

Project: Network of Competence on Internet of Things [NEON]

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Work Package 6: Quality Control and Monitoring

Title: D6.3c Third report on project implementation

Lead Organisation: UC3M

Participating Organisations: UNI-KLU, UC3M, UNC, UNS, UNMDP, Udelar, UCU, INCUTEX, ALASSIO, ALENET, TEAC, EYCON, ALLIANSYS SRL, Santex, TELECOM ARGENTINA S.A, CONTROLNET S. A., ABM ingeniería y sistemas S.R.L., UTE, CONAE.

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0	28.11.2023	Lianet Méndez. Ana García Armada	UC3M	First draft of the report.
1	8.01.2024	Lianet Méndez. Ana García Armada	UC3M	Updated version according to the comments of external experts.

LIST OF ACRONYMS

AP	Assurance Point
EU	European Union
HEI	Higher Education Institution
ICT	Information and Communications Technologies
IoT	Internet of Things
LA	Latin America
LFM	Logical Framework Matrix
MB	Management Board
NoC	Network of Competence
QC	Quality Control
QCM	Quality Control and Monitoring
QCMB	Quality Control and Monitoring Board
WP	Work Package

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1 INTRODUCTION

The main objective of project NEON is to improve and diversify the training of human resources, both in the academic field and in the public-private sphere by motivating innovative technologies in the Information and Communications Technologies (ICT) field, particularly in the Internet of Things (IoT). The main goal of the institutions that make up the consortium is the creation of a Network of Competence (NoC) for IoT. The project aims to offer the framework and support to foster industry collaboration in each country of interest, namely, Argentina and Uruguay, and, at the same time, provides the possibility of exchange and advice from two European countries: Austria and Spain, that have demonstrated significant development and innovation in the IoT field. The project goals are to be achieved by updating and improving the curricula of different university degrees, creating at least 5 laboratories on IoT, training their academic staff and establishing collaborations between the local and regional industries.

This document presents the final annual report on the execution of the project developed by the quality working package (WP6). The document presents the final status of the deliverables, tasks, milestones, and the results of the numerical indicators. It also includes the quality actions taken by the internal reviewers and the external experts of the Quality Control and Monitoring Board (QCMB) in response to the quality monitoring and weaknesses identified in the project, in the form of suggestions and recommendations to overcome the problems that arose throughout the project. The document presents the lessons learned and conclusions drawn by the QCMB.

As it is the last report, this document intends to include the main conclusions and collect the final status of the project, giving an overview of the fulfillment of the complete project. For more details of the progress of the project, WP6 also published a first and second report on project implementation [D6.3a](#) (first steps of the project) and [D6.3b](#) (mid-term report).

2 NEON QUALITY CONTROL AND MANAGEMENT

2.1. QUALITY CONTROL AND MANAGEMENT

Quality Control and Monitoring (QCM) activities are performed continuously throughout the project duration. The WP leader is UC3M. The QCMB has been established at the kick-off meeting by assembling a team of representatives from UC3M, UNI-KLU, UCU and UdelaR, and two students (from partner HEIs). In addition, one external QCMB member has been appointed and is assisted by two external experts who act as advisors to provide inputs and independently assess the project results. NEON exploits the following set of tools for quality assessment and monitoring activities:

- Indicators of progress: these are numerical indicators of progress (number of courses, number of students, surveys, etc.) established by the QCMB to evaluate the development of the project. These numerical indicators are relevant because they represent the tangible results of the project: courses, labs, trainings, etc., which indicate the achievement of the main objectives: improving the curricula of the universities involved.
- Courses/Internships evaluation forms.
- Evaluation surveys of the quality of classes and developed material will be developed as the project progresses.
- Meeting / Event Evaluation form: used to assess the degree of satisfaction and utility of NEON events/trainings/workshops considering both scientific and logistical aspects.
- Deliverable Evaluation Forms: used to revise and evaluate deliverables.
- Milestone Verification Forms: used to certify the achievement of a Milestone by verifying the compliance between planned and actual timing and the sources of verification.
- Meeting minutes template: used to summarize the content of project meetings and to verify the coherence with the actual and the planned agenda.
- Attendance sheet: demonstrates the attendance to any event.

The related documents are available on the Intranet project documentation portal on Confluence; <https://intranet.aau.at/display/projneon/Templates> and in the Quality Plan, which is published on the website as [D6.2](#).

2.2. DELIVERABLES AND MILESTONES

The deliverable [D6.2](#) (Quality Plan) describes the steps and procedures for revision, assessment, and publication of deliverables. The deliverables are the documents that report specific tasks accomplished in the project. The list of deliverables and milestones of the project can be found in Section 3.1. The milestones are significant points or events that also assess the progress of the project. Upon completion, the deliverables and milestones are submitted for review, to ensure their quality. The approval procedure for the deliverables is

described in the Quality Plan (D6.2) and in Section 4.1. The review process for the milestones is described in Section 4.2, which is similar to the deliverable approval procedure but is more contracted. It is indicated for those milestones that are considered critical for the project's advancement. The templates to be used in the process are available in the Intranet project documentation portal on Confluence, <https://intranet.aau.at/display/projneon/Templates> and [D6.2](#).

2.3. EVENTS

The quality of the project events are ensured by collecting a variety of information through visits, interviews, questionnaires, consultation, and other forms of activities. These are to bring awareness of the level of satisfaction of beneficiaries and other target groups. A template for feedback is created as a tool of impact assessment of the project activities. This template can be adapted marginally to conform to the specific needs of different events.

In addition, a specific event report template available under the Templates folder on the project's Intranet site <https://intranet.aau.at/display/projbenefit/Templates> is to be filled in and collected by project partners (organizers) for all NEON events (workshops, info days, trainings). The report includes a summary review of statistical data and will help in final reporting.

3 COMPLETE LIST OF THE PROJECT ACTIVITIES, DELIVERABLES AND MILESTONES

3.1. LIST OF DELIVERABLES, TASKS AND MILESTONES

In order to achieve its objectives, the project is organized into different tasks that have associated deliverables, milestones, and events as outputs.

The project deliverables are organized in the form of tangible deliverables (e.g., reports, publications, manuals, methodologies, plans, printed and electronic promotional materials) and intangible deliverables in the form of organized events (e.g., training, conferences, seminars, information days, etc.).

The summary of tasks, deliverables and milestones are listed below according to the project work plan. The associated progress indicators are also shown in the work plan. The achievement and/or performance indicators include those listed in the original project proposal (from the Logical Framework Matrix (LFM), which is also reported in APPENDIX A of the D6.2 Quality Plan) as well as those listed in APPENDIX B of the Quality Plan, and are further grouped according to the Work Package (WP) (from 1 to 8).

Each task, deliverable or milestone has an associated year and month of expected activity to be performed. The project is divided into 3 years (Year 1, 2, 3) with the corresponding months indicated as M1-M12, M13-M24, and M25-M36, respectively. Tasks are usually performed over a period of several months (see the work plan in the project proposal). The deliverables and milestones have an associated specific month as an indicative deadline, which is included in the tables below.

WP1: PREPARATION

Deliverable/Task/Milestone	Year
T1.1 Survey and analysis of IoT courses in ICT study programmes in relation to modern society and industry needs in the IoT domain	1
T1.2 Consolidate guidelines for curriculum modernisation in cooperation with industry	1
T1.3 Preparation of implementation actions of the network of competence	1
D1.1 Consolidated analysis of educational/industrial needs on IoT in Argentina and Uruguay (M6)	1
D1.2 Consolidated project plan of implementation actions (M6)	1
M1.1 Snapshot of present situation about IoT in ICT studies in Argentinian and Uruguayan HEIs (M2)	1
M1.2 Surveys to enterprises in order to have a feedback from IoT enterprises, mainly for technical contents (M2)	1

M1.3 Preliminary summary of industry needs, profile competencies and skills needed on IoT (M5)	1
M1.4 Analysis of the state of involved partnership institution's infrastructure related to remote courses, MOOCs, audio video supporting (M3)	1
M1.5 Pedagogical advice. Survey to technology & pedagogy specialists. The purpose is to have a feedback and advice about the technological tools for graduate & postgraduate courses (M5)	1
M1.6 Project meeting to present the summary of A&U situation and consolidated project plan (M6)	1
M1.7 Completion of the action plan and network of competence development guidelines (M6)	1
Indicators of progress	
-	

WP2: DEVELOPMENT OF THE NETWORK ON COMPETENCE ON IOT

Deliverable/Task/Milestone	Year
T2.1 Develop a management platform to coordinate the network of competence and to serve as knowledge base	1
T2.2 Develop policies and procedures to regulate the network of competence	1
T2.3 Define the governance of the network of competence	1
T2.4 Partners and network implementation	1
D2.1 Report on management platform to coordinate the network of competence (M3)	1
D2.2 Report on the creation of the legal framework for the network of competence (M6)	1
D2.3 Report that defines the governance of the network of competence (M8)	1
D2.4 Report on network implementation (M12)	1
M2.1 Creation of the management platform to coordinate the NoC (M2)	1
M2.2 Define the most appropriate legal framework for the NoC based on the local regulations (M4)	1
M2.3 Prepare the statute of the network of competence (M5)	1
M2.4 Define the network of competence members and their roles (M6)	1
M2.5 Meeting of the NoC group to coordinate the activities (M7)	1
Indicators of progress	
<p>Indicators of progress from LFM:</p> <ul style="list-style-type: none"> Completion of deliverables and achievement of milestones in due time. <p>Numerical indicators of progress (<i>TARGET</i>):</p> <ul style="list-style-type: none"> Number of partners of the network of competence (10) 	

