To adapt educational content to the possibility of practical use of knowledge and skills, as a result of its study.
3) Students/applicants
   - To determine how clear, useful and interesting the content of the new and modernized modules/courses/curricula is for students and applicants.

An example of a questionnaire for students can be seen in Annex 3.

5.4.   External Monitoring

The CRENG consortium will appoint an external expert to prepare an independent assessment, including recommendations, of the project implementation results and overall performance against plans and objectives.

The external Expert must demonstrate some relevant skills, including:

- Robust understanding of quality processes, expected activities, outputs and quality review processes;
- Knowledge of the Bologna process, Erasmus+ projects, HE system, Quality Assurance (ESG)
- Proven professional experience in evaluation process and monitoring process of international collaborative projects, in order to efficiently evaluate the final products and contents of the training activities, publications and other materials, as well as to monitor the effectiveness of CRENG project management (previous experience in EU-funded project is an asset);
- Excellent English language and reporting skills;
- Ability to effectively communicate evaluation results and feedbacks;

- In order to provide a professional and independent review, the external expert shall not have any concurrent contractual engagement with the Consortium members. This limitation does not apply in case of the selection of a company/agency.

The tasks of the external expert should be as follows:
- To review CRENG processes and products, according to the OECD/DAC evaluation criteria of relevance and fulfilment of objectives, development effectiveness, impact and sustainability, for project /programme evaluation;
- To provide quarterly feedbacks on quality assurance processes and methodologies;
- To prepare the intermediate (on Month 18) and final (on Month 36) external evaluation reports.

5.5.   Risk Assessment and Management

WP Leaders will report on the M&E and QA for their respective WPs, activities and results. This constant monitoring, evaluation and quality control will allow to identify operational risks. Should this occur, the WP3 Leader will address the Coordinator and the Project Management Board to raise the issue. The Project Management Board will develop appropriate mitigation measures or appropriate venues to take advantage of opportunities, as provided for in the project's operational and technical management procedures.

In order to prevent the potential risks in the project implementation, a roadmap is foreseen, including: the interested WP/deliverable, the connected risks, its probability to occur, the impact in case of occurrence and the agreed CRENG mitigation strategy, as shown in the table below.

Risk Management

No.	WP/ Deliverable	Risk	Probability	Impact	Mitigation Strategy
No. of WP/ Deliverable	Name of WP/ Deliverable	Risk description	Low/ Medium/ High	Low/ Medium/ High	Description of mitigation strategy

5.6.   Deliverables of the M&E and QA System

1) **The CRENG Project Quality Plan** is drafted by EXOLAUNCH as WP3 Leader, with active contribution from all partners. The Plan introduces the set of working processes to ensure the Project quality standards. The main aim of the Plan is to monitor on a regular basis the implementation of the Project activities as well as the quality of results (deliverables) and outcomes.

2) **Interim Internal CRENG Quality Reports:** Three Interim Reports are envisaged at the end of each year of implementation. They are drafted by EXOLAUNCH as WP3 coordinator and are fed by the internal six-month reporting from partners, including also a M&E and QA component. The Interim Quality Reports will contain details about M&E and QA activities and results, as well as outline measures to be undertaken in order to improve – if needed – any aspects of the Project implementation (communication, relevance of deliverables, internal processes, etc.).

3) **External Quality Report:** The Mid-term External Quality Report will be drafted by the External Expert (EE). The Report will evaluate the Project implementation, providing an

external perspective to achievements so far reached, and the overall performance of the Project against objectives and plans. The Report will also provide recommendations on different aspects of project implementation, including quality of the Consortium, working relations, internal communication, implementation processes, results, etc. The Final External Quality Report will be drafted by the EE. In addition to capturing the overall quality of the Project in all its aspects, the Report will highlight lessons learned and good practices to inform the work of partners in further exploiting the Project results beyond its lifetime.

4) **The Final CRENG Quality Report** will be drafted by EXOLAUNCH as WP3 coordinator with active contribution from all partners. It will describe how M&E and QA activities have been carried out, the involvement of the Internal QA Committee, and the results of the peer reviews carried out by the External Quality Committee. The Report will also describe the results of the formative evaluations carried out during the Project, as well as the results of the summative evaluation at the end of the Project, to identify lessons learned and good practices that will inform the exploitation of results beyond the Project's lifetime.

