



Design of an e-learning training programme for wind mills maintenance technicians enriched with interactive virtual reality simulations

Final Report

Public Part

Project information

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Executive Summary

This is a report to explain the final situation of the project e-WindTech “Design of an e-learning training programme for wind mills maintenance technicians enriched with interactive virtual reality simulations”, at the end of its execution period. We mean, this report presents the content of the project and its achievement after 30 months of execution. This is the end of a European Project developed by 8 entities (partners) with different profiles (3 from Spain, 2 from Germany, 1 from Greece, 1 from Portugal and 1 from Lithuania).

This report is intended for widespread. The target audience of this Report of the project is mainly general public, people who has not to be familiar with the sector of wind energy and wind energy generators maintenance. This report is a document for external communication and it can be published by the Executive Agency (EACEA).

The general and future aim of this project is to train wind mills maintenance technicians; and for that during the project it has been achieved the development of a new multilingual homogeneous e-Learning course, a tool enriched with interactive Virtual Reality based exercises.

To achieve this general aim, the project was divided in different workpackages (WPs) with different tasks and actions that were established following a plan, a calendar and specific objectives. This workpackages have been:

- WP1 - Project management and coordination.
- WP2 - Knowledge gathering and design of learning content.
- WP3 – Development of virtual reality simulations and adaptation of the platform.
- WP4 – Implementation and evaluation of the course/programme.
- WP5 – Quality and Evaluation Plan.
- WP6 – Dissemination.
- WP7 – Exploitation.

At this stage of the project, at the end of its execution, all the WorkPackages have been finished, and all the partners involved in the consortium worked in all of them, even in all the transversal stages of the project which are: WP1, WP5, WP6 and WP7.

Some of the specific objectives/outputs which have been achieved at the end of the project are listed below:

- Definition and implementation of a Coordination method and development of an Intranet to assure and standardize the management and communication between the partners involved in the consortium.
- Development of five consortium meetings between the partners (three in Pamplona-Spain, one in Porto-Portugal and one in Rostock-Germany).
- To gather and organize the current level of knowledge regarding wind mills maintenance in the partners’ countries (Spain, Germany, Greece, Portugal and Lithuania), select, classify and combine this knowledge, to design, standardize and develop the training programme.
- Development of some simulations as practical tools as part of the final e-learning training course and adaptation of an e-learning platform where the course is running.
- To test, evaluate and improve two prototypes of the e-learning course created (in English and in all partners’ languages).

- Development of a dissemination web of the project for the general public, that during the project has been supplied with some of the results achieved.
- Development and execution of some parts of an exploitation plan which includes also activities to develop in the future.

The main outcome at the end of this project is a new multilingual homogeneous e-Learning course enriched with interactive Virtual Reality based exercises and European developed contents to train students (in vocational training centres), technicians and unemployed technicians by using new interactive virtual reality based techniques. Furthermore, this programme will contribute to the re-training of technicians who are already working in these tasks but never have the opportunity to attend a formal course (due to the sector's fast growth this tends to be a regular situation).

All the partners have been involved during the project with more or less dedication depending on the calendar and their assigned tasks, developing each one, their expertise to achieve the above specific goals of the project.

Each of the members of the consortium had a specific complementary role and expertise that developed and contributed to achieve the main and the specific goals of the project:

Some partners as experts in renewable energy training (CENIFER - Spain) and e-learning training (BBZ - Germany) developed and coordinated the tasks related with its expertise (mainly WP2 and WP4); other partner is an expert in e-learning development who worked mainly in the adaptation and coordination of the tasks in relation with the e-learning platform (IGD-Germany) and another is an expert in Virtual Reality Simulations (VRS) who worked in the practical lessons/parts of the content of the course, developing VRS, videos... etc (VICOMTech - Spain); both mainly worked in WP3. Other partners contributed to the development of the course with their different points of view depending on their experience and specific country conditions. Besides these partners carried out the Pilot Projects of the course and implemented the course in a real way in order to test, evaluate and propose improvements to the training method & the e-learning tool and to improve it (CENIFER-Spain, IDEC - Greece, SPI - Portugal and SSI - Lithuania), mainly worked in WP2 and WP4. IDEC is also the responsible of the WP 6 (Dissemination). The cooperation and fluent communication was ensured between the partners because one of them is an expert in Management and Coordination of consortiums in different European projects (INICIATIVAS INNOVADORAS - Spain); mainly worked in WP1.

