Deliverable D4.2

Quality Report (D4.2)

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Deliverable factsheet

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Abstract:	This document is a reflection on the Quality Processes used in the project. As already noted the Quality Plan acts as a guide for the internal quality management of the project and contains the general rules agreed upon for its success. The plan shows how the project is carried out, measured and monitored. In this document we comment on the detail of how these policies worked.
Keyword List:	Quality, Report, Plan, Structure, Project Management.

Consortium

	Role	*Name*	*Short Name*	*Country*
1.	Coordinator, academic partner	The University of Cagliari	UniCA	Italy
2.	Forensic Computing Education expert, academic partner	Middlesex University	MU	United Kingdom
3.	Forensic Computing Education expert, academic partner	Dublin City University	DCU	Ireland
4.	Academic partner to establish a pathway program in forensic computing	Al-Quds university	AQU	Palestine
5.	Academic partner to establish a pathway program in forensic computing	Palestine Technical University Kadoorie	PTUK	Palestine
6.	IT and forensic software developer partner	Al-Andalus Software Development	ASD	Palestine
7.	Academic partner to establish a pathway program in forensic computing	Princess Sumaya University for Technology,	PSUT	Jordan
8.	Academic partner to establish a pathway program in forensic computing	The University of Jordan	JU	Jordan

Revision History

Version	*Date*	*Revised by*	*Reason*
V1.0	31-05-2018	Charles Daly, Darragh O'Brien, Renaat Verbruggen	Original document based on project quality plan guidelines..
V2.0	31-01-2019	Charles Daly, Darragh O'Brien, Renaat Verbruggen	.Taking into account comments from external quality auditor, presented at Dublin meeting January 2019.

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List of Abbreviations

The following table presents the acronyms used in the deliverable in alphabetical order.

Abbreviation	*Description*
WP	Work Package
WPL	Work Package Leader
FORC	Pathway in Forensic Computing
ICT	Information Communication Technology
PS	Palestine
JO	Jordan

Executive Summary

Education in the area of information technology is recognized as a key priority to support economic progression of both Palestine and Jordan. However, there is a mismatch between University curricula and the market demands and these curricula need to be updated to meet international standards. In particular, Forensic Computing and Digital Criminology is not well served by current University curricula. This has a negative impact on the market for these services and consequently on the security of information systems and infrastructure within these countries. We believe that introducing education and training in this area is essential to overcome the existing deficit and is critical to improving the quality of the legal services and ICT sectors in both public and private sectors. This document is a reflection on the Quality processes and their implementation within this process.

Comment: This document closely follows the project proposal (FORC_detailed-project-V1.0.docx). This project proposal will be referred to in this document as the project proposal This report is also based on the project Quality Plan (version 3) as published within the project.

1 Introduction

1.1 Background

Education in the area of information technology is recognized as a key priority to support economic progression of both Palestine and Jordan. However, there is a mismatch between University curricula and the market demands and these curricula need to be updated to meet international standards. In particular, Forensic Computing and Digital Criminology is not well served by current University curricula. This has a negative impact on the market for these services and consequently on the security of information systems and infrastructure within these countries. We believe that introducing education and training in this area is essential to overcome the existing deficit and is critical to improving the quality of the legal services and ICT sectors in both public and private sectors.

1.1.1 Project Objectives

This project will develop a set of related courses in forensic computing to integrate with current relevant undergraduate degrees such as computer science and law.

The specific objectives of the project are:
1. To update existing bachelor programs by defining the structure of a new Forensic Computing Pathway.
2. To develop, validate and implement a set of 8 courses, in emerging areas of Forensic Computing that address the following: Digital Investigation, Issues in Criminal Justice, Digital Forensics, Ethical Hacking, Digital Evidence.
3. To develop 4 case studies in Forensic Computing using student-centred adaptive e-learning contemporary education methodology focused on computer crime and computer Investigation.
4. To improve the level of competence and skill of staff in partner country universities by:
(i) training visits for staff to EU partners to develop Forensic Computing expertise in curriculum development and innovative learning and
(ii) providing research collaboration opportunities with EU staff through joint supervision of students' projects.
5. Additionally, to create opportunities of collaboration between academia and industry in the Forensic Computing field.
6. To establish Forensic Computing laboratories at partner countries universities, which will be used for teaching and research.

