

# SALEIE Project

## Workpackages Specification Document

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### Introduction

The SALEIE project sets out to firstly explore and then provide models for ways in which Higher Education Institutions of Europe in the Electrical and Information Engineering disciplines can respond to current challenges. The main challenges addressed by this project are:

1. Ensuring graduates are prepared to enable Europe to respond to the current global technical challenges in the Green Energy the Environment and Sustainability, Communications and IT, Health, and Modern Manufacturing Systems (including Robotics), that is, a “new skills for new jobs” approach. This will embrace conventional education, lifelong learning and training for entrepreneurship.
2. Ensuring that programme and module governance is sufficiently well understood that issues of mobility, progression and employment are understandable by appropriate stakeholders including the accrediting bodies for professional engineers.
3. Ensuring all learners, irrespective of their background or personal challenges, including: dyslexia and dyspraxia; visual and audio impairments; and mental disabilities such as aspergers, autism, depression, anxiety; are given equal opportunity to education and are appropriately supported;

The aims of this project are to investigate and explore these challenges and to:

- Build a shared understanding of the skills and competence needs of graduates to help European Companies respond to the current global technical challenges.
- Enhance current understanding of academic programmes and modules in terms of technical content and level of learner achievement as a means of improving clarity of learner skills and competence for mobility, academic progression and employment. At present careful scrutiny of application forms is often required when learners apply for academic experiences (such as work placements and ERASMUS exchanges) to fully understand how well the learner meets pre-requisite requirements; and how exchange programmes meet home institution requirements.
- Build a common understanding of current practices and issues associated with marketing programmes and the support of students from unconventional backgrounds and those with special needs. (In this context special need are taken to include, but not be limited to students with: physical mobility problems; dyslexia and dyspraxia; visual and audio impairments; and mental disabilities such as aspergers, autism, depression, anxiety.) Students with special needs often require adjustments to be made to infrastructure and teaching practices, adjustments that need to be carried out with sensitivity to the students involved.

The specific objectives of this project are to produce:

- Model programme and module curricula in the current global technical challenge subjects;
- Support for students with learners with personal challenges during their study and when wishing to undertake periods of study abroad through ERASMUS exchanges, for example
- Models for maximising accessibility of programmes to all learners;

This document describes the overall project methodology and the defines the activities that will be undertaken in the project workpackages to deliver these aims and objectives.

## Project Methodology

The methodology that this project will follow is to audit current practice, design new models, integrate the models into trial institutions, monitor and evaluate the trials and analyse, report and disseminate the findings.

As a first step in this project questionnaire surveys will be used for an audit of the current situation and current practices in interest areas of this project. Specifically the surveys will set out to audit:

- The skills required of graduates able to help industry to respond to the current global technical challenges.
- Programmes and modules that develop these key skills, the Institution offering them, their technical content and level of development.
- The volume and types of learners with specific needs that are currently registered on EIE programmes across Europe.
- Equal opportunities and diversity policies and practices.
- The level and types of support systems in place for these students.
- Policy and practices associated with programme and module specification including how well understood current specifications are to ERASMUS exchange partners and employers.

Supporting these questionnaires will be a meeting of partners' experts to decide on the appropriate questions to be asked so that the surveys generate value adding results. The surveys will be designed by the end of month 3 of the project and issued to all partners and their networks for completion by the end of month 9. A report on the analysis of the survey findings will be completed by the end of the first year – this will provide a solid foundation for the design and development of models and trials in project years 2 and 3.

In year 2, project meetings and small scale conferences will be used to develop model programmes and module curricula in the global technical challenge subjects. The first model will be completed by the end of month 15 with others following over the next 6 months. In this same period models for maximising accessibility of programmes to all learners; and for support for students and learners with personal challenges during

their study and when wishing to undertake periods of study abroad through ERASMUS exchanges will also be developed.

The models will then be deployed into trial project partner institutions to assess their effectiveness from month 21 to month 30 (the academic year of the third project year).

At all stages throughout the project careful attention will be paid to the design and deployment of measurable indicators of our activities. For the surveys, number and breadth of respondents will be amongst the key measures. For the models more qualitative measures based on independent feedback (from non-partner HEIs and Industrial representatives) will be amongst the important measures. For the trial phase, feedback from the pilot institutions will be important quality indicators. Additional overall project performance indicators will be developed by the Quality work package team.

## Overview of Workpackages

The activities in this project are all collaborative between partner staff members and fully support the “learning from each other” strategic emphasis. All involve partners joining together to design survey questionnaires, gathering a picture of the current state of EIE across Europe and then sharing experiences. Sharing will be through meetings to discuss best practice where partners will use their experiences to develop better models for the future. This method is used for widening participation, the marketing of programmes to learners with special needs and in the governance of programmes for exchange programmes and work experience and internships.

The project will, in the above three areas and in the key global technical challenge areas, generate new models of how EIE can be better aligned for the future. This will be in terms of widening the pool of potential learners and by deepening the understanding of competences required for Europe to be able to compete on the global scene in the key future technical challenge areas.

A number of the partners of this project are already members of the EAEEIE, an established network of EIE professionals. This project takes this network foundation and builds upon it with specialists in the widening participation, student support and programme governance areas to create a new project team. This team balances the skills of the content deliverer with those of the administrators to allow the needs of both sides to be harmonised into new and novel operating procedures and practices – using the best examples from across the whole project team.