The previous tasks are a resume of the main activities where the partners are experts and which have been led, coordinated and developed by them; but all the partners, have worked in all the WorkPackages following the agreements and sharing the activities established in the consortium meetings. All the partners also worked in the transversal WorkPackages, always led by one of them (WP1, WP5, WP6 and WP7).

Also wind energy sector companies and specialised education centres and some experts of the different countries have been involved in the project to gather the information and the current level of knowledge, to obtain the main wind mills maintenance areas needed for the sector companies to be included in a course like this, and to test and improve the final result, the e-learning course tool.

Some of the main results/products achieved with this project have been:

- a database with organized and accessible content and knowledge of the countries involved,

- the different theoretical training material of the course – content of the course (a document with different full texts units of the course (5), a pedagogical guide of the course and a student guide) in all the consortium languages,
- an e-learning platform adapted to this course,
- Videos based on Virtual Reality Simulations,
- Virtual Reality Simulations (Wind Turbine 3D model),
- Source codes to generate a 3D model of the wind turbine,
- Contents of the course loaded in the WBTEExpress author programme - partners' languages (DE, ES, GR, LT, PT) and English,
- Questions on the course corresponding to the 5 units – assessment tests in all the partners' languages (DE, ES, GR, LT, PT) and English,
- e-learning e-WindTech course (adapted to platforms which accept the SCORM standard) in all the partners' languages (DE, ES, GR, LT, PT) and English,
- Different assessment questionnaires to evaluate and validate the course for the target sector actors,
- An external evaluation of the project execution (Interim and Final),
- Different dissemination and exploitation material: logo, brochures in all the languages, a webpage, an exploitation plan... etc,
- Development of 5 consortium meetings, 4 workshops/seminars, 3 teleconferences, an intranet and different communication methodologies.
- Besides of the previous results/products, more or less tangible, also some outcomes more intangibles have been achieved as for example: the lessons learnt for the future to work in cooperation and collaboration, how to plan the activities, the methodologies of responsibilities sharing, how to involve the target groups or different field actors (dissemination and exploitation), experience gained by the project partners in the management and undertaking of transnational partnerships...

Once the financing period of the European project is finished, from now on, the partners we will try to sustain, disseminate and exploit the results of this experience as much as possible. For that in the WP6 (Dissemination) and WP7 (Exploitation) some activities have been developed inside the eligibility period and other activities have been foreseen for the future. The objectives of these activities are to maximise the impact of the project results by optimising their value, strengthening their impact, transferring them to different contexts, integrating them in a sustainable way and using them actively in systems and practices at local, regional, national and European levels. For that, it has been developed an Exploitation Plan which includes some targets/activities for the future and an Exploitation Agreement

signed between all the partners which take into account the Intellectual Property Rights. Also the webpage will be maintained for the next 5 years.

The website of the project is: <http://www.ewindtech.net/>

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1. Project Objectives

The general and final aim of this project, even for the next future, is to train wind mills maintenance technicians. For this purpose it has been developed a training programme and adapted it into an e-learning platform that has been tested in different training pilot projects. This tool provides some Virtual Reality Simulations and videos to show and explain better some operations in maintenance of wind farms and wind generators.

To obtain this final aim there are some partial or specific objectives that have been achieved during this project by the consortium:

- To gather and organize the current level of knowledge regarding wind mills maintenance in the partners countries.
- To select and standardize the knowledge based on the Qualification Catalogue Profiles, the Training Centres and Companies priorities.
- To adapt the contents, exercises and simulations to the e-learning requirements.
- To develop some Virtual Reality Simulations and different based videos to show, explain and train better some parts of the wind generator some safety tasks and some relevant maintain relevance tasks.
- To adapt the course and its contents to platforms which accept the SCORM standard (Shareable Content Object Reference Model).
- To translate and adjust the programme to the partners languages (Spanish, German, Greek, Portuguese and Lithuanian) and to English.
- To test and to assess the new e-learning programme (e-learning course tool) in different Pilot Projects.

This project and its results will benefit to some final users:

During the 30 months of execution, this project has been known by some potential final users of the final results. Thus, some specific communities have been involved to obtain the previous and first objectives of the project. These are: wind energy sector companies (maintenance responsables, technicians...), education training centres and institutions (students and trainers), ICTs entities, work and education institutions, Local and Regional government responsables, and public in general...