The duration of the project is 36 months (15/10/2016 to 15/10/2019) and is comprised of the following work packages:
WP1: Preparation (Review and analyse existing forensic computing practice legislation and education.)
WP2: Development (Establish a forensic computing pathway via the design and development

of course materials and training partner country staff in delivery of the modules.)
WP3: Development (Build University - Enterprise Partnership)
WP4: Quality Plan (Quality Control and monitoring)
WP5: Dissemination and Exploitation (Program Implementation and Dissemination)
WP6: Management

1.2 Purpose of the Quality Report

This document will analyse the internal quality management of the project and contains a reflection on the application of the general rules agreed upon for its success. The Quality Plan shows how the project will be carried out, measured and monitored. This Quality Report reflects on that process.

In addition, it contains details which were defined in the Plan for the organisation structure and relationships between partners so that the role of all partners is clear and the procedure for project management is clear and appropriately implemented. It also contains a project time plan which will specify milestones and major deliverables.
This report reflects on the metrics specified to ensure that all parts of the project are successfully implemented. All partners are involved in this assessment process while the project is being developed.

Project Organisation by Work Package

WP1: Princess Sumaya University for Technology (PSUT)

Review and analyse existing forensic computing practice legislation and education
WP1.1 Investigate national regulations and legislation regarding digital crime.
WP1.2 Analyse the existing level of digital security public awareness in Palestine and Jordan.
WP1.3 Analyse current practices of digital security and education in Palestine and Jordan to identify crucial points and weaknesses.
WP1.4 Organise a Forensic Computing Planning Workshop.

WP2: Middlesex University (MU)

Establish forensic computing pathway
WP2.1 Define the pathway objectives, learning outcomes, and career prospects.
WP2.2 Design the relevant academic course modules
WP2.3 Define delivery approaches and assessment
WP2.4 Develop capacity building of PC staff through visits to EU
WP2.5 Analyse and set up the learning platform
WP2.6 Set up state of art Forensic Computing Lab

WP2.7 Publish learning material on the learning platform

WP3: Al-Andalus Software Development (ASD)
Build University - Enterprise Partnership

WP3.1 Develop a University - Enterprise Partnership Model
WP3.2 Select and develop case studies
WP3.3 Conduct Training for IT and Legal Professionals
WP3.4 Organise a capacity building workshop

WP4: Dublin City University (DCU)
Quality Control and Monitoring

WP4.1 Definition of a quality framework for the project
WP4.2 Implement a project quality assurance control process
WP4.3 Generation of project quality reports

WP5: Al-Quds University (AQU)
Program Implementation and Dissemination

WP5.1 Disseminate and exploit the strategy and plan
WP5.2 Develop the project website for the duration of the project and disseminate the project results
WP5.3 Organise a workshop to discuss evaluation outcomes and derive plans to approve and/or adapt courses to address identified issues.
WP5.4 Implement the Forensic Computing pathway and apply the new curriculum to student courses
WP5.5 Organise an EU Professors teaching visit to Partner Countries Universities
WP5.6 Organise a training workshop by European Staff to establish student projects and co-supervision mechanisms.
WP5.7 Organise student visits to EU partner universities for project co-supervision training.
WP5.8: Organise concluding conference at Jordan University (JU)

WP6: University of Cagliari (UniCa)
Management of the project

WP6.1 Organisation of the initiation meeting
WP6.2 Formation of the project management committees
WP6.3 Set up an online document collaboration environment
WP6.4 Project Financial administration

3. Project Quality Control

In this section, we describe the process and mechanisms whereby the project quality is ensured. We will consider the quality of the plans, deliverables and the quality of the process to create the deliverables.