The partner institutions will pool their talent through meetings of specifically qualified staff from each institution so that experts can discuss with experts. The threads of the project will be brought together and harmonised at the twice yearly management team meetings and the annual full project meeting. Using these meetings the threads will not be allowed to diverge into separate and disconnected entities, the project management team will ensure tight cohesion and full collaboration between all aspects of the project.

The project also aligns with other EU actions such as the widening participation agenda by considering how to address market to and align teaching for students with special needs. It contributes to the quality agenda by exposing partners to examples of best practice in other partners, hence raising the general quality of provision and

management practices. Finally it supports mobility and achievement by enhancing the transparency of learner achievement in relation to international exchanges and work placements.

Table 1 summarises the project workpackages which are described in detail with their detailed action plan each in a separate section below.

<b>Workpackage Number</b>	<b>Workpackage Title</b>
1	Management
2	Quality Management and Project Evaluation
3	Global Challenges
4	Widening Participation & Student Support
5	Policy
6	Dissemination of Results
7	Exploitation of Results

*Table 1. SALEIE Project Workpackages*

## Document Control

This specification document will be updated as and when required to maintain it as a record of the activities being undertaken. Draft versions will carry a letter version code, starting at A. When the draft version is agreed by the Project management Team (see WP1.5) the version will be released as the first public version at issue 1. Thereafter the version number will be increased to reflect either major or minor revisions. Every major update will be reflected as an integer update (e.g. V1 to V2). Minor updates, including editorial changes will be reflected as a “dot number” update (e.g. V2.0 to V2.1).

## Workpackage 1. Management

This workpackage addresses the general management of the overall project and will provide administrative, financial, and operational guidelines for the management, project risks, communication and coordination of activities to ensure the coherent and smooth operation of the project.

A key task will be to define the key indicators for a successful project monitoring and impact assessment, in cooperation with WP2.

WP1 activities will be undertaken by a managing team, composed of the coordinator (leader of WP1) and the leaders of WP 2 to 6 (WP7 being lead by the lead partner). The managing team will:

- Establish workpackage teams and monitor the engagement of project partners
- Establish a communication system between project partners

- Establish a project quality monitoring system, risk register and appropriate internal and external quality assessors
- Coordinate the detailed definition of workpackage activities and outcomes as the project evolves
- Monitor project activities, their objectives and activities and manage the overall project plan
- Coordinate the establishment of a project website and maintain its content for project partners and external viewing
- Collating administrative, financial and activity data for reporting purposes
- Monitor and supervise the coherence of the project at the WP and sub-Wp levels in collaboration with the Quality Workpackage leader.

The managing team will monitor of the work, in coordination with the evaluation and quality WP, at partner, sub-WP and WP levels with respect to the key objectives to be achieved (Activity Document). This monitoring will serve as a key report on the project activities, and the nature and importance of each partner's involvement. This Activity Document will also be used to identify both "over-activity" and "under-activity" of partners, and allow the managing team to take appropriate early action in respect of under-performing partners.

The managing team, and in particular the project coordinator, will organize the project's meetings schedule, and be involved in the practical organisation, with the partner institution that will host the meeting, of every meeting.

The Coordinator will be responsible for the administrative and financial management of the project, manage the generation and presentation of reports for the Executive Agency and ensure efficient communication with the project officers at the Executive agency. The coordinator will disseminate information received from the executive agency to the project partners.

The following activities will be performed in this workpackage:

### **WP1.1 Workpackages Specification Document**

The Workpackages Specification Document is this document.

### **WP1.2 Project Website (See also WP6.1)**

From the commencement of the project a website will be developed that will advertise the existence of the project, state its aims and objectives and serve as an invitation for interested parties to contact the project network. It will provide public visitors with general information about the project. A specific website domain will be acquired.

This activity establishes the initial website. A specification for the site will be drawn up in conjunction with the overall project leader and the work package leaders and then created by subcontract.

A separate but linked Virtual Learning space for the project team to undertake their detailed work will be developed and operated for the duration of the project. This space will be a private area for project documents and information confidential to the project.

### **WP1.3 Mid-term Report**

A mid-term report will be produced to draw together progress and expand on plans for the second half of the project. Individual contributions to the report will be

produced by the workpackage leaders and the overall report will be collated and produced by the project leader. The report will be submitted to the EU and will be published on the public area of the project's website.

The mid-term report will rely on information gathered from workpackage leaders and also from information gathered via the Project Internal Documentation.

#### **WP1.4 Final Project report**

A final report will be produced that details all the work undertaken within the project and describes the outcomes and impact achieved. The report will include recommendations for future developments and the plan as to how the European Association for Education in Electrical and Information Engineering will embed and sustain the work of the project into its future activities.

Individual contributions to the report will be produced by the workpackage leaders and the overall report will be collated and produced by the project leader. The report will be submitted to the EU and will be published on the public area of the project's website.

#### **WP1.5 Project Management Team**

A Project Management Team (PMT) will be established at the first project meeting. The PMT will comprise the Project Leader and all Workpackage leaders. An email distribution list will be established to allow this group to communicate privately where appropriate.

#### **WP1.6 Project Logo**

The project requires a logo, which will be developed through suggestions, iteration and by seeking the views of all project partners. The project leader will, in the event a consensus cannot be reached across all partners, make the final decision.

#### **WP1.7 Project Internal Documentation**

A range of internal documents are required to enable the project management and data collection to function correctly and to ensure it is resilient to audit. The following documents, as a minimum will be produced.