WP3: TEACHING METHODOLOGIES, MATERIAL AND MODERNISATION OF STUDY PROGRAMMES

Deliverable/Task/Milestone	Year
T3.1 Adoption of new learning/teaching methods, tools, ICT best practices in teaching	1,2,3
T3.2 Creation and / or modernisation of teaching material related to IoT	1,2,3
T3.3 Improvement and implementation of new learning/teaching methods, tools, ICT best practices in teaching	2
D3.1 Web repository for class and lab sessions material (M12)	1
D3.2 Report on the modernised teaching methodologies applied to IoT courses (M12)	1
D3.3 Teaching and training materials for new and modernized IoT courses (M20)	2
D3.4 Delivery of teaching and training classes for new and modernized IoT courses (M26)	3
M3.1 Identification of modern teaching methodologies (M7)	1
M3.2 Collection of preliminary teaching material for new and modernized courses (M7)	1
M3.3 Delivery of web repository and platform (M8)	1
M3.4 Adoption of tools and equipment to enable innovative teaching methodologies (M12)	1
M3.5 Development of class material (M20)	2
M3.6 Upload of the new teaching material on the web repository (M30)	3
M3.7 Complete translation of shared teaching material (M32)	3
Indicators of progress	
<p><i>Indicators of progress from LFM:</i></p> <ul style="list-style-type: none"> • Completion of deliverables and achievement of milestones in due time. <p><i>Numerical indicators of progress (TARGET):</i></p> <ul style="list-style-type: none"> • Number of courses included in the study programmes (5) • Number of labs included in the study programmes (5) • Number of study programmes involved/modified (2) • Number of the study programmes included in the web portal (central platform) (6) • Number of courses on the web portal on IoT (10) • Number of contributions to textbooks published on IoT (1) • Number of students enrolled in the courses on IoT (100) • Satisfactory survey responses of the new learning on IoT (33) • Students' satisfaction survey reports (2) 	

WP4: DEVELOPMENT AND IMPLEMENTATION OF LABORATORIES

Deliverable/Task/Milestone	Year
T4.1 Creation of joint university-industry labs and modernisation of the lab infrastructure	1

T4.2 Pilot lab development. The purpose is to develop a complete undergraduate or graduate lab with pedagogical/technological tools in the domain of IoT.	1
D4.1 Report on the laboratory infrastructure and equipment at each LA university (M12)	1
D4.2 Report on the created five joint university-company labs ruled by an agreement (M23)	2
M4.1 Identification of laboratory infrastructure to be restructured in each LA university and initial steps for the joint university-industry labs (M3)	1
M4.2 Establishment of formal links and joint lab operation agreements between universities and companies (M5)	1
M4.3 Define the procurement procedure (M6)	1
M4.4 Purchase and installation of the laboratory equipment (M20)	2
Indicators of progress	
<p><i>Indicators of progress from LFM:</i></p> <ul style="list-style-type: none"> • Completion of deliverables and achievement of milestones in due time. <p><i>Numerical indicators of progress (TARGET):</i></p> <ul style="list-style-type: none"> • Number of partner country HEIs students trained (120) • Number of partner country HEIs academic staff trained (60) • Number of partner country HEIs administrative staff trained (10) • Number of trainings (5) • Number of labs created (5) • Number of partner country non-HEI individual trained (20) 	

WP5: TRAINING AND INTERSHIP IMPLEMENTATIONS

Deliverable/Task/Milestone	Year
T5.1 Creation of a section in the project website where training and internship opportunities are listed	1,2,3
T5.2 Implement framework for student training in cooperation with EU partners and industry	1,2,3
T5.3 Implement framework for student internships in companies	1,2,3
T5.4 Offer techno-economic, entrepreneurial and IPR related training modules	1,2,3
T5.5 Implement teacher staff training on technology and modern prototyping tools for IoT	1,2,3
T5.6 Implementation of three workshops on IoT and ICT technologies	1,2,3
D5.1 Report on the training/internships website section (M6)	1
D5.2 Report on the framework for training and internships (M11)	1
D5.3 Report on organized hackathons for students of the region (M19)	2
D5.4 Report on student training modules on technical and entrepreneurial subjects (M30)	3
D5.5 Report on teacher training modules (M35)	3

M5.1 Define the content and the responsible persons of the website section dedicated to internships and trainings (M3)	1
M5.2 Creation of the website section with training and internship opportunities (M6)	1
M5.3 Define the requirements and objectives of the training process for both students and teachers (M8)	1
M5.4 Define the required resources for the training implementation (M9)	1
M5.5 Create the training action plan and agenda for both students and teachers (M10)	1
M5.6 Student training module/seminars: Hands on IoT (introductory course) (M33)	3
M5.7 Define the organisation team for the proposed hackathon (M10)	1
M5.8 Organization of the student mobility for the hackathon (M13)	2
M5.9 Hackathon for students. Organized at UCU. (M18)	2
M5.10 List industry partners and related internships opportunities (M4)	1
M5.11 List professors and related co-supervised theses under the umbrella topic of IoT (M11)	1
M5.12 Define technical content for internships and cosupervised theses (M11)	1
M5.13 Workshop on teaching methodologies for IoT. Exchange about pilot courses and pilot labs. General consensus about pilot course and pilot lab structures. Pedagogical and methodological contributions. Survey results. Organised at UNI-KLU (M7)	1
M5.14 Workshop on communication technologies for IoT. Organized at UC3M. (M19)	2
M5.15 Workshop on IoT technologies for agriculture market. Organized at UdelaR by July 2023 (M31)	3
Indicators of progress	
<p><i>Indicators of progress from LFM:</i></p> <ul style="list-style-type: none"> • Completion of deliverables and achievement of milestones in due time. <p><i>Numerical indicators of progress (TARGET):</i></p> <ul style="list-style-type: none"> • Number of partner country HEIs students trained (120) • Number of partner country HEIs academic staff trained (60) • Number of partner country non-HEI individual bises (5) • Number of signed agreement about long-term cooperation between HEIs and non-academic partners (4) • Feedback, questionnaires results from clusters and other industrial partners (20) 	

WP6: QUALITY CONTROL AND MONITORING

Deliverable/Task/Milestone	Year
T6.1 Establishment of the QCM Board and appointment of an external expert for QC	1,2,3
T6.2 Consolidation of areas to be monitored, indicators, and correction strategies both internal and external	1,2,3

T6.3 Internal control of project progress and outcomes	1,2,3
T6.4 Monitor graduate profiles, improvements in their skills, in correspondence to industry needs	1,2,3
T6.5 Collect questionnaires and surveys via social networks (LinkedIn, AngelList)	1,2,3
T6.6 Monitor student enrollment statistics in the region	1,2,3
T6.7 Establish a monitoring system for employment statistics of graduates	1,2,3
T6.8 Establish a monitoring system for entrepreneur attitude and newcos (by means of surveys, databases, etc.)	1,2,3
D6.1 Establishment of Quality Control (QC) board and appointment of external experts for QC (M1)	1
D6.2 Development of guidelines for QC (M6)	1
D6.3 Reports on project implementation (M8, M17, M27)	1,2,3
D6.4 Report on graduates profile improvements and correspondence to industry needs (M34)	3
D6.5 Report on tools for monitoring student enrolment and employability/employment/entrepreneurial statistics of graduates (M24)	2
D6.6 Reports on stakeholders reached beyond the project consortium (M24)	2
M6.1 QCM Board establishment (M2)	1
M6.2 Quantitative indicator definition for project progress evaluation, as a part of QCMB duties (M3)	1
M6.3 Activity report delivered by QCM board to MB once a year	1,2,3
M6.4 Define QCM structure (M4)	1
M6.5 QCM Board meeting in Madrid (M18)	2
M6.6 Implementation of surveys and questionnaires to retrieve feedback on employment from graduates working in partner industries; study and analysis of social networks capabilities with respect to project visibility (M7)	
M6.7 Stakeholder appraisal relative to D6.6 (M12)	1
Indicators of progress	
<p><i>Indicators of progress from LFM:</i></p> <ul style="list-style-type: none"> • <i>Completion of deliverables and achievement of milestones in due time.</i> <p><i>Numerical indicators of progress (TARGET):</i></p> <ul style="list-style-type: none"> • <i>Number of milestones reached (64)</i> • <i>Number of meetings (12)</i> • <i>Number of webinars (3)</i> • <i>Number of deliverables (35)</i> • <i>QCMB established (1)</i> • <i>Quality Plan (1)</i> • <i>Quality expert reports (3)</i> • <i>Minutes from QCMB meetings (8)</i> 	

WP7: DISSEMINATION AND EXPLOITATION

Deliverable/Task/Milestone	Year
T7.1 Development of the project web site combined with the web platforms developed in the other WPs. Preparation of the materials to keep the project website up to date with the current activities	1,2,3
T7.2 Preparation of exploitation and dissemination plan	1,2,3
T7.3 Create promotional and dissemination material targeting high school students and society at large (exploiting also media)	1,2,3
T7.4 Organise an annual open event outreaching a wide audience that includes public authorities, industry, students, pupils and non-expert people	1,2,3
T7.5 Organise a yearly event (hosted in turn by the HEIs partners) in the form of a webinar broadcasted to all locations to present the study programmes, tips on studying engineering targeting enrolled and prospective students/pupils	1,2,3
T7.6 Establish agreements for future double degrees, joint teaching, student mobility beyond the project duration, bilateral agreements within Erasmus+ KA1	1,2,3
T7.7 Create an agreement for the maintenance of the web platform beyond the project life time	1,2,3
T7.8 Create partnerships for follow-up projects	1,2,3
D7.1 Central project web platform linked to the e-platforms developed in other WPs (M6)	1
D7.2 Report on exploitation and dissemination plan (M12)	1, 2
D7.3 Preparation and delivery of dissemination and informative material (M17)	1
D7.4 Report on open events to reach the community at-large and disseminate the results at ICT conferences (M34)	3
D7.5 Report on yearly webinars (hosted in turn by the HEIs partners) broadcasted to all locations (M35)	3
D7.6 Establishment of agreements for future double degrees, student mobility beyond the project duration (M30)	3
D7.7 Report on agreement for the maintenance of the web platforms beyond the project life time (M35)	3
D7.8 Report on partnerships for follow-up projects involving industry (M30)	3
M7.1 Establishment of a workgroup dedicated to coordinate dissemination actions (M1)	1
M7.2 Central web platform design drafted by UNS and approved by the project coordinator (M10)	1
M7.3 Central web platform released (M12)	1
M7.4 Central web platform linked with the other online services created in the previous WPs (M24)	2
M7.5 Webinar on new / modernized IoT courses offered by Neon, hosted by UNC (M10)	1
M7.6 Webinar on the NoC structure and partners, hosted by UdelaR (M22)	2
M7.7 Webinar on new / modernized IoT courses offered by Neon, hosted by UNMdP (M34)	3