3.1 Plans

Draft versions of the working package plans were presented at the kickoff meeting apart from the quality plan, which was developed in the first months of the project. Up to date versions of these plans are maintained in the document repository online (at UniCA). The plans include dates by which deliverables and reports are submitted. Plans also include metrics so that the progress of the plan can be measured

3.2 Quality of the deliverables

The concrete project deliverables are:
1. To produce 8 courses
2. To produce 4 case studies
3. To establish degree programs at the PC universities
4. Establish forensic computing labs at the PC universities
5. Organise training courses for PC university staff
6. Organise student project research collaboration opportunities

3.2.1 Evaluations of the Deliverables

Each type of deliverable has its own evaluation template in the document repository.
Deliverables are reviewed by a partner who is not involved in the creation of the deliverable. This reviewer is nominated by the WP leader. The WP leader provides the deliverable to the reviewer at least two weeks before the target date. The reviewer reviews the deliverable using the deliverable metrics and produces a report based on the template for that type of deliverable.

The reviewer sends the evaluation to the creator of the deliverable who should update the deliverable as specified or explain why they disagree with the evaluation. It is expected that dialogue between the leader, the creator and the reviewer will lead to a satisfactory deliverable or an updated plan.

Table 1 lists the outputs/activities of the various work packages and how they will be evaluated.

Work Package	Deliverable	Method of Evaluation
WP1 Review and analyse existing forensic computing practice legislation and education. [PSUT]	Investigate national regulations and legislation regarding digital crime. Analyse the existing level of digital security public awareness in Palestine and Jordan. Analyse current practices of digital security and education in Palestine and Jordan to identify crucial points and weaknesses. Organise a Forensic Computing Planning Workshop.	Peer review of deliverables Questionnaire
WP2 Establish forensic computing pathway [MU]	Define the pathway objectives, learning outcomes, and career prospects. Design the relevant academic course modules Define delivery approaches and assessment Develop capacity building of PC staff through visits to EU Analyse and set up the learning platform Set up state of art Forensic Computing Lab Publish learning material on the learning platform	Peer review of deliverables
WP3 Build University - Enterprise Partnership [ASD]	Develop a University - Enterprise Partnership Model Select and develop case studies Conduct Training for IT and Legal Professionals Organise a capacity building workshop	Peer review of deliverables Questionnaires for training workshop participants.
WP4 Quality Control and monitoring [DCU]	Definition of a quality framework for the project Implementing a project quality assurance control process Generation of project quality reports	Peer review of deliverables
WP4 Program Implementation and Dissemination	Disseminate and exploit the strategy and plan Develop the project website for the duration of the project and disseminate the	Peer review of deliverables. Questionnaire of workshop participants.

[AQU]	project results Organise a workshop to discuss evaluation outcomes and derive plans to approve and/or adapt courses to address identified issues. Implement the Forensic Computing pathway and apply the new curriculum to student courses Organise an EU Professors teaching visit to Partner Countries Universities Organise a training workshop by European Staff to establish student projects and co-supervision mechanisms. Organise student visits to EU partner universities for project co-supervision training. Organise concluding conference at Jordan University (JU)	Number of students enrolled on the Forensic Computing Pathway.
WP6 Management of the project [UniCa]	Organisation of the initiation meeting Formation of the project management committees Set up an online document collaboration environment Project Financial administration	Questionnaires to meeting participants. External Auditing.

Table 1: Evaluation methods for the work packages activities and deliverables

The deliverable evaluation templates are based on guidelines specified in Appendix 2.

In addition, all the above deliverables are subject to external audit.

3.2.2 Example Evaluations of the Deliverables

Templates were created to review the initial Module specifications, which allowed the reviews to be undertaken edited and finalized. The template in the repository is entitled: 2019-2-25-FORC-WP4-ModSpec-reviews.v01

Templates were also created for the review of the procurement system for the Forensic Lab equipment. Again these were reviewed, edited and finalized as documents. There was also a

template document created for the review of the student selection process:
2019-04-28-FORC-WP5.7- Template for student selection-V1.

3.3 Risk Management

A risk assessment matrix is a modification to the logical framework matrix of the project proposal and is included in Appendix 1. This outlines risks associated with the completion of various work packages. It is the responsibility of the work package leaders to be aware of these risks and to continuously monitor and consider and propose solutions should these risks be encountered.

3.4 Process Quality

The project processes are evaluated by monitoring partner meetings and work package progress. These are monitored using reports whose source may be meeting questionnaires, working package progress reports and external audit evaluations.

