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Erasmus + KA2 Cooperation for innovation and the exchange of good practices **Capacity Building in the field of Higher Education**

Proposals 2019 - EAC/A03/2018

Project Grant Agreement N. **586221**

Project acronym: **NePREv**

Full title: **Setting up a multidisciplinary joint master degree dedicated to the Next Production Revolution**

Progress of Work Packages

YEAR 3

<p>WP/Task/Deliverable: WP9/T9.1/D9.16</p> <p>Planned Date: 15/11/2022 Due Date: 15/11/2021</p> <p>Nr. pages: 4 Dissemination Level: Institution</p>	<p>Partner responsible: POLITO Person Responsible: Prof. Pierluigi Leone Author: Pierluigi Leone, Laura Rietto</p> <p>Document version: 1 Reviewed/supervised by: POLITO, POLIMI, CS, OBREAL, ENIT, ISGIS, FSJEGJ, ENIGA</p>
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History of revisions

Rev N	Description	Author	Review	Date
0	Draft	POLITO	Draft creation	01/03/2022
1	Draft	POLITO	Contents integration, revision of the Partners needed on their respective parts	30/06/2021
2	Final	POLITO		14/04/2023



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Executive summary

The deliverable collects all scientific project activities as well as the final monitoring of the project.

Introduction

This deliverable represents the collection of third year activities by highlighting all the tangible outputs of the project. The results are the same as the ones reported in the Annex of achieved results enclosed in the final reports; therefore the Annex is attached.

SETTING UP A MULTIDISCIPLINARY JOINT MASTER DEGREE DEDICATED TO THE NEXT PRODUCTION REVOLUTION – NEPREV

609702-EPP-1-2019-1-IT-EPPKA2-CBHE-JP

TABLE OF ACHIEVED RESULTS

<u>Title and reference number of the work package (WP)</u>	WP1 - Assessment of existing curricula in Tunisian and European Universities related with NPR
<u>Indicators of achievement and or/performance as indicated in the previous approved report</u>	Major indicators of performance: 1. Report of existing curricula and courses 2. Analysis of existing curricula and courses. Elaboration of a taxonomy. Reporting.

Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
Task 1.1	Identification of existing curricula and courses	15/11/2019	15/02/2020	Tunisia ENIGA	The task has collected the information from project partners about existing Master and single courses related to NPR. Given the broad meaning of NPR, only those courses really showing an innovative perspective have been collected and mentioned.	Del 1.1: List of existing curricula and courses (14/05/2021) Twenty masters fully analysed related with NPR. 30 single courses related with NPR topics. A review of the results was done after the meeting with NEO on April 2021.
Task 1.2	Building taxonomy of existing courses	15/11/2019	15/02/2020	Tunisia ENIGA	A taxonomy of courses has been built based on focal areas (Industry 4.0, Renewable Energy, Management of innovation & entrepreneurship) and different learning methods (Traditional, Participative, Learning by doing). Overall, a major gap is identified in	Del 1.2 Taxonomy of existing courses (14/05/2021) About 40% of existing single courses related with Industry 4.0, slightly less than 40% related with Renewable Energy and only about 20% related with Management of

					Management of innovation & entrepreneurship while there is a positive contribution of learning by doing that could be enforced by new equipment bought in the framework of the project.	innovation & entrepreneurship. More than 60% of courses with learning by doing activities.
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Changes that have occurred in this result since the previous approved report:

As reported above, a review of the results for D1.1 and D2.2 was done after the meeting with NEO on April 2021. Therefore, the end of task has been delayed at 14/05/2021.

Timing of activities:
 Deliverable 1.1: Expected on 15-02-2020. Reviewed on 14/05/2021
 Deliverable 1.2: Expected on 15-02-2020. Reviewed on 14/05/2021