- 1) Individual partner contracts – Contracts between the University of York and each individual project partner reflecting the existence of the main project contract between the EU Commission and the University of York.
- 2) Partner expense re-imburement procedure and claim form – A process will be developed in conjunction with the University of York's Finance Office to ensure an efficient process is developed whereby partners can be reimbursed for all eligible expenses. A procedure and expense claim form template will be developed and made available to partners.
- 3) Partner bank account details form – a proforma to collect this required information will be developed and made available to partners.
- 4) Reimbursement method declaration – All partners will be required to define their reimbursement policy for the SALEIE Project. The Project Coordinator will establish a method of identifying and collecting these declarations.
- 5) Time sheet and partner project time declaration forms – templates for these will be developed by the Project Coordinator to allow the in-kind contribution to be monitored.

- 6) Project Document Filing System (PDFS) – the Project Coordinator will develop a PDFS at York into which all project records will be filed.
- 7) Project Meeting Attendance Recording System (PMAR) – A PMAR system will be developed including the design of template attendance sheets to record partner engagement with project meetings. A record of notes of all project meetings will be kept.

### **WP1.8 Project Work Plan**

An overall project work plan will be developed showing ALL project activities and how progress is being made against the available time.

### **WP1.9 Associate Project Partners**

A system for the recognition and engagement of and with Associate Partners will be developed by the Project Leader in conjunction with the Project Management Team. A briefing for Associate Partners will be produced and made available to all project partners for circulation amongst their networks.

## **Workpackage 2. Quality Management and Project Evaluation**

The quality of work undertaken in this project is a high priority for the project team and attention will be given to it from the outset. The quality WP leader will work with the project leader to oversee and manage all aspects of quality. Overall quality management will be achieved through a quality assurance system, quality control checks and a general policy of continuous quality improvement. The final element of this workpackage is project evaluation.

- 1) A quality assurance system will be established at the outset of the project that defines methods of working, formats for outputs, a document version control system and a between and within workpackage communication and coordination system.
- 2) The quality control activity will monitor and assess the coordination and coherence of the work at WP and sub-WP levels, according to the work plan set by the managing team. It will devise appropriate key quality indicators for each activity and gather and report evidence for each. The quality control activity will have specific responsibility for:
  - All partners understanding the overall project goal at partner, task and project level and their part in the achievement of this goal.
  - The coordination and communications within the project and between partners and the overall quality of project leadership
  - The contribution of partners to workpackages
  - The quality of achievement against objectives at the WP and sub-WP levels
  - The response of the EAEEIE to outputs and their commitment to the maintenance of outputs beyond the life of the project
  - The quality and contribution of partners to project meetings
- 3) Continuous quality improvement: A policy of continuous quality improvement will be established to build on WP and sub-WP successes and learn from any mistakes that occur.

The quality workpackage leader will produce mid-term and final reports for incorporation into the overall project reports.

### **Evaluation**

The evaluation part of the workpackage will assess the results obtained in all workpackages using internal and external quality evaluation bodies.

Internally, evaluation will be through the following mechanisms:

- By user-groups at the task level. Internal quality auditors will assess the achievement and compliance of the workpackage outcomes as compared to the targets defined for that workpackage. The results will be collated and reported by the leader of the quality workpackage.
- By an external review team (selected from a European association, respected European Institution or other Thematic Network), knowledgeable in the work of the project.

The external quality review will be a subcontracted activity and will be made at the project and at each workpackage levels. The external quality review team will evaluate and comment on the project results, the quality with respect to the stated objectives, and on the potential impact of the results.

The following activities will be performed in this workpackage:

#### **WP2.1 Project Quality System Manual**

The project quality system manual will set the standard for ways of working to assure outcome quality throughout the project. The manual will define document formats and version control, means of activity communication and coordination, roles and responsibilities and reporting requirements. It will be a publicly visible document on the project website.

#### **WP2.2 Mid-term Quality Report**

The mid-term quality report will be a collation and summary of the internal assessment activities and of any feedback received from any project stakeholder. It will provide numerical data on outputs, dissemination actions and partner engagement (produced in cooperation with the project financial administrator). The report will primarily be a contribution to the overall project mid-term report. Information on quality will be gathered through a set of quality metrics.

#### **WP2.3 External Assessor's Report**

An external assessor will be appointed to review the activities of the project and provide feedback to the Quality Workpackage Leader and overall Project Leader on the progress and issues they observe. They will be required to produce an overall final report. The report will be produced to a general brief provided by the project management team and will be on all aspects of the project, its work packages and sub-activities. The external assessors will not be restricted in what they can investigate or report on and the final version of the report will be publicly visible on the project website.

#### **WP2.4 Final Quality Report**

The final quality report will be a collation and summary of the internal assessment activities, of any feedback received from any project stakeholder and the external assessors findings. It will provide numerical data on outputs, dissemination actions

and partner engagement (produced in cooperation with the project financial administrator). The report will primarily be a contribution to the overall project mid-term report.

### **WP2.5 Internal Assessment Activities**

In order to evaluate the appropriateness and the effectiveness of the work, a monitoring group, consisting of six people, was created during the first general meeting in York (Dec. 2012). This group will work in “pairs”, each one following one of the three main tasks (WP3, WP4 and WP5).

The objectives devoted to this group will be the following ones:

- To provide a feedback to the task managers
- To interact with the Managing Board.
- To supervise the project until the first progress report
- To provide constructive criticism.
- To suggest relevant topics for further discussion

### **WP2.6 Project Quality Metrics**

The quality of the management will be mainly assessed by the effective follow-up of the activity document.

