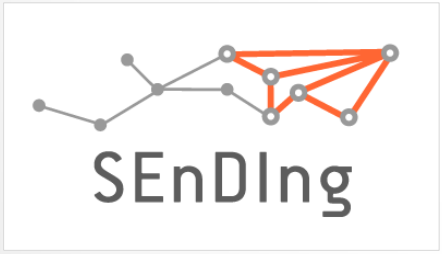

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SEnDIng

D6.6.3

WP5 QUALITY REPORT

FOR THE TIME PERIOD

AUGUST 1, 2018 – JANUARY 31, 2021

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Delivery Slip

	Name	Partner	Date
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Reviewed by	Vasileios Gkamas	UPATRAS	22/01/2021
Approved by	Maria Rigou	UPATRAS	25/01/2021

PROJECT SUMMARY

SEnDIng project aims to address the skills' gap of Data Scientists and Internet of Things engineers that has been identified at the ICT and other sectors (e.g. banking and energy) at which Data Science and Internet of Things have broad applications. To achieve this goal, SEnDIng will develop and deliver to the two aforementioned ICT-related occupational profiles two learning outcome-oriented modular VET programmes using innovative teaching and training delivery methodologies.

Each VET program will be provided to employed ICT professionals into three phases that include: (a) 100 hours of on-line asynchronous training, (b) 20 hours of face-to-face training and (c) 4 months of work-based learning. A certification mechanism will be designed and used for the certification of the skills provided to the trainees of the two vocational programs, while recommendations will be outlined for validation, certification & accreditation of provided VET programs.

Furthermore, SEnDIng will define a reference model for the vocational skills, e-competences and qualifications of the targeted occupational profiles that will be compliant with the European eCompetence Framework (eCF) and the ESCO IT occupations, ensuring transparency, comparability and transferability between European countries.

Various dissemination activities will be performed – including the organization of one workshop at Greece, Bulgaria and Cyprus and one additional conference at Greece at the last month of the project – in order to effectively disseminate project's activities and outcomes to the target groups and all stakeholders. Finally, a set of exploitation tools will be developed, giving guides to stakeholders and especially companies and VET providers, on how they can exploit project's results.

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1 Introduction

The scope of the deliverable is to report in narrative form the Quality Assurance activities that were applied for WP5 during the time period August 1, 2018 – January 31, 2021. Quality Assurance includes all those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given quality requirements. Quality Assurance evaluates the performance of the project and produces recommended actions and change requests, while quality control applies all the operational techniques and activities that are used to fulfil requirements for quality.

The Quality Assurance Report follows the same structure as the corresponding plan.

2 Deliverables Quality Standard

During the reported time period the project consortium produced the following deliverables within WP5:

D5.1.1: Technical and operational specifications of e-learning environment

This deliverable presents the target technical and operational specifications for the online courses platform to be used for the delivery of the online phase of VET trainings. Before working on this deliverable, the technical and operational demands for course platform were initially discussed in project group meetings. After this, a review of online sources covering most popular learning management systems and their applicability to different learning demands and context was conducted. Using these sources an initial list of features was compiled including brief description of each feature in an easy-to-understand, practical manner. This list was shared with all project members in the form of a survey to assess the validity/applicability of each feature for the project purpose.

D5.1.2: Survey of e-learning solutions

Within this deliverable different eLearning platforms for the delivery of SEnDIng online courses were surveyed. In the context of the survey, we considered four eLearning platforms, whose main features were documented from the viewpoint of SEnDIng project´s requirements. After reviewing the key characteristics of the four eLearning platforms, we tested each one aiming to define the best that meets the pre-defined target specifications. The platforms we considered and tested are Moodle, Open edX, Sakai LMS and Cypher Learning NEO LMS. Finally, we chosen Open EdX as the MOOC platform to host the Data Science and IoT online courses.

D5.2.1: E-learning platform installation report

This deliverable consists a report describing the installation and configuration of Open edX platform for the delivery of Data Science and IoT online courses. The Open edX platform

is a free and open-source course management system that was originally developed by edX. The Open edX platform is used all over the world to host Massive Open Online Courses as well as smaller classes and training modules. The MOOC that hosts the Data Science and IoT online courses is running at the following URL: http://mooc.sending-project.eu/

D5.2.2: E-learning platform operation and support

This deliverable is a report that describes the actions performed for the daily operation and support of the MOOC platform (http://mooc.sending-project.eu/) during the delivery of the vocational programs. The MOOC platform is hosted at a virtual machine provided by the the VIMA service of the Greek Research and Technology Network. The daily actions that have taken aim to ensure the stability, performance and security of the platform.

