SMACITE

Enhancing skills for smart city tech

SMACITE

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

WP6: Quality Assurance, Risk Management, and Project Evaluation

D6.1: Quality Assurance plan

Version V1.0

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:	T6.1: Project Quality Assurance
Deliverable:	D6.1: Quality Assurance plan
Version:	V1.0
Editor(s):	Teresa Papagiannopoulou (OTC)

DELIVERABLE HISTORY

Version	Name	Partner	Date	Comments
0.1	Teresa Papagiannopoulou	OTC	27/07/2022	Structure of the deliverable
0.2	Teresa Papagiannopoulou	OTC	30/08/2022	Incorporation of review comments as received by project partners
1.0	Vasileios Gkamas, Maria Rigou	UPATRAS	30.08.2022	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

In the frame of Work Package 6 the SMACITE partnership has to establish a peer review system that will be conducted by consortium's partners based on identified criteria againstwhich all project deliverables will be reviewed. Three main principles have been agreed to be applied towards quality assurance:

- ✓ **Transparency** The partners must at all stages of the project implementation ensure transparency in the processes for the development of the project deliverables and the relevant work products. Transparency of processes aims to provide opportunities for all relevant stakeholders to be informed and contribute to the quality process of deliverable development as early as possible in the project
- ✓ **Continuous improvement** aims to ensure increasing efficiency and effectiveness of the project processes, as well as, alignment and improvement of the respective project outputs to the changing needs of the relevant stakeholders (e.g. smart cities technicians and engineers, education and training providers, industry, public sector) during the entire life cycle of the project.
- ✓ **Effective communication**. Effective communication between consortium partners is essential to ensure the high quality, effectiveness and consistency of the implementation processes.

The present Quality Assurance Plan will describe in detail:

- The peer review system for quality control of project results.
- The quality standards and review criteria of project results.
- The project quality assurance procedures for transparency, continuous improvement, and effective communication between partners.

It is mentioned that this deliverable and the deliverables D6.2: Risk Register and D6.3: Evaluation Plan, complement each other.

2 Scope of Quality Assurance Plan

The scope of this framework includes the quality practices and procedures to be employed by the Project Partners, in the development of all results of the project. As a reference instrument, the Quality Assurance Plan (QAP) aims at supporting SMACITE project management and individual project members in continuously promoting and monitoring the improvement of project outputs through quantitative/qualitative indicators and the methods to measure and assess them. Among the main goals, which are pursued by the Quality Assurance Plan, are the improvement of the quality of project deliverables in terms of practicality, functionality, exploitation, as well as the quality of processes (establishment of transparency and consistency as well as mutual trust among partners).

2.1 Structure

QAP defines the following processes:

1. Quality Assurance (QA): QA activities focus on the processes being used to manage and deliver the solution to evaluate overall project performance on a regular basis. Quality assurance is a method to ensure that the project will satisfy the quality standards and will define and record quality reviews, test performance, and sectorial stakeholder acceptance.

2. Quality Control (QC): QC activities are performed continuously to verify that project deliverables are of high quality and meet quality standards and sectoral needs. QC may provide information on the causes of low quality project outputs and with the use of the appropriate tools, establish lessons learned to avoid similar issues. QC especially focuses on project outputs although key intermediate results or non-tangible outputs are included. Project team members and key sectoral stakeholders agree, during the project life-cycle on deliverables acceptance criteria that will be used to evaluate final results before the results are deployed for exploitation.

2.2 Audience

QAP, as a whole or in part, will be used by:

- The Partners of the SMACITE project, who are responsible for preparing the project products,
- Stakeholders,
- External Quality Expert.

The QAP is a live document that is updated continuously.

3 Quality Control

3.1 The peer review system for quality control of project results

To ensure the maximum quality of each deliverable produced, a set of review procedures will be applied. For each deliverable a peer review system is defined according to the detailed description provided in section2.1.3.

3.1.1 Actors involved in Quality Assurance

During the project development phase, the partnership decides to choose the structure that will ensure quality assurance, control and monitoring of SMACITE project (see Table 1 Actors involved in Quality Control and Monitoring).

Partner	Description of roles
OTC	WP6 Leader is overall accountable for the quality assurance activities within the SMACITE project as well as for scheduling and initiating all formal deliverables' reviews
UPATRAS	Coordinator is informed about the projects' status in terms of Quality Metrics, receives and reviews the Quality Assurance Progress reports and takes action in case of results that do not meet the quality standards
Quality Assurance Team	is responsible for the verification of the compliance of deliverables with the agreed standards; the review and approval of the project deliverables.
Project Advisory Board (PAB)	Providing inputs feeding into the qualitative assessment of the project progress, activities and deliverables once per year.
External evaluator (Subcontracted actor)	An external evaluator is subcontracted to provide for an external evaluation at mid-term and end of the project
Partners	Appoint 2 reviewers as members of the Quality assurance team Provide input about the progress of their activities Take action upon request for the improvement of the project outputs/deliverables

Table 1: Actors involved in Quality Control and Monitoring

3.1.2 Deliverables quality standard

Project outputs/deliverables are the most important target for quality control (this includes several intermediate or non-tangible project outputs). The methodology employed aims at ensuring the quality of project actions and results based on the design and development of a detailed QA strategy and criteria for project deliverables. Quality control is performed by members of the QAT, to assure the conformity of all outputs/deliverables with the initial criteria defined for them and guarantee that the final products are in accordance with the technical proposal. To this end, reviewers undertake the following specific tasks throughout the project life cycle:

- Check the quality of all deliverables submitted.
- Provide the WP Leaders with guidance on the contents of WP outputs/deliverables.