For the three main tasks (WP3, WP4 and WP5), questionnaires will be designed, distributed, and responses analysed. For each, the proportion of effective responses got, and their representativeness regarding the amount of countries and/or kinds of institutions. The usefulness of these questionnaires will be assessed through the results giving rise to publications: the number of communications, as well as the level of the conferences (task WP6) will be a measurement tool. For the dissemination task, the regular update of the webpage is also one of the main activity indicators.

## **Workpackage 3. Global Challenges**

The objective of this work package is to enhance the competitiveness of EIE education within Europe, especially in relation to modern global technical challenges. The outcomes will provide European HEI's with model curricula optimised to the technical needs of the challenges whilst retaining the valued characteristics of Education within European Institutions.

Building on our understanding of EIE programmes across Europe gained through the Surveyor and ELLEIEC monographs and the Tuning survey, this work package will look at the needs of Electrical and Information Engineering graduates in the key Global Challenges of Green Energy, the Environment and Sustainability, Communications and IT, Health (eg. medical application of knowledge of information engineering), and Modern Manufacturing Systems (including Robotics). Prior studies have developed our understanding of the need and importance of generic competences, including entrepreneurial skills, the importance of designing learning as a socialisation process, and the use of project orientated learning methods where learning is based on a concrete problem that target groups know from everyday life. This work package will explore these issues in relation to conventional students and those with special needs.

The methodology to be used will start with a review of past monographs and a survey to identify existing programmes orientated to the key global challenges. The survey

and follow-up more detailed discussions with the programme providers will form the basis of example curricula with module content, learning outcomes, level of achievement and assessment methods. The module specification will include the scope and depth of generic competence development. Partners willing to pilot these trial modules will be identified and supported through their first delivery and outcome assessment and documentation of their experience.

Activity in this work package will include:

- A survey of existing programmes in the key challenge subjects including content details
- The design and specification of example curricula in the key challenge subjects including learning outcomes and module content.
- The design of modules appropriate to the key challenge areas and the assessment of them through pilot delivery to learners in partner institutions
- A review of existing and designed modules for the integration of generic, transferable competences appropriate to employment in businesses focussed in key challenge areas.
- The creation of a web-based centre for excellence for the development of key challenges curricula in EIE across Europe. This resource will be accessible and add value to programme designers, teaching staff, academic administrators and learners.

All the outcomes will be made public through publication on the project website and/or through publications in relevant journals and/or conferences..

In order to have a clear understanding and a comprehensive offer and demand balance as well as a Roadmap towards the strategic objectives set forth, the following activities are to be performed in this WP.

### **WP3.1 Methodological Strategy and Work Plan Development.**

To assure effectiveness and efficiency of work to be done and activities related to global technical challenges to be undertaken by partners in all different countries and regions, TUIASI (P12) with the assistance of University of York (P1-UoY, project coordinator), P7-UCV, P8-CVUT, P29-FBORDEAU01, P34-UM-FERI (Management Group) will establish and define, up-front the methodological strategy. The methodology that this WP will follow is to audit current practice, design new models, integrate the models into trial institutions, monitor and evaluate the trials and analyse, report and disseminate the findings. Once the above has been established and agreed upon, a detailed Work Plan will be jointly developed with all Partners to assure on-time WP completeness and results availability within the pre-set time and budget frameworks. Correlations with the other work packages timetables will be taken into account.

### **WP3.2 Data Gathering at Regional / Area/ Country of Expertise Level.**

Prior to workshops, roundtables and seminars, all partners will conduct local/regional/national surveys on the said topic as to gather regional data on the topic to be later presented and discussed at the event.

### **T3.3 Initial Analysis on Global Technical Challenges.**

P12-TUIASI, will conduct a full initial research and documentation exercise in order to perform an Initial Analysis to define and refine the modern global technical

challenges in relation with the Electrical & Information Engineering (EIE) education. A number of technical area leaders, one per technical challenge area, have to be appointed. They should be experts in that area providing a real technical input and lead from the front. A Draft Initial Analysis Report will be issued and distributed to all Consortium Partners for consideration and review. Comments, suggestions for improvement and feedback on draft report will be gathered and jointly considered by the whole Consortium.

#### **T3.4 Feedback Gathering from Industry.**

TUIASI-P12 and P1-UoY will lead this activity which intends gathering information on the generic competences, including entrepreneurial skills, which EIE learners may possess in order to meet the employers expectations in businesses focussed in key challenge areas. Activities have to be assigned to partners based upon their adherence to a subgroup related to a technical area of expertise.

Some common and standardized activities shall be performed in every place. These activities include: Face-to-face in-depth interviews, roundtables, questionnaires to scientific and business actors. Additionally, and to adapt project's approach to social and/or cultural differences among regions or even stakeholders, each partner will undertake any other relevant activity it might consider appropriate for the achievement of goals and objectives.

#### **T3.5 Mapping and Identification of Existing Programmes Oriented to Key Challenge Areas.**

TUIASI (P12), P3-TU-Sofia, P5-RU, P19-UCBL1, P24-IHK, P27-STPKC, P36-UoM, P41-TUC will coordinate the mapping and identification of existing programmes oriented to key challenge areas aiming at boosting research and to increase regional socio-economic impact and competitiveness of EIE education within Europe. This activity will address these issues in relation to conventional students and those with special needs. A project questionnaire surveys will be used for an audit of the current situation and current practices in interest areas of this project. In order to compare different existing curricula or curricula with module content oriented to the key global technical challenges best practice criteria will be defined. A Draft Best Practice Criteria Report will be issued and distributed to all Consortium Partners for consideration and review. Comments, suggestions for improvement and feedback on draft report will be gathered and jointly considered by the whole Consortium.

