Application Form

Selection: 2019

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

Call for Proposals 2019 - EAC/A03/2018

Education & Training for Automation 4.0 in Thailand (ETAT)

DETAILED DESCRIPTION OF THE PROJECT

JOINT PROJECTS

(To be attached to the e-Form)

PART D – Relevance of the Project

D.1 Why does the consortium undertake this project?

- *Which problem(s) will the project address in the participating Partner Countries? Why are these problems pressing?*
- *Please explain the result of the need analysis carried out for each Partner Country and for each Partner institution and provide qualitative and quantitative evidence for your results. Please refer also to studies carried out and feasibility analyses undertaken. In particular explain for each institution, why the support from the CBHE action is required. (limit 10.000 characters)*

Problems and needs identified at the level of the Partner Country: [Thailand]:

According to education law and regulations in Thailand (National Education Act of B.E. 2542 - 1999, Ministry of Education Regulatory Act B.E. 2546 - 2003) the education in Thailand has gone through drastic changes since the first National Education Act has been in force in 1999. The guiding principles in education provision according to the Act are based on lifelong education for all, participation of all segments of society in education provision, and continuous development of the body of knowledge and learning processes. Moreover Thailand has fostered cooperation and partnership at bilateral and multilateral levels, and continuously participated in regional and international forums so as to enhance quality of education through sharing knowledge and experiences within the region and beyond. In this context the Association of Southeast Asian Nations (ASEAN) have been observing the development of the Bologna Process and viewing the Bologna Process, European Higher Education Area (EHEA) and European Research Area (ERA) as a useful model for their regional higher education reforms.

2018 was signed the Thailand Country Program with a key strategic pillars for Thailand's future. To achieve this key strategy, the country's government and business leaders have set in motion a transformation plan known as Thailand 4.0, the next stage of long-term growth after progressing through export dependent 1.0 agriculture, 2.0 light manufacturing and 3.0 heavy industry. Thailand 4.0 will be characterized by a digitized integrated business and social system and an advanced infrastructure. The plan emphasizes technological innovation and education, assisting digital entrepreneurs, boosting internet access and retraining workers by support and help of East Economic Corridore - Human Resource Development Centre (EEC-HDC). The government is also cooperating with small and midsize companies and large businesses to ensure that fast-changing industries, such as the financial and telecom sectors, are up to international standards.

A key component of Thailand 4.0 is the Eastern Economic Corridor (EEC), an area of more than 13,000 square kilometers straddling the three provinces of Chonburi, Rayong and Chachoengsao southeast of Bangkok. The government has earmarked US$45 billion to build extensive road, rail, aviation and shipping infrastructure and assist in developing so-called smart cities, which provide an efficient, self-contained environment for fostering production and innovation.

Together with the Eastern Special Development Zone Act B.E. 2561 for the development of EEC the Higher Education Commission in Thailand has 2018, therefore, deemed it appropriate to revise higher education standards in line with national education standards to serve as a mechanism at the ministerial, Higher Education Commission, and work unit levels for promoting educational quality assurance in accordance with the principles stated above, based on ongoing monitoring, auditing, assessment, and development; these higher education standards covering learner outcomes, research and innovation, academic services for society, art, culture and the Thai identity, and instructional management in accordance with the capacities and individual character of the type of institution, while emphasizing social responsibility and accountability in order that the key goal is met, namely the provision of education which produces higher education graduates who are Thai people corresponding to national strategies and a key driving force in the nation's development toward strength, stability, prosperity and sustainability.

The focus of economic development in the EEC is among others digital industries, electronics, robotics, aviation and automotive. The technologies used are intended to implement the principles of Industry 4.0 in order to develop a flagship Special Economic Zone in Thailand that will ensure the economic growth of the EEC region for the future. The industrial sectors and industries to be developed require a high degree of modern technology in order to be able to realize the used technical processes economically. The close connection of information technology with classic automation technologies in the sense of a digital transformation of Industry 4.0 (Automation 4.0) is therefore of particular importance for the efficient development of the EEC.

An essential basis for the implementation of the EEC project is the availability of highly qualified professionals who can develop, operate and maintain the relevant production, manufacturing and logistics technologies. Thereby, the educational institutions in the EEC, especially the universities, play an important role. Here, the future engineers and specialists for the EEC industries are to be trained and further educated. In order to do this modern education and training facilities for Automation 4.0 amongst others are needed in the universities, which can carry out a practical and competence-oriented education and training.

Thailand's higher-education sector is shifting gears towards the future – setting sights on new engines of growth as well as the much-vaunted EEC. "We will have to prepare education courses that respond to the development of target industries in the EEC," Office of Higher Education Commission secretary-general Suphat Champatong said of the new focus (The Nation, Nov. 05,2018).

The demands and requirements to the Higher-Education in the EEC for Industry 4.0 industrial automation have led to the concept of the ETAT project. In the ETAT project the experience and outcomes gained from the TATU project (544010-TEMPUS-1-2013-1-DE-TEMPUS-JPHES – Training in Automation Technology for Ukraine) will be used which fosters the involvement and experience of leading EU universities in industrial automation in the development of new learning opportunities, instructional materials and smart laboratories. These will be directly related to Thai regional employment demands in EEC.

The ETAT project will enable the training and education of future Thai trainers for automation engineers, maintenance engineers, process workers and students using non-classic teaching methods such as learning by doing, remote and mobile teaching with innovative technologies as well as LLL and the experience of the European universities. Each Thai HEI partner is responsible for communication with enterprises and has made already a survey that has shown the high demand of the specialists in modern Automation&Industry 4.0 technologies (Automation 4.0).

Specific Problems:

- Specialists at the Thai enterprises and students of technical topics have the lack of knowledge in Automation 4.0 and at the universities it is lack of modern equipment.
- Demand of opening of the hands-on training centers in the profiling universities of the EEC.
- Lack of didactical materials and knowledge of the Thai university staff members in Industry 4.0 automation technologies widely used in EU countries.
- Modernization and reform of higher education in technical subject.
- Curricula in Thai HEI in industrial automation have lack of hands-on trainings and do not include the application of practice-oriented and work-oriented ICT technology in Automation Engineering.
- Lack of capacities to translate the teaching materials, provided by the EU partner universities to the national languages.

All Thai partner universities involved in the ETAT project are leading HEIs in the EEC and the needs are for all in general the same, considering their specific technical main topics. The ETAT partner EEC-HDC as governmental institution and key stakeholder for EEC will support in the project in particular the Thai

universities in the cooperation/networking with enterprises in EEC and with the administrative help for the business of the planned ETAT Training Centers.

(*Please add Partner Countries/partners as appropriate)*

Please identify the target groups and their needs in each Partner Country and in each Partner Country institution. (limit 8.000 characters)

Partner Country [Thailand]
- Partner institution [BUU, RMUTTO, RRU, KMUTNB, KU, KMITL]

The target groups in all Thai partner universities are the same.

The target groups are following:

University staff members: This group needs modern equipment in Automation 4.0 for teaching and training, high-qualified didactical learning documents for Automation 4.0 topics, E-Learning courses including Remote Labs, certified learning courses and improved curricula, collaboration platform for exchange of documents, integration into international education networks for exchange of experiences, networks with the Thai enterprises in the EEC region

Undergraduate and postgraduate students: This group needs a high-qualified and practice and competence-oriented education in Automation 4.0 as an excellent preparation for their future work as an engineer, improved and modernised curricula in the universities, hand-on exercises on modern Automation 4.0 equipment during their study, work on education projects in cooperation with Thai enterprises from EEC

Trainees: Trainees are coming from different Thai instítutions and Thai enterprises from the EEC region. This group needs high-qualified, practice-oriented and certified training courses in Automation 4.0 for the main topics in EEC in order to improve their position in the labour market in the EEC.

Employees: This group needs high-qualified, practice-oriented and certified training courses as further education/training as well as E-Learning courses for LLL. Also for re-education or vocational retraining for the future job requirements in the EEC enterprises they needs corresponding training courses in Automation 4.0. of a certified training center.

- Partner institution [EEC-HDC]

The target groups relating the project partner EEC-HDC are following:

HEIs: HEIs in the EEC region need training centers for certified trainings in Automation 4.0 for the EEC topics (e.g. Robotics, Logistics, City&Home, Production, Environment&Energy).

Enterprises: Thai enterprises in the EEC regions need a cooperation with education institutions for further education and postgraduate professional education of their employees. Moreover they need from the universities well-educated and practice-oriented engineers which are fit for the technical topics in the EEC region.

(*Please add partner countries/partners as appropriate)*

How will the project address the relevant thematic national/regional priorities (see https://eacea.ec.europa.eu/erasmus-plus/funding/capacity-building-higher-education-2019_en) set by the Programme for its target country (ies)/region(s)? (limit 8.000 characters)

Partner Country /Region [Thailand/East Economic Corridor]

The ETAT project addresses the following priorities according to the ERASMUS+ program for Joint Projects:

1. Type of activities:
Modernisation of curriculum by developing new and innovative courses and methodologies (Category 1)

With the following elements:

- Learning and teaching tools;
- Methodologies and pedagogical approaches including learning outcomes and ICT-based practices (E-Learning and blended courses, virtual and real mobility);
- Multidisciplinarity/interdisciplinarity.

In the following subject areas:

- Engineering and engineering trades (Automation Engineering): Chemical engineering and processing, Environmental protection technology, Electricity and energy, Electronics and automation, Mechatronics, Automotive;

- Information and Communication Technologies: Computer use, Cloud-based design and administration, Software and applications development.