M7.8 Open Event involving the community on studying ICT with the participation of a renowned keynote speaker in UNMdP (M9)	1
M7.9 Open Event involving the community on academia-industry cooperation in teaching with the participation of a renowned keynote speaker in UCU (M22)	2
M7.10 Open Event and dissemination involving the community on entrepreneurship with the participation of a keynote speaker in UNS (M33)	3
M7.11 Preliminary exploitation plan (M24)	2
M7.12 Signature of agreement for the prolonged existence of the web platform (M33)	3
M7.13 Agreements for maintenance of joint labs with industry (M27)	3
M7.14 Agreement for further cooperation in education HEIs aiming at establishing at least one double degree and promoting student mobility (M27)	3
Indicators of progress	
<i>Indicators of progress from LFM:</i> <ul style="list-style-type: none"> Completion of deliverables and achievement of milestones in due time. 	
<i>Numerical indicators of progress (TARGET):</i> <ul style="list-style-type: none"> Project webpage (1) Number of visits to project website (100) Central web platform (1) Number of visits to web platform (200) Designed, printed and disseminated project promotion material (10) Newsletter, e-bulletins, newspapers (3) Reports from presentation meetings, presentations for media and interested groups (6) 	

WP8: MANAGEMENT

Deliverable/Task/Milestone	Year
T8.1 Creation of a project management (PM) board	1,2,3
T8.2 Creation of an e-platform for project management	1,2,3
T8.3 Monitor and coordinate the overall project	1,2,3
T8.4 Maintain flow of information between partners and the funding agency	1,2,3
T8.5 Organise regular meetings (face to face and remote)	1,2,3
T8.6 Monitor the financial aspects of the project, funding, and prepare the reports	1,2,3
D8.1 Report on the project management (PM) board and its establishment (M1)	1
D8.2 Report on the project management (PM) e-platform for sharing documentation (M2)	1
D8.3 Mid-term report (M18)	2
D8.4 Final report (M36)	3
M8.1 Project meetings and progress/status reports (every month)	1,2,3
M8.2 On an annual basis there will be physical project meetings, according to the following schedule: kickoff meeting in Klagenfurt (M1), project meeting in Madrid (M9), project meeting in Buenos Aires (M20) and wrap up meeting in Klagenfurt (M33).	1,2,3

M8.3 On an annual basis there will be a project meeting carried out via web conference for a total of three instances. Schedule will be decided at the kickoff meeting and distributed by M3.	1,2,3
M8.4 PC and the funding agency will communicate annually to assess the project progress (M1, M13, M25, M36).	1,2,3
M8.5 Financial reports will be delivered to the coordinator on an annual basis, according to the following schedule: first report (M12), second report (M24) and final report (M36).	1,2,3
Indicators of progress	
<p><i>Indicators of progress from LFM:</i></p> <ul style="list-style-type: none"> • <i>Completion of deliverables and achievement of milestones in due time.</i> <p><i>Numerical indicators of progress (TARGET):</i></p> <ul style="list-style-type: none"> • <i>Number of direct beneficiaries in the partner country(ies) per year: academic staff from HEIs (50)</i> • <i>Number of direct beneficiaries in the PC(/year): administrative staff from HEIs (10)</i> • <i>Number of direct beneficiaries in the PC(/year): HE students (400)</i> • <i>Number of direct beneficiaries in the PC(/year): non HE individuals (100)</i> • <i>Partnerships agreement (9)</i> • <i>Inter semi-annual financial reports (6)</i> • <i>PM board meetings and minutes (8)</i> • <i>PM board reports (3)</i> • <i>External audits (1)</i> 	

3.2. MONITORING AND CONTROL OF PROJECT WORK

This section contains the report on monitoring and control of the project's progress for all the tasks listed in the previous section (and their associated deliverables and milestones) at the time of completion of the project. They are organized in one table for every WP. Below each table, there are comments and a brief analysis about the original proposal and the actual outcomes achieved. These tables summarize the achieved/not achieved activities of the project.

The degree of achievement of the tasks is measured based on the progress of the deliverables, milestones and indicators. More details on the activities and the indicators of progress of the project (numerical results achieved per partner with respect to the target) can be found in the CBHE eReport explanatory note on the Final Report and in the intranet of the project [Indicators of Progress \[Period 2\]](#). The link to the published documents on the project's public website is <https://www.project-neon.eu/documents/>.

Table 3.1: Achieved results for WP1

WP1: PREPARATION			
Task	Start date	End date	Achieved milestones/deliverables and indicators of progress
T1.1 Survey and analysis of IoT courses in ICT study programmes in relation to modern society and industry needs in the IoT domain	15-01-21	14-07-21	<ul style="list-style-type: none"> • Kickoff meeting held online. • MS1.1 Snapshot of present situation about IoT in ICT studies in Argentinian and Uruguayan HEIs was achieved. • Delivery and analysis of the industry survey (MS1.2 and MS1.3). Results are available on deliverable D1.1.
T1.2 Consolidate guidelines for curriculum modernization in cooperation with industry	15-01-21	14-07-21	<ul style="list-style-type: none"> • Deliverable D1.1 provides consolidated guidelines that are based on 4 main pillars to modernize curricula and 3 layers of activities. It is available and published on the project website.
T1.3 Preparation of implementation actions of the network of competence	15-01-21	27-10-21	<ul style="list-style-type: none"> • The project meeting (MS1.6) was delayed due to travel restrictions, but it successfully held in Klagenfurt at the beginning of May 2022. • Deliverable D1.2 includes the consolidated action plan and is published.

The activities for WP1 have been completed in the first year. The comments with respect to the original proposal are:

- The deliverable D1.1 was published on time.
- D1.2 was delayed by 3 months due to COVID-19 causing the delay of the planned meeting and events and thus the finalization of the implementation actions.
- No numerical indicators of progress related to this WP.

Table 3.2: Achieved results for WP2

WP2: DEVELOPMENT OF THE NETWORK ON COMPETENCE ON IOT			
Task	Start date	End date	Achieved milestones/deliverables and indicators of progress
T2.1 Develop a management platform to coordinate the NoC and to serve as knowledge base	15-01-21	17-10-22	<ul style="list-style-type: none"> MS2.1 Creation of the management platform to coordinate the NoC – accomplished. Available at neon-iot.org. Deliverable D2.1 completed.
T2.2 Develop policies and procedures to regulate the NoC	15-01-21	18-10-22	<ul style="list-style-type: none"> MS2.2 Definition of the most appropriate legal framework for the NoC based on the local regulation is achieved. Deliverable D2.2 completed. The website was completed, available at neon-iot.org.
T2.3 Define the governance of the NoC	15-01-21	18-10-22	<ul style="list-style-type: none"> MS2.3 Preparation of the statute of the NoC is achieved. Deliverable D2.3 was completed.
T2.4 Partners and network implementation	15-01-21	21-10-22	<ul style="list-style-type: none"> Target number of partners of the NoC achieved. Deliverable D2.4 was completed. MS2.4 Definition of the NoC members and their roles completed. MS2.5 Meeting of the NoC group to coordinate the activities.

The comments regarding the original proposal are the following:

- There was a delay in activities T2.2 – T2.3 because the meeting scheduled for 2021 in Bahía Blanca, Argentina (UNS) was not possible due to the COVID-19 pandemic. In addition, the formal and legal aspects of establishing the NoC were more complex than initially thought.
- The numerical indicators of progress were achieved.

Table 3.3: Achieved results for WP3

WP3: TEACHING METHODOLOGIES, MATERIAL AND MODERNISATION OF STUDY PROGRAMMES			
Task	Start date	End date	Achieved milestones/deliverables and indicators of progress
T3.1 Adoption of new learning/teaching methods, tools, ICT best practices in teaching	15-07-21	15-01-22	<ul style="list-style-type: none"> MS3.1 Identification of modern teaching methodologies was achieved. Survey results are internally available on the project. management platform. Deliverables D3.1 and D3.2 published. MS3.4 Adoption of tools and equipment to enable innovative teaching methodologies was achieved. D3.4 Delivery of teaching and training classes for new and modernized IoT courses completed. Number of involved study programs surpassed the expected target. Student's satisfaction reports achieved.
T3.2 Creation and / or modernization of teaching material related to IoT	15-07-21	15-09-22	<ul style="list-style-type: none"> MS3.2 Collection of preliminary teaching material for new and modernized courses was achieved. MS3.3 Delivery of web repository and platform was achieved. Github (private) repository available on https://github.com/neon-iot. MS3.5 Development of class material completed for all delivered courses. A table collecting all relevant information about the teaching material developed in WP3 is available on the project platform. MS3.6 Upload of all the developed material to the web repositories done. Deliverable D3.3 completed for all the delivered courses.

			<ul style="list-style-type: none"> The numbers of labs included in the study programs exceeded the proposed target. The number of contributions to textbooks published on IoT exceeded the target.
T3.3 Improvement and implementation of new learning/teaching methods, tools, ICT best practices in teaching	15-07-21	15-03-23	<ul style="list-style-type: none"> MS3.7 Main material was translated to English. The details can be found in the project's intranet Details on Translation of Material. D3.4 Delivery of teaching and training classes for new and modernized IoT courses, is published. 25 (out of 27) courses were delivered, due to lack of students. The delivery period was during the project timeline (2021-2023), resulting in a total of 47 deliveries that reached 1037 students distributed in 5 universities (UCU, UDELAR, UNC, UNMDP, UNS). The number of courses included in the study programs exceeded the initially proposed target. The number of courses on the web portal on IoT exceeded the initially proposed target. Number of students enrolled in the courses on IoT exceeded the target. Indicator partially achieved: The number of satisfactory survey responses for the new learning on IoT was lower than anticipated. This may be due to the fact that the number of student responses was lower than expected.