These communities have answered different surveys of the partners trying to gather and organize the current level of knowledge regarding wind mills maintenance in the partners countries and have tested, assessed and proposed some improvements to the two different prototypes of the e-learning course developed during the project. Also the different communities involved have received different dissemination information through some dissemination activities developed in the project (brochures, web, dissemination CD, meetings, seminars, press articles...etc).

This project and its results (e-learning programme tool that can be increased and improved in the future) will contribute to the development of competencies of young students in their formal education stage and to fit them to the companies' requirements as there will be constant cooperation between the project partners and the wind sector companies.

Furthermore this programme will help to the re-training of technicians who are already working in these tasks but never have the opportunity to attend a formal course (due to the sector's fast growth this tends to be a regular situation).

Also the project has taken advantage from the utilities of the ICTs applied to enrich the training environments.

2. Project Approach

Below, the methodological / didactic approach on which the project is based is explained and the measures that have been adopted for testing the materials on target users are outlined. To create the e-learning training course the steps developed have been:

- Knowledge Gathering. This result also includes:
 - ✓ Research in the Qualification Catalogues, for this professional family, in each partners' country identified.
 - ✓ Sector training needs regarding wind mills maintenance: development of questionnaires and surveys to collect the training needs of maintenance technicians in the wind energy companies in each partner's country.
 - ✓ Gathering, analysing, organizing and selecting the knowledge.

- Content developed and standardized. This result also includes:
 - ✓ Take into account the knowledge gathering.
 - ✓ Content selected and classified depending on the previous items.
 - ✓ Wind energy training expert assistance.
 - ✓ Content developed and/or adapted based on the previous items. (theoretical parts of the course and Virtual Reality Simulations).

- e-Learning Course design. This result also includes:
 - ✓ e-Learning design parameters established and agreed.
 - ✓ Contents, summaries, exercises, VRS, videos and pictures adapted to the e-learning platform following the previous requirements.
 - ✓ Design of pedagogical guides and student guides.

- Prototype 1 design and implementation. This result also includes:
 - ✓ E-learning platform (SCORM compliant) adapted with the course programme included (units contents, Virtual Reality based Simulations, units summaries, evaluation tests, videos and pictures) and running in the platform in English version (Prototype 1).
 - ✓ Prototype 1 evaluated: developing different training pilot projects in the different partners' countries (Spain, Germany, Greece, Portugal and Lithuania), developing different assessment questionnaires and surveys to obtain some conclusions and improvements to be implemented. Just English version.
 - ✓ Improvements implemented.

- Prototype 2 developed and implementation (in all the partners languages). This result also includes:
 - ✓ Translations of all the contents to all the partners languages.

- ✓ Contents, summaries, exercises, VRS, videos, pictures adapted to the e-learning platform in all the different languages.
 - ✓ Development of different versions of the e-learning course in all the partners languages and English with the improvements implemented, running in the platform (Prototype 2).
 - ✓ Prototype 2 evaluated: developing different training pilot projects in the different partners' countries (Spain, Germany, Greece, Portugal and Lithuania), developing different assessment questionnaires and surveys to obtain some conclusions. All the languages versions.
- Final product: Blended learning tool to train wind mills maintenance skills focus on technicians.

The project is providing also an opportunity of cooperation between social agents, companies and training entities of all the participant countries.

In the next future this project could contribute to make the Formal Vocational Training more attractive and to make students responsible for their training process. What is more, Vocational Training Centres as well as SME's could apply new information and communication technologies in the classroom. For teachers it is also a change in the way they establish relations with the class and a way to introduce the new technologies in this subject. The product, with its face-to-face complement, can be applied to the three Vocational Learning Subsystems and it should be a very good aid in the training process of wind mills maintenance units. However this training should be completed with more knowledge and real practices.

Other added values of the approach adopted for testing the prototypes has been contributed by the different point of view of those different people involved in the course, tutors, trainers, teachers, students, experts in e-learning and experts in wind mills maintenance which developed the training pilot projects and filled in the questionnaires to improve the method and the tool. All the steps made to organize the course were tested by the key actors.

Some transversal activities to the project have been those dedicated to the dissemination and exploitation of the results, developed by all the partners. For that during the project were developed a Dissemination Plan and an Exploitation Plan. In these strategies, were taken into account different activities to be developed during the lifelong of the project and some activities to be developed after the project (in the next future).