2. Type of activities:
Strengthening of relations between higher education and the wider economic and social environment (Category 3)

With support to:

- Life-Long learning, continuing education;

- University-enterprise cooperation: Such as employability of graduates, etc ;

- Knowledge triangle, innovation: Such as reinforcing links between education, research and business;

- New technologies in Higher Education: Support to the modernisation of Higher Education systems through the development of open educational resources, connectivity, the acquisition of digital skills and learning methods and mobilisation of stakeholders including teachers (trainers), learners and business partners.

(*Please add Partner Countries/regions as appropriate)*

D.2 Aims and objectives

- *What does the proposal aim at in general? What are the project's specific objectives?*
- *Explain how the specific objectives of the project address the problems mentioned in Part D1 and the needs of each target group in each Partner Country. Demonstrate also that the set objectives are realistic and feasible in the national and institutional context(s).*
  (limit 8.000 characters)

The general aim of ETAT is to enhance the employability of university graduates and Life-Long Learning (LLL) in the field of Industry 4.0 and industrial automation by the introduction of European standards of education through practical examples.

Specific objectives:

The ETAT project aims to create exemplary Education & Training Centers in the field of engineering education at participating EEC universities that are able to support as education hubs in the EEC region for industry-related education and training for engineers and young specialists. The following objectives are to be achieved with it:

• Modernization of Higher Education in Thailand based on the experience of European countries;
• Increase the employment rate of university graduates and implement the concept of Life-Long learning with the help of special training modules in the field of industrial automation;
• Development of partnerships with enterprises;
• Improve the quality and relevance of Higher Education in Thailand in the field of industrial automation;
• Establishment of 6 certified ETAT Training Centers at partner universities, which will be equipped with 24 special training places (respectively 4 ETAT Smart Labs per Thai university)
• Establishmen of a platform for distance learning and cooperation between the partners for providing E-Learning & Cloud-based learning courses and for exchange of didactical documents and information.

ETAT Training Centers will be provided with teaching materials and certificated courses for different target groups (students, employees, post-graduates, trainees) as well as with the Thai trainers trained by EU university partners during the ETAT project.

Objectives to meet the needs of the target groups:

Students in the participating universities:
• Improved education as well as modernisation of the curricula in 6 Thai universities in modern automation technologies and Industry 4.0;
• 6 certified ETAT Training Centers in partner universities that are equipped with 24 ETAT Smart labs and can provide distance and face-to-face certified trainings for students in accordance to the demands of the EEC industry;
• Working E-Learning & Collaboration Platform in order to provide e-Learning courses and to share materials and information between EU and Thai partners.

Trainees from other institutions :
• 6 certified ETAT Training Centers in partner universities that are equipped with 24 ETAT Smart labs and can provide distance and face-to-face certified trainings for students of other universities in accordance to the demands of the Thai industry;
• Working E-Learning & Collaboration Platform in order to provide e-Learning courses and to share materials and information between EU and Thai partners.

Young specialists and engineers from enterprises (employees):
• 6 certified ETAT Training Centers in partner universities that are equipped with 24 ETAT Smart labs and can provide distance and face-to-face certified and practice-oriented trainings for employees of Thai enterprises in accordance to the demands of the EEC industry (further education);
• Working E-Learning & Collaboration Platform in order to provide E-Learning courses and to share materials and information between EU and Thai partners.

(*Please add Partner Countries/regions as appropriate)*

Please explain how the planned activities and the expected results meet the needs of the identified target groups in the Partner Countries (limit 6.000 characters)

Partner Country [Thailand]
- Partner institution [BUU, RMUTTO, RRU, KMUTNB, KU, KMITL]

The target groups in all Thai partner universities are the same.

The target group are following:

University staff members: Preparation of didactical materials & structure (WP3) will meet the needs of this group for improved learning courses in Automation 4.0; the development of the ETAT Smart Labs and the establishment of ETAT Training Centers (WP 4, WP 9) fullfill the needs for hands-on & practice-oriented exercises; providing EU workshops & trainings for Thai university staff members with special training documents (WP 5, WP 6 - Train the Trainer) fullfill the needs for qualified and certified teachers in Automation 4.0; using of the ETAT Collaboration Platform (WP 8) will meet the needs of networking and exchange between staff members in different universities.

Undergraduate and postgraduate students: High-qualified didactical materials&structure (WP3) will meet the needs of this group for improved curricula in Automation 4.0; the development of the ETAT Smart Labs and the establishment of ETAT Training Centers (WP 4, WP 9) fullfill the needs for hands-on & practice-oriented exercises; translation of the ETAT learning documents in national language (WP 7) will meet the needs of the students for an optimized and efficient study; using of the ETAT E-Learning Platform (WP 8) will meet the needs for Life Long Learning (LLL) of students and the study independently from place and time.

Trainees: High-qualified didactical materials (WP3) will meet the needs of this group for attractive training courses in Automation 4.0; the development of the ETAT Smart Labs and the establishment of ETAT Training Centers (WP 4, WP 9) fullfill the needs for up-to-date hands-on & practice-oriented exercises in Automation 4.0; translation of the ETAT learning documents in national language (WP 7) ensures the needs for an optimized and efficient training; using of the ETAT E-Learning Platform (WP 8) will meet the needs for preparation of the trainings, Life Long Learning (LLL) and trainings independently from place and time.

Employees: High-qualified and certified didactical materials (WP3) will meet the needs of this group for certified training courses in Automation 4.0; the ETAT Smart Labs and the certified ETAT Training Centers (WP 4, WP 9) fullfill the needs for up-to-date hands-on & work-oriented exercises in important technical topics for an engineering job in the EEC; translation of the ETAT learning documents in national language (WP 7) ensures the needs for an optimized and efficient training; using of the ETAT E-Learning Platform (WP 8) will meet the needs for preparation of the trainings, Life Long Learning (LLL) and trainings independently from place and time.

- Partner institution [EEC-HDC]

The target groups are following:

- HEIs: The Quality Management in the project (WP 2) ensures that all didactical documents, learning courses, the ETAT Smart Labs and the ETAT Training Centers are well-optimized and fit for the education requirements of enterprises in the EEC region.

- Enterprises: The Quality Management in the project (WP 2) ensures that all didactical documents, learning courses, the ETAT Smart Labs and the ETAT Training Centers fulfill the needs of enterprises for high-qualified and work-oriented training courses of their employees relating to their further education; the certification of the ETAT Training Center (WP 9) following EU standards is an important issue for the acceptance of trainings in the ETAT Training Centers of the Thai universities.

(*Please add Partner Countries as appropriate)*

How will the project and its results contribute effectively to the objectives of the action Capacity-Building in the Field of Higher Education in each targeted Partner Country? (limit 6.000 characters)

Partner Country [Thailand]:

Through structured cooperation, exchange of experience and good practices ETAT aim to:
• Support the modernisation, accessibility and internationalisation of higher education in 6 Thai universities by establishment of ETAT Training Center in these universities.;
• Support the Thai universities involved in the project to address the challenges facing their institutions in the EEC region, including those of quality, relevance, planning, delivery and management;
• Contribute to cooperation between the EU partners and Thai institutions by the joint work in the project;
• Promote voluntary convergence with EU developments in Higher Education by application of EU experiences from modernisation of HEIs (Bologna process);
• Promote people-to-people contacts, intercultural awareness and understanding by joint meetings, workshops and trainings.

These objectives are pursued in the Partner Country Thailand, through actions that:
• Improve the quality of Higher Education and enhance its relevance for the labour market and society by training of students and employees in the ETAT Training Centers;
• Improve the level of competences and skills in the Thai partner universities by developing new and innovative education programmes in Industry 4.0 automation (Automation 4.0);
• Enhance the management and innovation capacities, as well as the internationalisation of participated Thai universities;
• Foster regional integration and cooperation across the EEC region through joint initiatives, sharing of good practices and cooperation between the Thai partner universities and Thai enterprises in EEC.

ETAT is a Joint Project and aims at producing outcomes that benefit principally and directly the Thai universities involved in the project. The main focus of ETAT are the following two different types of activities:
• Curriculum development;
• Strengthening of relations between HEIs and the wider economic and social environment.

ETAT is carry out a range of activities, such as:

• Development, testing and adaptation of:
  o Curricula, courses, learning materials and tools in Automation 4.0;
  o Learning and teaching methodologies and pedagogical approaches, especially those delivering key competences and practice-oriented skills and focusing on the use of ICT;
  o New forms of practical training schemes and study of real-life cases in industry automation by E-Learning, Remote Labs and mobile learning;
  o University-enterprise cooperation by training of employees in the ETAT Training Centers;
  o Guidance, counselling and coaching methods and tools by Train the Trainer;
  o Quality assurance at programme and institution level by certified learning courses in the ETAT Training Centers;

• Strengthening of the internationalisation of Thai universities involved in the project and the capacity to network effectively in Education
  o by integration into international education networks;
  o by use of Remote Labs of the EU partners by Thai students (openness of learning courses) and
  o by knowledge transfer in education by use of ETAT Learning Management and Collaboration Platform;

• Establishing of ETAT Training Centers as new facilities in the Thai universities necessary to the implementation of innovative practices (e.g. for new curricula and teaching methods, for the development of new services, etc.);

• Organisation of staff trainings involving teaching and support staff, technicians as well as university managers by special workshops and trainings in the ETAT project.

(*Please add Partner Countries as appropriate)*

How do the project's objectives fit in with the modernisation and internationalisation agenda of the targeted higher education institutions in the Partner Countries and with the development strategy for higher education in each Partner Country involved in the project? (limit 6.000 characters)

Partner Country [Thailand]:

2018 was signed the Thailand Country Program with a key strategic pillars for Thailand's future. To achieve this key strategy, the country's government and business leaders have set in motion a transformation plan known as Thailand 4.0, the next stage of long-term growth after progressing through export dependent 1.0 agriculture, 2.0 light manufacturing and 3.0 heavy industry. Thailand 4.0 will be characterized by a digitized integrated business and social system and an advanced infrastructure. The plan emphasizes technological innovation and education, assisting digital entrepreneurs, boosting internet access and retraining workers through Eastern Economic Corridore - Human Resource Development Centre (EEC-HDC).