Two reviewers (members of the QAT) review each deliverable. Each reviewer, after having studied the output/deliverable under consideration, must evaluate it with respect to a set of key points and must conclude whether the output/deliverable should be accepted or not. These key points can be distinguished into two categories and the assessment for

the acceptance or rejection of the output/deliverable is based on both groups. The first category has to do with general comments and includes the following key points:

- Layout of the output/deliverable
- Contents thoroughness of the output/deliverable
- Correspondance to project and programme objectives
- Particular remarks in format, spelling, etc.

The second category is qualitative and includes:

- Relevance
- Response to user needs
- Methodological framework soundness
- Quality of presentation of achievements
- Quality of achievements

3.1.3 Process of Peer Review

The following process will be applied in order to ensure high quality and conformity to the QA Plan of the project outcomes / deliverables:

1. 3 months before the deadline for the submission of each deliverable/output the WP Leader in cooperation with the Coordinator selects and informs the 2 members of the QAT that they are invited to review the project deliverable. These two members must not have been involved in the production of the deliverable or have the least contribution but the capacity to evaluate the deliverable.
2. Within 5 working days the QAT members must respond to this invitation (accept or reject). If both members accept the process progresses to step3 otherwise other QAT members are invited to undertake the task of review. This process must have been closed at least one month before the deadline for the finalization of each deliverable.
3. A project outcome / deliverable must be submitted to the Coordinator and sent for review by the partner / person responsible AT LEAST 20 days before its contractual delivery date
4. Each reviewer must provide his/her comments to the WP leader (Coordinator and QA Task Leader in cc) using the Deliverable Review Form within 1 week (5 working days) of the date of assignment. Each reviewer clearly marks his/her recommendation regarding the outcome / deliverable as one of “accept as is”, “accept with minor revision”, “accept with major revision”, “reject”.
5. The WP leader considers the reviewers’ comments and suggestions and decides a course of action.
   - If both reviewers have suggested one of “accept as is”, “accept with minor revision”, the WP leader may choose to close the outcome / deliverable or to produce a new version based on the reviewers’ comments - in the case of “accept with minor revision”.
   - If both reviewers have suggested one of “accept with major revision”, “reject”, the partner / person responsible for the outcome / deliverable must produce a new version incorporating the reviewers’ comments.

- If one reviewer has suggested “accept as is”, “accept with minor revision” and the other has suggested “accept with major revision”, “reject”, the WP Leader in cooperation with the Coordinator may choose between assigning the outcome / deliverable to a third reviewer or asking the partner / person responsible for the outcome / deliverable to produce a new version taking into account the reviewers’ comments or choose to implement a different course of action

6. The WP Leader informs the Coordinator of its decision, depending upon which, the partner is asked either release the deliverable for uploading to the system by the coordinator or to produce a new version taking into account the reviewers’ comments. In the former case, the coordinator has 2 days to upload the outcome / deliverable. In the latter case, the partner / person responsible for the outcome / deliverable is asked to resubmit to the QA members that have reviewed the deliverable a new version of the outcome / deliverable within 1 week (5 working days), noting in the document itself (section History or related) or in a separate document the way that the reviewers’ comments were incorporated or arguing against them.
7. The 2 members of the QAT review the new deliverable and evaluate it against the original comments. Within 1 week (5 working days), they clearly mark their recommendation regarding the outcome / deliverable as one of “accept”, “reject”.
8. The members of the QAT inform the WP Leader responsible for the outcome / deliverable of their decision. In the former case, the QAT closes the outcome, and asks the Coordinator to upload the outcome / deliverable to the system. In the latter case, the delivery date of the outcome / deliverable is postponed. The QA Task Leader informs the Project Board of the potential risk for the project, in order for them to decide the risk mitigation course of action and to define a new delivery date.