6. Methodology and Tools of Quality Assurance

The M&E and QA activities, carried out in the CRENG Project, are aligned with the responsibilities and tasks of the partners in carrying out the activities and producing the deliverables, as envisaged in the Project Description and in the Partner agreements. Results and outcomes of the M&E activities are disseminated to the Project members during consortium meetings and/or via e-mail.

In order to support pro-active participation and avoid bureaucratization, in reporting and disseminating priority will be given to qualitative feedbacks and to proposals and suggestions, as well as to risk identification (if a possibility arises). Thus, in addition to proposed issues and topic for assessment, all M&E tools provide adequate room to collect comments on strong/weak points, as well as suggestions and proposals for improvements, etc.

M&E and QA procedure will address specifically the following processes and activities:

- General Consortium meetings
- Tangible deliverables (results)
- Dissemination events
- Internal six-month partner evaluation

Other activities may be considered for evaluation at later stages of project implementation (e.g. focus groups, workshops, training seminars, etc.) if deemed appropriate and agreed between the respective task leaders, WP3 leader and project coordinator.

6.1. Regular Consortium Meetings

Regular Consortium Meetings should be held during the Project's lifecycle, organised either on-site or on-line. After these meetings, the individual assessment of participants should be performed. Possible questions are:

- Was the meeting properly structured and organised (time planning, partners' roles, etc.)?
- Was the agenda well prepared, comprehensive and conclusive?
- Were the agenda and relevant information circulated in due time?
- Were the presentations useful and informative?
- Were the partners prepared and knowledgeable about their allocated tasks?

- Was there enough time for discussions and exchange of ideas?
- Were upcoming tasks and partners' roles clearly explained and agreed?
- Did the meeting as a whole achieve the expected outcomes?
- Was the web platform suitable *(on-line meetings)?*
- Was the venue suitable (comfort, room for networking) (*on-site meetings*)?
- Etc.

Quality criteria relate to preparation, implementation and follow-up and logistics, as follows:
- preparation: agenda, participants' roles, time planning, circulation of documents;
- implementation: time management, presentations, discussions, partners' preparation, partners' participation, inputs for follow up, overall assessment;
- logistics: on-site meetings: venue, equipment, catering, room for networking; on-line meetings: web platform and chat (usability, operation).

The Coordinator and WP3 Leader (EXOLAUNCH) will send the invitation to the on-line assessment and process the collected data. The results will be circulated among partners.

6.2. Internal Periodical Evaluation

As already described before, six-monthly internal self-monitoring reports are foreseen to be prepared by the partners and submitted to the project coordinator. These reports will feed into the interim and final reports that will be prepared by the project coordinator. To contribute to the monitoring of the project activities, the project implementation will also be assessed through an online questionnaire for individual quality assessment (Annex 4).

Quality criteria relate to the following topics:

- Project management (time scheduling, task assignment, work process, deadlines, consultation, decision-making, risk management)
- Financial issues
- Communication (partners, project coordinator)
- Overall functioning of the partnership

Additional topics may be included, as deemed relevant to the Project specific implementation phases and may concern such additional topics, as follows:

- New collaboration opportunities
- Quality and impact of dissemination activities
- Quality and impact of sustainability activities
- New networking opportunities with stakeholders
- New cooperation opportunities among partners

The periodical implementation the on-line assessment exercise will take place concurrently.

6.3. Dissemination Events

Effective dissemination is essential in order to make sure that the project and their effect will be visible. The CRENG consortium will be disseminating the results of the project to multiple audiences, via different channels, at different intervals, etc. The aim of this dissemination strategy is to maximize the impact, visibility and credibility of the project. The objectives of the strategy are as follows:

- Design, develop and regularly update the CRENG website;
- Share information about the project and publish its findings via both traditional media (e.g. press relation) and digital media (e.g. social media);
- Transfer knowledge to industry about changes in academic area - the creation of new training materials, educational resources and the new curricula;
- Support the development of a strategy for the exploitation.

