SMACITE

Boosting the technical
and non-technical skills
and competences
of smart cities technicians
and engineers

WP6: Quality Assurance, Risk Management, and Project Evaluation

D6.2.a Risk Management Plan for the Development of Risk Register

Version 1.0

DELIVERABLE FACTSHEET

Project Number:	101052513
Project Acronym:	SMACITE
Project Title:	Boosting the technical and non-technical skills and competences of smart cities technicians and engineers
Work Package:	WP6: Quality Assurance, Risk Management, and Project Evaluation
Task:	T6.2: Risk Management
Deliverable:	D6.2.a: Risk Management Plan for the Development of Risk Register
Version:	1st version
Editor(s):	Teresa Papagiannopoulou (OTC)

DELIVERABLE HISTORY

Version	Name	Partner	Date	Comments
0.1	Teresa Papagiannopoulou	OTC	17.07.2022	Structure of the deliverable
0.2	Teresa Papagiannopoulou	OTC	02.08.2022	Section 2.3: Incorporation of recommendations concerning the name of the severity scaling (use of description instead of numbers)
0.3	Teresa Papagiannopoulou	OTC	26.08.2022	Section 3.4: Addition of contingency actions
1.0	Vasileios Gkamas, Maria Rigou	UPATRAS	29.08.2022	Review and approval

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PROJECT SUMMARY

The project aims to address the skills gap of Smart Cities technicians and engineers, by designing and testing a vocational education and training program that is based on a novel and multi-disciplinary curriculum combining digital skills on Smart Cities enabling technologies, with soft, entrepreneurship and green skills.

The expected project outputs are:

- A Smart Cities competences map and ESCO-compliant Smart Cities job profiles.
- A Smart Cities curriculum combining both technical and non-technical skills and competences and promoting personalized learning pathways.
- Learning resources for Smart Cities enabling technologies and for building the soft, entrepreneurship and green skills of Smart Cities technicians and Engineers.
- A diagnostic tool to identify personalized learning pathways.
- A MOOC for Smart Cities enabling technologies.
- Virtual Worlds for building the soft, green and entrepreneurship skills of Smart Cities technicians and engineers.

The main project beneficiaries are Smart Cities technician and engineers either from the public sector (i.e. municipalities) or enterprises providing Smart Cities solutions, as well as HEI and VET students interested in Smart Cities.

The curriculum will be tested through 4 national pilots in Greece, Bulgaria, Spain and Italy with at least 160 trainees. The certification of the skills and competences will follow a two-fold approach: (a) using micro-credentials to recognize the knowledge and skills gained through the successful completion of each online training module at the MOOC and Virtual Worlds and (b) designing the "Smart Cities Specialization Certification" that will be awarded to those passing online certifications exams with e-proctoring after the completion of the training modules.

The project will create an ecosystem for the co-design and co-development of an innovative curriculum and technology-enhanced learning tools for the upskilling/reskilling of Smart Cities technicians and engineers.

1 Introduction

According to the Annex I of the Grant agreement, in the frame of Work Package 6 a systematic process is being established with the aim to identify, analyze and respond to eventual risks that might affect the project objectives. A Risk Management Registry (that results from a risk management plan) is of particular importance for involving SMACITE target groups and enabling their proactive participation in the project activities.

The present document will establish a systematic process to identify, analyze and respond to eventual risks that might affect the project objectives, as well as to identify the roles and responsibilities related to the management of risks. All this information will be depicted in the risk registry that will be the core tool that the partnership will use in order to monitor the status concerning management of the project risks. In short, the present deliverable we present the procedures that will be applied and the rationale of the tools used (risk register) in order to identify and document preventive or corrective actions, mitigate potential risks or even contingency measures in the case that a risk occurs.

Elements of standards such as ISO9001-2015, IEEE 1490-2011 and ISO 19796 and PM² have been used for the development of the current process description.

2 The management of risk

2.1 The essence of risk

A risk (or hazard) is a measure of the likelihood and consequences of not achieving one or more objectives of the project. The word "risk" usually does not exclude the positive sense of the term: a risk may have a positive impact. For example, the decision of the project manager to complete a WP in 80 % of the planned time, to more effectively boost project dissemination is a risk that may become a problem (if something goes wrong) or advantage (if all goes smoothly). Usually a risk is more likely to become a problem for the project and as such it will be referenced throughout this section.

