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# SEnDIng

D6.6.2

## WP3 QUALITY REPORT

FOR THE TIME PERIOD

AUGUST 1, 2018 – SEPTEMBER 31, 2019

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## Delivery Slip

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## 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 WP3 during the time period August 1, 2018 – September 31, 2019. 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 WP3:

### **D3.1: Training material for Data Science vocational trainings**

We developed training material for the following Data Science online courses:

- DS-EM1: Introduction to Data Science
- DS-EM2: Applied machine learning
- DS-EM3: Python for Data Science
- DS-EM4: Storing and retrieving data
- DS-EM5: Statistics for Data Science
- DS-EM6: Data Visualization

The training material developed for each course is documents, presentations, videos, self-evaluation quizzes and projects. It is available for downloading in the form of Open Educational Resources through project website.

### **D3.2: Training material for IoT vocational trainings**

We developed training material for the following Internet of Things online courses:

- IoT-EM1: Introduction to IoT
- IoT-EM2: Architectural Design and Applications in IoT
- IoT-EM3: IoT Communication Technologies
- IoT-EM4: IoT Security and Privacy
- IoT-EM5: IoT Devices

- IoT-EM6: IoT Business Value

The training material developed for each course is documents, presentations, videos, self-evaluation quizzes and projects. It is available for downloading in the form of Open Educational Resources through project website.

### **D3.3: Training material for transversal skills development**

We developed training material for the upskilling of ICT professionals at transversal skills. The aim of this training material is two-fold: (a) to help prospective learners to build their transversal skills that are developed upon academic and experiential learning and (b) to prepare them for engaging within the business environment in a creative way, communicating effectively with the internal and external environment of a business and acting in a collaborative way. The training material introduces learners to a portfolio of skills and competences required for effective communication and presentation, adaptation to changes, teamwork, goal-setting and thinking out of the box. The training material is available for downloading in the form of Open Educational Resources through project website.

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 WP3 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 its 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 the trainees by a survey incorporated at the end of each online course.

## 6 Communication Standards

While working on the deliverables in WP3, 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 [sendifg-all@ceid.upatras.gr](mailto:sendifg-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 WP3 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 WP3 deliverables.
- **Face to face meetings.** During the face-to-face meetings organized in the reported period, the partners paid a special focus on the WP3 deliverables.
- **Timesheets.** The timesheets provided by the partners reported the efforts invested for successful completion of WP3 activities and tasks and production of the corresponding deliverables.

## 8 WP2 Impact evaluation report

Below is presented the impact evaluation report for WP2 according to the template defined in project impact evaluation methodology.

### D3.1: Training material for Data Science 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
3	D3.1	1. Survey among trainees at the end of each Data Science online course 2. Focus groups and survey among SEnDIng partners	Trainees, companies, SEnDIng partners	1. Up-skilling of ICT professionals and especially Data Scientists and IoT engineers in order to meet new challenges in the work field.  2. Reduced training expenses for ICT businesses due to the free access to the VET programs.	2.1a. Number of open educational resources produced – 146 OERs  2.2a. Number of responses collected for the evaluation of Data Science training material – 271	2.1b. Type of open educational resources produced – Documents, Presentations, Videos  2.2b. Profile of trainees involved in the evaluation of training material – IT professionals, HEIs students	Access to Data Science Open Educational Resources available at <a href="https://drive.google.com/open?id=1qs1xEIqU7hL0HT72d7ak3myfCAefKiq9">https://drive.google.com/open?id=1qs1xEIqU7hL0HT72d7ak3myfCAefKiq9</a>  Increased opportunities of IT professionals for upskilling/reskilling at Data Science technologies  Access to free training resources  Enhanced technical knowledge and skills of ICT workforce at the Data Science domain

### D3.2: Training material for IoT 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
3	D3.2	1. Survey among trainees at the end of each IoT online course 2. Focus groups and survey among SEnDIng partners	Trainees, companies, SEnDIng partners	1. Up-skilling of ICT professionals and especially Data Scientists and IoT engineers in order to meet new challenges in the work field.  2. Reduced training expenses for ICT businesses due to the free access to the VET programs.	2.1a. Number of open educational resources produced – 109 OERs  2.2a. Number of responses collected for the evaluation of IoT training material – 207	2.1b. Type of open educational resources produced – Documents, Presentations, Videos  2.2b. Profile of trainees involved in the evaluation of training material – IT professionals, HEIs students	Access to IoT Open Educational Resources available at <a href="https://drive.google.com/open?id=1FOOIUt6iBd6H1KkBz9ggWqJjAmq0ZsBK">https://drive.google.com/open?id=1FOOIUt6iBd6H1KkBz9ggWqJjAmq0ZsBK</a>  Increased opportunities of IT professionals for upskilling/reskilling at IoT technologies  Access to free training resources  Enhanced technical knowledge and skills of ICT workforce at the IoT domain

### D3.3: Training material for transversal skills development

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
3	D3.2	1. Survey among trainees at the end of transversal skills training 2. Focus groups and survey among SEnDIng partners	Trainees, companies, SEnDIng partners	1. Up-skilling of ICT professionals and especially Data Scientists and IoT engineers in order to meet new challenges in the work field.  2. Reduced training expenses for ICT businesses due to the free access to the VET programs.	2.1a. Number of open educational resources produced – 2  2.2a. Number of responses collected for the evaluation of IoT training material – 32	2.1b. Type of open educational resources produced – Documents, Presentations,  2.2b. Profile of trainees involved in the evaluation of training material – IT professionals	Access to transversal skills Open Educational Resources available at <a href="http://sending-project.eu/attachments/article/71/SEnDING_DLV3.3-Final.pdf">http://sending-project.eu/attachments/article/71/SEnDING_DLV3.3-Final.pdf</a>  Increased opportunities of IT professionals for building further their transversal skills  Access to free training resources  Enhanced transversal skills of ICT workforce



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