Thus some activities developed and foreseen to be developed from now on, and to contribute to the sustainability of the project results are: development of a project/product logo, development and distribution of different brochures, development and maintenance of a webpage (which will be maintained during next 5 years), development of workshops/seminars, participation in fairs, public presentations, press articles, development and distribution at the end of the project of a dissemination CD. Besides at the end of the project, has been signed between all the partners an Exploitation Agreement taken into account the Exploitation Plan, where it is established the Intellectual Property Rights of the project results for the future.

3. Project Outcomes & Results

The major achievements and results of this project are the following, divided between workpackages (WP):

WP1: PROJECT MANAGEMENT AND COORDINATION

- Project Plan (Coordination Method): Method to assure the overall understanding and unify the development of contents and outcomes.
- Meeting Agendas and Minutes of the 5 coordination meetings (three in Pamplona-Spain one in Porto-Portugal and one in Rostock-Germany): Contents of the meetings, attendances, description of the discussion and agreements.
- The progress and final report (technical and economical): report containing the activities developed during half of the project and the entire period of the project, outlined and monitoring the project progress. The actual report is part of this Final Report.
- Intranet: It is a project management on-line tool adapted to the e-WindTech project to facilitate the fluent communication between partners and to share documents, reports... in development and draft & final versions of outcomes (<http://intranet.ewindtech.net/>).

WP2: KNOWLEDGE GATHERING AND DESIGN OF LEARNING CONTENT

- Database with organized and accessible content and knowledge: This database summarises all the tasks and work of research and gathering of information of all partner countries and Europe.
- Design of Course (planning of training contents). Description and planning of training contents of the wind mills maintenance course – Theoretical training material of the course (in all the partners' languages and in English):
 - ✓ eWindTech outline (Summary of the units).
 - ✓ Development of the five units of the course: (1) Wind Energy, (2) Wind Turbine Description and Components, (3) Introduction to wind farm maintenance, (4) Preventive Maintenance of a generic wind turbine (5) Risk Prevention in the maintenance of wind turbines.
 - ✓ Monitoring Knowledge questions (tests).
 - ✓ Pedagogical Guide (in all the partners' languages and in English).
 - ✓ Student Guide (in all the partners' languages and in English).
- Agenda, Minutes and Agreements of the workshop developed regarding WP2.
- WP2 Technical Report: collecting and analysing the activities developed and the achieved outputs of WP2.

WP3: DEVELOPMENT OF VIRTUAL REALITY SIMULATIONS AND ADAPTATION OF THE PLATFORM

- The e-Learning platform owned by the German partner IGD-Fraunhofer (SmartBLU) has been adapted for the specific purpose: Inclusion of the SCORM compliant new e-learning programme of wind mills maintenance and the virtual reality simulations (eWindTech

course), and to easily in the future adaptation to possible changes of the technology or the programme.

- Implementation of Virtual Reality Simulation running on the platform.
- eWindTech e-learning course in different versions (English, Spanish, German, Greek, Portuguese and Lithuanian): “e-learning training programme for wind mills maintenance technicians enriched with interactive virtual reality simulations”. This is the main product of the project and it is not public, because in the next future could be commercialised and then it is protected by the partners through an Exploitation Agreement.
- Guide to use the e-learning platform (samartBLU) for the learners.
- Accessibility to the full e-learning course (at least for the permitted people).
- Technical Report of Prototype 1 of WP3.
- Technical Report of WP3: collecting the activities developed in WP3 to obtain the prototype 1 and Prototype 2 of the e-learning course running in the platform.
- Agenda, Minutes and Agreements of the workshop developed regarding WP3.

WP4: IMPLEMENTATION AND EVALUATION

- Questionnaires to evaluate and survey the Implementation of the prototype 1 (in English).
- Technical report of the evaluation of the prototype 1 (implementation of pilot projects in English in all the partners' countries).
- Questionnaires to evaluate and survey the Implementation of the prototype 2 (in all the partners' languages and in English).
- Technical report of the evaluation of the prototype 2 (implementation of pilot projects in all the partners' languages and in English) and activities developed in WP4.
- Agenda, Minutes and Agreements of the workshop developed regarding WP4.

WP 5: QUALITY AND EVALUATION PLAN

- Quality Management Plan: It defines the approach taken to ensure the quality of the deliverables and highlights other management processes which influence deliverables quality, such as change and risk management.
- Ex-ante evaluation questionnaire: It refers to forward-looking assessment of the likely future effects. Its purpose is to gather information and to carry out analyses which help to ensure that the objectives will be delivered successfully.
- Indicators template to on-going evaluation.
- Interim External Evaluation Report.
- Final External Evaluation Report.