Together with the Eastern Special Development Zone Act B.E. 2561 for the development of East Economic Corridor (EEC) the Higher Education Commission in Thailand has 2018, therefore, deemed it appropriate to revise higher education standards in line with national education standards to serve as a mechanism at the ministerial, Higher Education Commission, and work unit levels for promoting educational quality assurance in accordance with the principles stated above, based on ongoing monitoring, auditing, assessment, and development; these higher education standards covering learner outcomes, research and innovation, academic services for society, art, culture and the Thai identity, and instructional management in accordance with the capacities and individual character of the type of institution, while emphasizing social responsibility and accountability in order that the key goal is met, namely the provision of education which produces higher education graduates who are Thai people corresponding to national strategies and a key driving force in the nation's development toward strength, stability, prosperity and sustainability.

Thailand's higher-education sector is shifting gears towards the future – setting sights on new engines of growth as well as the much-vaunted EEC. "We will have to prepare education courses that respond to the development of target industries in the EEC," Office of Higher Education Commission secretary-general Suphat Champatong said of the new focus (The Nation, Nov. 05,2018).

The demands and requirements to the Higher-Education in Thailand's East Economic Corridor and in the whole country for Industry 4.0 industrial automation (Automation 4.0) have led to the concept of the ETAT project. So the ETAT objective's correspond directly with the demands of modernisation and internationalization of Higher-Education in particular in the EEC region:

• To promote the modernization of Higher-Education in Thailand using the experience of the other European Countries, to enhance the employability of university graduates and LLL by offering special training modules in the field of industrial automation and Automation 4.0, development of the partnership with enterprises.

• To enhance the quality and relevance of Higher-Education in technical subjects for Automation 4.0 in Thailand by preparing competitive trainers in Industry 4.0 industrial automation and modernisation of the curricula and development of LLL.

• Meeting the local needs of Thai industry (in the EEC region) in lack of specialists in industrial automation and EEC-focused topics (e.g. Robotics, Logistics, City&Home, Production, Engergy&Environment).

(*Please add Partner Countries/partners as appropriate)*

Please explain how the proposal will pay attention to the issues of inclusion, diversity and socio-economically disadvantaged participants and/or organisations in the Partner Countries. (limit 2.000 characters)

The digitalization is of special importance for the reorganisation of economy and education. The propagation of the Internet and its related areas of use is a key prerequisite for a new information and learning mode in the society, which first and foremost implies a fundamental change of the socio-economic system. In detail, the following socio-economic impacts regarding the issues of inclusion, diversity and socio-economically disadvantaged participants of the project can be identified a.o.:

• ETAT supports the ability of knowledge changes through information technology and media in Automation Engineering and Industry 4.0 and thus creates new opportunities for learning and training.

• Support of the digitalisation of the Industry 4.0 knowledge domain as well as the use of the information technology (E-Learning) as a teaching and learning medium. The ETAT Learning & Collaboration Platform integrated in ETAT improves the professional qualification and interdisciplinary competence for students independently of time and place. By this way also socio-economically disadvantaged users can take part in the learning and training process.

• Extension of the social area of action through participation opportunities for users in the learning and training on Automation Engineering, which would otherwise be excluded from the Automation Engineering community due to the geographical distance and/or socio-economically disadvantages.

• Better integration of the ETAT users into the European and global Automation Engineering community and therefore at the same time improved opportunities for all users in the corresponding labour market independently from their socio-economically status.

Regarding the tangible diversity in ETAT 30% of the planned key staff are females

D.3 Innovative character

Demonstrate why the proposal is innovative.
If it is complementary to previous/existing funded projects nationally or internationally please explain how the new proposal build on it/them and demonstrate its added value and why it is not a simple continuation thereof. (limit 2.000 characters)

Innovative aspects of the project are the following:

- By carrying out needs analyses of the 6 Thai universities, specialized in different branches of industrial automation the specific needs of each target industry group (e.g., general modern automation technologies, Logistics automation, City&Home automation, Robotics&Production automation) the technical content and methodologies will be adjusted appropriately. This is not normally the case with training courses, which tend to treat all learners as a homogeneous group.

- The content of the training modules is innovative, as it focuses on the latest technologies in the field of automation (Industry 4.0 and Smart technologies); up to now no one practice-oriented Industry 4.0 teaching&learning course are available in the East Economic Corridore in Thailand.

- The project will enable the participants to share good practice in teaching and learning. This will take place through minutes of meetings, reports, guest teaching and the intensive seminars. Participants would not have access to this elsewhere. ETAT will allow to enhance networking among HEIs in Thailand, Thai enterprises and EU countries and to transfer the know-how and European Higher Education

experience;
- The project will allow to update the teaching programs in Thai universities in order to modern demands which will solve the problem of modernization and reform of Higher Education in technical subjects;

- The methodologies used will have an innovative character. These include hands-on training (learning by doing) strongly focused on real work situations and not on theoretical examples or exercises. Many of the materials will use Project Based Learning and Problem Based Learning and the courses will be supported by E-Learning methodologies, such as remote labs, web-based exercises and blended learning. These will be new approaches.

- Partners have been assigned to the defined tasks, according to their competences, their work capacity, and availability. The number of working days allocated to each of the main tasks has been carefully balanced according to the staff needs.

If the proposal builds on any previous or existing EU-funded/non-EU funded national or international activities/projects in this field, please fill the following table for each of these projects.

Reference number	N/A		
Project dates *(year started and completed)*		**Programme or initiative**	
Funded by			
Title of the project			
Coordinating organisation			
Partner Countries /institutions targeted by this project			
Website	http://		
Password / login if necessary for website			
(a)Summarise the project outcomes (b) Explain how ownership/copyright issues are to be dealt with (limit 2000 characters).			

Please copy and paste tables as necessary

D.4 European added value

Why is there a need for cooperation with the Programme Countries in this area of activity and a funding via the Erasmus+ Programme? Why can the intended results not be achieved through national, regional or local funding in the Partner Countries? (limit 2.000 characters)

Significant efforts have been made in European Higher Education institutions over the last 20 years, based on the Bologna process, to make universities fit for the labor market of the future. In particular, the Universities of Applied Sciences and the dual study programs there are in high demand in Asian countries for the reform of education and are often to be used as an example for a practice-oriented and labor market-oriented training of engineers. The rich experience of the EU partners should therefore also be used in the ETAT project in order to substantially improve the education and training in the East Economic Corridor in Thailand. Moreover, through the planned ETAT Training Centers, Thai universities will be able to offer training courses according to European standards for the industry.

In the EEC, the digitization of production, smart automation solutions and Industry 4.0 are to be promoted in particular. This requires the appropriate specialists. Industry 4.0 was developed in Germany in 2012 and now there are also a number of suitable and powerful Industry 4.0 learning / training courses at the EU partner universities, which should be modified and adapted accordingly for ETAT. In Thailand, such educational programs/learning courses on Industry 4.0 Automation are not yet available.

A national funding in Thailand can't help because the corresponding experiences are missing. The participation of EU partners are strongly required to achieve the planned objectives in ETAT.

D.5 Cross-regional cooperation

If your proposal is cross-regional, demonstrate the need for this cooperation between institutions from different regions. Please also explain the added value of this cross-regional cooperation for the targeted Partner Country institutions. (limit 2.000 characters)

N/A

PART E – Quality of the Project Design and Implementation

E.1 Project activities and methodology

Please provide a detailed description of the activities and the working methodology to be used for achieving the objectives (including major milestones, measurable indicators, etc.). (limit 6.000 characters)

The ETAT project aims to build 6 training centers in each Thai Partner University ready to provide certified trainings in applied to control operations and automated solutions in different fields of Industry 4.0 automation for providing certified trainings for students and young specialists (Thai enterprises) in fields important for the future development of the East Economic Corridor.

In order to achieve these objectives the main general tasks are:
• To develop training materials and labs, incorporating the needs and competences required on the Thai market in the EEC for different training modes (WP 3, 4, 5, 6, 7, 8, 9).
• To train future trainers ready to train students, postgraduates and engineers in 6 ETAT training centers after the end of the project (WP 6).
• To make a business strategy for ETAT training centers (WP 9).

During the ETAT project is planned the following:

First year: Development phase

1. Needs analysis from National Resonance Groups (Thai enterprises)
Methodology: Interviews and surveys, market analysis.
Deliverables and Outcomes: Needs analysis report.

2. Designing of the ETAT Smart Lab (ESL) concept by according to different topics of Industry 4.0 automation
Methodology: Hardware content analysis of previous mobile labs from the TATU (TEMPUS) project
Deliverables and Outcomes: Concept of the ETAT Smart Lab

3. To analyze the teaching possibilities of the ETAT Smart Lab (face-to-face, hands-on mode, remote mode, mobile and E-Learning etc.).
Methodology: Hardware content analysis.
Deliverables and Outcomes: Report and scheme of teaching possibilities

MILESTONE 1: ETAT Smart Lab concept and teaching possibilities are ready (M6)

4. Assembling of 24 ETAT Smart Labs (4 per university) to equip 6 training centers
Methodology: Quality analysis of ETAT Smart Labs, structural methods.
Deliverables and Outcomes: 6 equipped training centers in 6 Thai universities.

5. Development of the structure of the courses for Thai trainers according to the requirements of the engineering pedagogy.
Methodology: Engineering pedagogy methodologies and aspects.
Deliverables and Outcomes: Courses structure for different teaching cases.