3.1.4 Tools for assessing outputs/deliverables

Evaluation is based on structured questionnaire interviews with the goal of capturing both qualitative and quantitative information at various project stages. To this end the following plan (and methods) is envisaged:

- evaluation of the outcome / deliverable based on multiple quality criteria. This is achieved via the Deliverable Review Form available in Annex 1 and the PAB-External Expert Review Form available in Annex 3

4 Quality Assurance

4.1 The quality standards and review criteria of project results

4.1.1 Review criteria

The criteria that will be applied for the deliverable's review are the following:

- **Quality of the process**
  - Where the activities implemented in the timeline foreseen in the activity plan?
  - Is the deliverable submitted for review within the foreseen deadline?
- **Compliance with defined work plan**
  - Is the deliverable in line with the work plan defined in the proposal?
  - Is the deliverable in line with the specifications of the work package under which is implemented?
- **Uniformity**
  - Is the deliverable structured according to the official template provided to the consortium at the beginning of the project?
  - Are the key terms used in a uniform way?
- **Quality of writing and presentation**
  - Is the deliverable easily readable?
  - Are all the figures and tables of high quality?
  - Has the deliverable been checked for grammatical correctness?
  - Are all resources accurately cited?
- **Clarity of the deliverable**
  - Are the scope and rationale of the deliverable clear?
  - Does the author(s) clearly explain how he/she intends to address the deliverable?
  - Does the author(s) presents adequate the state of the art and/or the policy context in which the deliverable is situated?
- **Quality of evidence and analysis**
  - Has the author used various resources (e.g. primary data, books, academic journals, policy reports, etc.)?
  - Are the resources used relevant to the scope of the deliverable?
  - If applicable, has the author derived policy recommendations/advice in line with the evidence presented and relevant to EU policy?
  - Is the reasoning of the analysis conducted logical, coherent, consistent, and convincing?
- **Potential impact on the target groups**
  - Alignment to current trends and needs in the industry
  - Alignment to current trends in the education
  - Capacity strengthening for the partners

Based on these criteria the Deliverable Review Form (available in Annex 1) has been developed.

4.1.2 Documentation Quality Standards

The following documentation standards should be followed during the project lifecycle.

- **Text**. All text documents should use Microsoft Word format or OpenOffice format. In the case of a document's review the "Track Changes" option should be activated.
- **Tables**. All tables incorporating calculations should use Microsoft Excel or OpenOffice format.
- **Diagrams or figures**. Complex diagrams or figures should be designed using Microsoft Visio format.
- **Presentations**. All presentations should use Microsoft PowerPoint or OpenOffice format.
- **Images**. In general all images should use the JPEG format. In order also to minimize the size and optimize the quality of project related videos, recent video codec (e.g. DivX) should be used.

All deliverables should be written using the template provided in Annex 2 – SMACITE deliverable template. Furthermore, the deliverables name should follow the following structure:

D.X.X-DeliverableName-Version

When referring to the version of the document, the indication of 0x is used when the document has not yet been approved. The indication changes to x starting from 1 on (the 0 reference is deleted) upon the approval of the document

When creating a project document, this should include

- The title of the document
- The type of the document
- The version number
- The issue date
- The document history

4.1.3 Procedures for Transparency

The project partners will ensure transparency in both processes for the development of the project deliverables and the relevant work products.

Transparency of the process aims to provide opportunities for all relevant stakeholders to be informed and contribute to the quality process of deliverable development as early as possible in the project cycle. Transparency of the process of the development of the deliverables is expected to ensure consensus among relevant stakeholders and quality of the process. It will result in less rework during the development and in high quality of the final deliverable.

The partner responsible for the respective deliverable will communicate in advance the process of deliverable development with the WP leader and/or Coordinator and the partners involved in the respective tasks during the monthly zoom meetings and/or during a specific zoom meeting initiated by the WP Leader or the partner responsible for the development of the specific deliverable. The meeting will be arranged early enough in the planning phase of the deliverable, **not later than two months before the respective deadline for the deliverable submission**. The partner responsible for the development of the deliverable will share and discuss with the relevant stakeholders (i) scope; (ii) approach; (iii) methods, tools and techniques, (iv) roles, responsibilities and contributions of the relevant stakeholders; (v) indicative schedule and other relevant information about the process for the deliverable development. The partner responsible for the respective deliverable will communicate to and discuss with all relevant stakeholders any changes in the process as early as possible.

The decisions about the process of the deliverable development will be made with consensus among the partners that participated in the respective meetings. If it is impossible to achieve consensus, a decision can be made with a majority in case that the partner responsible for the WP and the Coordinator agree with proposed decisions.

Transparency of the work products aims to provide opportunity to all relevant stakeholders to contribute to the development of the deliverables in any time of its development and those to ensure high quality of the final product.

In order to ensure transparency of the work products each partner responsible for the development of the respective deliverable will keep the current versions of (i) deliverable; (ii) comments and reviews on the process and deliverable provided by all relevant stakeholders; (iii) used resources and any other important information in the respective shared folder in the deli folder of the deliverable in Google drive.

4.1.4 Procedures for Continuous Improvement

Continuous improvement aims to ensure increasing efficiency and effectiveness of the project processes as well as alignment and improvement of the respective work products (e.g. deliverables) to the changing needs of the relevant stakeholders (e.g. professionals, industry partners, policy makers) during the entire life cycle of the project.

The processes designed and used by the project partners as well as the respective work products are subject of formalised and informal internal reviews.

Informal Reviews: Once an improvement opportunity is identified by a partner (or any other relevant stakeholder) it should be communicated in a timely manner to the Coordinator and/or the WP leader and/or the partner responsible for the production of the respective deliverable.