WP 6: DISSEMINATION

- A Dissemination Plan collecting all the dissemination activities that took place during all the project was developed at the beginning.
- A project logo was created and selected between the partners.

- Development and update of a Website of the project (in all the partners' languages and in English) with some areas where some public contents and outputs of the project have been uploaded.

The website of the project is: <http://www.ewindtech.net/>

The main areas or fields of the website are: "Home", "About e-WindTech", "e-WindTech Tool", "Knowledge Database", "News, Press & Events", "Contacts" and "Partners Area".

At the end of the project (30/06/2011), the webpage counted with 10875 visits.

The screenshot shows the e-WindTech website interface. At the top, there are flags for the project's languages: UK, Spain, Germany, Lithuania, Greece, and Spain. The navigation bar includes: Home, About e-WindTech, e-WindTech Tool, Knowledge Database, News, Press & Events, and Contacts. The main banner features a grid of images with text: "e-learning training program" and "interactive virtual reality simulations" on the right, and "windmill maintenance technicians" on the left. Below the banner, the "e-WindTech Project" section states: "Project e-WindTech aims to develop a training tool for wind mills maintenance technicians. This tool will provide simulations of interactive virtual reality to train the technicians on the most critical operations in maintenance of wind turbines. The final tool will be available in 5 languages (German, Greek, Lithuanian, Portuguese and Spanish). The project started on January 2008 and is expected to finish by the end of June 2010. It is carried out with the support of the Lifelong Learning Program of the European Union." The "Enroll to the course" section says: "Quick and easy: Just fill in our registration form and start using the e-WindTech tool as soon as the courses become available!" The "News & Events" section lists two news items: "09/04/2008 Questionnaire for the identification of training needs of Wind Turbine Maintenance professionals has been published. Please help us by filling it up." and "28/01/2008 Kick off meeting for the e-WindTech project in Pamplona, Spain." The "Press" section has a link: "Der Wind welt in Richtung e-WindTech BBZ nimmt an internationaler Maßnahme teil". The "Partners Area" section says: "Please follow this link in order to". The "Funded by" section shows logos for the European Union and Education and Culture DG, with the text "Lifelong Learning Programme" and "Education and Training".

- Project brochures in all the languages and distributed (8000 copies).
- Different press articles appeared in all the partners press.
- Attendance to different fairs, meetings, seminars and workshops.

- Final Dissemination Seminar (Pamplona 03/06/2010).
- Dissemination CD and distribution (240 copies).

WP 7: EXPLOITATION

This workpackage has been discussed in all the meetings and finally the last 7 months of the project have been developed its activities. Its main outcomes and results are:

- Exploitation Plan.
- Exploitation Agreement: where it is established the rules and the Intellectual Property Rights for the future commercialisation of the results and outputs of the project.

All the results and outputs can be found in the following places:

- Webpage of the project (<http://www.ewindtech.net/>): the main public (not restricted) products and outputs of the project can be found here.
- Intranet of the project (<http://intranet.ewindtech.net/>): all the products developed during the lifelong of the project, results, deliverables, documents, material... drafts and final versions can be found here. But this is a restricted area for the partners and the project officers of the EACEA.
- With the Confidential Part of the Final Report, 3 copies of the main products/results/outputs have been submitted to the EACEA.
- Finally, the main sources to obtain some result/product/output are to put in contact with some of the partners of the project through post, e-mail, phone or fax (CENIFER, INICIATIVAS, BBZ, IGD-Fraunhofer, VICOMTech, IDEC, SPI or SSI). The contact data of the partners can be found in the webpage of the project.

4. Partnerships

CENIFER (Foundation for the Training in Renewable Energies) located in Navarra, Spain, was the applicant and leader of this project. CENIFER provides professional training to technicians in order to contribute to the appropriate development of the Renewable Energy sector not only in Spain but in Europe.

But to achieve the main goal of the project, CENIFER needed to work with a European Consortium with partners with different skills and experience.

For that reason the consortium was completed with 7 partners more: 2 from Germany (BBZ and IGD-Fraunhofer) and 2 more from Spain (INICIATIVAS and VICOMTech), as Germany and Spain are the European countries with more wind capacity installed; 1 from Portugal (SPI), 1 from Greece (IDEC) and 1 from Lithuania (SSI).