The comments with respect to the original proposal are:

- T3.2: The development of the teaching material was started in mid 2021 as planned in the original project. The number of proposals for developing this material were

much more than originally planned and their required time to be completed became longer.

Table 3.4: Achieved results for WP4

WP4: DEVELOPMENT AND IMPLEMENTATION OF LABORATORIES			
Task	Start date	End date	Achieved milestones/deliverables and indicators of progress
T4.1 Creation of joint university-industry labs and modernization of the lab infrastructure	15-01-21	15-01-22	<ul style="list-style-type: none"> MS4.1 Identification of laboratory infrastructure to be restructured in each LA university and initial steps for the joint university-industry labs was achieved. MS4.2 Establishment of formal links and joint lab operation agreements between universities and companies was achieved. MS4.3 Definition of the procurement procedure was achieved. Memorandum of Understanding (MoU) signed: 21 in total, available in Confluence. Deliverable D4.1 was published. Finalization of the equipment acquisition.
T4.2 Pilot lab development. The purpose is to develop a complete undergraduate or graduate lab with pedagogical/technological tools in the domain of IoT	15-01-21	15-12-22	<ul style="list-style-type: none"> Number of labs created (5) achieved the expected target. D4.2 completed. MS4.4 Purchase and installation of the laboratory equipment has to be finalized.
T4.3 Pilot lab development. The purpose is to develop a complete undergraduate or graduate lab with pedagogical/technological tools in the domain of IoT, regarding introductory Lab, Smart grids and HW for IoT	15-01-21	15-12-22	<ul style="list-style-type: none"> Number of labs created achieved the expected target (same as T4.2). D4.2 completed. MS4.4 Purchase and installation of the laboratory equipment has to be finalized.

Changes from the original proposal:

- There were many difficulties in acquiring the equipment on time. The reasons for the delay are local contexts, such as tax delays in exemption procedures, Central Bank restrictions, procurement on hold due to lack of funds, and global circumstances particularly the significant material and electronic components shortages during the pandemic. Some items or quantities were slightly modified

(e.g., Udelar). On the other hand, UNMDP that experienced the highest difficulties is in the process of requesting a four-month extension of the deadline for the equipment purchases.

Table 3.5: Achieved results for WP5

WP5: TRAINING AND INTERSHIP IMPLEMENTATIONS			
Task	Start date	End date	Achieved milestones/deliverables and indicators of progress
T5.1 Creation of a section in the project website where training and internship opportunities are listed	15-01-21	15-07-21	<ul style="list-style-type: none"> MS5.1 Define the content and the responsible persons of the website section dedicated to internships and trainings was achieved. MS5.2 Creation of the website section with training and internship opportunities was achieved. D5.1 was completed.
T5.2 Implement framework for student training in cooperation with EU partners and industry	15-01-21	15-12-23	<ul style="list-style-type: none"> D5.2 was completed. D5.3 was completed. MS5.3 Define the requirements and objectives of the training process for both students and teachers was completed. MS5.4 Define the required resources for the training implementation was completed. MS5.5 Create the training action plan and agenda for both students and teachers was completed. MS5.7 Define the organization team for the proposed hackathon was completed. MS5.8 Organization of the student mobility for the hackathon was completed. MS5.9 Completed the Hackathon for students. It was organized at UCU. MS5.11 List professors and related co-supervised theses under the umbrella topic of IoT was completed. MS5.12 "Define technical content for internships and co-supervised theses" was completed. Number of partner country HEIs students trained and Number of partner country HEIs academic staff trained have achieved the target. Number of partner country non-HEI individual trained, indicator achieved. Number of labs created indicator achieved.

			<ul style="list-style-type: none"> The number of feedback, questionnaires results from clusters and other industrial partners surpassed the expected target. Number of trainings achieved, exceeded the target. Number of university-industry labs ruled according to an agreement was achieved (5/5).
T5.3 Implement framework for student internships in companies	15-01-21	15-12-21	<ul style="list-style-type: none"> MS5.10 "A list industry partners and related internships opportunities" was completed. Number of collaborating enterprises surpassed the expected target. Number of signed agreement about long-term cooperation between HEIs and non-academic partners surpassed the target.
T5.4 Offer technoeconomic, entrepreneurial and IPR related training modules			<ul style="list-style-type: none"> MS5.6 Student training module/seminars completed. Deliverable D5.4 completed.
T5.5 Implement teacher staff training on technology and modern prototyping tools for IoT	15-01-21	15-12-23	<ul style="list-style-type: none"> D5.5 done.
T5.6 Implementation of three workshops on IoT and ICT technologies	15-01-21	15-12-23	<ul style="list-style-type: none"> MS5.13 was completed. Workshop on teaching methodologies for IoT. Exchange about pilot courses and pilot labs. General consensus about pilot course and pilot lab structures. Pedagogical and methodological contributions. Survey results. Organized at UNI-KLU. MS5.14 was completed. Workshop on communication technologies for IoT. Organized at UC3M. MS5.15 "Workshop on IoT technologies for agriculture market. Organized at UdelaR" was held.

Changes from original proposal:

- The start of the mobilities related to training activities was delayed almost one year due to COVID-19. Once the sanitary situation allowed to start the internships and stays it was possible to define an agenda and, consequently, to start with WP5 activities.

Table 3.6: Achieved results for WP6

WP6: QUALITY CONTROL AND MONITORING			
Task	Start date	End date	Achieved milestones/deliverables and indicators of progress
T6.1 Establishment of the QCM Board and appointment of external experts for QC (1 QC expert and 2 external advisors)	15-01-21	15-02-21	<ul style="list-style-type: none"> • QCMB was established (MS6.1) (1/1). • QCM structure (MS6.4) as well as quantitative indicators for project progress evaluation (MS6.2) were defined. Details are in D6.1.
T6.2 Consolidation of areas to be monitored, indicators, and correction strategies both internal and external	15-01-21	15-05-21	<ul style="list-style-type: none"> • MS6.2 Quantitative indicator definition for project progress evaluation, as part of QCB duties was achieved. • D6.2 (Quality Plan) done (achieved indicator). • Minutes from QCMB meetings achieved indicator, gathered in the intranet of the project (QCMB site).
T6.3 Internal control of project progress and outcomes	15-01-21	15-04-23	<ul style="list-style-type: none"> • MS6.3 Activity report delivered by QCM board to MB once a year is up to now achieved. • MS6.5 QCM Board meeting in Madrid was achieved. • Annual reports on project implementation finished as D6.3a, D6.3b and D6.3c (this document). • Number of quality reports (3/3) achieved. • All the milestones were reached, major ones were submitted for review. • All the deliverables were reviewed and published. • The number of meetings surpassed the expected target. • The number of webinars expected was achieved.
T6.4 Monitor graduates profile, improvements in the skills, correspondence to industry needs	15-01-21	15-11-23	<ul style="list-style-type: none"> • MS6.5 QCM Board meeting in Madrid. • MS6.6 Implementation of surveys and questionnaires to retrieve feedback on employment from graduates working in partner industries; study and analysis of social networks (LinkedIn, AngelList, Facebook) capabilities with respect to project visibility. It is available on Confluence (link). • D6.4 Report on graduates profile improvements and correspondence to industry needs (UCU) done.
T6.5 Collect questionnaires and surveys via social	15-01-21	15-01-23	<ul style="list-style-type: none"> • MS6.6 Implementation of surveys and questionnaires to retrieve feedback on employment from graduates working in

networks (LinkedIn, AngelList)			<p>partner industries; study and analysis of social networks (LinkedIn, AngelList, Facebook) capabilities with respect to project visibility. It is available on Confluence (link)</p> <ul style="list-style-type: none"> Keep survey collection (keep monitoring the surveys of interest beyond the duration of the project).
T6.6 Monitor student enrolment statistics in the region	15-01-21	15-01-23	<ul style="list-style-type: none"> MS6.6 Implementation of surveys and questionnaires to retrieve feedback on employment from graduates working in partner industries; study and analysis of social networks (LinkedIn, AngelList, Facebook) capabilities with respect to project visibility It is available on Confluence (link). D6.5 done.
T6.7 Establish a monitoring system for employment statistics of graduates	15-01-21	15-01-23	<ul style="list-style-type: none"> MS6.6 Implementation of surveys and questionnaires to retrieve feedback on employment from graduates working in partner industries; study and analysis of social networks (LinkedIn, AngelList, Facebook) capabilities with respect to project visibility. It is available on Confluence (link). D6.5 done.
T6.8 Establish a monitoring system for entrepreneur attitude and newcos (by means of surveys, databases, etc.)	15-01-21	15-01-23	<ul style="list-style-type: none"> MS6.7 Stakeholder appraisal was achieved. D6.5 done. D6.6 done.

Changes from proposal:

- The QCMB meeting in person in Madrid had to be postponed being finally held on November 2022, due to the pandemic situation caused by COVID-19.
- The project reports D6.3b and D6.3c were started on time but published later, in order to include up to the latest updates of the status of the project.