Following Dissemination methods were defined for CRENG Project:

Methods	Purpose
Project website	A project website is one of the most universal dissemination tools. It will contain information for different audiences. It will be updated regularly.
Universities' websites	Information dedicated for academic community, recommended in national languages and in English
Social media	Information for project partners, engagement of partners in project planning and improvement.
Press releases	Flyers in printed form can be handed out at conferences, other events or to colleagues / students at each institution. An electronic version (e.g. PDF file) can also be circulated electronically via the project website.
Programme meetings	Programme meetings are excellent opportunities for project partners to learn from each other, discuss common issues, and get feedback on their work.
Conference presentations / posters	National and international conferences are an important opportunity to share achievements with experts in the field.
Events, including lectures, demonstration and workshops	There are useful in the project to get feedback from students and other stakeholders (including industry) on functionality and usability

7. Evaluation of outcomes and impacts

Impact evaluation is an evidence-based procedure intended to measure the effectiveness of the project in achieving its strategic and operational goals, and in achieving the expected impact on partnership organisations and target groups.

7.1. Impact Analysis and Results

In the context of the CRENG Project, impact analysis will revolve around following areas, reflecting the architecture of the Project design:

- The Project's performance against the defined Quality Assurance Indicators, i.e. the capacity of the Project partners to perform the planned activities within the given deadlines and quality consistency;
- The impact on partnership organisations (Consortium partners), focusing on the integration of project results into internal processes;
- The impact on the wider target groups (other than partnership organisations), particularly the adoption and actual use of project results by relevant stakeholders, or a possible future valorisation of project results;
- The impact on the policy objectives/areas defined for KA2 by the Call for Proposals 2018 - EAC/A05/2017 Erasmus+ Programme;

- The results to be obtained from this analysis are part of the overall QA management procedure and will support the partnership to early identify areas for improvement;
- Implement corrective actions to align project results with objectives, if considered necessary;
- Identify how to maximise post-Project impact based on the feedback from stakeholders and target groups.

7.2. Impact Evaluation, Dissemination and Sustainability

As anticipated in the Introduction to this document, the M&E and QA procedures and tools described in this document focuses on Project implementation and impacts with regard to deliverables; management; consortium internal communication and cooperation; impact of project implementation and deliveries to internal and external target groups.

The project interim and final reporting will include inputs and comments results on all WPs and provide an overall integrated view on project implementation.

Finally, it should be reiterated that the purpose of M&E and QA is to support the execution of the project and - most importantly - the achievement of the intended objectives: M&E and QA are an essential and value-adding process, not a formal procedure. The QA plan will be consistently monitored and revised at any time deemed necessary according to input from the Project Coordinator and Project Management Board.

Based on the longstanding-experience matured in other similar EU projects, the QA Plan of CRENG Project and the impact analysis will be enriched and developed based on the results of the M&E itself starting from the second year of implementation onward.

Annex 1: Logical Framework Matrix

(see original project document) represents a control list to assess any progress and the rate of success of project activities in relation to specific objectives and expected results.

Wider Objective: *What is the overall broader objective, to which the project will contribute?*	Indicators of progress: *What are the key indicators related to the wider objective?*	How indicators will be measured: *What are the sources of information on these indicators?*	
To support of development of Crisis and Risks Engineering for transport services (CRENG) to ensure sustainability of UA, AZ, TM transport systems for their integration into Global transportation network. To contribute CRENG development in PCs the environment for education of high skilled specialists in line with labor market, EU best practices and Bologna process will be created.	- The volume of international transportations in PCs countries growth; - Implementation of CRENG in PCs enterprises growth; 100% employability of graduates of new MA program on CRENG; - Annual increase in CRENG graduates demand together with annual increase in CRENG MA program entrants.	- Official statistics of PCs; - Statistics of PCs HEIs; - Statistics of PCs Ministries of education on graduation and employment.	