All meetings are assessed using a survey tool (see appendix 2 for an example of a meeting questionnaire). We have used two different forms of the meeting questionnaire, an original open source solution was used for early meetings. The results are shown in summary form in Appendix 3. Later meetings have used a Google form approach and their summary is in Appendix 4.

3.4.1 Analysis

A summary of the data collected is used and suggestions for changes and improvements is compiled after each meeting or event.

4. Communications

The project employs video conferencing as its main communication channel for coordinating project activities which enables the management team to meet regularly. The steering committee meets every quarter to monitor overall coordination of the project and to monitor reporting from WP leads' committee, the coordinator and project manager. Capacity building face to face workshops allow partners to cooperate on work packages, tasks and activities and plan for next phases of the project. These workshops, although planned for training, and dissemination, ensure at least all project partners meet face to face, twice a year with the remainder of the meetings being virtual using a video conferencing facility. The allocation of project tasks has been clearly specified in the overall Project Plan, thus ensuring clarity on responsibility, delivery and roles which certainly aids cooperation between partners.

5. Exchange of Electronic Communications

Documents are shared using the document repository at UniCa (https://nue.diee.unica.it). Partners are notified of updates to the document repository by email.

The following directory structure for the document repository exists:

Introduction To FORC

Full Proposal And Support Documents

EACEA Agreements

Reports

Partner meetings (Agendas, minutes, presentations for all meetings and video conferences)

Work packages 1-6 (details for all work packages and outputs).

5.1 Document format

All documents are saved in PDF, MS Word or MS Excel formats. An MS Word template is in the repository.

5.2 Document naming conventions

Document names (Document Identifiers) follow the format:

date-Project-WorkPackage-title.version

The date format is yyyy-mm-dd

The project is FORC.

The work package within which the document has been developed is named.

The Title is chosen by the author to clearly indicate the contents of the document but should normally reflect those titles in the Project Proposal document

Version number: e.g. v01., v2.

Example: 2018-05-31-FORC-WP4-QualityReport.V1.

In communication, the document can be referred to as the Quality Report Version 1

Each page contains a header with Document Identifier and the footer contains Page numbers

Document cover pages follow the form as shown by this document and the document

template in the repository.

Appendix 1

Risk Assessment Matrix

Wider Objective: *What is the overall broader objective, to which the project will contribute?* To develop the capacity of partner country universities and contribute to sustainable economic development and regeneration by reforming and modernising computing education curricula in Forensic Computing at undergraduate levels.	***Indicators of progress:*** *What are the key indicators related to the wider objective?* Launch of innovative undergraduate Forensic Computing pathway. Periodical consultation reviews from: students, recently graduated students, and management of beneficiary institutions	**How indicators are measured:** *What are the sources of information on these indicators?* Number of external organizations (Industry, Academic and Public Sector) participating to project's events Annual statistics of recruitment on the new program in the two partner countries (four universities in total) .	
Specific Project Objective/s: *What are the specific objectives, which the project shall achieve?* To implement an innovative undergraduate forensic computing Pathway within the partner country universities To develop, validate and implement 8 courses and 4	**Indicators of progress:** *What are the quantitative and qualitative indicators showing whether and to what extent the project's specific objectives are achieved?* Establish and start new Forensic Computing pathway at the four partner	**How indicators are measured:** *What are the sources of information that exist and can be collected? What are the methods required to get this information?* New Forensic Computing pathway at the four partner country universities.	**Assumptions & risks:** *What are the factors and conditions not under the direct control of the project, which are necessary to achieve these objectives? What risks have to be considered?* A continuation of relative political stability Continuation of support for the project from the