#### **T3.6 Design and Specification of Example Curricula in the Key Challenge Subjects**

Based on the survey and follow-up the WP3 leader P12-TUIASI and the technical area leaders (P3-TU-Sofia, P5-RU, P19-UCBL1, P24-IHK, P27-STPKC, P36-UoM, P41-TUC) will provide partners with a form of the basis of example curricula with module content, learning outcomes, level of achievement and assessment methods. The module specification will include the scope and depth of generic competence development. It will be issued and distributed to all Consortium Partners for consideration and review. An indication of which generic competences will be developed and how socialization and project orientated learning methods using concrete examples that targets groups know from everyday life might be used in the implementation of the curricula. Partners willing to pilot these trial modules will be identified and supported through their first delivery and outcome assessment and documentation of their experience.

### **T3.7 On-going Work Plan Monitoring.**

The WP leader P12-TUIASI will have, at least, every two months monitoring and follow-up reviews with the technical area leaders and all Partners responsible for running the analysis in different regions/countries as to closely track quality and performance as well as to solve issues and/or problems that may arise. As part of monitoring strategy, due to the amount of the work required within the WP3, besides the management team meetings, a number of one or two face-to-face meetings per year with the technical area leaders will be planned in order to discuss WP3 progress, alignment with plan and the contribution of individual partners. Between these meetings the email and Skype communication has to be taken into account.

### **T3.8 DataWarehousing.**

The WP3 leader P12-TUIASI and the technical area leaders (P3-TU-Sofia, P5-RU, P19-UCBL1, P24-IHK, P27-STPKC, P36-UoM, P41-TUC) will collect the relevant data and will help the project coordinator and the WP6 leader to create, develop and implement integrated databases as required to be able to compile and concentrate in just one single place all the information available for further usage of curricula related to the key challenge subjects. This activity will be performed in close co-operation with project coordinator and WP4 and WP6 leaders.

### **T3.9 Dissemination.**

The dissemination of the WP3 SALEIE project results and events will be highly served by web-based means and mechanisms. The SALEIE project web site will contain general project information as well as the WP3 results: survey of existing programmes in the key challenge subjects, report of the survey results based on a questionnaire for all project partners and their local networks to identify and characterise modules and programmes aligned to the key global technical challenges, set of model curricula for programmes and modules orientated to the key challenge subjects *etc.* The Web-based dissemination will be performed in close co-operation with the project coordinator and the WP6 leader. In the mean time all WP3 subgroups partners will contribute throughout Europe to disseminating information about the project and its results at conferences, workshops and seminars.

## **Deliverables:**

### **D3.1 Methodology and Work Plan Document.**

Document defining the methodology and the Work Plan to be followed by all partners during the development of WP3's activities. It is part of the entire project methodology and work plan.

To include:

- Method of mapping and identifying existing programmes oriented to key challenge areas which require increased competitiveness of EIE education within Europe.
- Types, modalities and characteristics of programmes to be considered for the analyses.
- Work Plan to be followed [month 4].

### **D3.2 Report on the modern global technical challenges**

In relation with the EIE education within Europe. Best practice criteria aiming to provide a comparison basis for different curricula will be defined and integrated within this report [Delivery date: month 9].

### **D3.3 Report on existing programmes orientated to key challenge areas.**

This deliverable will be a report summarizing the findings of a desk research exercise reviewing past monographs and a survey of existing programmes orientated to key challenge areas. Of interest will be full programmes and specific modules where the creators are prepared to discuss content details, level of achievement and assessment methods [Delivery date: month 9].

### **D3.4 Questionnaire on existing technical challenge focussed modules and programmes.**

The questionnaire helps all project partners and their local networks to identify and characterise modules and programmes aligned to the key global technical challenges. The survey results will be collated into a report to be delivered in month 21<sup>st</sup> [Questionnaire delivery date: month 9].

### **D3.5 Model curricula for key challenge subjects.**

This deliverable will be a set of model curricula for programmes and modules orientated to the key challenge subjects. The models will be derived from the findings of the desk research activity related to the WP4. Each model will comprise a full specification with indicative content, learning outcomes, level of achievement and assessment methods [Delivery date: month 18].

### **D3.6 Experimental modules.**

This deliverable will be a small number of full modules that partners can deliver on a pilot basis to evaluate their effectiveness. The modules will have teaching and learning materials and all resources needed for an academic to base a module they can deliver methods [Delivery date: month 24].

### **D3.7 Report on results of trials of experimental modules.**

The report summarizes the findings of the trials of experimental modules [Delivery date: month 33].

### **D3.8 Dissemination materials.**

The project results will be presented at conferences, workshops and seminars. Project workshop meetings minutes have to be provided too.

## **Workpackage 4. Widening Participation & Student Support**

This work package will explore approaches to widening participation in EIE programmes across Europe. It will consider the specific needs of learners with disabilities pertinent to education in EIE. Consideration will be given to conventional Higher Education learners, those studying part-time, distance learners, International students, lifelong learners, students with disabilities and those who traditionally do not see conventional higher education as their route to personal development. Each of these types of learner have different support needs especially in relation to developing competence in laboratory skills and generic, transferable competences (such as group

working, presentation skills, creativity, etc.). The work package will explore the implications on the education system of students with disabilities (reference of best practice across Europe in supporting students with such issues, eg: Dyslexia, Dyspraxia, Mental Health, Autism, Aspergers, etc.).