Specific Project Objective/s:	Indicators of progress:	How indicators will be measured:	Assumptions & risks:
What are the specific objectives, which the project shall achieve?	*What are the quantitative and qualitative indicators showing whether and to what extent the project's specific objectives are achieved?*	*What are the sources of information that exist and can be collected? What are the methods required to get this information?*	*What are the factors and conditions not under the direct control of the project, which are necessary to achieve these objectives? What risks have to be considered?*
• To develop, implement and accredit new practice oriented, student- focused MA program on CRENG including innovative teaching/learning. approaches and ECTS in UA, AZ and TM till November 2021. • To bring the HEIs in UA, AZ and TM closer to labor market in CRENG area. • To increase collaboration between EU and UA, AZ and TM HEIs in CRENG area.	• 9 new core and 3 transferable curricula developed 4 existing curricula updated and implemented; • 9 MA program accredit on institutional and national levels in PCs; • Graduates employability increased; • 300 graduates on CRENG annually; • Satisfaction of employers with graduates skills increased; • Annual income of CRENG educational environment operating after project increased	• Annual statistic reports of PCs HEIs about graduation, employability and requests of CRENG experts; • Public statistic data of Ministries of Higher education of PCs; • Reports of PCs HEIs departments and subdivisions on implementation and accreditation of new MA programs; • Agreements of cooperation between PCs HEIs and EU HEIs • Data provided by the national Chamber of Commerce	• Factors necessary to achieve objectives: • Political and socioeconomic stability in the PCs; • Support and cooperation from the side of national educational authorities; • Public / business willingness to the new technologies; • Risks: • Language and cultural barriers; • Key participants leave the projects.
Outputs (tangible) and Outcomes (intangible): *Please provide the list of concrete DELIVERABLES - outputs/outcomes (**grouped in Workpackages**), leading to the specific objective/s.* **(PREP) WP 1.** Designed guidelines on instructional strategies for MA program "CRENG" development **(DEV) WP 2.** Developed and accredit new MA program "CRENG". Developed new core and	Indicators of progress: *What are the indicators to measure whether and to what extent the project achieves the envisaged results and effects?* • 9 PCs HEIs and 3 EU HEIs sign an Agreement and Guideline model for MA curricula development and implementation; • 12 new curricula developed, 4 current curricula updated and implemented incl. learning cotent;	How indicators will be measured: *What are the sources of information on these indicators?* • Reports of Project working groups meetings; • Published learning/teaching materials; • Published guidelines (Labs creation, Service Offices creation, IPBL and Skills Wallet implementation);	Assumptions & risks: *What external factors and conditions must be realised to obtain the expected outcomes and results on schedule?* • Risk of instability of international currency will be mitigated by storage of project funds in foreign currency. Risk can be avoided by procurement making as soon as possible and stored in the warehouses until installation.

transferable curricula on CRENG inc. educational environment. Increased cooperation between HEIs and employers by creation of Service office and Skills Wallet Increased collaboration between PCs and EU HEIs by establishing IPBL **(Quality plan) WP 3.** Internal and external quality control of processes and deliverables **(DISS& EXP) WP 4.** Dissemination events according to Dissemination strategy and event plan conducted; stakeholders outside consortium involved. **(MNGT) WP 5.** Management of the project incl. Project management online, daily project administration and coordination are conducted.	• 9 MA programs "CRENG" accredit on institutional and national levels; • 108 teachers retrained on new curricula and IPBL; • 6 master classes on new MA program conducted for 180 teachers and 270 students; • 270 students from PCs HEIs involved in pilot teaching on CRENG; • 100% students satisfaction of learning process; • 18 people from PCs HEIs retrained to operate Service Offices; • 9 Service Offices VCR and CRENG Labs established and equipped; • 45 organizations signed CRENG+ Agreement; • 36 PCs and 20 EU students participated in IPBL; • 1 CRENG Service Offices network; • 100% execution of Dissemination event plan; • 270 specialists of enterprises retrained; • 18 enterprises and 60 students participated in Skills Wallet.	• Reports of the departments meeting in PCs HEIs; • Reports of the faculty council meeting in PCs HEIs; • Reports of the meeting of the university council; • Invoices; • Receipts; • Web Platform update report; • Statistics of visitors of groups in social networks; • Statistics of website visitors; • CRENG+ Agreements of cooperation; • Results of conducted pools; • Promotion materials published; • Interviews records; • Articles published; • Agreement on conduction of refreshing courses for graduates.	• Risks of instability of political situation in Ukraine (Mariupol) will be mitigated by replacement of project working group meeting to another Ukrainian city for example to Kyiv or Dnipro. • Risk of non-targeted use of grant funds is mitigated by providing financial audit: internal and external (regarding to the project) by providing financial report to project coordinator every month; external by ordering audit service to independent company with providing brief report by auditor. • Risk of time constraint is mitigated by solid work plan, which takes into account bureaucratic delays in documents and events preparation. • Social risk consists in difficulty of reaching the target groups (students, enterprises). To mitigate this risk affect it is necessary to create effective advertising environment by establishing project web-pages and societies in social networks; conducting meeting and conferences.
Activities: *What are the key activities to be carried out (__grouped in Workpackages__) and in what*	**Objectives:** *What inputs are required to implement these activities, e.g. staff time, equipment, mobilities, publications etc.?*		**Assumptions, risks and pre-conditions:** *What pre-conditions are required before the project starts? What conditions outside the project's direct*