Risk includes uncertainty. It is associated with probabilities (the risk to become a problem) and impact (e.g. on project activities). These two parameters should be treated jointly rather than separately. The analysis of risk in two parameters (probability, impact) does not help managing it because both parameters are difficult to estimate accurately even with the use of statistical methods. In general, a risk is comprised of three (3) parameters:

- An event (which is usually an undesirable change)

- A possibility (for the event to occur)

- Consequences (on one or more objectives of the project)

Therefore, the risk for any adverse event can be expressed as a function of the probability and consequences:

Risk = f (event, probability, impact)

There are generally three **types of risks** to a project:

- Quality: this risk is related to the quality of processes and intellectual outputs that in turn affect project performance.

- Cost: This risk relates to the ability of the project to meet its economic goals.

- Planning: this risk relates to the ability of the project to meet its time schedule.

The sources from where the risk of a project originates are internal and external.

Internal risks originate from:

- The project itself. The size of the project includes the duration, estimated cost and resources needed for implementation.

- The development team of the project. Factors such as experience, qualifications and relations between partners may create either beneficial or harmful events.

- Project management. Operations Management or bad policies may create risks.

External sources of risk include:

- **Stakeholders**. Stakeholders may change or miscommunicate requirements while the work is in progress.

- **Technology**. The use of new technologies that are unstable, incompatible or have high costs for the project are a source of risk.

- **Environment Status**. Changes in economic conditions, national or regional policies are also a source of risk and may affect the cost and / or duration of the project.

- **Outsourcing**. The problems from subcontractors or outsourcing may constitute a serious risk to the project.

3 Risk management process

Risk Management includes processes (procedures) regarding planning, identification, analysis, treatment and monitoring of risks and their causes. Most of these processes are active throughout the project life-cycle. Their goal is to increase the probability and consequences of positive events for the project and to reduce the likelihood and consequences of negative ones. Risk Management usually includes the following processes:

1. **Risk Management Planning**: deciding on how to design and implement the risk management procedures. Proper design ensures the proper functioning of the remaining five activities for risk management. It focuses on the way in which risk management procedures are enacted.

2. **Risk identification**: identification of risks that may affect the work and recording of their characteristics. Risk identification is performed by project members such as the project manager, the development team, etc. or by external experts. This process is continuous since new risks may arise during the project life-cycle. The tools that are used to identify risks include meetings between key actors of the project (brainstorming), the application of techniques such as the Delphi method, SWOT analysis and diagrammatic techniques (cause and effect diagram, flow charts, etc.).

3. **Qualitative Risk Analysis**: Ranking of risks based on the probability of occurrence and the impact.

4. **Quantitative Risk Analysis**: Quantitative analysis on the impact of identified risks to project goals.

5. **Risk Response Planning**: design of actions for the mitigation of risks that have a great probability to become problems for the project. This process defines the actions that should be followed to reduce the possibility of these risks becoming a problem. The most common tactic used is to draw a contingency plan. This plan records all the actions to be taken when a risk becomes a problem:

- the strategy to be followed if the risk becomes a problem

- the time frame in which the plan is to be active

- who is responsible for the activation of the plan

- a list of people (internal or external to the project) which will be notified that the plan is active.