Activity in this work package will include:

- A survey of the project partners of the scale of diversity of widening participation practices across Europe.
- A collation of examples of best practice in supporting these specific needs.
- The design and development of best practice support models for different types of specific needs.
- A collation of examples of best practice in marketing programmes to students with specific needs.
- A review of how HEI's industrial partners view support to learners
- The translation of these templates and examples of best practice into a range of European languages.
- The design of a web-based centre for excellence for the support of learning in EIE across Europe.

Programmes and modules already aligned to the key global technical challenges (see Wp4) will be carefully reviewed to ensure that appropriate learner support systems can be put into place in these future critical technical areas.

The methodology will be to start with an audit of current practices through a set of appropriately targeted questionnaires. The project partners will be used as the route to obtaining responses to these surveys from within their own institutions and their networks. The objective will be to achieve as broad a coverage of stakeholder responses as can be achieved. The results of the surveys will be collated and analysed into one or more reports. These reports will be published on the project website.

The results of the surveys will inform: the design of new models for support systems for students; the design of programme marketing materials to maximise attractiveness of EIE programmes to all potential students; the perceptions of ERASMUS exchange institutions and Industry on student support systems; and the identification of examples of best practice in support systems. Visits of partners to institutions with identified best practices will raise the visibility of these systems and enable best practice to be spread across the project network.

The following activities will be performed in this workpackage:

#### **WP4.1 Pan-European Widening Participation and Diversity Survey**

Surveys will be designed to explore the forms, scope and effectiveness of existing student support systems across Europe, specifically:

- The distribution of learners with specific needs across Europe;
- The percentage of students with specific needs who undertake ERASMUS exchanges and industrial work placements;
- The content of widening participation policies and practices across Europe;
- Common perceptions of formal learning (eg. Being ashamed of their gaps or thinking they are too old to learn);
- Marketing materials to attract learners with specific needs to EIE;

- Perception of ERASMUS and Industrial partner institutions of support systems for learners with specific needs;

The surveys will be distributed amongst project partners for their completion and by their networks to widen the picture across Europe. The questionnaires will also be made public on the project website to enable any other institution who wishes to contribute to the project to do so. The surveys will be managed using the SurveyMonkey questionnaire service.

#### **WP4.2 Best Practice Exemplars in Supporting Students with Specific Needs**

This activity will commence with a discussion amongst project partners of how ‘best practice’ can be recognised. A search for best practice will then be undertaken through project partners and their personal networks to identify examples of best practice.

The methodology for understanding the best practice examples will be through structured interviews which will be designed and pilot tested on a project partner. Structured interviews will then be used on the real best practice example institutions to extract and understand what it is that is leading to the best practice. The findings of each will be written up as a case study.

The activity deliverable will comprise a collation of these best practice case studies in supporting learners with specific needs.

In seeking out examples of best practice consideration will be given to the differing needs laboratory based, practical activities, work experience and placements within the EIE discipline areas. Programmes and modules already aligned to the key global technical challenges (see Wp4) will be carefully reviewed to ensure that appropriate learner support systems can be put into place in these future critical technical areas.

The cases will be produced in English (but see deliverable WP4.6). The case studies will all be published on the public section of the project website.

#### **WP4.3 Supporting Students with Specific Needs Models**

Using the case studies from WP4.2 as the basis, a set of models of best practice support for different types of specific needs will be drawn up. The models will be designed so that they can be easily understood and applied within new institutions. Each model will include practical steps that should be taken to create the support system and a clear statement of all those who will be affected within the education system and how. The cases will be produced in English (but see deliverable WP4.6).

#### **WP4.4 Marketing Programmes to Widen Participation Report**

A similar methodology to the one described above will be used to explore how programmes are marketed to encourage learners with difficulties. The activity deliverable will be a collation of case study examples of best practice in marketing programmes that encourage learners with difficulties to engage equally well to other learners. The case studies will be written so that they can be easily understood and applied within new institutions. Each case will describe the approach taken, its objective and provide examples of wording, the rationale for inclusion of images, etc. The cases will be produced in English (but see deliverable WP4.6).

The case studies will all be published on the public section of the project website.

#### **WP4.5 ERASMUS and Industry perceptions of Support Systems for Students with Specific Needs Report**

A survey into the perception of industrial partners and ERASMUS partner institutions on the importance and effectiveness of support systems for learners with specific needs will be designed and deployed using the SurveyMonkey questionnaire service.

The deliverable will be a report on the findings of the survey. It will be published on the public section of the project website.

#### **WP4.6 Translation of models and best practice case studies**

Translated versions of the best practice exemplars in supporting students with specific needs, the models for supporting these students and best practice case studies in the marketing of programmes for maximum appeal will all be translated into a range of European languages as considered useful by the project partners. The target languages will be French, Slovakian, Slovenian, Romanian, Bulgarian, Italian, German as a minimum.

All translated versions will be published on the public section of the project website.

#### **WP4.7 Widening Participation Centre Website**

A centre for excellence widening participation and support for learners with specific needs will be created in the publically visible part of the project website. Visitors will be able to view all the case studies and models of good practice found within the project and view them in a range of different languages. All resources will be created so they are accessible and easy to use by interested higher education institutions. Examples of where they are currently being used with contact names where available will be provided so that interested parties can make contact with that institution to pursue further enquiries.