Specific meeting and or analysis will be conducted to evaluate the impact to the respective improvement to the project processes and work products.

Formal Reviews: (a) In the frame of the Peer review process the QAT reviewers have the opportunity to provide suggestions (if any) for the improvement and uptake of the specific (under evaluation) deliverable with the aim of making it more exploitable at a later stage of the project and /or have an even more direct impact on the targeted objectives of SMACITE .

Members of the QAT are under confirmation (see Table 2 Members of the QAT). [1]

Person	Position/ Organisation	Email
Maria Rigou	Project Manager/UPATRAS	rigou@ceid.upatras.gr
Vasileios Gkamas	Technical Manager/UPATRAS	gkamas@ceid.upatras.gr
Jon Michelena	Project Manager / GAIA	mitxelena@gaia.es
Cristina Murillo	Services Director / GAIA	murillo@gaia.es
Georgia Griva	Project Manager/UNICERT S.A.	georgia.griva@unicert.gr
Aikaterini Lykomitrou	Researcher/ UNICERT S.A.	euprojects@unicert.gr
Teresa Papagiannopoulou	project Manager/OTC	teresa_pap@olympictraining.gr
Spyridon Zafeiropoulos	Researcher/OTC	spzafeir@gmail.com
Alessandra Zini	Project Manager/Digital SME	a.zini@digitalsme.eu
Justina Bieliauskaite	Project Director/Digital SME	j.bieliauskaite@digitalsme.eu
t.b.d.		
t.b.d.		
t.b.d.		
t.b.d.		

Table 2: Members of the QAT

[1] the list will be finalized until 30.10.2022

(b) External review from the Project Advisory Board (PAB): PAB is invited to validate the project's compliance with overall goals, acting as an external peer reviewer, since its members do not belong to any partner organisation or they are not, at least, involved into the Project's activities. The input of PAB (once a year) will feed into the qualitative assessment of the project progress, activities and deliverables. PAB guides and provides input to the implementation of the SMACITE actions. PAB is encouraged to facilitate widespread impact and adaption of the project outputs by a broad range of organizations. Their inputs/findings are documented in the **SMACITE External Expert Review Form** (it's the questionnaire to be used with each partner that will capture the degree of satisfaction with project organization and development) and shared between all partners to identify common needs and content solutions.

Members of the PAB are under confirmation (see Table 3 Members of the PAB)[2].

Person	Position/ Organisation	Email
Michael Paraskevas	Associate Professor / University of Peloponnese	mparask@uop.gr
Spiros Sirmakessis	Professor / University of Peloponnese	syrma@uop.gr
Dimitrios Vergas	MSc in total quality management, Managing Director of Hellenic Sales & Negotiation Institute	dvergas@icloud.com
Vaios Orestis Noulas	Mechanical Engineer, MSc Sustainable energy technologies and management, Managing Partner in Horizon Company	euprojects@horizonae.gr
Stefanos Vagenas (TBC)	Mechanical Engineer, Co-Founder & Managing Director ReadLab	stefanos@read-lab.eu
Catherine Sotiropoulou (TBC)	Researcher/ University of Patras	sotirca@gmail.com

[2] the complete list of PAB members will be available by the 31.12.2022

t.b.d.		
t.b.d.		
t.b.d.		
t.b.d.		

Table 3: Members of the PAB

Once the improvement suggestion is discussed and agreed to be applicable and beneficial it will be implemented by the respective partners/stakeholders.

4.1.5 Procedures for effective Communication

4.1.5.1 Internal communication

The following internal communication standards should be used during the project lifetime.

- The common way of communication among partners will be via e-mail.
- In the case that an email is addressed to all project partners, the mailing list smacite@googlegroups.com should be used.
- At the subject of each email include the name of the project.
- All the documents and files that are related to the project should be stored at the Google Drive repository.
- All emails should be notified (with cc) to the Project Coordinator and Technical Manager.
- The agenda of each monthly Zoom meeting should be sent to the partners at least 1 week before the meeting.

The Partners contact information (available in the SMACITE contact list) is being updated by the partners when changes occur in their project team.

The composition of the Project Board members and Executive Team is depicted in D1.1.

4.1.5.2 External communication

The communication standards with the external environment are defined in the D7.1 Dissemination plan that will be available from M4 on.

In all external communications the partners should meet the visibility standards set by the EC (https://www.eacea.ec.europa.eu/about-eacea/visual-identity/visual-identity-programming-period-2021-2027_en). The obligations for the dissemination are stated in the Grant Agreement, article 17.2 (Visibility — European flag and funding statement) and article 17.3 (Quality of information — Disclaimer).