6. **Monitoring and controlling risks**: tracking identified risks, identifying new application response plans and ongoing evaluation of risk management processes.
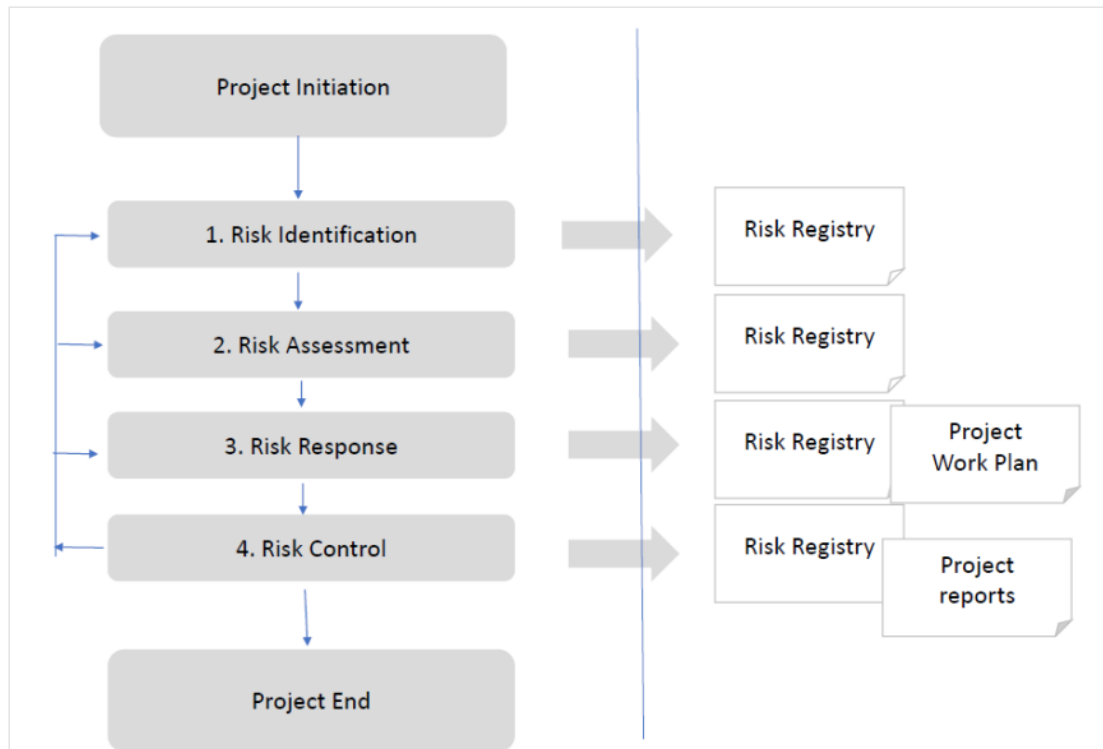
Figure 1: Steps for the management of Risks

3.1 Risk identification

Initial risk identification in the SMACITE project stems from the general objectives of the project as they are stated in the application form and grant agreement. Since the project sought to actively involve external stakeholders not only as end-users but also as co-designers of main project activities and outputs, special attention is given to user enactment, sustainability, relevance and impact of results. Risks are directly mapped to quality standards and criteria (D6.1 section 3). Common risks to project management (time and economic scheduling) are also included in the risk registry since they must be continuously monitored by project management.

Risks are continuously identified throughout the project lifecycle; however, here, we present an initial risk list that has to hereafter be frequently updated. The same process will be followed both for the creation of the Risk Registry as well as for the inclusion of new risks later in the project.

The following risks are initially identified for the project:

Risk	Description
A new health crisis outbreak	A new Covid-19 outbreak puts in risk project implementation.
Partners' interaction	Lack of communication or consensus within the consortium
Team changes	Loss of qualified staff during the project
Inconsistencies with the project schedule	Project implementation delays
Partial integration of input	Difficulty to integrate the contributions of the different stakeholders involved in the project.
Vague scope in WP2	Scope of work in WP2 is poorly delimited, going beyond focus and resulting in excessive effort
Limited input about the job profiles	Failure in collecting sufficient data for defining emerging Smart Cities job profiles
Unattractive Learning resources	The quality of learning resources developed do not meet the expectations of main beneficiaries
Uselessness of diagnostic tool	The design of the diagnostic tool for identifying personal learning pathways is too complicated leading to doubtable results/ recommendations
Low involvement	Difficulty to reach the expected numbers of pilot users with the needed requirements
Inadequate training content or process	Discovery of missing requirements or findings of unsolvable steps during pilots implementation.
Quality of project products	Outcomes/reports/results with poor quality
Low or contradictive evaluations	Poor evaluation or disagreement between the evaluators about the output quality
Limited dissemination	Dissemination of the project results is not sufficient to create impact

Table 1: Risk identification

Each of the above-mentioned risks may be identified within the project lifetime by engaging stakeholders in the QA process (Table 2):

Risk	Identification method/tool
A new health crisis outbreak	Continuous monitoring and sharing of new information with regard to restrictions imposed at national level and evaluation of status during online meetings
Partners' interaction	Within the proposal, management procedures have been defined for enabling effective communication and interaction for decision making. Online Partner meetings are planned to be held regularly on a monthly basis and all partners must participate or watch the recordings of the meetings; provide their input and support the development of a common understanding for the project's interests.