### **Workpackage 5. Policy**

Findings in previous EAAEIE Thematic Network projects undertaken by networks have identified differences in Quality Assurance procedures and administrative practices across Europe and that establishing new and making changes to existing programmes in European HEIs are governed to varying degrees at the National, Regional and Institutional level. Given this variation and that work packages 3 and 4 are focussed on change within Higher Education to meet future challenges, a review of the needs and impact of administrative policy as it impacts the design, development, delivery, assessment and review of academic programmes is included.

The objective of this work package is to bring together policy administrators from institutions across Europe to review current practices and to identify examples of best practice; to build a common understanding of governance and policy implications on the strategic changes associated with the project; and create a centre for excellence in the policy area.

The methodology will be to commence with an audit of current practices. The project partners will be used as the route to obtaining responses to these surveys from within their own institutions and their networks. The objective will be to achieve as broad a coverage of European higher education institutional responses as can be achieved. The results of the surveys will be collated and analysed. The analysis report will be published on the project website.

Activities in this work package will include:

- A survey of administrative practices across Europe in respect of the design, development, delivery, assessment and review of academic programmes
- Work package meetings in partner institutions
- The identification of examples of best practice

A policy in EIE resource website will be created as part of the main project site.

The following activities will be performed in this workpackage:

### **WP5.1 Survey of Administrative Policies and Practices in EIE**

Surveys will be designed to explore current administrative policies and practices across Europe. The survey will address the following questions, as a minimum:

- What autonomy do academic staff have in proposing new modules and programmes;
- Who, if not academic staff, are monitoring programme and module needs to respond to the changing industrial environment;
- What policies and practices are in place in respect of assessment of learning outcomes;
- How closely aligned are assessments and module and programme learning outcomes and how are these monitored;
- How policy takes account of the needs of Professional Engineering bodies;
- Differences in policies and practices with respect to non-conventional learners;
- The existence and content of equal opportunities and widening participation policies and practices;
- How are the needs of learners with specific needs communicated within the institution and to whom;
- What policies are in place to ensure learners with specific needs are supported?
- How are ERASMUS and Industrial partner institutions supplied with information about modules and programmes;

The surveys will be distributed using the SurveyMonkey questionnaire service amongst project partners for their completion and by their networks to widen the picture across Europe. The questionnaires will also be made public on the project website to enable any other institution who wishes to contribute to the project to do so.

The results of the surveys will inform partner institutions policy makers and, through them, the wider community, and highlight examples of best practice (see WP5.2). Visits of partners to institutions with identified best practices will be made to raise visibility and enable best practice to be spread across the project network.

### **WP5.2 Best Practice Exemplars in administrative policy**

This activity will commence with a discussion amongst project partners of how ‘best practice’ can be recognised. A search for best practice will then be undertaken through project partners and their personal networks to identify examples of best practice.

The methodology for understanding the best practice examples will be through structured interviews which will be designed and pilot tested on a project partner. Structured interviews will then be used on the real best practice example institutions to extract and understand what it is that is leading to the best practice. The findings of each will be written up as a case study.

The deliverable will comprise a collation of case study examples of best practice in administrative policies and practices in EIE education.

In seeking out examples of best practice consideration will be given to the needs of students with special needs and those studying in non-conventional ways.

The cases will be produced in English (but see deliverable WP5.3). The case studies will all be published on the public section of the project website.

### **WP5.3 Translation of best practice case studies**

Translated versions of the best practice exemplars in administrative policies and practices will all be translated into a range of European languages as considered useful by the project partners. The target languages will be French, Slovakian, Slovenian, Romanian, Bulgarian, Italian, German as a minimum.

All translated versions will be published on the public section of the project website.

### **WP5.4 Website Support Resources**

A section of the project website will be dedicated to the results and outcomes of this work package. Included will be the survey report of administrative practices across Europe in respect of the design, development, delivery, assessment and review of academic. The examples of best practice will be presented as case studies and models that others can consider and adapt to their specific needs. All the results will be published on the publicly visible area of the website.

## **Workpackage 6. Dissemination of Results**

Internal dissemination (between project partners) is through:

- Project partner meetings
- Visits to partner institutions identified as examples of best practice
- Using the Virtual Partner Network

An annual meeting is planned where all project partners meet to share work package outcomes and share experiences. The meetings will be adjoined to the European Association for Education in Electrical and Information Engineering (EAEEIE) Annual Conference.

External dissemination is through:

- Project website
- Learned publications
- Final report to HEIs across Europe

A project website will be created containing, publically visible, all results and outcomes as they emerge and as an on-going resource after the project ends. The website will be referenced from the EAEEIE's site. Contact will also be made with other relevant EU projects with a view to mutual referencing.

A special session devoted to the activities of the project will be arranged in the annual conference of the EAEEIE in each year of the project's duration. Discussions on the inclusion of special sessions in other relevant conferences including ITHET will also be held with the conference organisers. Conference and journal publications on outcomes will also be produced to broaden the awareness of the project and to disseminate its outcomes.

The final report and an executive summary will be sent to the head of department of all known EIE departments across Europe as identified in the THEIERE and EIE-Surveyor project monographs. Each head of department will be asked to forward the communication to their industrial partners, academic policy makers, student support administrators and teaching staff. By using this resource, the majority of current providers of EIE programmes will be reached and through them relevant administrators and industrial partners.