sequence in order to produce the expected results? • 1.1 Designing Agreement and guidelines on instructional strategies for MA program "CRENG" development; • 2.1 Development 13 new, updateing 4 current curricula; • 2.2 Development and accredit new MA program "CRENG"; • 2.3 Development of teaching/learning materials, e-learning courses; • 2.4 Develop documentation/ purchase, equipment for CRENG Labs and VCR; • 2.5 Develop guidelines and hold the courses to retrain academic teachers in new curricula methodology incl. IPBL and Skills Wallet; • 2.6 Pilot teaching of students on new curricula, learning environment incl. IPBL; pilot operating of CRENG Labs and VCR; updating MA curriculum, if necessary; • 2.7 Developing documentation, purchase and install equipment, staff training, establishing of Service offices;	• 1. Staff: P1 717 days (D), P2 317 D, • P3 242 D, P4 310 D, P5 384 D, • P6 274 D, P7 276 D, P8 280 D, • P9 280 D, P10 280 D, P11 317 D, • P12 317 D, P13 318 D, • 2. Mobility: EU-EU: 3 flows (2 persons 3 days each) • EU-PC: • 4 flows (2 persons 5 days each); • 18 flows (2 persons 3 days each); • 15 flows (2 person 2 days each); • PC-EU: • 11 flows (2 persons 3 days each); • 3 flows (1 persons 3 days each); • 27 flows (4 persons 12 days each); • 9 flows (2 persons 5 days each). • PC-PC: • 9 flows (4 persons 5 days each); • 1 flow (1 persons 2 days each); • 12 flows (2 persons 3 days each); • 19 flows (2 persons 2 days each); • 1 flow (1 persons 2 days each); • 3. Equipment: 9 equipment sets for CRENG Labs, CRENG Service Offices, VCRs; 9 sets new books and software. • 4. Subcontracting: Web Design and maintenance IT tool for teaching (incl. interactive video materials), external quality monitoring and control; printing, publishing and		*control have to be present for the implementation of the planned activities?* • Availability of qualified motivated staff members; • Willingness to travel abroad for training; • Language skills

• 3.1 Internal/external evaluation; internal and external QC of processes and deliverables; • 4.1 Dissemination strategy and event plan; • 4.2 Full media coverage of the project activities incl. joint WEB based platform, groups in social networks; • 4.3 Establishing, pilot operating of Service Offices network; "CRENG+" Agreement; • 4.4 Conduct refresh courses for graduates; • 4.5 Promoting of Skills Wallet • 5.1 Management of the project incl. Project management online using Trello, daily project administration and coordination; • 5.2 Coordinating meetings	diss. activities; translation services; audit type II.		