Team changes	The project teams are identified before the beginning of the project and participate in the project meetings.
	Any change is directly communicated to the project partners
Inconsistencies with the project schedule	The close and continuous monitoring of project progress and the implementation of proactive actions will limit project delays
Partial integration of input	Experts indicate that key players are not identified and addressed by the project.
Vague scope in WP2	Executive team members or stakeholders assess WP2 planned outcomes as too general/of low impact
Limited input about the job profiles	Low participation
	Few answers in emails - on-line questionnaire survey
	Not all areas covered by participants
Unattractive Learning resources	Stakeholders do not understand the significance of one or more project outputs
	Stakeholders assess outcomes as not practical
	Stakeholders assess outcomes as too general/of low impact
Uselessness of diagnostic tool	The tool provides vague suggestions
Low involvement	Low involvement, low participation rates - few beneficiaries engage in the project activities.
	Beneficiaries lose their interest in the project and do not complete the activities
Inadequate training content or process	The use of outcomes contradicts specific rules/policies/best practices/national laws
	Stakeholders do not understand how to use the project outcomes
	Stakeholders assess outcomes as not practical or as costly to use or configure
Quality of project products	Stakeholders do not understand how to use the project outcomes
	Stakeholders assess outcomes as of low quality or of low impact
	Similar or better outputs available
Low or contradictive evaluations	Opinions as expressed in the evaluation questionnaires vary significantly
Limited dissemination	Stakeholders do not understand why they need the project outcomes
	Stakeholders do not engage their dissemination network
	Low participation in stakeholder-related events

Table 2: Risk identification methods

3.2 Risk Assessment

All identified risk must be assessed in terms of likelihood (probability to occur) and potential impact on the project implementation and objectives. This is a crucial step in order to then plan the response strategy to any given risk.

In the present section the risks' level is defined based on their likelihood and impact in project objectives, followed by a prioritization in terms of severity and response measures.

Risk	Probability to occur	Impact
A new health crisis outbreak	Medium	Low
Partners' interaction	Low	High
Team changes	Medium	Low
Inconsistencies with the project schedule	Medium	High
Partial integration of input	Medium	Medium
Vague scope in WP2	Medium	Medium
Limited input about the job profiles	Low	Medium
Unattractive Learning resources	Low	High
Uselessness of diagnostic tool	Medium	High
Low involvement	Low	High
Inadequate training content or process	Low	High
Quality of project products	Low	High
Low or contradictive evaluations	Low	Medium
Limited dissemination	Low	High

Table 3: Risk Level

The probability of a risk to occur is calculated based on the probability matrix (Table 4):

Probability	Percent
High	>30%
Medium	10-30%
Low	<10%

Table 4: Risk probability matrix

The impact of the risk to the project is based on the impact matrix (Table 5):

Impact level	Impact on time scheduling	Impact on project quality	Impact on the cost of project
High	Significant deviation of over 30%. Milestones need to be reset.	Significant effects. Major project objectives not reached.	Cost increase >20%
Medium	Medium deviation between 10% and 30%. Some milestones need to be readjusted.	Some effects	Cost increase between 5% and 20%
Low	Small deviation of about 10%. No need for adjustments.	Minimum effects	Cost increase <5%

Table 5: Risk impact matrix

3.3 Risk assessment /analysis

An initial risk assessment is possible through the risk priority matrix (Table 6), which combines risk impact and probability to derive risk priority.

Probability	Impact	Priority	Severity
High	High	High	severe
Medium	High	High	severe
Low	High	Medium/High	medium severity/severe
High	Medium	Medium	medium severity
Medium	Medium	Medium	medium severity
Low	Medium	Low/ Medium	low severity/medium severity
High	Low	Low	low severity
Medium	Low	Low	low severity
Low	Low	Low	low severity

Table 6: Risk priority matrix

Based on the priority matrix, a ranking of the risks identified in section 1.3 is possible as depicted right below (Table 7):

Risk	Priority	Severity
A new health crisis outbreak	Low	low severity
Partners' interaction	Medium /High	medium severity/severe
Team changes	Low	low severity
Inconsistencies with the project schedule	High	severe
Partial integration of input	Medium	medium severity
Vague scope in WP2	Medium	medium severity

Limited input about the job profiles	Low	low severity
Unattractive Learning resources	Medium /High	medium severity/severe
Uselessness of diagnostic tool	High	severe
Low involvement	Medium /High	medium severity/severe
Inadequate training content or process	Medium /High	medium severity/severe
Quality of project products	Medium /High	medium severity/severe
Low or contradictive evaluations	Low/ Medium	low severity/medium severity
Limited dissemination	Medium /High	medium severity/severe

Table 7: Risk ranking

Detailed Risk analysis requires measuring the quality factors and criteria of section 3 of the Quality Assurance Plan and statistical analysis of the results.