4.1.5.3 Meetings

Physical meetings: The consortium will meet physically every six months starting. A pre-kick-off meeting was held virtually on M1:

Meeting ID	Date	Place / Host	Status
E1.1	M4 22-23/9/2022	Patras - EL (organized by UPATRAS)	Planned
E1.2	M10	Sofia - BG (organized by ESI CEE)	Planned
E1.3	M16	Madrid - ES (organized by CDAM)	Planned
E1.4	M22	Brussels - BE (organized by DIGITAL SME)	Planned
E1.5	M28	Alba - IT (organized by APRO)	Planned
E1.6	M34-M36	Athens - EL (organized by UNIWA)	Planned

Table 4: List of SMACITE Physical Meetings

Each project meeting will be formally evaluated by partners, who will have the chance to give feedback on the development of the meeting, actions developed, and decisions taken. A partner questionnaire survey will be distributed after each project meeting in order to capture partner expectations, goals vs. actual results achieved after the meeting. This is achieved via the **SMACITE Evaluation Form for Project Meetings** (available in ANNEX 4 of the present document).

In addition **monthly virtual meetings** will be held via zoom platform on a predefined day (1st Friday of every month) with the participation of all SMACITE partners in order to discuss the project progress problems occurred and mitigations steps taken or to be taken. **Web meetings should, when technically feasible, be recorded.**

Code	Date	WP	Partners	Topic	status (done/planned)
OPM1	08.06.2022	1	All	Pre-Kick off meeting	Done
OPM2	11.07.2022	1	All	Partners update about the project progress	Done
OPM3	XX.10.2022	1	All		Planned
OPM4	xx.11.2022	1	All		Planned

OPM5	xx.12.2022	1	All		Planned
OPM6	xx.01.2023	1	All		Planned
OPM7	xx.02.2023	1	All		Planned
OPM8	xx.03.2023	1	All		Planned
OPM9	xx.04.2023	1	All		Planned
OPM10	xx.05.2023	1	All		Planned
OPM11	xx.06.2023	1	All		Planned
OPM12	xx.07.2023	1	All		Planned
OPM13	xx.08.2023	1	All		Planned
OPM14	xx.09.2023	1	All		Planned
OPM15	xx.10.2023	1	All		Planned
OPM16	xx.11.2023	1	All		Planned
OPM17	xx.12.2023	1	All		Planned
OPM18	xx.01.2024	1	All		Planned
OPM19	xx.02.2024	1	All		Planned
OPM20	xx.03.2024	1	All		Planned
OPM21	xx.04.2024	1	All		Planned
OPM22	xx.05.2024	1	All		Planned
OPM23	xx.06.2024	1	All		Planned
OPM24	xx.07.2024	1	All		Planned
OPM25	xx.08.2024	1	All		Planned
OPM26	xx.09.2024	1	All		Planned

OPM27	xx.10.2024	1	All		Planned
OPM28	xx.11.2024	1	All		Planned
OPM29	xx.12.2024	1	All		Planned
OPM30	xx.01.2025	1	All		Planned
OPM31	xx.02.2025	1	All		Planned
OPM32	xx.03.2025	1	All		Planned
OPM33	xx.04.2025	1	All		Planned
OPM34	xx.05.2025	1	All		Planned
OPM35	xx.06.2025	1	All		Planned
OPM36	xx.06.2025	1	All		Planned

Table 5: List of SMACITE Virtual Meetings

Specific Zoom meetings. Specific meetings will be organized with the participation of SMACITE partners who play a role in the specific topic discussed at the meeting. The main scope of these meetings is to discuss topics of specific interest (e.g. deliverable) for the participants.

4.1.6 SMACITE curriculum

The quality assurance of SMACITE curriculum and pilots will be based on EQAVET quality cycle (planning – implementation – evaluation- review).

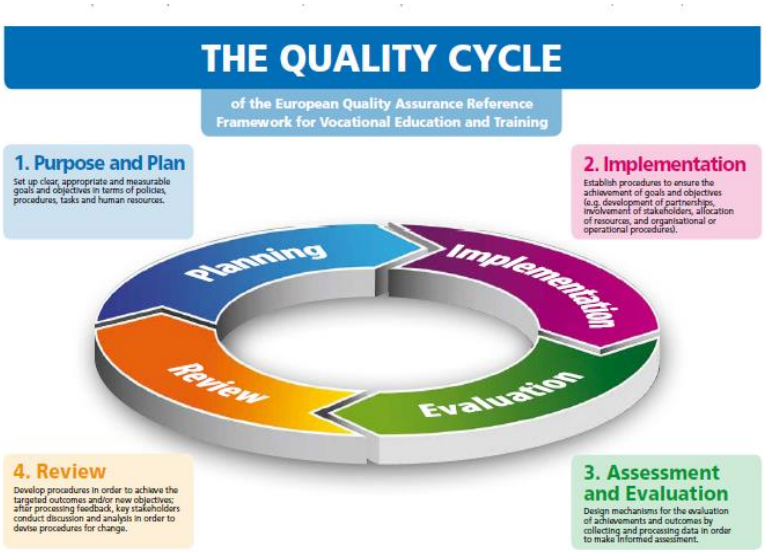

Figure 1: EQAVET Quality Cycle

The placement of EQAVET indicators within its quality cycle is depicted in the following figure.