6. Developing the scheme of the trainings in order to prepare Thai trainers for ETAT Training Centers by EU university staff members (3 trainers for each university)
Methodology: Engineering pedagogy.
Deliverables and Outcomes: Scheme of training

7. International Workshop for academic staff of the Thai universities organized by P2

8. Development of teaching materials (classical and E-learning) for integration in existing courses in industrial automation according to the curricula of Thai universities in accordance to European requirements.
Methodology: Engineering pedagogy
Deliverables/Outcomes: Teaching materials (theory)

Second Year: Implementation Phase

11. Development of teaching materials (practice) for different branches from EEC (in national language); development of simulation models and practical exercises for different branches (Robotics, Traffic, Logistics, City&Home)
Methodology: Engineering pedagogy
Deliverables/Outcomes: Practical exercises according to the specific branch of each Thai university.

MILESTONE 2 : ETAT Training Centers are equipped with ETAT Smart Labs and ready for working (M15)

12. Translation of the teaching materials into national language.
Methodology: Technical translation methodologies.
Deliverables/Outcomes: ETAT teaching materials in national language.

13. Setting up of E-Learning and Collaboration platform in order to provide E-Learning courses and to share materials and information between partners.
Methodology: Analysis of LMS systems, decision making
Deliverables/Outcomes: ETAT Learning&Collaboration Platform

14. International Workshop for academic staff of the Thai universities organized by P7.

Third year: Evaluation&Improvement phase

15. 3-days-trainings for university academic staff (3/each university) and Master students (5/each university) provided by P11.

16. Development of Certificates to provide certificated ETAT courses.

17. Testing, evaluation, improvement of the quality and relevance of the teaching material
Methodology: Statistic methods, engineering pedagogy methodologies and aspects.
Deliverables/Outcomes: Graphics of relevance of learning outcomes, recommendations for revisions of teaching materials.

MILESTONE 3: Evaluation/testing of ETAT Smart Labs was executed and a report for the improvement of the education quality was finished (M31)

18. Development of business and working plan and exploitation strategy of ETAT Training Centers
Methodology: Canvas methodology (well-known method for development of new business models) and SWOT analysis
Deliverables and Outcomes: Business and working plan; re-financing and efficiency for the next 5 years

19. Development of the dissemination strategy.
Methodology: Analysis of the education in Thai HEIs for Industry 4.0/Automation Engineering

The training on Industry 4.0 automation technologies for Thai university staff should be presented as an exemplary course, which will be set-up during the project implementation phase. The trainings could be provided also to non-university teachers, could contribute to the development of partnerships with

enterprises and to the development of Life-Long Learning in society at large (dissemination strategy).

In the ETAT project the experience gained from the TATU (TEMPUS) project will be used which fosters the involvement and experience of the leading European universities and companies in field of industrial automation in the Industry 4.0 era for development of new learning opportunities, instructional materials and smart laboratories. These will be directly related to Thai regional employment EEC demands. This project will enable the training and education of future Thai trainers for automation engineers, maintenance engineers, process workers and students using non classic teaching methods such as learning by doing, remote and mobile teaching.

The methodologies planned to be used in this project have an innovative character. These include together with face-to-face learning, the distance learning, mobile learning, remote trainings as well as hands-on trainings (learning by doing). The focus is strongly on real work situations and not only on theoretical examples or exercises. The proposed approach will realize the smart device concept and should be a good solution in face-to-face, remote and mobile experimentation in different Industry 4.0 technologies.

Please demonstrate that the activities and the methodology mentioned are the most appropriate to achieve the envisaged results and that they are feasible. (limit 3.000 characters)

The activities and methodology used in ETAT were developed and applied in the CoNet (TEMPUS) project (2009 - 2012) and after that improved in the following TATU (TEMPUS) project (2013 - 2017). Both projects reached excellent results approved by EACEA.

These experiences from previous similar education projects are the best demonstration that the planned activities and methodology in the ETAT project (modified corresponding to the EEC requirements) will be the most appropriate to achive the envisaged results and that the project results are also realistic and feasible.

What concrete, tangible results are expected to be achieved at the end of the project's activities in each of the targeted Partner Countries? (limit 6.000 characters)

Partner Country [Thailand]:

The expected concrete, tangible results of the ETAT project:

1. 6 ETAT Training Centers equipped with modern Smart Labs in 6 Thai universities in order to provide different kinds of trainings for students as well as for automation engineers, maintenance engineers and process workers using also non-classic teaching methods in Industry 4.0 automation for the main branches in the EEC.

2. In frames of ETAT project 18 well-prepared trainers for these ETAT Training Centers will be trained (3 for each Thai university).

3. Qualified teaching materials in English and Thai language ready to use for teaching process as well as for LLL and trainings of postgraduates.

4. Certificated E-Learning courses/Remote Labs for students and for LLL.

5. ETAT Learning&Collaboration Platform to provide E-Learning certificated courses and to share educational content will be established.

6. Improved education as well as modernization of the curricula in 6 Thai universities in Industry 4.0

automation technologies.

7. Enhancement of employability of university graduates and LLL by offering special training modules in Industry 4.0 automation

8. Meeting the local needs of Thai industry relating the lack of Industry 4.0 specialists in the EEC and improvement of the university partnership with enterprises.

(*Please add Partner Countries as appropriate)*

*For all **types of activities** (curriculum development, modernisation of governance, management and functioning of HEIs; strengthening of relations between HEIs and the wider economic and social environment), for **each Partner Country institution** please provide information in Part F.2 Organisation and Activities.*

E.2Quality control and monitoring

Please explain what mechanisms will be put in place for ensuring the quality of the project and how the evaluation will be carried out. If an external evaluation is foreseen, provide information on the purpose and expected outcomes of this evaluation. Please define the specific quality measures established, as well as the benchmarks and indicators foreseen to verify the outcome of the action. Make sure that the information in this section is consistent with the project Logical Framework Matrix. (limit 3.000 characters)

WP2 (Quality Plan) has been specifically created in order to ensure the coherence between the main tasks and other tasks. This “quality task” will ensure that production of results and deliverables are coordinated, that good communication flows are established between all actors of the different tasks. Quality documents will be produced to ensure good information and transparency about the work development. The quality documents will also evaluate the work and methodology adopted, using key indicators that have been set by the quality WP.

The project will be managed by an Project Coordinator, but with the support of a Steering Committee and the Quality Manager.

Mechanisms for quality control and monitoring will include:
- Peer reviews;
- Evaluation surveys;
- Internal and external institutional evaluation boards.

Quality Management:
WP 2 will involve a leader (internal quality coordinator), the External Evaluator and Project Coordinator. The leader will be a key participant to the managing team. Quality management will be available through the 3 mainstays: quality monitoring, quality assurance and quality improvement.

1) Quality monitoring activities will assess and visualize 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 ensure and respect a good coordination of key activities, deliverables and timetable. This will be possible with the help of key indicators.

2) Quality monitoring and quality assurance will ensure (non exhaustive list) that the following qualitative monitoring indicators are respected:
- Do all partners understand the goals at partner, task and project level ?
- The organization at sub-WP level in term of material, platform, internal communication and daily staff are clear and respect the budget.
- Meeting correspond to a phase of tuning development of a main task with the active partners involved.

It will also keep an eye on the balance between the repartition of work and use/repartition of budget.

3) Quality improvement is the third pillar of the quality management system. In case of a delay, a problem, requiring a modification of the objectives, timetable, or blocking a deliverable envisaged, the quality team will quickly intervene, by setting up a dialogue process between the managing team and the partners involved, to ensure a rapid solution and ensure the smooth development of the specific task, keeping in mind the potential consequences on others WP and overall project development.

4) An External Evaluator guards the overall quality of the project. She obtains input from the Quality Manager (Leader WP2), Project Coordinator and rest of the Consortium. The reports prepared by her are sent to by the Project Coordinator and will be discussed with the Consortium at the next general meeting and if necessary, adjustments are made in the work process, agenda of the workgroups, etc.

E.3 Budget and cost effectiveness

Please describe the strategy adopted to ensure that the proposed results and objectives will be achieved in the most economical way, and on time. Explain the principles of budget allocation amongst partners. Indicate the arrangements adopted for financial management. What sources of co-funding will be used? (limit 3.000 characters)

There is a consistency between the work program and the budget, all aspects are clearly related to the justified activities in the work program. The budget provides the adequate resources for success.

It is used the following general rules for the budget allocation amongst the partners:
1. All partners have basically the same workload.
2. The Project Coordinator will get 50% more workload.
3. Partners which are a WP leader will get 50% more workload.

The accounting of the budget is done by considering the workload and the Unit Costs for the partners.

STAFF COSTS:
The working days are calculated very accurately based on the activities in the work program. Tasks have been divided among the partners based on their expertise. The Unit Costs for the staff of the EU partners are set very low and are far from equal to the real labour costs in the universities of the participating programme countries. All EU partners must therefore provide significant co-financing for staff costs.
The staff costs allocated to HSD are higher than from the other partners, due to the coordination tasks: content, quality, control.

EQUIPMENT:
Equipment: For the practical implementation and to equip training centers in Thai universities is planned to assemble 24 ETAT Smart Labs (4 for each university). The cost allocated to this equipment is at this moment a fixed number for one lab (12 000 €). It is the real cost decided on the results of CoNeT/TATU (TEMPUS) projects and considering the usual costs in the market 2019 for a qualified training place in automation technology taking into account special hardware&software for an Industry 4.0 training.