3.4 Risk response planning

Risk response planning is the process of determining actions that reduce risks before they become threats (risk mitigation) or reduce their impact when they do become threats (contingency planning).

SMACITE uses a proactive approach based more on risk mitigation than contingency. That is, risk probability/impact is reduced by taking early actions such as conducting multi-level assessments of project outputs (engaging stakeholders at an early stage, consulting experts with different areas of specialization, beta testing early versions of tangible outputs before scaling up). On the other hand, contingency is difficult to implement since most risks become threats near or right after project-end where the consortium momentum (at least in most funded projects) is somewhat lower. The involvement of stakeholders comprises both the nature of most risks in SMACITE and the means to mitigate them. Being a highly user-centered project, this additional risk may prove to be an opportunity rather than a hazard.

Risk response planning includes the identification of **risk owners**, that is, the persons or committees responsible for monitoring risks. In SMACITE, risks described in section 1.3 span the whole range of project outputs and deliverables. For this reason, every project partner that is responsible for an output/deliverable is the owner of the risks associated with it. It is, however, most probable that a risk that becomes a hazard in a work package that plays a major role in SMACITE strategy, creates a domino effect increasing the probability/impact of risks in other outputs/deliverables. The interlinked nature of risks is

a matter to be monitored by the Project Board. Corrective action may be decided during risk audit sessions, if appropriate.

Risk	Risk Owner(s)
A new health crisis outbreak	all project partners
Partners' interaction	Project Coordinator
Team changes	Project Coordinator Work Package Leaders Task Leaders
Inconsistencies with the project schedule	Project Coordinator Executive Team Work Package Leaders Task Leaders
Partial integration of input	WP2 Leader WP2 Task Leaders Quality Assurance Team
Vague scope in WP2	WP2 Leader WP2 Task Leaders Quality Assurance Team
Limited input about the job profiles	WP2 Leader WP2 Task Leaders Quality Assurance Team
Unattractive Learning resources	WP3 Leader WP3 Task Leaders Quality Assurance Team
Uselessness of diagnostic tool	WP4 Leader WP4 Task Leaders Quality Assurance Team
Low involvement	Project Coordinator Work Package Leaders
Inadequate training content or process	Work Package 5 Leader
Quality of project products	WP6 Leader
Low or contradictive evaluations	Project Coordinator Work Package Leaders
Limited dissemination	Project Coordinator Work Package Leaders

Table 8: Ownership of risks

After the definition of risk owners follows the selection of the risk response strategy, which will be based on

● the results of the risk assessment (risk level),

● the type of risk,

● the effects on the overall project objectives (e.g. schedule and costs),

● the cost of the strategy and its benefits (cost/benefit analysis).

The strategy (or strategies) selected for each risk are documented in the Risk Registry.

There are four strategies to be considered as risk responses:

1. **Avoid**: risk avoidance, modifying the project or project plan to eliminate the conditions or activities that introduce the risk

2. **Reduce**: risk mitigation or reduction through the proactive implementation of risk reduction activities

3. **Transfer/Share:** transfer or share the risk with other entities, e.g. through insurance, subcontracting, partnering etc.

4. **Accept**: acceptance of the risk (the impact/loss is accepted if the risk occurs). When accepting risks, there are two possible reactions:

   o Acceptance of the risk and no special action required, except continue to monitor the risk (passive acceptance);

   o Accept and develop contingency plans in case the risk occurs (active acceptance)

As soon as the selection of risk owners and response strategy is complete, specific actions to implement the strategy are defined, described, scheduled and assigned through the Risk Registry.

This means that the possible mitigations or contingency actions per risk are defined as presented in Table 9 while the risk owner monitors the risk response status and is responsible for having the risk closed.