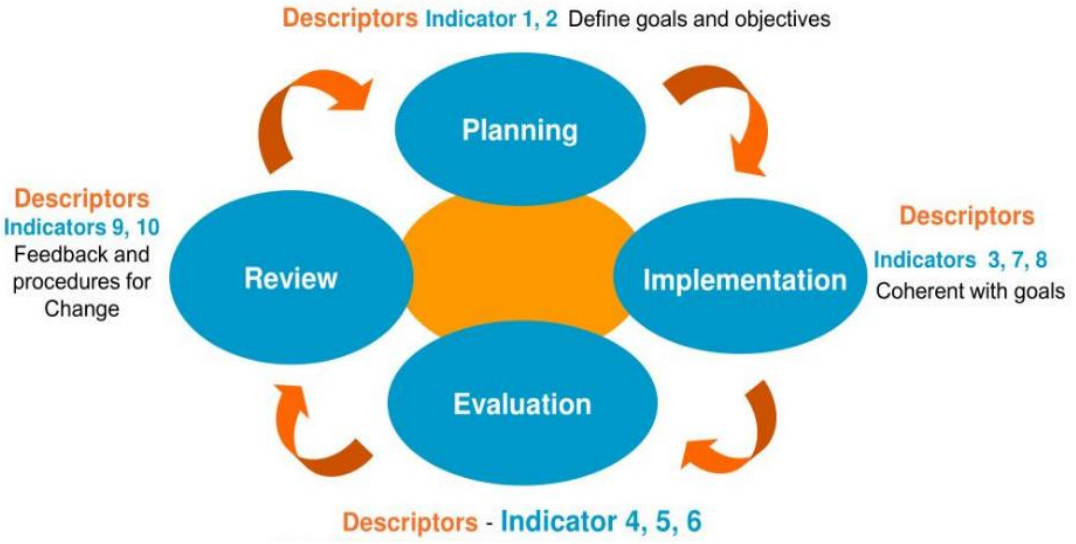

Figure 2: EQAVET indicators within its quality cycle

Thus, the quality assurance model during the development and pilot delivery of the curriculum will be divided into three quality categories (supply quality, delivery quality and results quality) and four phases (input, process, output, outcome).

5 Project indicators

5.1 Progress Indicators

Tables 6 & 7 **SMACITE project Progress indicators** summarizes the progress indicators as well as quantitative and qualitative indicators used to evaluate whether and to what extent the project reaches its objectives and results.

Indicators foreseen to measure the performance of project internal processes					
WP	**Indicator/ unit of measurement**	**Baseline**	**Target values**	**Achieved (status)**	**Accomplished (Y/N) and comments**
WP1	Timely provision of Partners Agreements		Within the 1st month of the project	Accomplished	Y
WP1	Timely provision of payments		Within one month from the reception of the installment provided that the partner has signed the Partners agreement	1/3 Accomplished	Y 1st installment N 2nd & 3d
WP1	Timely provision of meeting agendas and minutes	2 working days before the meeting 1 month after the meeting	1 week before the meeting 1 week after the meeting	2/42 Accomplished	OPM1 Y OPM2 Y
All WPs	Timely provision of action lists		1st week of WP starting month		
WP1	Timely provision of bi-annual project progress reports		M7/ M13/ M19/ M25/ M31/M37		

Indicators foreseen to measure the performance of project internal processes					
WP	**Indicator/ unit of measurement**	**Baseline**	**Target values**	**Achieved (status)**	**Accomplished (Y/N) and comments**
WP1	Timely provision of bi-annual project financial reports		M7/ M13/ M19/ M25/ M31/M37		
	Timely responses from partners within agreed deadlines		Within one week		
	Timely completion of deliverables		Monitored Per Deliverable and milestones progress checklist / no deadline extension in final deliverables		
	Effective communication between partners		Response of partners within one week		
WP1	Transparency between partners on allocation of roles and responsibilities, decisions taken		Task allocation and roles in accordance with GA and action plans		
WP6	Continuous improvement of project processes and outputs	Once during the project	Projects and process audits performed yearly		

Indicators foreseen to measure the performance of project internal processes					
WP	**Indicator/ unit of measurement**	**Baseline**	**Target values**	**Achieved (status)**	**Accomplished (Y/N) and comments**
WP1	Number of (face-to-face and online) meetings and attendance rate	42 meetings 80% attending	42 meetings 100% attending	2/42	Y OPM1 83,3% … OPM2 ……
WP1	Deviation from the schedule	5%	5%		
WP1	Deviation from the workplan	5%	5%		
WP1	Deviation from budget	0%	0%		

Table 6: SMACITE project Progress indicators

Indicators to monitor and verify the outreach and coverage of project activities and results					
WP	**Indicator/ unit of measurement**	**Baseline**	**Target values**	**Achieved (status)**	**Accomplished (Y/N) and comments**
WP2	Number of stakeholders involved in the design of Smart Cities Competences Map and emerging job profiles	50	50	To be accomplished	N
WP2	Number of resources consulted for	15	15	To be accomplished	N