<u>Title and reference number of the work package (WP)</u>	WP2 - Assessment of skills and competences requirements
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<u>Indicators of achievement and or/performance as indicated in the previous approved report</u>	Major indicators of performance: 1. Organization of the Strategy Forum Workshop 2. Report about the Strategic Education Agenda
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Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
Task 2.1	Organization and implementation of a Strategy Forum Workshop	15/11/2019	15/02/2020	Tunisia - ISGI	The International Forum for Next Production Revolution (NPR) has been organized at ISGIS in Sfax on February 19th, 2020 with the participation of about 250 people between professors (30), industrials (20), researchers (20), students (160) and NePRev members (20). Important industry have assisted to the forum from food industry (Triki group), ceramic industry (Cartago Ceramic Group), petrochemical industry (Groupe chimique), TIC (Sfax technopark, CRNS), Automobile industry (SAMM, ACTIA), recycling industry, oil industry, renewable energy (GPC), (STEG).	Del 2.1: Strategy Forum Workshop (19/02/2020) The International Forum for Next Production Revolution (NPR) has been organized at ISGIS on February 19th, 2020. 250 participants have assisted between professors (30), industrials (20), researchers (20), students (160) and NePRev members (20).
Task 2.2	Preparation of the Strategic Education Agenda	15/11/2019	15/02/2020	Tunisia - ISGI	This activity sets the background, perspectives and an action plan for capacity building in NPR for Tunisia and for the Master in NPR by involving local stakeholders gathered during the Strategy Forum Workshop. All the feedback collected were used to design the Master in NPR as foreseen by the NePRev project. Stakeholders have been contacted to host students' traineeship and final thesis.	Del 2.2 Strategic Education Agenda (22/06/2020) High level feedback from Tunisian stakeholder about the challenges and opportunities of NPR for Tunisian and required skills for new job. Feedback came from Festo Tunisia, SAMM Test & Automation, Career center at ISGIS, ENIT & former Minister of Higher Education in Tunisia, Union of Small and Medium Industries – UPMI, center for innovation, transfer and entrepreneurship at Sfax

						university, Green Power Company, Tunisia Africa Business Council, General Director of Innovation at the Ministry of Industry, General Director of the Agency for the Promotion of Industry and Innovation (APII), Vice-Président UTICA, Poulina Group Holding (PGH), SKF Tunisia & Leoni Tunisia
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Changes that have occurred in this result since the previous approved report:

<p>The strategy forum was carried out on 19/02/2020, while a delay occurred for the preparation of the strategic agenda to collect information and feedback from stakeholder (del 2.2 ended on 22/06/2020).</p> <p>Timing of activities: Deliverable 2.1: Expected on 15/02/2020. Achieved on 15/02/2020 Deliverable 2.2: Expected on 15/02/2020. Achieved on 22/06/2020</p>
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Title and reference number of the work package (WP)	WP3 - Design and development of a Master in the Next Production Revolution
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Indicators of achievement and or/performance as indicated in the previous approved report	Major indicators of performance: 1. List of new courses (1 Master and >25 new and updated courses); Blended learning in courses (>80%) 2. Accreditation of the Master and new course
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Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
Task 3.1	Definition of a Master in the Next Production Revolution	15/11/2019	15/05/2020	Tunisia - Ecole Nationale d'Ingénieurs de Tunis.	<p>Based on activities done in WP1, WP2, WP4 and WP5, a Master in the Next Production Revolution has been designed at the Université de Tunis El Manar - Ecole Nationale d'Ingénieurs de Tunis (ENIT). The Master in NPR is organized in four semesters. A total number of 15 Unité d'enseignement (UE) plus the Master Thesis have been designed. The Unité d'enseignement includes specific Elément constitutif d'UE (ECUE) that are 40 in total. The total number of credits is 120.</p> <p>New and updated courses have been designed for the other partner Universities including 33 courses in focal areas of : 16 courses in « Industry 4.0 », 8 courses in «Renewable Energy », and 9 courses in « Management of innovation & entrepreneurship ».</p>	<p>Del 3.1: Definition of a Master in the Next Production Revolution (15/03/2021 and 15/06/2021)</p> <p>The deliverable has been splitted into Part I and Part II.</p> <p>Part I includes the Master in NPR designed and submitted for approval by ENIT. A Master in the Next Production Revolution has been designed at ENIT. The Master in NPR is organized in four semesters. A total number of 15 Unité d'enseignement (UE) plus the Master Thesis has been designed. The Unité d'enseignement includes specific Elément constitutif d'UE (ECUE) that are 40 in total. The total number of credits is 120. 12 out of 15 courses of Master include blending learning pedagogical methods.</p> <p>Part II includes new & updated courses designed and submitted for approval by ENIGA, ISGIS, FSJEGJ.</p>
Task 3.2	Accreditation of the Master in the Next Production Revolution	15/11/2019	15/08/2020	Tunisia - Ecole Nationale	The Master foreseen in the NePRev project – classified as ‘Mastère de Recherche’, has been submitted to the Ministère de l'Enseignement Supérieur et de la Recherche Scientifique de la	Del 3.2 Accreditation of a Master in the Next Production Revolution and new courses (14/10/2021)

				d'Ingénieurs de Tunis	Tunisie for Accreditation on March 15, 2021. The title of the Master is 'Next Production Revolution'. The master foresees a total number of 20 students per year that could be increased at 25 students. The Master has been accredited on June 2021 and started in academic year 2021/2022. New and updated courses have been approved at partners universities and started on academic year 2021/2022 as well.	The Master in NPR was approved on June 2021. Single new courses were designed and approved. The Master and courses started on Academic year 2021/2022.
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Changes that have occurred in this result since the previous approved report:

With respect to the project proposal, the accreditation has been delayed due to the specific window for applications set by the Tunisian Government. Therefore, master definition has been concluded on January 2021, new and updated courses on May 2021. Accreditation of the master (Ministerial level required) and courses (internal accreditation required) have been achieved on June 2021.