D5.3.1: Open call for participation of companies in the vocational trainings

This deliverable is the open call issued in September 2019 that invites companies to express interest for participation in the piloting and testing of the Data Science and IoT VET programs.

D5.3.2: Report about the delivery and certification of Data Science vocational trainings

This document is a detailed report with regards to the pilot implementation of the SEnDIng Data Science VET program. The Data Science VET program consists of three phases: Phase 1: Data Science online training (103 hours), Phase 2: Transversal skills online training (20 hours) and Phase 3: Work based learning (320 hours). All those who successfully completed the 3 phases of the training have passed through exams that lead to the Data Science SEnDIng certification.

D5.3.3: Report about the delivery and certification of Internet of Things vocational trainings

This document is a detailed report with regards to the pilot implementation of the SEnDIng IoT VET program. The IoT VET program consists of three phases: Phase 1: IoT online training (103 hours), Phase 2: Transversal skills online training (20 hours) and Phase 3: Work based learning (320 hours). All those who successfully completed the 3 phases of the training have passed through exams that lead to the IoT SEnDIng certification.

The objectivity of the review process is ensured by two criteria: (1) the reviewer is not directly involved in the development of significant part of the deliverable and (2) the reviewer uses standard quality criteria, documented in advance in the review form in order to check the quality of the deliverable.

For each of the aforementioned deliverables, the relevant stakeholders applied the following review procedures:

- Work Package Leader or Project coordinator appoints reviewers.
- Final draft of the deliverable was reviewed by the appointed reviewers.
- Where necessary, the deliverables authors were asked promptly to modify the document to ensure that it is with the expected high quality.
- The authors of the deliverable addressed the comments and recommendations of the reviewers, if any and submitted the final version of the deliverable.
- The reviewers checked the final deliverable and documented their findings in the specially designed review forms.
- The reviewers uploaded the review forms in the Review/Forms folder under the folder in which the respective deliverable was stored.

2.1 Corrective actions

There were not significant deviations from the quality plan that required corrective actions.

2.2 Review criteria

The criteria that were applied for deliverables' review were the following:

- Clarity of the deliverable
- Compliance with defined work plan
- Quality of evidence and analysis
- Uniformity
- Quality of writing and presentation
- Potential impact to the target groups

Detailed information about the review criteria is given at the project quality assurance plan. As we have stated, compliance to the review criteria per each deliverable was checked and documented by at least two appointed reviewers in the corresponding review forms for each deliverable.

3 Documentation Quality Standards

The following documentation standards were 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 or PowerPoint 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 were written using the template provided in the "Annex – SENDING deliverable template" of project quality assurance plan. Compliance to the documentation quality standards per each deliverable was checked and documented by at least two appointed reviewers in the corresponding review forms for each deliverable.

4 Transparency

The project partners have ensured the transparency on both processes for the development of WP5 deliverables and the relevant work products.

Transparency of the process was ensured for all deliverables in the scope of this report. Each partner responsible for the respective deliverable communicated in advance the process of deliverable development with the lead partner and the partners involved in the respective tasks during the monthly skype meetings and/or during a specific skype meeting initiated by the project leader or a partner. The partners achieved consensus about each deliverable.

All partners assured transparency of the work products and respective deliverables through their continuous sharing with all stakeholders in the structured repository accessible.

5 Continuous Improvement

All partners were involved in a communication aiming to further improve the quality of the deliverables and the respective process, by trying to combine the feedback collected by each partner. Moreover, additional feedback was requested by trainees during the pilots. This feedback was collected by surveys conducted (a) after the completion of each Data Science and IoT online course, (b) at the end of the transversal skills training and (c) at the end of the work-based learning.

6 Communication Standards

While working on the deliverables in WP5, all partners took into account the accepted communication standards:

- The common way of communication among partners was via e-mail.
- In the case that an email is addressed to all project partners, the mailing list sendig-all@ceid.upatras.gr was used.
- At the topic of each email included the name of the project.
- All the documents and files were stored at the google drive folder.
- All emails should be notified (with cc) to the project manager and technical manager.

7 Monitoring tools

While working on the WP5 deliverables, the project partner reported progress permanently to assure the quality of work and deliverables.