The profiles of the partners are different and working together provided added value to the project. Some partners are experts in renewable energy training (CENIFER - Spain) and e-learning training (BBZ - Germany); other partner is an expert in e-learning development, to adapt the content of the course to a e-learning platform (IGD-Germany) and other, is expert in Virtual Reality Simulations to include these ones as a practical lesson in the content of the course, (VICOMTech - Spain). Other partners contributed to the development of the course with their different points of view depending on their experience and specific country conditions. Their main tasks were to carry out the Pilot Projects of the course and implement the course in a real way in order to test the training method & the e-learning tool and to improve it (IDEC - Greece, SPI - Portugal and SSI - Lithuania). Also these partners contributed in all the rests of the tasks to develop properly the course with information collected from their countries, and then obtain more extensive European Added Value. IDEC has been also the responsible and coordinator of the Workpackage 6 (Dissemination), because its expertise. The partner INICIATIVAS INNOVADORAS (Spain) has expertise in management and coordination of consortiums in different European projects and then in eWindTech, ensured the cooperation and fluent communication between the partners.

So, finally, it is considered a good experience of working together in a European partnership, because one partner learn each other, and it is possible to know the different realities of other European entities and it is possible also to create the beginning of future networks. Besides, to achieve one of the main goals of the project, that it was to develop as better as possible an "international course" due to the international and globalized sector of wind energy, it was necessary to develop an European working consortium, that jointly has worked quite well, always mainly led by CENIFER.

Each one of the partners of the consortium has been in contact and had worked during the lifelong of the project with different target groups or final users of their countries; so the same project and the same tool (e-learning course) has been disseminated in different regions and countries with different realities and cultures. So, this is considered a good benefit, because though the markets, regions and countries are different, the wind energy sector and the target users are the same, and it is considered that the training of the technicians should be quite unified, because the wind turbines companies are more or less the same around the entire world. It is considered as a benefit also because we consider that it is a good experience and it is a good beginning to develop a unic and standardised e-learning training course for different European countries. This could be a good seed for future training initiatives to unify and globalized the formation of the wind energy sector

technicians. Then the wind energy experts could work easier in the different countries, which is one the main requirements of the wind energy companies and the sector.

Some contact details of the partners of the consortium that also can be found in the webpage of the project are:

1- Foundation for the Training in Renewable Energies (CENIFER) *Spain*

<http://www.cenifer.com>

Address: C/ Aduana s/n. 31119 - Imarcoain.(Navarra). Spain

2- Innovative Initiatives (INICIATIVAS) *Spain*

<http://www.iniciativas-innovadoras.com>

Address: C/ Zabalgaina 3. Oficinas 4-5. 31180 - Zizur Mayor. (Navarra). Spain

3- Vocational Training Centre of the Craftsmen's Guild Association in Iserlohn (BBZ)

Germany

www.bbz-mk.de

Address: Handwerkerstrake 2. Iserlohn D-58638. Germany. Spain

4- Fraunhofer Institute for Computer Graphics (IGD) *Germany*

www.igd-r.fraunhofer.de

Address: Joachim-Jungius-Str. 11. 18059 Rostock. Germany

5- Visual Communication and Interaction Technologies Centre (VICOMTech) *Spain*

www.vicomtech.es

Address: Parque Tecnológico de Miramón. Paseo Mikeletegi 57. 20009 - Donosita-San Sebastián. Spain

6- IDEC *Greece*

<http://www.idec.gr/>

Address : Iroon Polytechniou 96. Piraeus 18536. Greece

7- Portuguese Society for Innovation (SPI) *Portugal*

www.spi.pt

Address: Rua Julio Dinis, 242, 2º, 208. 4050-318 Porto. Portugal

8- Public Institution Strategic Self-Management Institute (SSI) *Lithuania*

<http://www.eksponente.lt/ssi>

Address: Sausio 15 osios 11a-27 Kaipeda - KT 91136. Lithuania

5. Plans for the Future

In the project it has been developed a specific WorkPackage, dedicated to the Exploitation of the results obtained in the project. In this WorkPackage has been treated the exploitation plan, including plans for the future, and the potential commercialisation of the developed tool, the e-learning course (main result of this project).