Delay was also in the preparation of new & updated courses. In this case, a higher effort in the first project phase has been devoted to administrative issues for equipment purchase, management, etc...

Timing of activities:
 Deliverable 3.1: Expected on 15/05/2020. Part I achieved on 15/03/2021 and Part II achieved on 15/06/2021.
 Deliverable 3.2: Expected on 15/08/2020. Achieved on 15/10/2021.

<u>Title and reference number of the work package (WP)</u>	WP4 - Design and development of a teaching lab in NPR
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<u>Indicators of achievement and or/performance as indicated in the previous approved report</u>	Major indicators of performance: 1. List of equipment 2. New lab facilities (>8 including both NPR and IT Labs)
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Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
Task 4.1	Design of a teaching lab in NPR	15/11/2019	15/08/2020	Tunisia	The activity has involved a deep analysis of lab equipment for the Master and new courses developed within NePRev project. The analysis has been complex, since project partners belong to different scientific background areas and the Next Production Revolution is a new topic at international levels with small companies that are able to supply proper equipment. With respect to the initial plan of equipment, in terms of typologies, the final choice has been fully in line.	Del 4.1: Design and purchasing of a teaching lab in NPR (14/05/2021) The deliverable includes the list of equipment already included in the bids with a description of timeline and procedures adopted. The deliverable also includes the courses within equipment will be deployed. Finally, the deliverable includes technical specification and costs of equipment.
Task 4.2	Building and start-up of the teaching lab	15/11/2019	15/08/2020	Tunisia	Tenders have been launched and closed from all Tunisian partners. The purchase procedure has been concluded. Equipment have been installed and correctly deployed within new developed courses.	Del 4.2: Design and purchasing of a teaching lab in NPR (14/08/2022) The deliverable includes photos of newly developed labs.

Changes that have occurred in this result since the previous approved report:

Some delay was accumulated due to several causes. The planning of equipment purchase has been aligned with Master and course design, however, COVID 19 pandemia has delayed some activities especially at administrative level for preparing tenders. Therefore, all tenders were finalized on May/June 2021.

Some problems were related with lack of participation of suppliers and some bids (i.e., from FSJEGJ) remained with no participants. Another problem was related with the assignment of a bid to a company that finally was not able to provide some of the equipment that were assigned for purchasing (this was a bid managed at ENIT); this situation whose responsibility is out of control of the consortium caused some delays since some time was devoted to recover part of budget that was already transferred to the company. Finally, there were more structural situations that delayed this Work package including the necessity to align procurement procedures of Tunisian administration to the EU principles and to clarify some specific financial/legislative constraints such as VAT issue.

Timing of activities:

Deliverable 4.1: Expected on 15/05/2020. Achieved on 14/05/2021

Deliverable 4.2: Expected on 15/08/2020. Achieved on 15/08/2022

<u>Title and reference number of the work package (WP)</u>	WP5 - Staff training about key courses and lab equipment
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<u>Indicators of achievement and or/performance as indicated in the previous approved report</u>	Major indicators of performance: <ol style="list-style-type: none"> 1. List of trainers, trainees, courses, logistics 2. Numbers of people involved 3. Quality assessment of the training
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Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
Task 5.1	Organization of a program of training for teachers and staff	15/05/2020	15/11/2022	Milan/Virtual	A first training was organized and designed to be delivered in Autumn 2020. Originally the training program was intended to take place in Milan during one week of an intensive “in-presence” session; however, in light of the coronavirus outbreak it was necessary to adopt a remote training modality. The specific format to be adopted for the training program involves synchronous webinars delivered online by appointed trainers. Despite the circumstances that motivated the format change, the new format brings unanticipated benefits including flexibility for both trainers and trainees in terms of location and time, as well as the possibility to reach a larger audience and to count with the presence of a wider array of trainers. The list of training modules to be included in the program was drafted primarily taking into consideration the contents of WP1, WP2 and especially WP3, which reflects the main educational needs of the Tunisian consortium partners, including the Master Degree to be activated at ENIT as well as the series of single courses offered at ENIGA, ISGIS and FSJEGJ. Additionally, a number of modules were dedicated to sharing	Del 5.1: Organization of a program of training for teachers and staff (30/01/2021) The first training program was scheduled to take place between October 12th and November 25th, during which the following 24 modules were addressed: 14 for Curriculum Development, 3 for General Contents, and 7 for Ecosystem Building. A total of 13 MOOCs were also offered to participants willing to enrol and benefit from the contents. The trainers in charge of the modules were selected among faculty staff and industrial practitioners. The criteria for trainer selection are based on their knowledge and experience related to the three main disciplines related to the project as evidenced by their activities, publications, position, etc. A total of 19 trainers joined the training program. The trainees to benefit from the training program were selected according to their interest and motivation. Given the change of delivery format, a wider group of participants – with respect to the number initially considered in