Indicators to monitor and verify the outreach and coverage of project activities and results					
WP	**Indicator/ unit of measurement**	**Baseline**	**Target values**	**Achieved (status)**	**Accomplished (Y/N) and comments**
	the design of Smart Cities Competences Map and emerging job profiles				
WP3	Number of the curriculum training modules	15	15	To be accomplished	N
WP3	Number of learning outcomes of the curriculum	200	200	To be accomplished	N
WP3	Number of learning resources developed	200	200	To be accomplished	N
WP3	Number of MOOCs developed for Smart Cities enabling technologies	10	10	To be accomplished	N
WP4	Number of virtual worlds developed	3	3	To be accomplished	N
WP5	Number of participants in the pilots	160	160	To be accomplished	N

Indicators to monitor and verify the outreach and coverage of project activities and results					
WP	**Indicator/ unit of measurement**	**Baseline**	**Target values**	**Achieved (status)**	**Accomplished (Y/N) and comments**
WP5	Number of registered trainees in the MOOC	300	300	To be accomplished	N
WP6	Number of project meetings evaluations	30	30	To be accomplished	N
WP6	Score achieved at the external interim and final project evaluation	>80	>80	To be accomplished	N
WP7	Number of visitors to the project website	5000	5000	To be accomplished	N
WP7	Number of social media followers	300	300	To be accomplished	N
WP7	Number of participants in the national workshops	320	320	To be accomplished	N
WP7	Number of participants in the final conference	80	80	To be accomplished	N
WP7	Number of	150	150	To be	N

Indicators to monitor and verify the outreach and coverage of project activities and results					
WP	**Indicator/ unit of measurement**	**Baseline**	**Target values**	**Achieved (status)**	**Accomplished (Y/N) and comments**
	participants in the European workshops			accomplished	
WP7	Participants satisfied or very satisfied with the workshops (national and European)	At least 80%	At least 80%	To be accomplished	N
WP2	Profile of stakeholders involved in the design of Smart Cities Competences Map and emerging job profiles		Education and training providers, enterprises, public sector, research must all be represented	To be accomplished	N
WP3	Diversity of competences covered by the curriculum		• technical, • soft, • entrepreneurial, • green	To be accomplished	N
WP3	Diversity of learning resources		• documents, • short videos, • presentations	To be accomplished	N
WP4	User Friendliness, User Experience, User Interface		high	To be accomplished	N

Indicators to monitor and verify the outreach and coverage of project activities and results					
WP	**Indicator/ unit of measurement**	**Baseline**	**Target values**	**Achieved (status)**	**Accomplished (Y/N) and comments**
	of the diagnostic tool				
WP4	Learners' satisfaction from the curriculum and learning resources		high	To be accomplished	N
WP5	Learners' satisfaction from the MOOC and Virtual Worlds		high	To be accomplished	N
WP5	Profile of trainees in the pilots		• Smart Cities technicians and engineers, • HEIs and VET students	To be accomplished	N
WP5	Profile of organizations participating in the pilots		• enterprises, • public sector organizations • HEIs and VET providers	To be accomplished	N
WP5	Satisfaction of participants in the pilots		high	To be accomplished	N
WP6	Profile of stakeholders evaluating the project outputs		• education and training providers, • public organizations, • enterprises,	To be accomplished	N

Indicators to monitor and verify the outreach and coverage of project activities and results					
WP	**Indicator/ unit of measurement**	**Baseline**	**Target values**	**Achieved (status)**	**Accomplished (Y/N) and comments**
			• research organizations, • policy makers, • others		
WP7	Profile of participants in the national and European workshops and the final conference		• education and training providers, • enterprises, • public sector organizations, • research organizations • policy makers	To be accomplished	N
WP7	Number of follow-up activities defined towards the sustainability of the project after its end		3	To be accomplished	N

Table 7: SMACITE project Progress indicators (outreach & coverage)

The major milestones that will be used to verify the project's progress and the achievement of its objectives are the following:

Number	Name	Lead Beneficiary	Due Date(in months)	Means of Verification	Work Package No.	Accomplished (Y/N) and date (if Y)
MS13	Project website	UPatras	M3	The project website is accessible through Internet	WP7	N
MS3	Emerging Smart Cities ESCO-compliant job profiles	UAH	M4	2 Smart Cities job profiles have been defined	WP2	N
MS4	1st version of SMACITE curriculum	UPatras	M6	1st version of curriculum reviewed and accepted by all partners	WP2	N
MS8	Diagnostic tool to identify personalized training pathways	ESI CEE	M12	The diagnostic tool has been tested and recommends personalized learning pathways	WP4	N
MS6	1st version of curriculum's learning resources	UPatras	M14	At least 200 learning resources have been developed	WP3	N
MS9	MOOC for Smart Cities training	ESI CEE	M18	2 tests users successfully complete 2 online courses at MOOC	WP4	N
MS1	Project interim report to EACEA	UPatras	M19	successful submission	WP1	N
MS10	Virtual Worlds for training on soft, entrepreneurship and green skills	UPatras	M20	1-hour training is taking place at the Virtual Worlds, as a test	WP4	N