Annex 2: Quality assessment of implementation of new and modernized modules/courses/curricula. Peer review template (Example):

Name of the university: _____

Module/curriculum/course title: _xxxxx_____

Award criteria:	Score	Max
Indicator 1: Balance of student's workload	4	5
Comments/recommendations of a peer reviewer		
Indicator 2: Application of ECTS	4	5
Comments/recommendations of a peer reviewer		
Indicator 3: Usage of information about the latest (up to 5 years old) results of scientific research of foreign scientists in teaching materials	3	5
Comments/recommendations of a peer reviewer		
Indicator 4: Usage of the university online educational platform during the educational process	5	5
Comments/recommendations of a peer reviewer		
Indicator 5: Ability of students to influence the educational content or process	4	5
Comments/recommendations of a peer reviewer		
Indicator 6: Partial teaching and implementation of reporting works in English	4	5
Comments/recommendations of a peer reviewer		

Indicator 7: Portfolio of student's completed practical works in a group	4	5
Comments/recommendations of a peer reviewer		
Indicator 8: Correspondence to the national norms (standards) of education	4	5
Comments/recommendations of a peer reviewer		
Indicator 9: Consideration of a new module by the university council of experts with the participation of potential employers (chair meeting, meeting of educational council)	3	5
Comments/recommendations of a peer reviewer		
Indicator 10: Publications of teaching staff or students, participation in conferences	5	5
Comments/recommendations of a peer reviewer		
Total score:	**40* (max. 50)**	
Number of indicators	**10****	
Arithmetic Mean	**4*****	
Summary of the peer reviewer:		

*Score of the Module "xxxxx" = 40
**Number of quality indicators: 10
***40/10 = 4 (arithmetic mean = "grade" of xxxxx modul

Annex 3: Example for a questionnaire for students/applicants for evaluation of the content of educational disciplines (suggested to be anonymous)

Your education, field of research

| |
| |

The name of the university and curricula you evaluate:

| |
| |

Give a grade from 1 to 5 of the content of the discipline using the following the criteria

(1 - lowest score, 5 - highest score)

1. You clearly understand what you will obtain as a result of completing the program/module/course
- o 1
- o 2
- o 3
- o 4
- o 5

2. Educational content is interesting for you
- o 1
- o 2
- o 3
- o 4
- o 5

3. The knowledge and skills acquired as a result of program/module/course will be useful to you in your future career
- o 1
- o 2
- o 3
- o 4
- o 5

4. The university has all the necessary infrastructure (for instance, equipment, library, internet access, access to the online resources, etc.) for the research within the program
- o 1
- o 2
- o 3
- o 4
- o 5

5. The program offers opportunities for internships or research in collaboration with the companies, protential employees or government agencies
- o 1
- o 2
- o 3
- o 4
- o 5

6. The program offers opportunities for collaboration with universities, companies, and/or projects at the international level

- o   1
- o   2
- o   3
- o   4
- o   5

7. Educational content is relevant and reflects current developments in the industry
- o   1
- o   2
- o   3
- o   4
- o   5

8. Supervisors, teachers have the necessary level of expertise in the subject and research support
- o   1
- o   2
- o   3
- o   4
- o   5

9. Supervisors, teachers are motivated and actively involved in the research process, running of the curricula
- o   1
- o   2
- o   3
- o   4
- o   5

10. The list of information sources/literature is up-to-date and sufficient to study the discipline
- o   1
- o   2
- o   3
- o   4
- o   5

11. Hours between lectures, practical / laboratory work, independent work is distributed in a balanced way
- o   1
- o   2
- o   3
- o   4
- o   5

12. Your comments for improving the content of the curricula

Annex 4: Internal periodical evaluation questionnaire for partner organizations

Partner Organization: _____

Name of the person filling the form: _____

	It fully met expectations 5	It widely met expectations 4	It partly met expectations 3	It hardly met expectations 2	It didn't met expectations at all 1	Not applicable -
Project management (e.g., scheduling, task assignment, work process & deadline monitoring)						
Governance (e.g., decision-making, consultation and problem-solving)						
Management of financial and administrative issues						
Partners' collaborative and pro-active attitude and behaviours						
Communication among partners and with the Project coordinator						
Quality & impact of the dissemination activities (e.g., website, presentations at conferences, etc)						
New networking opportunities with education and industry stakeholders cross-border						
New networking and collaboration opportunities among partners						
Quality & impact of the sustainability aspects						
Improvement of technical/professional skills in your organisation						

Additional comments (challenges faced, positive aspects, suggestions for improvement, etc):