					<p>the European partners' perspectives on the development of innovation ecosystem models based on partnerships between universities, institutions, and the private sector.</p> <p>A second and third trainings were organized in Paris and Torino/Milano. Following the indications of the mid-term report, these training were organized by combining face-to-face training and case-studies and visiting to labs and competence centers located at relevant partners premises and networking. These visits aimed at sharing best practices taking into account technical, organization and managerial perspectives.</p>	<p>the proposal time - was sought by distributing a survey to gauge interest in the training program.</p> <p>Del 5.3 & D5.4: Organization and delivery of a program of training for teachers and staff (30/11/2022)</p> <p>The second training was scheduled to take place between May 23rd and May 27th 2022 in Paris, at CentralSupelec facilities, during which the following 11 modules were addressed: 3 Presentations, 5 Visits, and 3 Training Sessions.</p> <p>An additional in-presence training program was scheduled between September 26th to 29th 2022, in Italy, spanning from Milan to Turin facilities of the two "Politecnico". In particular, this last training session was composed of 4 Visits.</p> <p>In total 18 Tunisian colleagues were involved in these two trainings.</p>
Task 5.2	Delivery of a training session	15/05/2020	15/11/2022	Milan/Virtual	<p>The first training program was scheduled to take place between October 12th and November 25th, during which the following 24 modules were addressed: 14 for Curriculum Development, 3 for General Contents, and 7 for Ecosystem Building. A total of 13 MOOCs were also offered to participants willing to enrol and benefit from the contents.</p> <p>As described above, a second training session, held in presence, focused more on visits and case study sharing.</p> <p>Through the first and second edition of the training programs, the partners were provided with knowledge that targets the three main disciplines in the scope of the project, which were carefully developed by the trainers in line with the latest advances in these</p>	<p>Del 5.2 Delivery of the training (30/01/2021)</p> <p>Originally, the training program was meant to have an audience of 20 trainees, 5 from each Tunisian Partner Institution (ENIGA, ENIT, FSJEGJ, ISGIS). The change in modality from presential to remote has allowed for the possibility of reaching a wider group of participants beyond the constraints imposed, albeit unintentionally, by a series of selection criteria. An initial survey was shared with the key staff from each of the four Tunisian consortium partners involved in the project in order to gauge interest in the training program and individual proposed training modules. The survey reached a total of 155 respondents who showed interest in the program. A total</p>

				<p>disciplines and their adoption by the industry. Furthermore, the program introduced the concept of innovation ecosystem as a model adopted by the European partners for collaboration between industry, institutions, and academia. In particular, the second edition of the training program focused on providing trainees a more detailed overview of the functioning and components of this ecosystem. Providing this knowledge and experience to Tunisian partners will enable them to identify the opportunities for partnerships according to the specific technological, industrial, and educational context in which their institutions operate. During the development of the project, two areas were identified as needing a higher degree of attention: i) resources to support remote learning and ii) avoiding content overlap.</p> <p>Two different success factors were identified in the context of the training program:</p> <p>i) the flexibility and adaptability shown by the consortium, and ii) the student-centric staged learning design of the program.</p>	<p>of 68 trainees participated in the training program, out of which 26 had accumulated the minimum number of attendance marks required for the awarding of certificates of attendance. By the end of the training program, it was possible to obtain feedback about the planning and delivery by reaching out to trainers and by circulating a survey among trainees. A number of trainers denoted their desire for a more active participation among the trainees during the training sessions. In contrast, the trainees offered a series of improvement suggestions which seemed to indicate that they might not have been engaged to the degree the trainers desired due to having had a traditional face-to-face approach with only one-way communication.</p> <p>Del 5.5 Lessons learned from the training (30/11/2022)</p> <p>The deliverable reports the results of lesson learned from the training.</p>
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Changes that have occurred in this result since the previous approved report:

The initial training had to be planned in Milan on 15/06/2020. However, due to COVID 19 and delay in master preparation, the training was delayed in autumn 2020. The activity was well recovered and successfully delivered.