The following activities will be performed in this workpackage:

#### **WP6.1 Project Website**

The basic project website is created as part of WP1. This activity will produce content for dissemination to interested stakeholders. The structure of the dissemination section will enable visitors to the site to quickly and easily locate all publically visible project publications including reports, links to conference and journal publications, newsletters, and general announcements. The structure will be established early in the project so that population with content is a straightforward process.

#### **WP6.2 Learned publications**

One of the dissemination strategies of this project is to use conferences and journals as a means of disseminating the existence and outcomes of this project. Journals and conferences are the source of intelligence about latest thinking in the education field for academics all over the world. Using such a dissemination mechanism will give the project the widest visibility and potential for real impact.

The targets for outcomes are:

- Project Year 1:
  - A special session in EAEEIE 2013 comprising at least 4 papers.
  - One or more papers submitted to ITHET 2013.
- Project Year 2:
  - A special session in EAEEIE 2014 comprising at least 4 papers.
  - One or more papers submitted to ITHET 2014.
  - One or more papers submitted to SEFI 2014.
  - One or more papers submitted to DeSC 2014.
- Project Year 3:
  - A special session in EAEEIE 2105 comprising at least 4 papers.
  - One or more papers submitted to ITHET 2015.
  - One or more papers submitted to SEFI 2015.
  - One or more papers submitted to DeSC 2015.
- Journal papers as appropriate to the outcomes of the main workpackages.

### WP6.3 Project Newsletter

Project newsletters will be produced advertising the existence of the project and disseminating its outcomes. Distribution of the newsletter will be to all Heads of Departments of identified EIE providers across Europe, to Officers of the European Union and, through partners and attendance at conferences and other education related events, to the widest audience achievable.

The targets for this outcome are:

- A minimum of 3 newsletters will be produced in paper and electronic forms
- An e-Newsletter for distribution to all Heads of Departments of identified EIE providers across Europe and to Officers of the European Union.

A paper copy of each newsletter for distribution through partners to conferences and other education related events.

### WP6.4 Project Posters and Fliers

A range of visible project marketing items will be produced, including:

- A pull-up advertising poster for use at exhibitions, conferences, meetings and other marketing opportunities.
- Project posters for use at conferences, in partner departments.
- Project fliers for distribution at exhibitions, conferences, etc.

## Workpackage 7. Exploitation of Results

The activities being undertaken in this project are extremely important to the future of EIE education across Europe and should have a significant impact on the administration, design, development, delivery, assessment, and support activities for current and new programmes. Dissemination of the outcomes of the project is a very important activity and is one that the project and EAEEIE are fully committed to for the duration of the project and beyond. The project leader and work package leaders will jointly develop an exploitation strategy for the project based on the following.

It is expected that, by virtue of the attendance of partners at meetings in other institutions, benefit will be gained that will be able to be used within partner institutions. Being able to explore how other institutions address the widening participation and student support issues, the policies and practices of programme and module administration and student mobility and work experience – all key components of the overall learner development process – will raise the general level of performance in these areas across Europe. An immediate benefit will, therefore be available for partner institutions and through their networks institutions in general.

Newsletters and a final letter containing the project outcomes will be sent to every head of an EIE department or faculty across Europe (using the EIE-Surveyor survey database) with a summary showing how the findings can be exploited.

In respect of EIE responding to the global technical challenges, this project will produce a survey of programmes and modules aligned to the challenges, examples of best practice and model curricula for institutions to use and adapt to their specific local needs. Institutions who are seeking to create new programmes or modules will have carefully designed models that will give them the combined benefit of all the

project partners, all experts in the EIE field, as a starting point, with links they can follow to partner experts for further clarification if needed.

Overall the benefit to Europe from this project should be in both the breadth of personal development (through widening participation, and enhancing student support) and depth of development through a better understanding of how Europe can respond to the current global technical challenges it faces. The EAEEIE, through its members and activities, will spearhead the exploitation of the project findings and sustain their presence in the minds of EIE educators beyond the life of the project.

The following activities will be performed in this workpackage:

### **WP7.1 Exploitation strategy**

The overall project leader with the assistance of the work package leaders will develop an exploitation strategy based on the following:

- Promoting the adoption of project outcomes to project partners through annual meetings and communications
- Communicating project outcomes to other European HEIs
- Encouraging project partners to make contact with their local contacts within EIE professional accreditation bodies, Government Agencies and Industry Associations in their Region and through their personal networks

The exploitation strategy will be in the form of a report published on the project website. The project lead partner will be responsible for managing the achievement of the dissemination strategy.

### **WP7.2 Internal exploitation**

Partners attending project meetings will benefit from exposure to new policies, procedures and practices and from exchange of ideas and problems with other partners. These meetings will be key opportunities to exploit the findings of the project and gain information upon which changes in their host institution can be made.

### **WP7.3 External exploitation**

Exploitation of the outcomes of this project to non-project partners will be closely associated with the dissemination strategy in that annual newsletters and results will be communicated to all heads of EIE departments across Europe with suggestions as to how to use the findings. The examples of case studies and models will be in languages that permit easy and more widespread understanding to maximise the use of the project's findings.

The work package leaders will help in promoting the findings of the project to their regional and national institutions. They will be required to have discussions with the professional bodies for EIE in their Region to establish opportunities for the wider exploitation of the project findings as part of the overall project exploitation strategy.