Table 3.7: Achieved results for WP7

WP7: DISSEMINATION AND EXPLOITATION			
Task	Start date	End date	Achieved milestones/deliverables and indicators of progress
T7.1 Development of the project web site combined with the web platforms developed in the other WPs. Preparation of the materials to keep the project website up to date with the current activities	15-01-21	15-07-21	<ul style="list-style-type: none"> MS7.1 Project NEON website was created and constantly maintained by the established workgroup. MS7.2 Central web platform design was drafted by UNS and approved by the project coordinator, done. Deliverable D7.1 was completed. Project webpage was created (1/1). Number of visits to project web surpassed the expected target.
T7.2 Preparation of exploitation and dissemination plan	15-01-21	15-01-22	<ul style="list-style-type: none"> MS7.3 Central web platform was released and it is available at neon-iot.org. (Related indicator achieved). MS7.4 Central web platform linked with the other online services created in the previous WPs was achieved. MS7.11 (Preliminary exploitation plan) available on Confluence. Deliverable D7.2 was completed. Number of visits to web platform surpassed the target. Exploitation plan released. Number of newsletters, e-bulletins, newspapers achieved. Reports from presentation meetings, presentations for media and interested groups achieved.
T7.3 Create promotional and dissemination material targeting high schools' students and society at large (exploiting also media)	15-01-21	15-06-22	<ul style="list-style-type: none"> MS7.11 Exploitation plan is achieved. Promotional materials are available on Confluence. D7.3 was completed. Designed, printed and disseminated project promotion material [2+RollUps, Flyers and Event Template in Canva in both EN and ES], indicator surpassed target.
T7.4 Organize an annual open event outreaching a wide audience that includes public authorities, industry,	15-01-21	15-11-23	<ul style="list-style-type: none"> MS7.8 Open Event involving the community on studying ICT with the participation of a renowned keynote speaker in UNMdP was achieved.

students, pupils and non-expert people			<ul style="list-style-type: none"> MS7.9 Open Event involving the community on academia-industry cooperation in teaching with the participation of a renowned keynote speaker in UCU was achieved. MS7.10 Open Event and dissemination involving the community on entrepreneurship with the participation of a keynote speaker in UNS done. Number of Open Events carried out (3/3) achieved. D7.4 done. (For the 3 open events D7.4a, D7.4b, D7.4c).
T7.5 Organize a yearly event (hosted in turn by the HEIs partners) in the form of a webinar broadcasted to all locations to present the study programmes, tips on studying engineering targeting enrolled and prospective students/pupils	15-01-21	15-12-23	<ul style="list-style-type: none"> MS7.5 Webinar on new / modernized IoT courses offered by Neon was hosted by UNC. Number of Webinars: (3/3). MS7.6 Webinar on the NoC structure and partners, hosted by UdelaR done. MS7.7 Webinar on new / modernized IoT courses offered by Neon, hosted by UNMdP. Deliverable D7.5 done.
T7.6 Establish agreements for future double degrees, joint teaching, student mobility beyond the project duration, bilateral agreements within Erasmus+ KA1	15-01-21	15-07-23	<ul style="list-style-type: none"> MS7.13 Agreements for maintenance of joint labs with industry. MS7.14 Agreement for further cooperation in education HEIs to establish at least one double degree and promoting student mobility. D7.6 done.
T7.7 Create an agreement for the maintenance of the web platform beyond the project life time	15-01-21	15-12-23	<ul style="list-style-type: none"> MS7.12 Signature of agreement for the prolonged existence of the web platform. D7.7 done. The agreement for the maintenance of the web platform signed.
T7.8 Create partnerships for follow-up projects	15-01-21	15-07-23	<ul style="list-style-type: none"> MS7.14 Agreement for further cooperation in education to establish at least one double degree and promoting student mobility. D7.8 done.
T7.9 Participate in an event of dissemination	15-01-	15-07-23	<ul style="list-style-type: none"> Number of individual disseminations grew, details in Confluence.

of project results	21		• D7.8 done.
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Changes from original proposal:

- The open events suffered from delays due to the COVID-19 pandemic situation.
- Due to delays in the first month due to Covid, the 2nd webinar was held on April 2023. The 3rd open event was held on October 2023 by UNS.

Table 3.8: Achieved results for WP8

WP8: MANAGEMENT			
Task	Start date	End date	Achieved milestones/deliverables and indicators of progress
T8.1 Creation of a project management (PM) board	15-01-21	15-02-21	<ul style="list-style-type: none"> • D8.1 Report on the project management (PM) board and its establishment was completed. • PM board reports (3/3) done.
T8.2 Creation of an e-platform for project management (e.g., wiki page)	15-01-21	15-03-21	<ul style="list-style-type: none"> • A Confluence page on intranet.aau.at has been created and is maintained for the purpose of project management. • Confluence platform delivered and daily used. Link: https://intranet.aau.at/display/projneon/ • D8.2 Report on the project management (PM) e-platform for sharing documentation was done.
T8.3 Monitor and coordinate the overall project	15-01-21	15-12-23	<ul style="list-style-type: none"> • Regular emails to partners. • Regular upload of info on Confluence. • Regular web meetings. • Partnerships agreement achieved. • Number of direct beneficiaries in the partner country(ies) per year surpassed the target. • Number of direct beneficiaries in the PC(/year): administrative staff from HEIs surpassed the target. • The management board has been established at the kick-off meeting and monitors the project progress through monthly project calls and WP status updates (MS8.1).
T8.4 Maintain flow of information between partners and the funding agency	15-01-21	15-12-23	<ul style="list-style-type: none"> • MS8.4 Communicate annually with the funding agency to assess the project progress achieved.
T8.5 Organize regular meetings	15-01-	15-12-23	<ul style="list-style-type: none"> • Kick-off online meeting (5 Feb,2021). • MS8.2 Four physical project meetings

(face to face and remote)	21		<p>organized: Project meeting in Klagenfurt (May 2022), Madrid (November 2022), Córdoba (July 2023) and Final Meeting in Klagenfurt (December 2023).</p> <ul style="list-style-type: none"> • Monthly Zoom calls with minutes uploaded in Confluence. • MS8.3 "On an annual basis there will be a project meeting carried out via web conference for a total of three instances" has been satisfied up to date. • PM board meetings and minutes surpassed the target.
T8.6 Monitor the financial aspects of the project, funding, and prepare the reports	15-01-21	15-12-23	<ul style="list-style-type: none"> • Partnership agreement signed. • Secretariat established. • Regular assistance to partners. • Collected financial reports every 6 months. • Inter semi-annual financial reports (6/6) all collected. • MS8.5 Financial Report delivered by the partners annually achieved. • D8.3 Submit Mid-Term report to EC. • D8.4 Final Report submitted.

No changes occurred with respect to the proposal for the activities of this WP.

In summary, the tasks were accomplished. Although several deliverables or milestones suffered a delay of a few months with respect to the original proposal, all tasks were completed within the expected duration of the project. Most of the indicators of progress have been achieved with respect to the initial targets defined in D6.2. However, even if this is not negative, it is important to note that most of them have exceeded the initial target, due to an unexpected excess of the achieved numerical indicator (for example, the number of visits to the web pages or the number of students participating in the courses was higher than expected) or due to the inaccuracy of the initially specified target. On the contrary, one of the indicators (number of satisfactory course survey responses from students) was partially met because the number of students who responded to the survey was lower than expected.

4 RESULTS OF THE QUALITY CONTROL ACTIVITIES

In this section, the evaluation process for deliverables and milestones is outlined. The initial review process, as defined by the QB members at the project's outset, underwent revisions based on recommendations from the QCMB. These adjustments were made to enhance efficiency and align with the project's objectives. The finalized procedure is detailed below.

4.1. PROJECT'S DELIVERABLES

The quality procedure followed for reviewing the deliverables is as follows:

1. Step 1: Evaluation/revision:
 - Once the deliverable has been written in its entirety, the WP leader (or the owner of the deliverable) should upload the Word document to the respective Deliverable Log page in Confluence (as well as the WP page) and inform the QCMB chair or WP6 leader/contact person via email.
 - Evaluation/revision will be performed by a NEON-member who has not directly participated in the preparation of the deliverable. The owner of the deliverable suggests a reviewer.
 - The evaluator/reviewer is appointed by the QCMB Chair via email and will have to respond within 5 working days.
 - The evaluator/reviewer will assess the deliverable by providing comments using the predefined Deliverable Evaluation Template: **QCM_Manual_Template_7_Deliverable_Review** (see Annex C in D6.2, or in the project's Intranet: <https://intranet.aau.at/display/projneon/Templates>).
 - The filled in form mentioned above must be uploaded to the respective Deliverable Log page in the Intranet.
 - The QCMB will check the assessment. In case of quality-related inconsistencies, the deliverable will be returned for refinement.
2. Step 2: QCMB Approval:
 - After the deliverable has been reviewed by the internal reviewer, the deliverable is sent to QCMB for approval. If no comments are received after a period of 5 working days, the deliverable is considered as approved.
 - The QCMB marks it as **APPROVED BY QCMB** within the Deliverable Log page on Intranet.
 - The following template is used to report the QCMB evaluation and is uploaded by the QCMB chair with the results of the evaluation (**QCM_Manual_Template_8_Deliverable_QCMB_Evaluation** in Annex C of D6.2 or in the project's intranet <https://intranet.aau.at/display/projneon/Templates>).
2. Step 3: Consortium approval and Publication:
 - WP6 publishes the revised version of the deliverable on the Deliverable Log Page in PDF and announces by email the consortium approval to the main contacts of each institution.
 - The main contact person of each partner must tick their institution's box in the Deliverable Log Page in the intranet to approve the deliverable.

- Any comment or suggestion on the document can be submitted via the Deliverable Log Page or email.
- If suggested changes are minor, the WP leader rectifies them, if not then editor(s) will/can do so.
- In the absence of any suggestions or comments after a period of 5 working days the approval process is concluded and silence acts as approval.
- The WP leader asks UNI-KLU for the publication of the document (in PDF) to the website, usually to the person managing the project's website.

Any corrections or comments made at any stage of the review process are systematically recorded in the Deliverable Log page on the intranet. This log meticulously tracks all document versions along with the corresponding review dates for each step.

The quality revisions are performed based on the following assurance points (APs) for both Step 1 and Step 2 of the review process:

1. Adequacy of deliverable:
 - a. Compliance with the objectives of NEON.
 - b. Compliance with the specific objectives of the work package.
 - c. Correspondence with the description of work of the relevant activity.
2. Deliverable format:
 - a. Compliance with NEON Template
 - b. Adequacy of complementary information
3. Adequacy of written language.

An additional point (4) is included in Step 1 with the overall assessment and suggestions for improvement (see the internal review and QCMB evaluation templates in <https://intranet.aau.at/display/projneon/Templates> or in Annex C of D6.2).

A pass/no pass result is assigned to each of the above-mentioned aspects as a result of the revision. In case a no-pass condition is identified in a deliverable, further information is provided to fully explain the non-conformance to facilitate its amendment.

The quality monitoring of the deliverables for the complete project is outlined in Table 4.1, including the information about their status and review process (reviewer, evaluation date and APs). The review time refers to the number of working days for the Step 1: Review by partner not directly involved in the development of the deliverable, plus the number of extra days for modifications or corrections if needed. The total time also considers the QCMB review and Consortium approval steps, which are of 5 working days each.