case studies in Forensic Computing using student-centred adaptive contemporary education methodology. To establish Life Long Learning framework by offering two training courses for specialized public and government entities focused on computer crime and computer Investigation. To promote the adoption of the Bologna system (aligned to Quality Assurance procedures and informal education approaches). To improve level of competences of partner country universities by (i) training visits staff to EU partners (ii) providing research collaboration opportunities with EU staff members through joint-supervision of students' projects.	country universities. Number of students enrolled on the pathway Organization of seminars on the learning and teaching methods that are part of the Bologna system Prepare a set of training courses for public entities Number of students participated on co-supervision with staff in the EU partners New training and teaching materials developed. New teaching equipment for classrooms. Enrichment of libraries with relevant material and books Establishment of an up-to-date teaching lab.	Establishment of Learning Management System with customized access to teaching/project material for internal and external organizations. Reports of staff who completed training visits to EU universities Results of participation in the teaching and learning methods in the Bologna system seminars Number of students enrolled on the Forensic Computing pathway in its first run. Reports of students co-supervised/visited EU universities for short two-weeks visits. Number of dissemination activities in participation of	University management in the partner countries Approval of the new Forensic Computing pathway by University authorities in the partner countries Cooperation of partner universities for joint development of teaching materials. Participation of students.

	Number of developed Forensic Computing case studies. Involvement of stakeholders and number of staff taking training and EU Experts involved in the development of the integrated curricula.	related workshops	
Outputs (tangible) and Outcomes (intangible): *Please provide the list of concrete DELIVERABLES - outputs/outcomes **(grouped in Work packages)**, leading to the specific objective/s.:* PRE) WP1: 1- Evaluation for the national regulations and legislation regarding digital crime and identify market needs for digital security (DEV) WP2: 2- Design Forensic Computing curricula and program structure and courses ILOs 3-Capacity building of staff in curricula development, course and teaching material.	**Indicators of progress:** *What are the indicators to measure whether and to what extent the project achieves the envisaged results and effects?* Staff visit EU institutions for training Develop and implement new Forensic Computing pathway, its 8 courses, case-studies. Staff attend training in Forensic Computing topics. Coaching visits by EU faculty members and professors	**How indicators are measured:** *What are the sources of information on these indicators?* Reports of staff on training EU visits Reports of students on co-supervision activities and study visits Project dissemination material including website, brochures/leaflets. Reports of EU staff on their coaching and training activities	**Assumptions & risks:** *What external factors and conditions must be realised to obtain the expected outcomes and results on schedule?* Continued interest of partner country teaching staff in attending training visits to EU universities. Continued interest of EU universities in co-supervising and hosting students short study visits from partner universities. Speedy appointment of local coordinators and local administrators and arrangements for banking issues in

(DEV) WP2: 3- Develop teaching material for 8 courses on forensic computing and their appropriate learning methodology. (DEV) WP.3: 4- Develop applied case studies and short training courses. (DEV) WP.3: 5- establish university-enterprise partnership model (DEV) WP.4: 6- establish quality control and plan (EXP) WP.5: 7- Implement forensic computing pathway in the 4 partner country universities. (QPLN) WP.5:8-establish procedures for effective dissemination of the project results (MNGT) WP.6: 9- Establish sound procedures for effective management of the Project	Students co-supervised and/or attending study visits to EU partners Purchase of equipment, books and other teaching material Development and circulation of dissemination material including a website, leaflets etc. Dissemination of Project activities, in seminars and workshops Develop/produce project Quality Plan, monitoring process and reports. Formation of management committees and establishing project management processes .	Partner Country university libraries inventory reports of the supplied books, journals and teaching materials Inventory report of bought equipment & installed teaching labs at 4 partner country universities. Developed courses teaching material Intermediate progress and Final project quality and management reports.	partner countries .

Activities: *What are the key activities to be carried out (**grouped in Work packages**) and in what sequence in order to produce the expected results?* D6.2: formation of management committees. D4.1: Develop Quality plan D5.2: Disseminate project/Website etc D1.4: Develop Forensic Computing pathway structure & workshop (at P7). D2.2:Develop and validate 8 courses D2.4:Capacity building workshop (at P2) teaching D2.6:Establish Forensic Computing teaching lab at 4 PCs D2.7: Develop learning environment. D3.2:Develop Forensic Computing case studies D3.3 develop and conduct two training courses for public entities D3.4: Capacity building	***Inputs:*** *What inputs are required to implement these activities, e.g. staff time, equipment, mobilities, publications etc.?* The total number of working days dedicated to the project is 4018: distributed as follow cat1 (159), cat2(3206), cat3(309), and cat4(344) The following equipment will be purchased to establish a forensic computing Laboratory lab in each partner country university: Computer Forensic Lab (SW): Access Data Forensic Toolkit V4, Access Data Imager (free), Access Data Password Recovery Toolkit, EnCase, XRY Mobile forensic complete kit , DVD Inspector, Paraben forensic		**Assumptions, risks and pre-conditions:** *What pre-conditions are required before the project starts? What conditions outside the project's direct control have to be present for the implementation of the planned activities?* A continuation of a relative political stability Continuation of support for the project from the University management in the partner countries Continuation of supported cooperation between partner country universities and EU partners. Changes in University management or their faculties do not adversely affect their support of the project.