Timing of activities:

Deliverable 5.1: Expected on 15/06/2020. Achieved on 30/01/2021

Deliverable 5.2: Expected on 15/09/2020. Achieved on 30/01/2021

Deliverable 5.3: Expected on 15/06/2021. Achieved on 30/11/2022

Deliverable 5.4: Expected on 15/09/2021. Achieved on 30/11/2022

Deliverable 5.5: Expected on 15/11/2022. Achieved on 30/11/2022

<u>Title and reference number of the work package (WP)</u>	WP6 - Pilot Master in NPR
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<u>Indicators of achievement and or/performance as indicated in the previous approved report</u>	Major indicators of performance: <ol style="list-style-type: none"> 1. Presentation of the Master 2. Quality assessment of different courses 3. Quality assessment of students from industrial companies (where students do their training) 4. Number of MoUs
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Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
Task 6.1	Actuation of the Master in NPR	15/11/2020	15/11/2022	Tunisia (Enit)	The activity referred to the implementation of the master, the integration within Tunisian accreditation rules (internal of the university and national), enrolment of students and launch of courses. The master was accredited in June 2021. The first intake followed recruitment activities, pre-selection and final list of enrolled students. The courses started in September 2021.	<p>Del 6.1 Start on the Master in NPR (15/10/2021)</p> <p>The first intake followed recruitment activities, pre-selection and final list of enrolled students according to the following data:</p> <ul style="list-style-type: none"> • Application received: 306 • Preselected candidates: 83 • Selected candidates: 25 (14 females and 11 males) • 17 candidates accepted for double curriculum (3AGI + Master NePRev) • 8 external candidates (Holding an Engineering diploma) <p>For the second intake, the admitted candidates were 35:</p> <ul style="list-style-type: none"> - Application received: 177 - Preselected candidates: 99 - Selected candidates: 35 (18 females and 17 males) - 25 candidates accepted for double curriculum (3AGI + Master NePRev)

						<p>- 10 external candidates (Holding an Engineering diploma in mechanical engineering and industrial engineering)</p> <p>Agreements were signed with companies Logidas (http://www.logidas.com/), Our Digital Future “ODD” (http://ourdigitalfuture.org), Majesteye (https://www.majesteye.com/).</p> <p>In year 1 of Master NePRev, 17 students obtained scholarships to conduct their master thesis abroad (in France, Italy, and Canada). Among them, 10 were funded by the NePRev Erasmus+ project (2 at Centrale Supélec, 4 at PoliTo, and 4 at PoliMi).</p>
Task 6.2	Monitoring of the Master in NPR	15/11/2020	15/11/2022	Tunisia (Enit)	<p>The monitoring of the master includes: checking the achievement of the intended learning outcomes, the assessment of the courses, the results of the examinations, and the verification of the implementation the blending learning activities and courses’ material. This report also covers the involvement of the private sector and future perspectives in terms of internationalization and collaborations. The assessment was done about graduated students and also about quality of courses.</p>	<p>Del 6.2: Monitoring of the Master in NPR (15/11/2022)</p> <p>CLASS 1 RESULTS – First Intake (2021-2022)</p> <p>From the 25 registered master’s students, 18 passed the exams and 7 failed. Here it should be noted that these latter are professional students and most of them didn’t attend the courses, neither take the exams due to their professional activities.</p> <p>CLASS 2 RESULTS – Second Intake (2022-2023)</p> <p>All the students, except three, succeeded in the exams. Again, the three who failed are professional students. Among them, one student never attended any course or passed any exam, and the two others only attended some courses.</p> <p>The detailed assessment about quality of courses is reported in D6.2 showing a good appreciation from students.</p>

						There were several collaborations with companies to offer students professional experiences such as: collaboration with Sfax Industry 4.0 Center; collaboration with Learn & Win; collaboration with Safran; collaboration with Seit Consulting/ Assur 3D.
Task 6.3	Joint master and internationalization	15/11/2020	15/11/2022	Tunisia (Enit)		<p>Del 6.3: Internationalization of the Master in NPR and Joint Master Agreement (15/11/2022)</p> <p>Two MoU signed with PoliTO and PoliMI and one achieved Erasmus+ Mobility Program: Inter-institutional agreement Key Action 1 Learning mobility for higher education students and staff. This agreement is valid for the Erasmus+ KA171 calls 2023/2024 and 2024/2025 till 31.07.2025, and offers:</p> <ul style="list-style-type: none"> -6 scholarships for Phd/master Neprev students (53 total months), -2 staff mobilities from PoliMi to ENIT, -Staff mobilities from ENIT to PoliMi.

Changes that have occurred in this result since the previous approved report:

The approval and start of the Master had a delay, in part due to COVID pandemic and in part due to a not well planned timing in the original proposal that did not match the official periods for accreditation requests at the Tunisian authorities. Overall all results were achieved.