Risk	Indicative risk mitigation actions	Indicative Contingent actions
A new health crisis outbreak	As the majority of project activities will run online the impact of this risk on project implementation will be low. However, where applicable we will re-plan face to face project activities to deliver them online. The experience from the previous Covid-19	Escalate to the Project Board and bring in back up plan of implementation in cooperation with EACEA if needed Pull down contingency

	outbreak has proved that this is possible	
Partners' interaction	The consortium partners have the necessary skills to resolve such conflicts by adequate negotiation. It is planned to keep close contact within the consortium by regular communication through various means (e.g. emails and online meetings).	Board to take action and resolve any potential conflict.
Team changes	The required skills and competences are distributed among different team members in order to ensure project continuity in case of losing qualified staff. However, in the occurrence of such a situation, we will hire new employees to ensure the coherency and high quality of the project team	Organize debriefing workshops, intensify internal communication, restate the current project status and targets and encourage the old team members in order to take -up change and support the new team members to swiftly and effectively respond to their new duties.
Inconsistencies with the project schedule	Time buffers in activity planning of complex or time sensitive tasks are to be foreseen.	In the case of delays we will increase the headcount of project team in order to minimize potential delays
Partial integration of input	Adoption of a participative approach to engage stakeholders since the beginning in the project implementation	in case the result fails to meet crucial needs that were identified during the planning process, then the reason behind this deficiency should be investigated from the partnership so as to develop a comprehensive understanding of the problem and possible ways to address it. the next step is the implementation of specific actions in order to improve the situation
Vague scope in WP2	Avoid misunderstanding the concept and adopt an agreed approach to the project, accepted by all partners before working in specific profiles, data and occupations, with close monitoring of progress, to act asap in case of deviations.	Adjustment of the WP2 so as to be well articulated, accessible and usable.

Limited input about the job profiles	Although it is planned to gather information from open big data sources (ESCO, OVATE, etc.), alternative options for analyzing other sources (surveys, direct collection of reports and job ads, etc.) will be considered to complement or substitute primary sources	surveys, direct collection of reports and job ads, etc are being used to complement or substitute primary sources if further input is required
Unattractive Learning resources	Adoption of a continuous improvement approach aiming to maximize the quality of project results. Project main beneficiaries (e.g. engineers and technicians of Smart Cities) will be asked to review early-versions of samples of learning resources aiming to establish feedback loops	Document assumptions made and associated risks and have the partners commit to specific corrective actions
Uselessness of diagnostic tool	The diagnostic tool will be assessed to evaluate its accuracy, sensitivity and specificity before being publicly available. The recommendations done by the diagnostic tool, have to be validated by a project partner	Request for experts' judgment for improvement suggestions in order to reach the anticipated result
Low involvement	From the project beginning, we will develop a sound analysis of pilot users and highlight the project value proposition for them, aiming to efficiently engage them with the project.	Intensification of dissemination activities by all project partners in a coordinated way following a detailed dissemination schedule drafted by the WP leader.
Inadequate training content or process	The development of the pilot activities will guide the generation of project requirements. The modular nature of the training framework used will ease	Document assumptions made and associated risks and have the partners commit to specific corrective actions

	adaptation to new requirements.	
Quality of project products	As prevention measures, we will plan a set of deliverables' quality control procedures (continual board updates and multiple draft/review cycles), so as to timely conduct review and proofread of deliverables and hence ensure the deliverables are submitted according to high-quality standards and within the deadlines. Moreover, WP/Task leader will discuss the quality level of a deliverable in terms of presentation, content, attaining the objectives, etc. In case the deliverable is considered of poor quality, the WP /task leader will indicate sections that need improvement and recommendations to improve the deliverable.	Escalate to the Project Board and bring in specific content improvement decisions in order to meet the quality criteria.
Low or contradictory evaluations	DELPHI method will be used so as to survey the group and help it come to a consensus around the output quality	Consultation of an external evaluator
Limited dissemination	The consortium is strongly engaged to create a sustaining impact, and the partners have substantial experience in European projects. A dedicated work package for dissemination, exploitation and sustainability will plan and execute this.	Intensification of dissemination activities by all project partners in a coordinated way following a detailed dissemination schedule drafted by the WP leader.

Table 9: Summary of risk mitigation actions

The Risk Owner assumes the responsibility for the implementation of all required actions. Actions will detail concrete activities, milestones and deliverables and will be documented in the Risk Registry. Moreover, they will clearly identify the target resolution date, as well as the estimation of resources involved and dependencies. These actions (at least the most effort/cost consuming ones) will be incorporated into the Project Work Plan, to have a consolidated view of all project related activities.