MS11	National pilots	APRO	M30	The reports for the 4 national pilots have been collected	WP5	N
MS5	Final version of SMACITE curriculum	UPatras	M32	Final version of curriculum reviewed and accepted by all partners	WP2	N
MS7	Final version of curriculum's learning resources	UPatras	M32	The final version of learning resources has been reviewed and accepted by all partners	WP3	N
MS14	Project final conference	UNIWA	M36	The final conference has been completed with at least 60 participants.	WP7	N
MS2	Project final report to EACEA	UPatras	M38	successful submission	WP1	N
MS12	Project final evaluation by an external expert	UPatras	M38	The evaluation outcomes are returned to the project coordinator	WP6	N

Table 8: Project milestones sorted by delivery month and implementation status

5.2 Impact indicators

Both quantitative and qualitative indicators will be used to monitor progress and assess the expected short and medium term impact, to the extent appropriate for each target group. The expected impact will be measured at the interim (M18) and final phase (M36) of the project using the following indicative indicators:

WP	Indicator/ unit of measurement	Achieved (status)	Accomplished (Y/N) & comments
WP7	Number of deliverables' downloads from the project website	To be accomplished	N
WP6	Learners perspective on the improvement of their competences and employability in the Smart Cities sector	To be accomplished	N
WP6	Enterprises and public sector perspective on the improvement of their capacity and competences in the Smart Cities sector	To be accomplished	N
WP6	HEIs and VET providers' perspective on the improvement of their education and training offerings	To be accomplished	N
WP7	Number of synergies among education and training providers, enterprises, and the public sector	To be accomplished	N
WP7	Intention of target groups for the exploitation of project results	To be accomplished	N

Table 9: SMACITE project Impact Indicators

5.3 Exploitation Indicators

The exploitation of project results during the project's lifetime and after it has finished will be measured using the indicators presented in Table 10:

Indicator/ unit of measurement
Number of deliverables' downloads from project website
Number of trainees in the pilots
Number of enrolled users at the MOOC
Number of enrolled users at the Virtual Worlds
Number of watching hours of learning videos at project's channel at YouTube

Number of deliverables downloads from project website
Number of enrolled users at the MOOC
Number of organizations exploiting the SMACITE curriculum
Number of organizations exploiting the SMACITE learning resources

Table 10: SMACITE project Exploitation Indicators

All project indicators are being monitored through the Indicators Monitoring tool available in Annex 5

6 Monitoring tools

In addition to the Project Quality Assurance plan, the main mechanisms employed to ensure the monitoring of the project, its deliverables, results, and outputs are the following:

- Bi-annual project progress reports. They present the project's progress during the six-monthly period of reference, deviations from the work-plan and mitigation steps taken, as well as the actions planned for the next six-monthly period. Annex 6
- Bi-annual project financial reports. They provide a detailed view of the expenditures of the project during the six-monthly period of reference in comparison to the approved budget per partner. Annex 7[3]
- Bi-annual project dissemination reports. They present the project dissemination actions during the six-monthly period of reference, deviations from the dissemination plan and mitigation steps taken, as well as the actions planned for the next six-monthly period Annex 8
- Minutes of project meetings.
- Deliverables review forms from QAT and PAB. Annex1 and Annex 3
- The progress is recorded in the Indicators Monitoring tool. Annex 5
- Trello project management tool. This tool provides an overview of project activities with the persons

UPATRAS will have the principal responsibility for project monitoring, supported by OTC and WP leaders. Each WP Leader will implement the identified monitoring procedures for the WP he/she leads and provide the necessary information to the Project Coordinator and OTC. The staff involved in monitoring activities will have experience with quality and monitoring controls in the items/fields assessed.

A summary of the timeline for assessment and tools used is presented in Table 10:

Evaluation Timeline	Evaluation instrument	Title of instrument	Annex	Comment
When an intellectual output is submitted	Questionnaire	Deliverable Review Form	1	May vary slightly depending on type of output or special requirements
After each project	Questionnaire	Evaluation	4	May vary slightly

[3] The template is subject to potential changes in view of the anticipated information by EACEA.

meeting or event		Form for Project Meetings		depending on type of event
Constant	Table	Indicators Monitoring tool	5	Reviewed in OPM when deemed necessary and in every face to face meeting E1-6
1st year of the project 2nd year of the project Near project end	Questionnaire / Guided Interview	PAB External Expert Review Form	3	PAB meetings are held either in person or online on a yearly basis. in the form of individual meeting - interview or national group meeting/s.
Bi annually	Report	Project Progress Reports	6	
Bi annually	Report	Project Financial Report	7	
Bi annually	Report	Project Dissemination Report	8	

Table 11: QA Connected Document templates

7 References

European Commission, Directorate-General for Informatics. (2018). *PM² project management methodology : guide 3.0.* Retrieved from Publication Office of the European Union: https://data.europa.eu/doi/10.2799/755246