The following monitoring tools and mechanisms were utilized:

- **Six-monthly internal reports per partner**
- **Monthly skype meetings**. Monthly skype meetings was organized with the participation of all SEnDIng partners. The main scope of these meetings is to keep all partners informed about project progress and running deliverables, problems occurred and mitigations steps taken.
- **Specific skype meetings**. Specific skype meetings were held on to discuss the status and the process of producing the WP5 deliverables.
- **Face to face meetings**. During the face-to-face meetings organized in the reported period, the partners paid a special focus on the WP5 deliverables.
- **Timesheets**. The timesheets provided by the partners reported the efforts invested for successful completion of WP5 activities and tasks and production of the corresponding deliverables.

8 WP5 Impact evaluation report

Below is presented the impact evaluation report for WP5 according to the template defined in project impact evaluation methodology.

D5.1.1: Technical and operational specifications of e-learning environment / D5.1.2: Survey of e-learning solutions /D5.2.1: E-learning platform installation report /D5.2.2: E-learning platform operation and support

WP No	No of deliverable / result(s)	Evaluation tools used	Target groups/ potential beneficiaries	Impact	Quantitative Indicators measured	Qualitative indicators measured	Impact for the sector concerned/ Comments/ Recommendations/ Corrective actions proposed or/and implemented
5	D5.1.1 D5.1.2 D5.2.1 D5.2.2	1. Survey among trainees at the end of certification exams 2. Focus groups among SEnDIng partners	Trainees, Companies, SEnDIng partnets	1. Free access to learning opportunities and training methodologies for ICT businesses that lack training facilities and departments. 2. More interactive learning opportunities via the use of new teaching and learning technologies for learners.	4.1a. Number of MOOC platforms surveyed - 4 4.2a. Number of stakeholders involved in the survey of MOOC platforms - 12	4.2b Profile of stakeholders involved in the survey of MOOC platforms – HEIs, VET providers, SMEs, Associations of IT companies, Associations of IT professionals and scientists, Certification Bodies	The MOOC platform is running at http://mooc.sending-project.eu/. In addition to the Data Science and IoT online courses, it hosts a course for transversal skills development.

D5.3.1: Open call for participation of companies in the vocational trainings / D5.3.2: Report about the delivery and certification of Data Science vocational trainings / D5.3.3: Report about the delivery and certification of Internet of Things vocational trainings

WP No	No of deliverable / result(s)	Evaluation tools used	Target groups/ potential beneficiaries	Impact	Quantitative Indicators measured	Qualitative indicators measured	Impact for the sector concerned/ Comments/ Recommendations/ Corrective actions proposed or/and implemented
5	D5.3.1 D5.3.2 D5.3.3	1. Surveys among trainees at the end of each Data Science/IoT course, at the end of transversal skills training and at the end of work based learning 2. Focus groups among SEnDIng partners	Trainees, Companies, SEnDIng partnets	1. Training in skills and competences that are more tailored to the needs of ICT learners and industry based on a learning outcomes oriented vocational curricula. 2. Up-skilling of ICT professionals and especially Data Scientists and IoT engineers in order to meet new challenges in the work field. 3. More attractive opportunities for vocational education	4.3a. Hours of online asynchronous training provided – 103 hours for Data Science and 103 for IoT per trainee 4.4a. Hours of face-to-face training provided - 0[1] 4.5a. Hours of work-based learning provided – 320 per trainee 4.6a. Number of participants in the vocational trainings for Data Science and	4.6b. Profile of participants in the vocational trainings for Data Science and IoT – IT professionals with a minimum EQF level 5 4.7b Profile of companies participated in the vocational trainings – Mainly IT companies, as well as companies operating in the Energy, Financial and other sectors	The average completion rate of SEnDIng MOOC – 38.7% for the Data Science and 36.8% for the IoT - is much higher than the average completion rates (20%) observed at MOOCs provided by big brands like Harvard, MIT and Stanford. Moreover, we would like to emphasize that the difficulties faced the trainees due to the COVID-19 situation has affected their participation in the pilots and for this reason a drop rate is observed through the 3 phases of the VET programs

[1] The transversal skills training which has planned to be organized through face-to-face sessions, has finally delivered online due to COVID-19 restrictions

				and training in ICT sector at a pan-European level. 4. Ability of ICT professionals throughout Europe to respond to the needs of different ICT markets and other sectors like banking, insurance and energy.	IoT – 207 expressed interest 4.7a. Number of companies participated in the vocational trainings - +25 4.8a. Number of MOOC users - +200 4.9a. Number of trainees completing the first phase of the training – 46 completed the Data Science online courses and 35 the IoT online courses 4.10a. Number of trainees completing the second phase of the training – 42 4.11a. Number of trainees completing the third phase of the training - 23		