The result of the APs were satisfactory for all the deliverables, overall. However, the reviewer's comments are included, which involved the correction of the documents several times due to minor typos or suggestions for improvement, which resulted in an enhancement of their quality.

The total average review time for each deliverable was 40 days, including all stages of the process, including internal review, correction period, QCMB review, and consortium approval. In particular, the internal review phase exceeded expectations, averaging around

18 working days against the expected 5 working days. In response, various actions were taken during the first reporting period to identify and address the key causes of delays, with the intention of accelerating the internal review process in the subsequent reporting period. Regrettably, despite these efforts, the overall average review time did not improve due to additional delays, particularly in the correction phase of deliverables. Note that some documents (only 4 of the deliverables) had to be exceptionally reviewed by the QB, skipping the usual process, due to lack of time to meet the project deadlines and for timely publication of the deliverables. The review of this document (D6.3c) was also done exceptionally by the QCMB members (both internal and external).

It is worth noting that despite the challenges, the review process was ultimately considered successful. All deliverables were found to meet the project requirements. In addition, it's important to acknowledge that certain delays were influenced by vacation periods, varying across different institutions. These factors were taken into consideration in the assessment of the overall review timeline.

WP6 also monitors the level of partner participation in this step of the review process. The percentage of participants in the review of deliverables was 40% of all partners for the first reporting period of the project. This increased in the second reporting period to almost 50%. This metric is useful to track the number of deliverables reviewed per partner to avoid overload.

Table 4.1: Quality process results of the published WP1-WP8 deliverables

	Review							Internal review time (days)	Total time (days)
	Reviewer	Date assigned	Date received	Assessment					
				AP1	AP2	AP3	Comments		
D1.1	Vitali Korzhun, UNI-(KLU)	7/9/21	13/9/21	✓	✓	✓	-	6	16
D1.2	Juan P. Oliver, (UdelaR)	19/10/21	22/10/21	✓	✓	✓	-	3	13
D2.1	Ana García Armada (UC3M)	2/12/22	12/12/22	✓	✓	✓	-	3	13
D2.2	Jorge Finocchietto (UNC)	6/12/22	6/12/22	✓	✓	✓	Suggestions for improvement.	0	10
D2.3	Daniel Carrica (UNMdP)	2/12/22	2/12/22	✓	✓	✓	-	0	10
D2.4	Graciela Corral Briones (UNC)	2/12/22	13/12/22	✓	✓	✓	Minor typos corrected, suggestions by reviewer for improvement.	7	17
D3.1	Benigno Rodríguez, UdelaR	11/5/22	12/5/22	✓	✓	✓	Suggestion of minor change during QCMB evaluation (final update 13/5/2022).	1	11
D3.2	Jorge Castiñeira Moreira, UNMDP	11/5/22	5/8/22	✓	✓	✓	Suggested minor changes.	63	73
D3.3	Horacio Mendoza (UNC)	3/12/22	5/12/22	✓	✓	✓	Suggested minor changes.	1	11
D3.4	Matías Míguez (UCU)	11/12/23	13/12/23	✓	✓	✓	-	2	12
D4.1	Patricio Donato, (UNMDP)	12/7/22	13/7/22	✓	✓	✓	Minor corrections suggested by the reviewer in the first form, made on the document on 23/07/2022	1+7	18
D4.2	Claudina Rattaro (UdelaR)	22/12/23	29/12/23	✓	✓	✓	Minor suggestions.	5	15

D5.1	Leonardo Steinfeld, (UdelaR)	25/7/22	12/8/22	✓	✓	✓	Reviewer suggested changes, final document received 17/08/2022.	14+3	27
D5.2	Juan P. Oliver, (Udela)	18/8/22	26/8/22	✓	✓	✓	Corrections suggested by reviewer, document after corrections delivered on 30/08/2022.	8+2	20
D5.3	Jorge Finocchietto (UNC)	18/5/23	3/6/2023	✓	✓	✓	Suggest providing more details on: the participating students to the Hackathon: universities they belong to, degree programs they are enrolled, country / region of origin, etc. and the projects developed in the event: title, target problem, etc.	11+138	
D5.4	Benigno Rodríguez (UdelaR)	19/12/23	21/12/2023	✓	✓	✓	-	1	-
D5.5	Jorge Finocchietto (UNC)	28/11/2023	6/12/2023	✓	✓	✓	-	5	15
D6.1	Alfredo Arnaud, (UCU)	1/11/21	26/5/22	✓	✓	✓	-	149	159
D6.2	Leonardo Steinfeld, (UdelaR)	1/11/21	7/2/22	✓	✓	✓	Corrections made (8/2/2022). Report from external expert on the deliverable available in the intranet in the deliverable log page.	71+1	82
D6.3a	Matías Míguez, (UCU)	10/5/22	17/5/22	✓	✓	✓	-	5	15
D6.3b	Surabhi Chhetri, (UNI-KLU)	24/1/2023	2/2/2023	✓	✓	✓	Approved. Slight delay due to administrative reasons.	9	19
D6.4	Víctor P. Gil (UC3M)	14/01/2024	14/01/2024	✓	✓	✓	Special case: reviewed by QB to accelerate the process, skipped usual process	0	0
D6.5	Graciela Corral Briones (UNC)	9/6/2023	20/9/2023	✓	✓	✓	Delayed due to vacation stop.	74	113
D6.6	Graciela Corral Briones (UNC)	9/6/2023	20/9/2023	✓	✓	✓	Delayed due to vacation stop.	74	113
D7.1	Nicola Novello (UNI-KLU)	13/12/22	13/12/22	✓	✓	✓	Minor typos corrected, suggestions by reviewer for improvement.	3+1	14
D7.2	Juan Cousseau, UNS	29/7/22	16/8/22	✓	✓	✓	Corrections made (7/12/2022)	13+81	104
D7.3	Nicola Novello (UNI-KLU)	13/12/22	13/12/22	✓	✓	✓	-	2	12

D7.4	Melisa Kuzman (UNMDP)	22/12/23	26/12/23	✓	✓	✓	-	2	12
D7.5	Ana García Armada (UC3M)	14/01/2024	14/01/2024	✓	✓	✓	Special case: reviewed by QB to accelerate the process, skipped usual process	0	0
D7.6	Lianet Méndez (UC3M)	14/01/2024	14/01/2024	✓	✓	✓	Special case: reviewed by QB to accelerate the process, skipped usual process	0	0
D7.7	Ramiro Detke (UNC)	25/12/23	28/12/23	✓	✓	✓	-	2	11
D7.8	M. Julia Fernández-Getino (UC3M)	14/01/2024	14/01/2024	✓	✓	✓	Special case: reviewed by QB to accelerate the process, skipped usual process	0	0
D8.1	Nicola Novello (UNI-KLU)	-	-	✓	✓	✓	-	0	10
D8.2	Nicola Novello (UNI-KLU)	-	-	✓	✓	✓	-	0	10



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4.2. PROJECT'S MILESTONES

This QC process for the milestones has been performed following the rules agreed upon in the consortium, which will once more be included here for the sake of completeness but are also available in D6.2:

1. Whenever a milestone is achieved, the WP leader may contact the QCMB via email and attach the template QCM_Manual_Template_Milestone_Verification (see Annex D of D6.2 or <https://intranet.aau.at/display/projneon/Templates>). This template substantiates the completeness of a milestone by referencing the corresponding outcomes and providing supporting evidence.
2. It will be evaluated by a member of NEON who has not directly participated in the achievement of the milestone, designated by QCMB or suggested by the WP leader. The evaluator will have to respond in 5 working days by delivering his or her comments using the predefined Milestone Evaluation Template QCM_Manual_Template_Milestone_Evaluation (see Annex D of D6.2 or at the website <https://intranet.aau.at/display/projneon/Templates>).
3. Approval by QCMB. In case of quality-related inconsistencies, the milestone will be returned to the WP leader for refinement.
4. After positive evaluation result, the WP leader will mark the milestone as completed within the WP page on the Intranet.

The verification of a milestone includes a detailed list of the documents and proofs supporting the completion of the milestone, and are subsequently reviewed focused on the following assurance points:

1. Was the milestone successfully completed? That must be understood in sense of the degree to which the activities included in the milestone comply with the objectives specified in the project proposal.
2. Was the milestone completed by the specified deadline? Indicating the degree of adherence to the planned date for the achievement of the milestone in the project schedule.

Only those milestones that are considered particularly relevant are subjected to quality revision. This is an action taken for efficiency purposes. While many milestones have been achieved, it's worth noting that only a subset of them required a formal review process.

Note that, in this case, the total time refers to the number of working days, including Steps 2 and 3 in the milestone review procedure depicted above. Step 3 is always completed within 5 working days. The average review time is of 8.8 working days (with always 5 working days for the QCMB evaluation, and an average internal review time of 3.84 working days).