Timing of activities:

Deliverable 6.1: Expected on 15/11/2020. Achieved on 30/09/2021

Deliverable 6.2: Expected on 15/11/2022. Achieved on 14/04/2023

Deliverable 6.3: Expected on 15/11/2022. Achieved on 14/04/2023

<u>Title and reference number of the work package (WP)</u>	WP7 – Project Quality and Evaluation
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<u>Indicators of achievement and or/performance as indicated in the previous approved report</u>	Major indicators of performance: 1. -Positive opinion about the training session (>80%)
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Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
Task 7.1	Setting of the quality evaluation process	15/11/2019	15/02/2020	Tunisia	The quality plan has been set including the different methods that will be deployed to check the status of the project. The external quality evaluator has been appointed.	Del 7.1: Quality and Evaluation Plan (08/04/2020) The work illustrates the main methods used for quality checks.
7.2	Quality evaluation	15/11/2019	15/11/2022	Tunisia	Surveys have been done for the training and meetings. The evaluation of the training was in general positive, especially in regards to the effectiveness, relevance. All respondents showed a positive attitude towards the project and the collaboration and cooperation put in place during these months of activities.	Del 7.2: Mid-Term evaluation report Plan (15/05/2021) Survey for training revealed a positive impact of the training as shown in deliverable D5.2. The deliverable includes also the quality assessment of project meetings and activities. Del 7.3: Final evaluation report (14/04/2023) This deliverable includes the assessment of second/third training; a summary of quality assessment of reports and a collection of feedback from students about new courses.

Changes that have occurred in this result since the previous approved report:

Due to the initial delay of activities, the external quality expert has been appointed later with respect to the schedule. The appointment of the external quality expert had some delay. Indeed, a public selection call was prepared by the University of Jendouba that is WP leader and this required some time to be assessed. In addition, according to the rule of the University, the availability of the whole budget for the external expert was required before starting the selection. This brought some further delay because the steering committee had to approve this special request and a consequent anticipation of budget to the University of Jendouba. The quality evaluation activity cumulated the delays of the development work packages.

Timing of activities:

Deliverable 7.1: Expected on 15/02/2020. Achieved on 08/04/2020.

Deliverable 7.2: Expected on 15/05/2021. Achieved on 15/05/2021

Deliverable 7.3: Expected on 15/11/2022. Achieved on 14/04/2023

<u>Title and reference number of the work package (WP)</u>	WP8 - Dissemination and exploitation
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<u>Indicators of achievement and or/performance as indicated in the previous approved report</u>	Major indicators of performance: <ol style="list-style-type: none"> 1. - Social Media accounts 2. -Numbers of social media posts 3. -Posts analytics 4. -Views of video promo 5. -Access to website 6. -Number of papers and conferences
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Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
Task 8.1	Drawing up of Dissemination & Exploitation strategy	15/11/2019	15/02/2020	Paris	The Dissemination and Exploitation has been prepared by identifying targets, tools and phases. In particular, Website and social media will be used as tool to involve stakeholders along the whole project duration. Conferences and workshops have been identified in order to carry out specific actions to selected targets. Some measurable impacts have been identified including analytics of social media, followers and number of posts.	Del 8.1: Dissemination and Exploitation Plan (30/06/2020) 8 conferences identified in the first year of the project. Social media identified and website preparation.
Task 8.2	Implementing a multimedia dissemination strategy	15/11/2019	15/11/2022	Paris/Turin	A logo of the project has been designed with selection of best suited colours, used font, etc... A website has been designed including: Mission (the goals of the NePREv project), Partners and Stakeholders involved, People (list of people involved in the project), News and Events (International Forum for Next Production Revolution in Sfax is published), Subscription form. Three social media have been activated: Facebook page https://www.facebook.com/neprev , Twitter	Del 8.2: Project website and social networks (30/09/2020) Project website has been created as well as social media accounts: Website: www.neprev.com Facebook page: https://www.facebook.com/neprev Twitter https://twitter.com/neprev LinkedIn group: https://www.linkedin.com/groups/13872167/

					<p>https://twitter.com/neprev, LinkedIn group https://www.linkedin.com/groups/13872167/.</p> <p>Different videos have been designed by the consortium and partners to address different stakeholder and communication strategies.</p>	<p>Del 8.3: Video promo (14/04/2023)</p> <p>- Video 1: First period of the project, kickoff, launch of the master in ENIT in 21-22 - Video 2-1, 2-2 et 2-3: Lab of ENIT - Video 3: Smart i4.0 LAB of ISGI - Video 4: Meeting Hammamet in december 2022 - Video 5: 3D Printing package ENIT - Video 6: Industry 4.0 Laboratory ENIT</p> <p>Link for the videos : https://neprev.com/videos/</p>
Task 8.3	Papers conferences and	15/11/2019	15/11/2022	Europe/Tunisia	<p>The project was presented during an open session during the KoM at Enit on February 19th and the Stakeholder forum in Sfax on February 20th, 2020. (D2.1 & D2.2).</p> <p>PoliTO has published a paper entitled “Solar Hydrogen from North Africa to Europe through Green Stream: a simulation-based analysis of blending scenarios and production plant sizing” in International Journal of Hydrogen Energy with the following acknowledgment “This work has no specific funding support, however the Authors wish to thank the European Commission and the European Education and Culture Executive Agency for funding the Erasmus + project Enbrain – Building capacity in Renewable and Sustainable Energy in Libya (586221-EPP-1_2017_1_IT-EPPKA2-CBHE-JP) and the Erasmus + project Neprev - Setting up a multidisciplinary joint master degree dedicated to the Next Production Revolution in Tunisia (609702-EPP-1-2019-1-IT-EPPKA2-CBHE-JP).</p> <p>These two projects have certainly strengthened the idea of the Authors about a fruitful cooperation between Europe and North African</p>	<p>Del 8.4: Papers and conferences (14/04/2023)</p> <p>The deliverable reports a list of conferences and papers prepared during the project.</p> <p>Link for the scientific papers: https://neprev.com/public-documents/#scientific_papers</p>