SUBCONTRACTING:
- Subcontracting include External Evaluator EE (planned: Margareth Gferer - Austria) with 30 days (15.000 €), the EE will accompany the project and monitor the implementation of the activities, quality of the cooperation & products produced and use of the resources. In cases of disputes the EE will mediate among the partners;

- External quality control (8.000 €) is planned for the audit of the results as a part of the final report;

- Shipment of the ESLs to Thailand - 19 200 € (24 x 800 €). The costs are realistic taken from the price of

the shipment company that deliver to Thailand;

- Translation of the teaching materials to the national language - ca. 7 EUR/page - 850 pages = 6.000 €;

- Designing of project website, flyers, posters, dissemination video etc. - 9.000 €;

TRAVEL&COSTS OF STAY:
Travel costs are realistic, as they cover the GMs and the training workshops. If possible, we will link International Workshops and Trainings with GMs to save costs for journeys - the web meetings will be used to save travel costs.

CO-FINANCING:
For the co-financing (in total ca. 17%) the EU partners use the differences between Unit Costs and real staff costs as well as publishing costs; the Thai universities use printing&publishing costs as well as one Engineering-PC for each ETAT Smart Lab as co-financing.

If your project involves any "exceptional costs" related to travel, please justify them here. (limit 2.000 characters)

N/A

Please justify the equipment costs for each Partner Country Institution:
- *why the Partner Country institutions need them for the implementation of the project;*
- *their relations with the content to be developed and the specific activities to be implemented) and*
- *the estimated timeframe for their purchase as well as the estimated place where they will be located (limit 3.000 characters)*

Partner Country [BUU, RMUTTO, RRU, KMUTNB, KU, KMITL]:

The ETAT Training Centers will be built on all 6 Partner Country universities on equal terms, with basically identical equipment and at the same time. Depending on the thematic focus of the Thai university in the EEC (Robotics, Smart City & Home, Smart Farming, etc.), some modules of the ETAT Smart Labs may consider special topics, for example:

BUU: Main branch - City&Home; ETAT Smart Lab peripheral module = Model of Smart City
RMUTTO: Main branch - Robotics; ETAT Smart Lab peripheral module = Small robot
RRU: Main branch - Agriculture; ETAT Smart Lab peripheral module = Model of Smart Farming
KMUTNB: Main branch - Logistics, Traffic Automation; ETAT Smart Lab peripheral module = Model of Smart Traffic
KU: Main branch - City&Home; ETAT Smart Lab peripheral module = Model of Smart Home
KMITL : Main branch - City&Home; ETAT Smart Lab peripheral module = Model of Smart City

The equipment (ETAT Smart Labs) is the fundament for the implementation of the ETAT project. A practice-oriented and industry-suitable education for Industry 4.0/Automation Engineering in the Thai universities can be established ONLY by corresponding equipment.

All learning content (lessons, practice, E-Learning) in the project is oriented to the application of the ETAT Smart Labs.

All Thai partner universities will establish a ETAT Training Center. The main components of the ETAT Training Center are in each university 4 ETAT Smart Labs (in total 24 ETAT Smart Labs) for all Thai universities. An ETAT Smart Lab (ESL) will consist of different hardware & software modules for different topics in Automation Engineering. It is needed for one ESL a space of ca. (2 … 4) qm. To implement the

ETAT Training Center each Thai university provides an special laboratory room (required space ca. 50 … 80 qm) equipped with usual lab furniture.

The ESLs should be set up as early as possible and installed in the Thai universities so that learning / training courses can be carried out over several semesters during the project period.

(*Please add Partner Countries as appropriate)*

***Please complete the following Logical Framework Matrix**:*

E.4 Logical Framework Matrix – LFM

Wider Objective: *What is the general objective, to which the project will contribute?*	**Indicators of progress:** *What are the key indicators related to the wider objective?*	**How indicators will be measured:** *What are the sources of information on these indicators?*		
• To promote the modernization of Higher Education in Thailand using the experience of the other European Countries, to enhance the employability of university graduates and LLL by offering special training modules in the field of Automation 4.0, development of the partnership with enterprises. • To enhance the quality and relevance of Higher Education in technical subjects in Thailand by preparing competitive trainers in Automation 4.0 and modernisation of the curricula and development of life long learning. • Meeting the local needs	• Increased number of students by 2020 in 6 leading universities in Thailand in the EEC where automation technologies are trained. • Improved quality of the teaching process by preparing Thai academic staff by EU partners. • Number of Thai academic staff trained by EU partners. • Number of the trained specialists from Thai enterprises in the field of modern automation technologies.	• Universities registry. • Officially published data. • More learning outcomes by the same time interval. • Evaluation forms filled by trainees.		

of Thai industry in lack of specialists in industrial automation.				
Specific Project Objective/s: *What are the specific objectives, which the project shall achieve?* • Improved education as well as modernisation and accreditation of the curricula in 6 Thai universities in industrial automation (Automation 4.0) • 6 certified ETAT training centres in partner universities that are equipped with 24 ETAT Smart labs and can provide distance and face-to-face certified trainings for students as well as for young specialists in accordance to the demands of Thai automation in the East Economic Corridor. • Establishment of an E-Learning&Collaboration Platform in order to provide E-Learning	**Indicators of progress:** *What are the quantitative and qualitative indicators showing whether and to what extent the project's specific objectives are achieved?* • Types of modern automation technologies used in different branches of industry in the Thai East Economic Corridor (EEC). • Types of automation technologies teached in Thai universities. • Improved teaching possibilities of the ETAT Smart Lab prototype, structure of the courses, business model of the ETAT training centres work after the end of the project. • Number of class hours of teaching materials (lessons, practice). • Number of developed E-Learning courses.	**How indicators will be measured:** *What are the sources of information that exist and can be collected? What are the methods required to get this information?* • Needs analysis. • External evaluation. • Quality documents. • Evaluation forms. • Internal and external quality reports • Evaluation forms. • Analysis of the teaching possibilities of the Smart Labs of previous generation. • Peer reviews. • Evaluation surveys. • Internal and external institutional evaluation boards. • Integrating of the teaching materials to the university	**Assumptions & risks** *What are the factors and conditions not under the direct control of the project, which are necessary to achieve these objectives? What risks have to be considered?* • The accreditation of the new curriculum/courses might be not accepted by the national authorities. • Institutional support from the partner universities (the academic staff from the ETAT EU consortium members included in the project should be available during the project realization). • The academic staff involved to the ETAT management team should deliver needed information in time. • Language problems. • The curricula of the Thai partner universities in teaching of automation technologies can be different.	**How the risks will be mitigated:** • Discuss the accreditation problems with DEPA and corresponding national authorities in a early stage of the project work. • In time planning of the working time for the project • Give project information in time and completely to all responsible/enlisted persons/departments in the own university. • Use of additional electronic translation tools for a better understanding in simple working cases, organize special English courses during the project work. • In-time consideration and discussion of the required content of the curricula in the Thai universities.

courses and to share materials and information between EU and Thai partners. • Increase the employment rate of university graduates and implement the concept of LLL with the help of special training modules in Automation 4.0; • Development of partnerships with enterprises;	• Quality and quantity of the updated/new courses. • Partner meetings and web meetings. • Numer of activities in the E-Learning & Collaboration Platform. • Number of enterprises in the National Resonance Groups	curriculum. • Project reports • Number of meetings.		
Outputs (tangible) and Outcomes (intangible): *Please provide the list of concrete DELIVERABLES - outputs/outcomes (grouped in Work packages), leading to the specific objective/s.:* • WP1: D1.1 Mailings for meetings and admin. tasks; D1.2-D1.3 Meeting reports (also web), Activity Document • WP2: D2.1-D2.1 Quality plan, evaluation reports (Ext.Qlt. Coord) • WP3: D3.1-D3.2 Needs analysis, concept of the	**Indicators of progress:** *What are the indicators to measure whether and to what extent the project achieves the envisaged results and effects?* • Number of enrolled users in the E-Learning & Collaboration Platform. • Improved quality of the training materials. • Improved quality of the schemes of EU trainings. • Quantity of published materials (articles, newsletters, flyers, posters).	**How indicators will be measured:** *What are the sources of information on these indicators?* • Reports • Methodologies. • Teaching materials. • Conference proceeding. • Number of EU trainings and workshops. • Number of access to the E-Learning & Collaboration	**Assumptions & risks** *What external factors and conditions must be realised to obtain the expected outcomes and results on schedule?* • The curricula of the Thai partner universities in teaching of automation technologies can be different. • Language difficulties. • Problems by organisation of the training centres on the base of universities (permitting documents, free room, etc). • The problem of taxes	**How the risks will be mitigated:** • In-time consideration and discussion of the required content of the curricula in the Thai universities. • Use of additional electronic translation tools for a better understanding in simple working cases, organize special English courses during the project work. • Give project information in time and completely to all responsible/enlisted persons/departments in the own university.

ETAT Smart Lab; D3.3 ETAT Smart Lab teaching possibilities; D3.4 –D3.6 Teaching materials (lessons, practice, E-Learning) • WP4: D4.1 Structural scheme; D4.2-4.3 ETAT Smart Labs and equipped train. centers (Thai) • WP5: D5.1 Methodology of the EU trainings for trainers • WP6: D6.1-D6.2 Workshops WS1, WS2; D6.3 3-days Training for the Thai academy staff; D6.4 Testing teaching materials for training centers; D6.5 Evaluation forms; D6.6 Improving and modernisation of curricula • WP7: D7.1 Teaching materials • WP8: D8.1-D8.2 ETA E-Learning & Collaboration Platform; D8.3	• Dissemination strategy. • Number of academic staff trained. • Number of non-academic staff trained (engineers from enterprises). • Number of certificates gained by students and trained engineers after finishing of certificated courses. • Articles and participation in conferences.	Platform. • Meetings minutes.	according to the Partner Country laws	• Use help and experiences of the manufacturer for the ETAT Smart Lab components in export of components from Europe to Thailand.