Table 4.2: Quality process results of the published WP1-WP8 milestones

	Review						Review + Correction time	Total time (days)
	Reviewer	Date assigned	Date received	Assessment				
				AP1	AP2	Comments		
M3.1	Matías Míguez (UCU)	11/2/2022	28/2/2022	✓	✗	Finished on M14 instead of M7.	10	15
M3.2	Jimena Caro (Incutex)	18/2/2022	16/3/2022	✓	✓	-	17	22
M3.3	Daniel Carrica (UNMDP)	16/3/2022	25/3/2022	✓	✓	The review process experienced a delay due to the reviewer being out of the office for justified reasons.	6	11
M3.4	Favio Masson (UNS)	16/3/2022	21/3/2022	✓	✓	-	2	7
M3.5	Daniel Carrica (UNMDP)	12/12/2023	12/12/2023	✓	✓	-	0	5
M3.6	Daniel Carrica (UNMDP)	12/12/2023	12/12/2023	✓	✓	-	0	5
M3.7	Daniel Carrica (UNMDP)	12/12/2023	12/12/2023	✓	✓	-	0	5
M4.1	Alejandro J. Uriz (UNMDP)	11/4/2022	13/4/2022	✓	✓	Delay of the milestone achievement (due to pandemic). Reviewer did not consider it in the form.	2	7
M4.3	Horacio Mendoza (UNC)	25/4/2022	1/5/2022	✓	✗	Delay of the milestone achievement (due to pandemic).	5	10
M6.1	Nunzio A. Letizia (UNI-KLU)	23/3/2022	25/3/2022	✓	✓	-	2	7
M6.2	Vitali Korzhun (UNI-KLU)	23/3/2022	29/3/2022	✓	✓	The specified date for the milestone M6.2 to be complete is M3. The completion date for the deliverable D6.2, where the milestone should be published, is M6. According to the Revision History of the deliverable D6.2, its first complete version is dated 26.7.2021, which corresponds to M7. The milestone results were publicly available no later than M7.	4	9



M6.4	Emma Schneider (UNI-KLU)	23/3/2022	24/3/2022	✓	✓	-	1	6
M7.5	Leonardo Steinfed (UdeLaR)	4/4/2022	5/4/2022	✓	✓	-	1	6

4.3. PROJECT'S EVENTS

The quality of the project events was ensured by collecting questionnaires. This was useful to bring awareness of the level of satisfaction of beneficiaries and other target groups to the organizers of the events. Specific templates are available on the intranet for every type of events (course, internship, training, etc.). Moreover, the format of the questionnaires was adapted to "Google Forms" to simplify the process of collecting responses via virtual platforms. Table 4.3 shows the main project events and surveys carried out. The surveys can be found on the project's internal website, and the links and information can be found in the corresponding deliverables (reports) published on the project's website.

Table 4.3: Events of the project and surveys

Event	Organizer	Date	Report
Hackathon	UCU	Oct. 2022	D5.3
Workshop in Klagenfurt, Austria: Workshop on teaching methodologies for IoT.	UNI-KLU	May 2022	D5.5
Workshop in Madrid, Spain: Workshop on communication technologies for IoT	UC3M	Nov. 2022	D5.5
Workshop in Montevideo, Uruguay: Workshop on IoT technologies for agriculture market	UdelaR	Jun. 2023	D5.5
First Webinar on IoT in Universities	UNC	Dec. 2021	D7.5
Second Webinar on Presentation of NEON	UdelaR	Apr. 2023	D7.5
Third Webinar on IoT in Universities	UNMDP	Oct. 2023	D7.5
First NEON Open Event	UNMDP	Oct. 2021	D7.4_1
Second NEON Open Event	UCU	Oct. 2022	D7.4_2
Third NEON Open Event	UNS	Sep. 2023	D7.4_3
Carintian EU-Project Day" (DE: 5. Kärntner EU-Projekte-Tag)	Europahaus Klagenfurt	Oct. 2023	Link to website post
Encuentro IoT MDP-Tandil 2021 (virtual event)	UNMDP	Jul. 2021	Link to website post; D7.4_1
Modernization of IoT Courses	NEON LA Partners (WP3)	-	D3.4
Joint industry-academia labs	NEON LA Partners (WP4)	-	D4.2

The section below shows some of the results for the evaluation of the above-mentioned events. The Klagenfurt Meeting & Workshop in May 2022 organized by UNI-KLU, the Madrid Meeting & Workshop in November 2022 organized by UC3M, and the Workshop in Montevideo 2023 organized by UdelaR are depicted in Fig. 4.1, 4.2 and 4.3, respectively. The results are presented from 1 (worst) to 5 (best). It can be observed that the level of satisfaction of the participants was satisfactory.

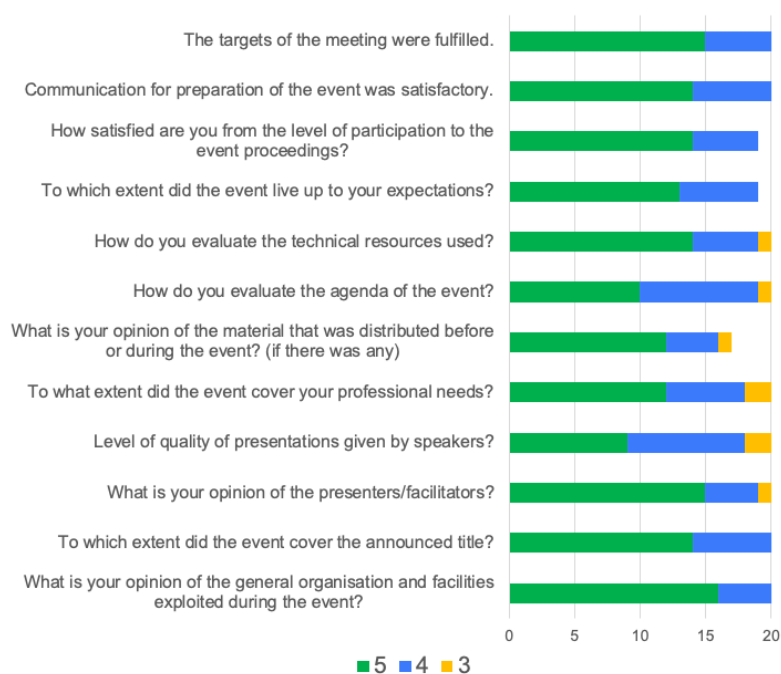


Fig. 4.1: Results of the evaluation survey for the Klagenfurt Meeting & Workshop May 2022.

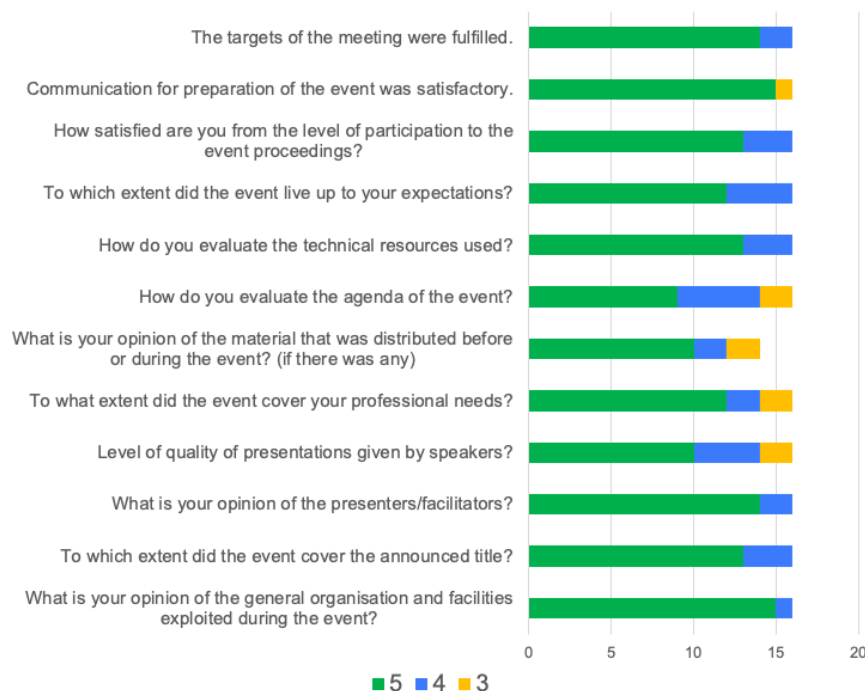


Fig. 4.2: Results of the evaluation survey for the Madrid Meeting & Workshop Nov. 2022.

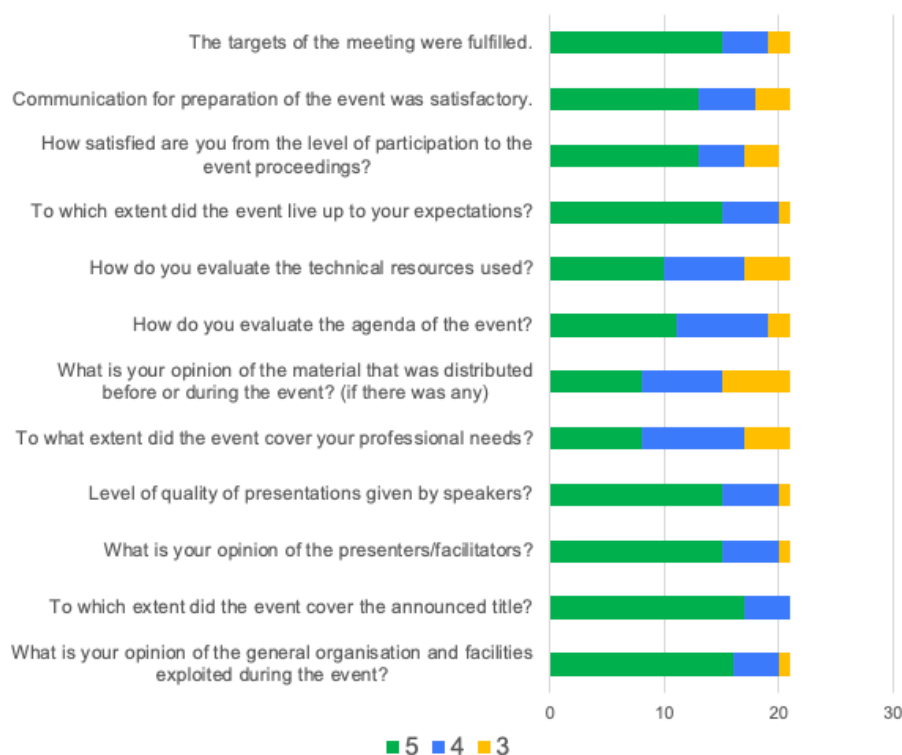


Fig. 4.3: Results of the evaluation survey for the Montevideo Workshop July 2023.

As the project progressed and feedback from the events was collected, the NEON partners tried to improve based on constructive criticism and experience. However, many issues were dependent on the situation of the country, region or available dates, and it was inevitable that unforeseen events would occur.