				<p>countries about renewable and sustainable energy”.</p> <p>PoliMI has participated to the 7th International Conference on Higher Education Advances (HEAd'21), Title: "An inclusive overview of Learning Factories around the globe" and 11th Conference on Learning Factories (CLF 2021), Title: "Development of a pilot introductory course to Smart Maintenance based on open source software using Google Colab".</p> <p>Enit has participated to the SMART Tunisia Fair, Presentation of the NePRev project, February 20 th, 2020.</p> <p>In addition, ENIT has promoted other open workshop activities for dissemination such as (more details in D6.1 and D6.2& D6.3):</p> <ul style="list-style-type: none"> -an open session presenting the modular production system MPS-400 (ENIT, February 23rd, 2022). This open session was organized by ENIT, El Eslek (Festo representative in Tunis), and Festo didactic (Canada). -Workshop ENIT: To inaugurate ENIT NPR hub and showcase the equipment funded by NePRev project, a technical/communication workshop was organized on March 31st, 2022, at ENIT. The event gathered: project NePRev consortium partners, the Italian ambassador, Italian Agency for Development Cooperation (AICS), professors, students, and key stakeholders. <p>Finally, a joint workshop, open to stakeholder, has been organized together with other projects active in Tunisia about Industry 4.0 and in cooperation with the National Erasmus+ Office in Tunisia. In particular, a sharing and a dissemination event has been organized in Hammamet on December 2022 together with projects ENHANCE, SMTMC and MS@CPS.</p>	
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Changes that have occurred in this result since the previous approved report:

Promo videos were prepared upon starting the master, having equipment and first enrolled students to have more tailored materials used for different stakeholders with special focus for students orientation.

Timing of activities:

Deliverable 8.1: Expected on 15/02/2020. Achieved on 30/06/2020

Deliverable 8.2: Expected on 15/05/2020. Achieved on 30/09/2020

Deliverable 8.3: Expected on 15/11/2020. Achieved on 15/04/2023

Deliverable 8.4: Expected on 15/11/2022. Achieved on 15/04/2023

<u>Title and reference number of the work package (WP)</u>	WP9 - Operative and financial management of the project
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<u>Indicators of achievement and or/performance as indicated in the previous approved report</u>	Major indicators of performance: 1. -Number of meetings 2. -Attendees to the meeting 3. -Budget and timing of activities
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Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
Task 9.1	Operative and financial management	15/11/2019	15/11/2022	Europe/Tunisia	<p>The grant agreement has been signed and all partners received a copy on Jan 20th, 2020. The final rules of the project have been first explained during a virtual meeting held on Dec.5th 2019 and then during the kick-off meeting held on February 18th, 2020. The February 18th, 2020 at the National Engineering School of Tunis (ENIT). The NEO of Tunisia was present.</p> <p>The partnership agreement is a multi-lateral document that was signed by the latest partner on May 14th, 2020.</p> <p>All the project activities were managed regularly with a good interaction and collaboration among the partners. A shared folder was created to facilitate interactions.</p>	<p>Del 9.13: Project Management Handbook (15/02/2020) Report bringing guidelines for project management</p> <p>Del 9.14: Progress of Work Packages (31/12/2020) Report summarizing first year activities.</p> <p>Del 9.15: Progress of Work Packages (31/12/2021) Report summarizing second year activities.</p> <p>Del 9.16: Progress of Work Packages (15/04/2023) Report summarizing full project year activities</p>
Task 9.2	Performing of plenary and virtual meetings	15/11/2019	15/11/2022	Europe/Tunisia	<p>Due to COVID outbreak, some meetings were performed remotely or the delivery in presence was postponed to the mitigation travel and quarantine restrictions. Below the list of presence (bolded) and remote (<i>italic</i>) project meetings:</p> <ul style="list-style-type: none"> • <i>December 5th, 2019 - Virtual Meeting, D9.6 - Plenary</i> 	<p>In presence meetings:</p> <p>Del 9.1: Kick off meeting (18/02/2020) The kick of meeting was performed on February 18th, 2020 at ENIT in Tunis.</p> <p>Del 9.3: First mid-term meeting in Tunis (31/03/2022)</p>