Certificates • WP9: D9.1 Business and working plan; D9.2 Certification of the ETAT Training centers • WP10: D10.1 - D10.3 Website, Collab. Plat-form., publications, flyers, posters				
Activities: *What are the key activities to be carried out (**grouped in Work packages**) and in what sequence in order to produce the expected results?* • WP1(MAN): General meetings, coordinating • WP2(QUAL): Quality improv. and control, writing report • WP3(PRE): Preparation of didactic. materials & structures • WP4(DEV): Dev. of structural schemes & methodologies, ETAT Smart Lab assembling, equip. of 6 training centers in Thailand, work group meetings, preparation of training	**Inputs:** *What inputs are required to implement these activities, e.g. staff time, equipment, mobilities, publications etc.?* • WP1 Staff: 406d, Mobility: 584d, Subcontr: 30d, 500 pages printing • WP2 Staff: 144d, Subcontr: 8 days, 600 pages printing & publishing • WP3 Staff: 316d, Mobility: 86d, 4000 pages printing • WP4 Staff: 309d, 24 ETAT Smart Labs (ESL) , 2000 pages printing & publishing, Subcontr: shipping of the 24 ESLs to Thailand		**Assumptions |& risks** *What pre-conditions are required before the project starts? What conditions outside the project's direct control have to be present for the implementation of the planned activities?* • The academic staff involved to the ETAT management team should be available and to deliver needed information in time • Project start fits to the academic year • Language problems • Retirement or change of key persons	**How the risks will be mitigated:** • Give project information in time and completely all responsible/enlisted persons/departments in the own university. • If the project will start in November, the project start fits more or less with the academic year. Use of additional electronic translation tools for a better understanding in simple working cases, organize special English courses during the project work. • Denomination and integration in good time deputies or successors for key persons in the partner institution.

materials • WP5(DEV): Mailing, communicating in work groups • WP6(QUAL): Providing EU Workshops & Trainings in Thailand by EU staff • WP7(DEV): Mailing, preparation of translated materials • WP8(D&E): Developing E-learning & Collab. platform, Workshop in using E&C platform • WP9 (D&E): Mailing, preparation of official documents, preparation of the working and business plan • WP10(DISS): Participation in exhibitions, conferences, writing articles, using website, Collaboration platform as a dissemination tool	• WP5 Staff: 327d, 2000 pages printing & publishing, • WP6 Staff: 327d, Mobility: 316d, 8000 pages printing & publishing, • WP7 Staff: 263d, 5000 pages printing & publishing, • WP8 Staff: 366d, 500 pages printing & publishing, • WP9 Staff: 115d, 500 pages color printing for Certificates • WP10 Staff: 380d, Subcontr: Design of website, flyers, leaflets; dissemination video , 6000 pages printing &publishing,			

Please complete the following work plan.

E.5 Work Plan

Please use the model provided below. Applicants are expected to complete a one-page work plan for each project year.
For each year of your proposal, please complete a work plan indicating the deadlines for each outcome and the period and location in which your activities will take place. Please create additional work plan tables if further space is needed.

The same reference and sub-reference numbers as used in the logical framework matrix must be assigned to each outcome and related activities.

Activity carried out in the Programme Country: **=** (E.g. activity in France for two weeks in the first month of the project 2= under M1)
Activity carried out in the Partner Country (ies): **X** (E.g., activity in Tunisia for three weeks in the second month of the project: 3X under M2)

WORKPLAN for project year 1

Activities		Total duration (number of weeks)	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Ref.nr/ Sub-ref nr	**Title**													
D1.1	Mailings for meetings and administrative tasks *(permanent work)*	**4**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**
D1.2	Organizing of the meetings, web-meetings, preparing of the reports *(permanent work)*	**1**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**
D1.3	Preparation of the report on quality of the work produced by each partner *(permanent work)*	**1**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**
D2.1	Quality Report (quality control,improvement activities) - *(permanent work)*	**0,5**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**
D2.2	Preparation of Evaluation reports of the External Evaluator	**0,5**												**0,5=**
D3.1	Preparation of surveys for need analysis, needs analysis report	**3**	**1X**	**1X**	**1X**									
D3.2	Redevelopment of the concept of Mobile Lab (based on TATU-TEMPUS project)	**2**				**1=**	**1=**							
D3.3	ETAT Smart Lab teching possibilities/concept	**2**				**1=**	**1=**							
D3.4	Preparation of teaching materials (lessons, theory)	**12**						**0,5= 1,5X**	**0,5= 1,5X**	**0,5= 1,5X**	**0,5= 1,5X**	**0,5= 1,5X**	**0,5= 1,5X**	
D3.5	Preparation of teaching materials (practice)	**12**							**0,5= 1,5X**	**0,5= 1,5X**	**0,5= 1,5X**	**0,5= 1,5X**	**0,5= 1,5X**	**0,5= 1,5X**
D4.1	Development of the structural scheme of the ETAT Smart Lab	**2**					**1=**	**1=**						
D4.2	Assembling of 24 ETAT Smart Labs (ESL)	**12**							**2=**	**2=**	**4=**	**4=**		

D4.3	Equipping of 6 Training centers in Thailand by 24 ESLs	**2**											**0,5= 0,5X**	**0,5= 0,5X**
D5.1	Development of the structure, methodology and scheme of the EU trainings	**3**			**1=**	**1=**	**1=**							
D6.1	Holding of the International WS1 (BE) for academic staff of the Thai universities	**1**									**1=**			
D8.1	Setting up and testing of ETAT Collaboration platform (*permanent work*)	**1**					**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**
D8.2	Setting up and testing of E-Learning platform (*permanent work*)	**2**												**=X**
D10.1	Creation and service of the project website (*permanent work*)	**4**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
D10.2	Usage of the collaboration platform (*permanent work*)	**3**							**=X**	**=X**	**=X**	**=X**	**=X**	**=X**
D10.3	Publicity materials, conferences and seminars (*permanent work*)	**1**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**

WORKPLAN for project year 2

Activities		Total duration (number of weeks)	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Ref.nr/ Sub-ref nr	Title													
D1.1	Mailings for meetings and administrative tasks *(permanent work)*	**4**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**
D1.2	Organizing of the meetings, web-meetings, preparing of the reports *(permanent work)*	**1**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**
D1.3	Preparation of the report on quality of the work produced by each partner *(permanent work)*	**1**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**
D2.1	Quality Report (quality control,improvement activities) *(permanent work)*	**1**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**
D2.2	Preparation of Evaluation reports of the External Evaluator	**0,5**												**0,5=**
D3.6	Preparation of teaching materials (E-learning)	**9**	**3=**	**3=**	**3=**									
D4.3	Equipping of 6 Training centers in Thailand by 24 ESLs	**3**	**1X**	**1X**	**1X**									
D6.2	Holding of the International WS2 (SL) for academic staff of the Thai universities	**1**							**1=**					
D6.4	Testing, evaluation, improvement of the quality and relevance of the materials	**5**								**1=**	**1=**	**1=**	**1=**	**1=**
D6.5	Preparing and processing of the questionnaires for improvement actions.	**4**	**1X**	**1X**	**1X**	**1X**								
D7.1	Translation of the re-edited teaching materials	**6**						**1X**	**1X**	**2X**	**2X**			
D8.1	Setting up and testing of ETAT Collaboration platform (*permanent work*)	**1**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**
D8.2	Setting up and testing of E-Learning platform (*permanent work*)	**3**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**
D10.1	Creation and service of the project website (*permanent work*)	**4**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
D10.2	Usage of the collaboration platform (*permanent work*)	**3**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**
D10.3	Publicity materials, conferences and seminars (*permanent work*)	**2**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**

WORKPLAN for project year 3

Activities		Total duration (number of weeks)	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Ref.nr/ Sub-ref nr	Title													
D1.1	Mailings for meetings and administrative tasks *(permanent work)*	**4**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**
D1.2	Organizing of the meetings, web-meetings, preparing of the reports *(permanent work)*	**1**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**	**= X**	**=X**
D1.3	Preparation of the report on quality of the work produced by each partner *(permanent work)*	**1**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**
D2.1	Preparation of the quality document (quality control,improvement activities) *(permanent work)*	**0,5**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**	**=**
D2.2	Preparation of Evaluation reports of the External Evaluator	**0,5**											**0,5 =**	
D6.3	Holding 3 days training (Thai) by EU-academic staff for the Thai academic staff	**1**		**1X**										
D6.4	Testing, evaluation, improvement of the quality and relevance of the materials for training centers	**14**	**0,5= 1,5 X**	**0,5= 1,5 X**	**0,5= 1,5 X**	**0,5= 1,5 X**	**0,5= 1,5 X**	**0,5= 1,5 X**	**0,5= 1,5 X**					
D6.6	Improving and modernisation of curricula in UA universities, accreditation	**6**				**2X**	**2X**	**2X**						
D8.1	Setting up and testing of ETAT Collaboration platform (*permanent work*)	**1**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**
D8.2	Setting up and testing of E-Learning platform (*permanent work*)	**3**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**
D8.3	Developing of the certificates	**3**						**1=**	**0,5=**	**0,5=**	**0,5=**	**0,5=**		
D9.1	Business and working plan	**6**									**1= 1X**	**1= 1X**	**1X**	**1X**
D9.2	Certification of the TATU training centers	**4**										**1= 1X**	**0,5= 0,5X**	**0,5= 0,5X**
D10.1	Creation and service of the project website (*permanent work*)	**4**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
D10.2	Usage of the collaboration platform (*permanent work*)	**3**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**
D10.3	Publicity materials, conferences and seminars (*permanent work*)	**2**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**	**=X**

Please complete the information on each work package for your project

E.6 Work packages

Please enter the different project activities you intend to carry out in your project. Make sure that the information in this section is consistent with the project Logical Framework Matrix.