Regarding the courses, which are analyzed with more detail by WP3, the results of the delivery of the courses was as expected or even more satisfactory, with more than a thousand students involved. See [D3.4](#) for the evaluation results of the courses. In specific, a 27 courses were proposed to be delivered using the NEON material. The delivery period was during the project lifetime (2021-2023), resulting in a total of 47 deliveries that reached 1037 students distributed in 5 universities (UCU, UDELAR, UNC, UNMDP, UNS). The list of courses is (some names in Spanish):

- Antenna Design.
- Hands on IoT.
- Communication Systems based on Software Defined Radio.
- IoT in Agribusiness.
- Fundamentos de Comunicación (Communication Fundamentals).
- Diseño de IoT y Sistemas Embebidos (IoT and Embedded Systems Design).
- Fundamentos de Sistemas de Comunicaciones (Fundamentals of Communications Systems).
- Tecnologías celulares de IoT (IoT cellular technologies).
- Radio-localización y Radares (Radio-location and Radars).
- Sistemas de Comunicaciones Inalámbricas (Wireless Communications Systems).
- Posicionamiento y Seguimiento (Positioning and Tracking).
- Informática (Information technology).
- Dispositivos IoT (IoT devices).
- Conectividad y Protocolos IoT (IoT Connectivity and Protocols)
- Aplicaciones y Visualización en IoT (Applications and Visualization in IoT)
- Redes de Sensores Inalámbricos (Wireless Sensor Networks)
- Tecnologías para la Internet de las Cosas (Technologies for the Internet of Things)
- Diseño digital de bajo consumo (Low-Power Digital Design)
- Sistemas Embebidos para Tiempo Real (Embedded Systems for Real-Time Applications)
- Comunicaciones Digitales (Digital Communications)
- Radios cognitivas definidas por software (Software-Defined Cognitive Radios)
- Experimentando en un Laboratorio Remoto de Radio Definida por Software. Caso de Aplicación: Modulación LORA (Experimenting in a Remote Laboratory of Software-Defined Radio. Application Case: LORA Modulation)
- Comunicaciones Inalámbricas (Wireless Communications)
- Hardware and Microwave Circuit design for IoT (Hardware and Microwave Circuit Design for IoT)
- Medios de Transmisión (Transmission Media)
- Introducción a las Comunicaciones Digitales (Introduction to Digital Communications)
- Antenas (Antennas).

Additionally, NEON partners have developed five modern industry-academia labs. The equipment was purchased and installed to reinforce the LA partners's labs. The equipment has been used in various project activities, primarily for teaching and training, but also for some more advanced research involving graduate students. The list of labs is:

- Signal Processing for Communications laboratory (UNS) – Modernized lab.
- Communications Technology applied to IoT (UNdMP).
- Digital Communications Laboratory (UNC).
- IoT for agribusiness Laboratory (UCU).
- IoT Laboratory (UdelaR).

4.4. QUESTIONNAIRES AND MONITORING SYSTEMS DEVELOPED DURING THE PROJECT

This section identifies all the monitoring activities and analysis surveys performed during the project. These were:

- Analysis and surveys of WP1: report available in Deliverable D1.1 ([D1.1 Consolidated analysis of educational/industrial needs on IoT in Argentina and Uruguay](#)).
- Monitoring student enrolment in the region and employability: in Deliverable D6.5.
- Monitoring system for employment statistics of graduates: in Deliverable D6.5.
- Monitoring system for entrepreneur attitude and newcos: in in Deliverable D6.5, D6.6.
- Report on stakeholders reached (industry catalogue): available in D6.6.

The monitoring surveys in D6.5 were evaluated by the QCMB's external experts. The detailed analysis is included in the document. However, the results were further analysed by the QCMB and the following was concluded:

- Questionnaire 1: This survey was designed to assess the needs of graduates regarding IoT based on their experiences in the industry. There were 75 responses to this questionnaire (most of which were electrical engineering graduates). Out of the 75 responses, only 32 indicated that they had experience in the IoT industry and evaluated their competencies in designing and implementing IoT projects. These responses are shown in Figure 4.4. The QCMB points out that more responses would be needed to obtain more valuable results. In addition, the data should be analysed by region (Europe and LA). Most of the responses for this survey are from the LA region: 12.5% from Argentina and 71.9% from Uruguay. From Europe, 9.4% came from Spain and 3.1% from Belgium. More responses from the European region would be needed to draw further conclusions. However, the analysis in D6.5 provides valuable insights into the needs of graduates regarding IoT in LA.

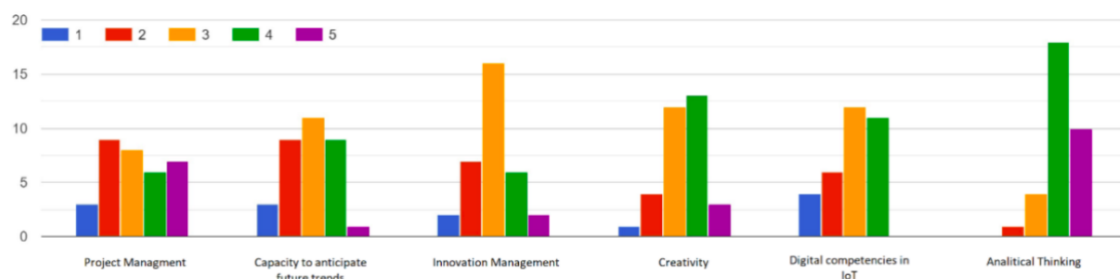


Fig. 4.4: Results to the question "Rate from 1 to 5 how developed were the following competencies for designing and implementing IoT projects, when you started working in the area (1 - lack of ability, 5 - highly developed)".

5 QUALITY ACTIONS OF THE QCMB

Based on the analysis of the outcomes of the project and quality aspects, the QCMB provided suggestions and recommendations for improvement and how to accomplish them, which are detailed below. This included improvement measurements proposed by internal reviewers and external experts about general aspects of the project or specific assistance to some deliverables. These recommendations and comments were useful throughout the duration of the project, and serve as *lessons learned* to be included here.

The external experts have provided reports. The reports received throughout the project are:

- First year contract report by Eduardo Ballesteros, which focuses on deliverables D6.2 and D6.3a. Recommendations included in D6.3a.
- Second year contract report by Eduardo Ballesteros, focused on D6.3c and D6.6. Included in D6.3b.
- Project report by Cecilia Galarza, about D6.2 and D6.3. In
- Project report by Sebastián Gava, on the documents D6.4, D6.5 and D6.6, developed in year 3 (this last year). The external collaborator pointed out in this report several improvements for the deliverables. Here, the main aspects are appointed:
 - Questionnaire 1 of D6.5: was performed over 75 participants. The sample should be larger, and discriminated by country/region.
 - Questionnaire 4 of D6.5: the result shall give a rank of the professor, the course and the institution. These aspects are included in the survey.
 - Industry catalogue of D6.6: The information about the main activity of each company shall be added to the list. This will help to understand how close to IoT are them. In addition, the list is way too short, the project shall have impact in more companies. The needs of these companies are the traction for the development of IoT. This was not included in the last version of the industry catalogue.

The recommendations were taken into consideration, and the improvements were made in the deliverables and considered for the following ones. In specific, the comments of the external collaborator for year 3 deliverables are addressed in Section 4.4 of this document.

Furthermore, the QCMB has gathered several recommendations for improvement on the project implementation. The main recommendations and measurements that were considered for the project are:

- QCMB proposed that industry cooperation should be closely monitored to assure they are properly involved in the project. This was an aspect of the project that may serve to other similar future projects: consider the possible gap between the internal partners of the project and the industry ones.
- The external expert E. Ballesteros gives quality recommendations: the deliverables and quality procedures must be focused on the final outcome of the project. There must be an

aligned view between the internal (partners) and external (stakeholders) results and the general view of the project.

- The time duration of QCMB evaluation or consortium acknowledgement steps may be extended in some cases, since the current limitation of 5 days might be insufficient for particular deliverables. This has been considered. Also, it has been noted that sometimes the conventional review process initially established by the QCMB was slightly modified for particular deliverables and some cases (this is indicated in the Sections 4.2 and 4.3).
- The QCMB chair A. Garcia Armada suggests that QCMB should assign appropriate QC activities to the students belonging to QCMB. She suggests that the students can perform course evaluations. This has been considered but finally, no specific duties were assigned to the QCMB students members. They actively participated in the review of the deliverables.
- Regarding the new quality indicators introduced in the technical report, QCMB detects that the average time of reviewing and approval is high (estimated average time of 40 days, with respect to the ideal 15 days). The main sources of delay are:
 - The first step (review by a partner not directly involved in the development of the document). In this step, the reviewer is informed by e-mail to carry out the revision of the document. A. Garcia Armada suggests that the e-mail should be sent not only to the reviewer, but also to the corresponding leader of the partner institution. This measure was approved and implemented by the QCMB. Although the average review time did not vary much due to other sources of delay, such as some communication problems, corrections needed, or vacation interruptions. However, the correction period was an expected source of delay.

6 CONCLUSIONS

This deliverable provides a comprehensive overview of the activities performed during the NEON project. The document details all activities performed and their corresponding quality control processes.

In summary, the project unfolded according to the planned trajectory, with justifiable delays attributed mainly to the impact of the COVID-19 pandemic. Although the publication of several deliverables was delayed by a few months compared to the original proposal, all deliverables and milestones were completed within the expected target year and the project was able to meet the objectives within the agreed timeframe. Progress indicators were mostly achieved (or even exceeded the initial target). Details can be seen in the Final Report (D8.4) or in the [intranet of the project](#). This document justifies the few that didn't reach the target, either because of external causes or because the original target was inappropriate.

The QCMB monitored project outcomes, identifying weaknesses and proactively addressing them to improve overall project performance. The implementation of quality measurements was successful. The project developed properly thanks to the efforts of the project partners, who worked diligently to achieve the goals and maximize the benefits of the NEON project.

In conclusion, despite minor drawbacks, such as the delay of certain deliverables or the failure to meet a specific indicator, it is considered that the indicators of greatest impact, and that reflect the main objective of the project, have been achieved satisfactorily: the NoC has been created, the 5 planned laboratories have been implemented, courses have been carried out with more students than expected (more than a thousand) and trainings, workshops and events have been held, reaching many more people (both from academia and industry), thanks to the organization of this project.