workshops (at P1). D5.5: EU professor visits to PS and JO D5.2: Course Evaluation Workshop (at P2) D5.6: Capacity building workshop (at P3) D5.7: Students visits to EU (at P1, P2, P3) D5.4 implement new Forensic Computing path. D5.8: disseminate conference for project outcomes (at P8) D4.3/D6.4: project intermediate/final quality and management reports.	software Computer Forensic Lab (HW): Computers, card-readers, servers, Tableau forensic kits, Screwdriver kits, Faraday bags, IDE hard disks, computers, servers, Solid state disks total of 9 faculty and staff exchanges visits between PC and EU institutions will be achieved to accomplish the project objectives. 36 students (9 selected from each PC universities) will visit EU partner universities for two-week study visit (P1, P2, P3) for co-supervision. Website development Publicity material, including information sheets, brochures etc. Forensic Computing		

	teaching Textbooks and access to Electronic Libraries will be obtained for instructors' use and made available at PC's libraries. .		

Appendix 2

Templates for the project deliverables and course are in the Project repository and are currently being used to describe module content. There is ongoing work to define a review mechanism for this content and a review form has been suggested and is waiting approval. There are courses, case studies, running degree programs, Forensic Computing Labs, and training courses.

Course Evaluation

1. Formative Assessment:

Is the assessment motivating, relevant, clear, challenging, feasible. Is there a clear marking guide. Does a sample solution exist.

2. Content
Is the content relevant, clear, motivating, well structured.

3. Overall
Does the content correspond with project objectives?
Is the content presentation of a satisfactory standard?
Does the content as a whole represent a reasonable amount of work for the students?
Is the content as a whole coherent and thorough?
Is the content assessed properly in the small, i.e. are there small exercises that reinforce the content. A small exercise may require between 15 minutes and 2 hours for a competent student to complete.?
Is the content properly assessed in the large,, i.e. is there a reasonably large project that can be accomplished as a result of completing this course. This assessment may use groupwork.

4. Suggested Improvements to the course
Edits
Additional content required

Case Study

Feedback form for the case study. This form is used as part of a peer review process.

1. Is the case study relevant, motivating, challenging?
[Note that a case study does not have to be realistic.]
2. Does the case study demonstrate the use of the courses developed by the FORC project?

Running Degree Programs

Feedback form for the developed bachelor degree programs.

This would include structured questionnaires of staff, students and other stakeholders,

however it is not envisaged that this could take place within the time period of the project.

Forensic Computing Labs

The forensic computing labs will be evaluated by physical examination of the lab equipment and software and by observing the lab being used in a classroom environment.

Training Course and supervised projects

The training courses and the supervised projects will be evaluated through questionnaires administered to the participants.

Questionnaire for meetings

General meeting points (1=Strongly Agree; 5=Strongly Disagree)
* The objectives of the meeting were clear.
* The materials prepared before and during the meeting ensured that objectives could achieved.
* All partners participated actively and had a chance to participate in the decision making.
* The meeting helped to establish a good working relationship between all partners.
* Overall the meeting helped to further the project objectives.

Meeting Organisation
* The agenda and related items were circulated in advance
* Sufficient time was allocated to agenda items.
* The room and infrastructure were appropriate.

Meeting follow-up and matters arising
Issues that arose in the meeting:
* Tasks and deadlines are clear.
* Roles and responsibilities are clear
* Decisions made are clear.

Do you have suggestions to improve future meetings or working arrangements or indeed this questionnaire?

Appendix 3

This version of the Quality Report has been based on the new Document template available in the online document repository.