3.5 Risk Control

The overall risk management is under the responsibility of partner OTC and the Project Coordinator (UPatras) who develop the procedures for managing risks, tracking efforts to reduce high risks, and combining the risk briefings, reports, etc. In turn, the Work package and task leaders are responsible for the risk management within their activities, including identification, analysis, handling, communication (in case of moderate or high risks), monitoring, and tracking efforts to reduce low and moderate risks.

To ensure that critical risks are stressed preventively, the following actions will be developed and implemented by the Consortium:

a. Project Follow-up Meetings

The Project monthly follow-up meetings are used to revise the status of risks and related actions, and to identify new risks that can impact project milestones, deliverables or objectives.

The presentation of the project work done by every single partner at the project meetings is a main tool to receive / give direct feedback on the quality of the provided work and fulfilled tasks. All partners are requested to give appropriate feedback to results discussed at the meeting. The main results of the discussion will be summarized in the meeting minutes and distributed among the project partners. Project meetings will be evaluated as part of the quality assurance activities.

b. Review of the Risk Registry

The review of the Risk Registry also appears in the agenda of the Project Review Meetings. Risks will be revised at regular predetermined intervals, but also after the occurrence of any event that might have a significant impact on the project environment and hence the project risks. The updating of the Risk Registry can include adding new risks or actions, updating the status of response activities, changing risk levels based on mitigation actions, changing the assignment of actions, etc.

c. Communication with the Executive Agency

The Coordinator will inform all project partners about the most important input / communication with the Agency, in particular regarding contract amendment requests and information on the project progress in general. Generally relevant feedback from the Agency will be distributed to all project partners.

d. Conflict resolution

The Project Board will approve major changes to the project work programme- where necessary the consent of the Agency will be requested. Minor requests for work plan

changes are submitted, first, to the WP Leader and discussed within the confines of the WP level. If the problem cannot be resolved it is referred to the Coordinator and ultimately to the PB. If necessary, the Coordinator may call for a special meeting of the PB. In case of conflict that is not resolved by Coordinator mediation and/or negotiation between the interested parties, the full PB will settle the matter following a majority vote.

e. Keeping the time schedule / handling of delays:

The deadlines determined in the submitted project work plan will be re-checked every 3 months and at every partner meeting. The timeschedule of the project has to be adapted to the current situation in regular intervals.

Opportunities to reduce the processing time of subsequent activities will be investigated – in particular to catch up with the delays of previous project periods.

f. Internal reports

Loss of information and other communication problems can result in high risks for project success. The reporting process is the core element of the project-internal flow of information and the mid-term reporting will identify problems and work as an early warning system. The project coordinator will have the opportunity to monitor the development of the activities within the respective deadlines and be able to handle the problematic situations. Technical reports will present any problems or delays of the project course, while the financial reports state any mistakes made on the financial status of the project (i.e. missing/wrong receipts, wrong reporting, ineligible costs, etc.).

The following tools will be used to manage risk:

1   Biannual technical and financial reports.

    These reports will be the main tools that will identify risks with a potential significant impact on the project (e.g. significant deviations from the workplan, miscommunication of how objectives should be reached, low sustainability of results, low stakeholder engagement etc.).

2   Internal Project Evaluation Reports that will present data gathered via the Internal Project Evaluation Forms in regular intervals or when the Project Board (PB) deems it necessary.

3   The Risk Owner periodically reports on the status of the risk. These reports/ and any response activities are submitted to the Quality Manager (QM). Then QM will report to the Project Board the status of the major risks and to other project stakeholders (as per the project's communications plan). If any of the identified risks occur, then QM will ensure the implementation of the contingency plans and communicate the issue to the Project Board.

The activities described above are performed throughout the project lifecycle and are reported in the risk registry which is systematically updated.

3.6 Risk management roles and responsibilities

The following table presents the risk management roles in the project.

Quality Manager	- is responsible for the coordination of the process for the identification, assessment, management and monitoring of the risks of the project, consulting the project team and other stakeholders, when appropriate - regularly reviews the progress of the management of risks - reports to the Project Board according to the escalation procedure
Risk owner	- Is responsible for the planning implementation and documentation of risk management activities - assigns resources to the risk management process, with the approval of the QM/Project Coordinator - reports to the QM on the status of the risk
Project Coordinator	Approves new risks and related actions, as well as changes to identified risks and actions
Project Board	Validates the identified risks and actions, and plan other actions, if adequate
Project Partners	- Implement the activities they are assigned in order to identify mitigate or reduce risks - Identify and suggest new risks or effective management strategies

Table 10: Risk management roles

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