				<ul style="list-style-type: none"> • February 18th, 2020 - KOM In presence in Tunis, D9.1 - Plenary • <i>May 26th, 2020 Virtual meeting with Enit and Politecnico di Milano.</i> • <i>July 6th, 2020 - Virtual Meeting. D9.7 – Plenary</i> • <i>September 18th, 2020 - Virtual meeting in Milan. D2.2</i> • <i>January 15th, 2021, Virtual meeting (with Tunisian Partners and Plenary), D9.8</i> • <i>April 8th, 2021, Virtual meeting (with Tunisian Partners and Plenary), D9.9</i> • <i>September 23th, 2021, Virtual meeting, D9.10</i> • March 31st, 2022, in presence in Tunis, D9.3 – Plenary • May 25st, 2022, in presence in Paris, D9.4 – Plenary • September 27st, 2022, in presence in Torino/Milan, D9.5 – Plenary • December 20th, 2022, in presence in Hammamet, D9.6 - Plenary 	<p>After COVID mitigation, a meeting was organized in Tunis in correspondence of the official opening of new labs.</p> <p>Del 9.4: Second mid-term meeting in Paris (25/05/2022)</p> <p>A meeting was organized in Paris in correspondence of the training done there.</p> <p>Del 9.5: Third mid-term meeting in Torino/Milan (27/09/2022)</p> <p>A meeting was organized in Torino in correspondence of the training done in Torino and Milan.</p> <p>Del 9.6: Final meeting in Hammamet (20/12/2022)</p> <p>A meeting was organized in Hammamet in correspondence of the workshop organized together with other project about 4.0 in Tunisia and funded under Erasmus +.</p> <p>Del 9.2: Virtual Meeting (18.09.2020) Virtual meeting on December 5th, 2019</p> <p>Del 9.7: Virtual Meeting (05.12.2019) Virtual meeting on December 5th, 2019</p> <p>Del 9.8: Virtual Meeting (06.07.2020) Virtual meeting on July 6th, 2020</p> <p>Del 9.9: Virtual Meeting (15.01.2021) Virtual meeting on January 15th, 2021</p> <p>Del 9.10: Virtual Meeting (08.04.2021) Virtual meeting on April 8th, 2021</p> <p>Del 9.11: Virtual Meeting (23/09/2021) Virtual meeting on September 23th, 2021</p> <p>Del 9.12: Virtual Meeting (13/10/2021) Virtual meeting on October 13th, 2021</p>
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Changes that have occurred in this result since the previous approved report:

Major change has been due to the fact that COVID Pandemia has changed the schedule of all presence meetings and this has brought a necessary re-alignment of working activities and methodologies. Furthermore, COVID 19 has brought some delays especially at the administrative level. However, almost all in-presence meetings were recovered with the exception of one while all virtual meetings were done but all of them shifted during the COVID period. Number of deliverables have been slightly changed as well some order of meetings due to rescheduling for COVID outbreak.

Timing of activities:

Deliverable 9.1: Expected on 15/02/2020. Achieved on 18/02/2020
Deliverable 9.2: Expected on 15/09/2020. Achieved on 18/09/2020
Deliverable 9.3: Expected on 15/02/2021. Achieved on 31/03/2022
Deliverable 9.4: Expected on 15/09/2021. Achieved on 25/05/2022
Deliverable 9.5: Expected on 15/02/2022. Achieved on 27/09/2022
Deliverable 9.6: Expected on 15/02/2022. Achieved on 20/12/2022
Deliverable 9.7: Expected on 15/03/2020. Achieved on 05/12/2019
Deliverable 9.8: Expected on 15/07/2020. Achieved on 06/07/2020
Deliverable 9.9: Expected on 15/07/2021. Achieved on 15/01/2021
Deliverable 9.10: Expected on 15/03/2022. Achieved on 08/04/2021
Deliverable 9.11: Expected on 15/07/2022. Achieved on 23/09/2021
Deliverable 9.12: Expected on 15/07/2022. Achieved on 13/10/2021
Deliverable 9.13: Expected on 15/02/2020. Achieved on 15/02/2020
Deliverable 9.14: Expected on 15/11/2020. Achieved on 15/11/2020
Deliverable 9.15: Expected on 15/11/2021. Achieved on 15/11/2021
Deliverable 9.16: Expected on 15/11/2022. Achieved on 14/04/2023