Work package type and ref.nr	**MANAGEMENT**	**WP1**
Title	Project Management	
Related assumptions and risks	**Assumptions:** Institutional support from the Partner Universities (the academic staff from the ETAT EU-Consortium members included in the project should be available during the project realization). **Risks:** The academic staff involved to the ETAT management team should deliver needed information in time, language difficulties (THAI, EN), Retirement or change of key persons.	
Description	1)The managing team (Project Coordinator and Steering Committee) will sharpen in a first stage the repartition of the work force, on the basis of the preparative work done to application phase, and further frame and define the objectives and workplan of each task, in coordination with all other tasks, in particular: - Needs analysis; - Creation of national resonance group in Thailand (NRG); - Adapt the content of the training modules to the local Thai needs; - Elaboration of the specifications for the design of the website; - Web meetings as a mean of everyday communication - Exploitation and dissemination of results; - Organisation of International Workshops and Trainings for Thai academic staff (11 days). 2) Regarding the management of the consortium work, and the monitoring of the work, in coordination with the quality WP2, the managing team will in particular organize a set of questionnaire at partner, sub-WP and WP levels with respect to the key objectives to be achieved (Activity Document). This document will serve as a key report on the project activities, and the nature and importance of the partner's involvement. This Activity Document will also be used to identify both "over-activity" and "under-activity" of partners, and to ensure in both cases a balance repartition of the work and of the budget allocated between partners. 3) The managing team, and in particular the Project Coordinator, will organize the project's meetings schedule and web meetings, and be involved in the practical organisation, with the partner institution that will host the meeting. 4) The Project Coordinator will ensure the administrative and financial management of the project, establish the reports toward the Executive Agency and ensure an efficient communication with the project officers at the Executive Agency. He will report to the partners the information delivered by the Executive Agency.	
Tasks	HSD: Project Coordinator (PC) in charge of the financial and administrative management of the project, and the coordination of the workpackages activities, in collaboration with WP2 leader (Quality Management) Responsible for the production of the Activity Document, chair of the managing team, organisation of web meetings. Will be the main contact to the Executive Agency. UAntwerp: P2 is a member of the Steering Committee. At first stage of the project they sharpen the repartition of work force, frame and define the objectives and workplan of each task. They organize a set of questionnaire at partner, sub-WP and WP levels. They schedule	

	together with PC the meetings, take part in web meetings and GM, deliver needed information in time. UNIOVI, UPorto, STU: At first stage of the project they sharpen the repartition of work force, frame and define the objectives and workplan of each task. They organize a set of questionnaire at partner, sub-WP and WP levels. They schedule together with PC the meetings, take part in web meetings and GM, deliver needed information in time. CUAS: P5 is a member of the Steering Committee. At first stage of the project they sharpen the repartition of work force, frame and define the objectives and workplan of each task. They organize a set of questionnaire at partner, sub-WP and WP levels. They schedule together with PC the meetings, take part in web meetings and GM, deliver needed information in time. EWA: P6 is a member of the Steering Committee. At first stage of the project they sharpen the repartition of work force, frame and define the objectives and workplan of each task. They organize a set of questionnaire at partner, sub-WP and WP levels. They schedule together with PC the meetings, take part in web meetings and GM, deliver needed information in time. BUU: P8 is a member of the Steering Committee. National coordinator - stake holder, contact person from Thailand to the governmental institutions responsible for the EEC. Participant General Meetings, web meetings, deliver all needed information to P1 in time, taking up needs analysis, setting up NRG consisting of at least 12 Thai enterprises in field of industrial automation in the EEC region. RMUTTO, RRU, KMUTB, KU, KMITL: Participant in General Meetings, web meetings, deliver all needed information to P1 in time, taking up needs analysis, setting up national resonance group (NRG) consisting of at least 12 Thai enterprises in field of industrial automation in the EEC region. EEC-HDC: Participant in General Meetings, web meetings, deliver all needed information to P1 in time, taking up needs analysis, contact person from Thailand to the Ministry of Education and Sciences and to other relevant Thai associations.		
Estimated Start Date (dd-mm-yyyy)	15-11-2019	**Estimated End Date (dd-mm-yyyy)**	14-11-2022
Lead Organisation	HSD		
Participating Organisation	P1 – P14		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.*	Additionally to the Internal Quality Manager, Margareth Gfrerer (from austria) will be contracted as External Evaluator (EE) for 30 days (30 days à 500 € = 15.000 €). The EE will accompany the project & monitor the implementation of the activities, quality of the cooperation & products produced and use of the resources. The EE will be in charge to compile quarterly reports. Shortcomings & recommendations will be discussed with the Internal Quality Manager & Management team. In cases of disputes the EE will mediate among the partners. Travel&Accomodation: 584 person days for 7 General Meetings		

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**1.1.**	
	Title	Mailings for meetings and administrative tasks	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report X Service/Product
	Description	A non-exhaustive list of tasks for which the daily management needs e-mail traffic follows: • sending the invitations for the meetings; • sending the invitations for the web meetings; • sending the reports of the meetings to the partners; • sending reminders for reports of resonance group and workgroup meetings, quality reports, etc. All e-mail traffic is archived electronically to make it possible to perform quality control on the managing team.	
	Due date	End of the project	
	Languages	EN	
Target groups	☐ Teaching staff ☐ Students ☐ Trainees X Administrative staff ☐ Technical staff ☐ Librarians X Other		
	Partners of the ETAT Consortium, Executive Agency		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	☐ National X International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**1.2.**	
	Title	Meeting reports	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event X Report ☐ Service/Product
	Description	The Consortium meets two times a year in the first and second project year and three times in the last project year (some meetings will be combined with trainings;) and use web meetings as a mean of everyday communication between partners. The follow-up of these meetings is the responsibility of the PC. A detailed report of the General Meetings will be made up and sent by PC to all the partners in the Consortium by e-mail. The coordinator also archives the report electronically and on paper.	
	Due date	End of the project	
	Languages	EN	
Target groups	☐ Teaching staff ☐ Students ☐ Trainees X Administrative staff ☐ Technical staff ☐ Librarians		

	X Other		
	Partners of the ETAT Consortium		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	☐ National X International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**1.3.**	
	Title	Activity Document	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event X Report ☐ Service/Product
	Description	This Activity Document will both be a reporting tool useful for the Executive Agency to assess the nature, repartition and quality of the work produced by each partner in the Consortium, and for the coordinator and managing team to assess the efficiency of the project monitoring, take the necessary actions regarding the budget allocation per partner, should their implication be over-estimated, or under-estimated, compared to the initial work repartition and budget allocation	
	Due date	End of the project	
	Languages	EN	
Target groups	☐ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians X Other		
	Report to the Executive Agency		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	☐ National X International

Work package type and ref.nr	**QUALITY PLAN**	**WP2**
Title	Quality Management	
Related assumptions and risks	Language difficulties (all information is in EN - Thai partners should possess enough language knowledge)	
Description	The quality WP will involve a leader (internal quality coordinator), the External Evaluator and Project Coordinator (PC). The leader will be a key participant to the managing team. Quality management will be available through the 3 main mainstays: quality control, quality assurance and quality improvement. 1) Quality control activity will monitor and assess the coordination and coherence the work at WP and sub-WP levels, according to the work plan set by the managing team. It will ensure and respect a good coordination of: Key indicators, Key activities, Deliverables, Timetable. The quality control will ensure (non exhaustive list) that the following qualitative monitoring indicators are respected: - Do all partners understand the goal at partner, task and project level ? - The organisation at sub-WP level in term of material, platform, internal communication	

	and daily staff are clear and respect the budget. - Meeting correspond to a phase of tuning development of a main task with the active partners involved. It will also keep an eye on the balance between the repartition of work and use/repartition of budget. 2) Quality improvement: In case of delay, problem, requiring a modification of the objectives, timetable, or blocking a deliverable envisaged, the quality team will quickly intervene, by setting up a dialogue process between the managing team and the partners involved, to ensure a rapid solution and ensure the smooth development of the specific task, keeping in mind the potential consequences on others WP and overall project development. 3) An External Evaluator guards the overall quality of the project. She obtains input from the Quality Manager (Leader WP2), Overall Coordinator and rest of the Consortium. The reports prepared by her are sent to by the PC and will be discussed with the Consortium at the next General Meeting and if necessary, adjustments are made in the work process, agenda of the workgroups, etc.		
Tasks	UAntwerp: Will lead the WP2, in close cooperation with the PC, External Evaluator and the Steering Committee. Will be the key responsible for the Quality Document production. HSD: P1 ensures quality of the project in close cooperation with the Internal Quality Manager and the External Evaluator. UNIOVI, UPorto, CUAS, EWA, STU, BUU, RMUTTO, RRU, KMUTNB, KU, KMITL, EEC-HDC P3 ... P14 will deliver the necessary information in time to the Internal Quality Manager and the Project Coordinator.		
Estimated Start Date (dd-mm-yyyy)	15-11-2019	**Estimated End Date (dd-mm-yyyy)**	14-11-2022
Lead Organisation	UAntwerp		
Participating Organisation	P1 – P14		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.*	Subcontracting: External Quality Control (Audit): Estimated workload to make an evaluation report after the end of the project: 8 days = 8.000 €		

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr		**2.1.**
	Title	Quality Report	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event X Report ☐ Service/Product
	Description	The quality document will report on the quality control,	

		assessment and improvement activities over the project duration. It will be a key information tool to the Executive Agency, on the potential problems arisen during the project duration, the solutions found, etc. The document will include few indicators to evaluate the success of the project development, management, WP coordination.
	Due date	End of the project
	Languages	EN
Target groups	☐ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians X Other	
	Partners of the ETAT Consortium, Executive Agency	
Dissemination level	☐ Department / Faculty ☐ Local ☐ National ☐ Institution ☐ Regional X International	