The responsible of this WorkPackage has been the leader of the project, CENIFER, and with the collaboration of all the rest of the partners the main confidential results and deliverables obtained have been, the **Exploitation Plan** and an **Exploitation Agreement** that has been signed by all the partners.

The main activities of the Exploitation Plan have been necessary at the end of the project and will be even more necessary after the project because include objectives and plans for the future in order to reach the right and proper target groups, because the sector of wind energy is changing and developing very fast. This activities of Exploitation are closely related with the Dissemination activities and both together (called valorisation) contribute to the sustainability of the project and its results in the future. Thus some useful activities developed and foreseen to be developed that will contribute to the sustainability of the results and valorise the project are:

- development of a project/product logo, image (Marketing) of the product,
- development and distribution of different brochures,
- development and maintenance of a webpage (which will be maintained during next 5 years),
- development of workshops/seminars,
- participation in exhibitions and commercialisation fairs,
- public presentations,
- press articles,
- development and distribution of a dissemination CD,
- creation of specific areas on the partners web sites,
- mailings to associations and to the education and work departments of the EU regions where wind energy is more developed,
- meetings with companies and teachers of the wind energy sector;...

Fulfilling the objectives of the Exploitation Plan and respecting the Exploitation Agreement, the sustainability of the project results will be assured. Also it is necessary and it has been taken into account that the e-learning Platform, where the course is included, was easily modifiable or changeable, because the technology of wind energy and necessities of the partners are changing very quickly.

Finally the signature developed between all the partners of the confidential Exploitation Agreement, it is very important because it is the document where it is established the intellectual property rights' issues about the products and services developed during the project for the future commercialisation if it is the case.

6. Contribution to EU policies

It is explained below, how this project is contributing to key EU policies, objectives and priorities.

Lisbon Education & Training Progress Indicators

Target: Open learning environment, population aged 24-64 participating in education and training.

Different students from the different partners' countries have developed the pilot projects to test the e-learning course prototype. Besides, some of the potential beneficiaries of the proposed final tool will be the current windmill technicians working in Europe, who demand re-training and continuous education on windmill maintenance.

The rapidly evolving innovation on wind energy generator manufacturing technologies make continuous education a pressing matter for workers and companies that surely welcome the e-learning tool designed in this project and that it is flexible enough for its frequent update.

Target: Making learning more attractive, share of the population aged 18-24 with only lower secondary education and not in education and training.

In the closed future, other potential beneficiaries of the results of the project will be also those young people with a secondary lower level education interested in technical professions on emerging sectors, such as the renewable energies one. For the moment these beneficiaries have not yet been reached.

Lisbon Key Competences

Target: Digital competence.

Some partners contracted some staff to work in the project with ICT skills and all the people involved in the project learned new ICT skills to develop and adapt the contents of the course to an ICT platform. Also all the consortium has used the intranet as a tool to communicate and to manage the files and the project. Also the innovative and ICT-based environment of the main project result (the e-learning course tool) enabled and will enable students, who will require basic digital competences, to further increase them through searching, locating, evaluating, manipulating and controlling of digital and visual information from diverse digital sources and formats.

LLP Horizontal policies

Target: Promoting equality between men and women and contributing to combating all forms of discrimination.

During the project, as average half part of the committees and meetings developed were composed/participated by women and always in all the actions of the project was taking into account the equality between men and women. The extremely technical content of the training and the project does not provide many chances to include subjects in the final programme course that may confront the traditional gender roles or to promote gender equity messages. Nonetheless, the maintenance technician sector is an extremely male gendered sector for the moment, so with the development of the results of this project, could contribute to access improvement by women to training in maintenance skills of wind turbines as a first step.

Complementarity with other policies

Target: Education and Training 2010 Work Programme.

The project has contributed to Objective n° 2 of the Work Programme, as it has been an open learning environment that will improve the attractiveness and access to training for the reasons described in previous paragraphs.

Target: Environment.

The proper thematic of the project on Renewable Wind Energy is focused on the European Union's Energy Policy to maintain the EU's position as a world leader in renewable energy by proposing a binding target of 20% of its overall energy mix to be sourced from renewable energy by 2020.

Also in the development of the actions of the project the consortium tried to use as less paper as possible, using to communicate between them the intranet and send all the documents via electronic files. Other measure that was friendly with the environment during the project was, that all the consortium meetings took place in the same dates that the specific technical workshops of the WorkPackages. This measure reduced the number of travels and then some CO2 emissions were avoided.