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**2.2.**	
	Title	Evaluation reports of the External Evaluator	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event X Report ☐ Service/Product
	Description	The External Evaluator makes a report concerning the quality of the functioning and the work and outputs of the Consortium. The following is non-exhausting list of items audited: • the level of cooperation of the members in the consortium; • the quality of the output ; • are the aims and objectives of the projects reached. This report is sent to the overall coordinator and discussed with the internal quality manager, the management team and passed to consortium for adaptations.	
	Due date	End of the project	
	Languages	EN	
Target groups	☐ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians X Other		
	Partners of the ETAT Consortium, Executive Agency		
Dissemination level	☐ Department / Faculty ☐ Local ☐ National ☐ Institution ☐ Regional X International		

Work package type and ref.nr	**PREPARATION**	**WP3**
Title	Preparation of the didactical structure and content of the ETAT Smart Lab	

Related assumptions and risks	The curricula of the Thai partner universities in teaching of automation technologies can be different; language difficulties.
Description	In this workpackage the detailed structure of the ETAT is outlined. The project will produce 24 ETAT Smart Labs for education in Automation 4.0. The topics below have been identified as areas of need by the Consortium: - University partners have organised the meetings to assume the local needs; - The decision is made on the base of the evaluation of the TATU- TEMPUS project results (544010-TEMPUS-1-2013-1-DE-TEMPUS-JPHES); - The Project Coordinator (PC) discussed the proposal with P8 and P2 when visiting the universities in Thailand; - The PC discussed the proposal with P2, P3 and P5; In this WP the development of ETAT Smart Lab (ESL) concept by integrating the hardware into one ESL should be done, considering different topics of industrial automation for Industry 4.0 (Automation 4.0): 1. Basics of Cyberphysical Systems and Industrial Internet of Things (IIoT). 2. Advanced PLC programming. 3. Feedback Control Technology. 4. Robotics/ Basic of Robotic Control/ Robotic Programming. 5. Man-Machine Systems. 6. Big Data Analysis for Industrial Applications. In this WP the didactical materials for specified cases should be developed. Taking into account the comments from the needs analysis the outlines will be tuned. This is the work for the partner's experts in the different areas in Automation 4.0. During the first GM we will assign a team leaders and team members to assemble the 24 modules. Besides the workgroup meetings, the members will communicate their work via e-mail, web meetings and the members-only part of the website. The course developers will link their meetings to the General Meetings.
Tasks	UNIOVI: Coordinating the work in this WP, preparation and revision of learning-teaching materials, preparation of documents and reports. Coordination of the preparation of the ETAT didactical content, responsible for the meetings and the coaching of the workgroups working around the training modules. CUAS: Coordination of the preparation of the ETAT didactical content (theory and practice) in EN and Thai language by native speakers, revision of the materials developed by Thai partners. BUU: Organizing national work group meetings, Developing of the content, participation in web-meetings, preparation of simulation models in Automation 4.0 for Smart City applications, assisting in engineering pedagogical approaches. RMUTTO: Organizing national work group meetings, Developing of the the content, participation in web-meetings, preparation of simulation models in Robotics, assisting in engineering pedagogical approaches. RRU: Organizing national work group meetings, Developing of the the content, participation in web-meetings, preparation of simulation models in Automation 4.0 for Agriculture (Smart Farming), communication with enterprises in the EEC region. KMUTNB: Organizing national work group meetings, Developing of the the content, participation in web-meetings, preparation of simulation models in Automation 4.0 for Logstics & Traffic,

	Environment & Energy, communication with enterprises in the EEC region KU: Organizing national work group meetings, Developing of the the content, participation in web-meetings, preparation of simulation models in Automation 4.0 for Smart Home applications, communication with enterprises in the EEC region. KMIL: Organizing national work group meetings, Developing of the the content, participation in web-meetings, preparation of simulation models in Automation 4.0 for Smart City & Smart Home applications, communication with enterprises in the EEC region		
Estimated Start Date (dd-mm-yyyy)	15-11-2019	**Estimated End Date (dd-mm-yyyy)**	14-02-21
Lead Organisation	UNIOVI		
Participating Organisation	P3, P5, P8-P13		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.*	Travel & Accommodation (D 3.2): 70 person days (3-days-Workshop for preparation of ETAT Smart Lab assembling)		

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**3.1.**	
	Title	Needs analysis	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event X Report ☐ Service/Product
	Description	To do the needs analysis in 6 Thai universities project-partners of the needed changes in teaching of automation technologies by P8-P13 by interview and surveys of students studying automation technologies (in 6 universities) and market analysis in automation technologies used in Thailand and Europe. To set up National Resonance Groups by Thai enterprises. A report will be translated into English sent to the overall coordinator and the internal quality controller and content will be adapted.	
	Due date	3 months after project start	
	Languages	EN	
Target groups	X Teaching staff X Students X Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians X Other		

	Employers of the enterprises in different branches of industrial automation (Thailand)		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	X National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**3.2.**	
	Title	Redevelopment of the concept of Mobile Lab (based on TATU-TEMPUS project)	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report X Service/Product
	Description	Preparation of the concept of the ETAT Smart Labs - modules with signs of intelligent system-designing and by considering of the results from the TATU-TEMPUS project by integrating the required hardware/software for different Automation 4.0 topics into one ESL Methodology: Hardware/software content analysis of the TATU Mobile Lab	
	Due date	5 months after project start	
	Languages	EN	
Target groups	X Teaching staff X Students X Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	Thai universities		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	X National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**3.3.**	
	Title	ETAT Smart Lab teaching possibilities	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report X Service/Product
	Description	To analyze the teaching possibilities of the ETAT Smart Lab (face-to-face, hands-on mode, remote mode, Mobile and E-Learning etc.). Methodology: Hardware/software content analysis. Deliverables and Outcomes: Report and scheme of the possibilities of ETAT Smart Lab usage in teaching process.	
	Due date	5 months after project start	
	Languages	EN	
Target groups	X Teaching staff X Students X Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		

	Thai universities		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	X National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**3.4.**	
	Title	Preparation of teaching materials (lessons, theory)	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report X Service/Product
	Description	Preparation/Adoption of teaching materials (classical and E-learning) for integration in existing courses in industrial automation according to the curricula of Thai universities in accordance to European requirements (P8-P13): Preparation of the didactical materials. The materials will be prepared first in English and edited by a native speaker before the first test phase. Than they will be adopted and translated to the Thai national language.	
	Due date	11 months after project start	
	Languages	EN, Thai	
Target groups	X Teaching staff X Students X Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians X Other		
	Thai universities, enterprises		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	X National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**3.5.**	
	Title	Preparation of teaching materials (practice)	
	Type	X Teaching material X Learning material X Training material	☐ Event ☐ Report ☐ Service/Product
	Description	Preparation of teaching materials (practice) for 6 different basics topics of Automation 4.0 (in English and Thai language): Basics of Cyberphysical Systems and Industrial Internet of Things (IIoT), Advanced PLC programming, Feedback Control Technology, Robotics, Man-Machine Systems, Big Data Analysis for Industrial Applications. Preparation of simulation models and practical exercises and projects in the field of Smart City, in the field of Robotics, in the field of Agriculture, in the field of Logistics & Traffic and/or Environment & Energy in the field of Smart Home applications.	
	Due date	12 months after project start	
	Languages	EN, Thai	
Target groups	X Teaching staff X Students X Trainees		

	☐ Administrative staff ☐ Technical staff ☐ Librarians X Other		
	Thai universities, employers		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	X National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**3.6.**	
	Title	Preparation of teaching materials (E-learning)	
	Type	X Teaching material X Learning material X Training material	☐ Event ☐ Report ☐ Service/Product
	Description	Preparation of the E-Learning materials in order to use them for certificated E-Learning courses.	
	Due date	15 months after project start	
	Languages	EN. Thai	
Target groups	X Teaching staff X Students X Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians X Other		
	Thai universities, enterprises		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	X National ☐ International

Please copy and paste tables as necessary.

Work package type and ref.nr	**DEVELOPMENT**	**WP4**
Title	ETAT Smart Lab (ESL) Hardware	
Related assumptions and risks	- The procedure for ordering and import of the ETAT Smart Lab equipment is complex and its duration is relatively long; - It is not always possible to make precise financial plans and actions in accordance with the Partner Countries financial laws; - The problem of taxes according to the Partner Country's laws.	
Description	As soon as the outlines of the ETAT Smart Lab functions and structure are adapted to the local Thai requirements the development of the ETAT Smart Lab hardware can start (parallel to the preparation of the didactical materials). Meanwhile the consortium will decide upon the methodology and if necessary the trainers will be trained in this methodology. Quality will be controlled by team leaders, internal quality manager, External Evaluator and overseen by the leader of this WP. Each module will be tested and evaluated in work situations and feedback will be incorporated into the materials. For the practical implementation of the training modules 24 ETAT Smart Labs will be developed and assembled. The laboratories should be smart, it means prepared for the education in Automation 4.0.	

	Designing of 24 ETAT Smart Labs (4 for each Thai university) to equip 6 training centers. *Methodology:* Quality analysis of the previous TATU Mobile Labs, structural methods. *Deliverables and Outcomes:* Structure scheme for assembling of the ETAT Smart Lab Internal quality control - P2. Assembling of the ETAT Smart Labs and equipping 6 training centers in Thailand, *Methodology:* Hardware content analysis. *Deliverables and Outcomes*: 6 equipped training centers in 6 Thai universities. The costs of 12.000 € for one ETAT Smart Lab are realistic (on the base of market analysis and the results of the TATU project). It is planned a special WS in Germany to discuss the ESL assembling (1 person/Thai partner; 2 persons/EU partners - 3 days). The aim is to use learning hardware already available on the market, which is in principle suitable for training in Automation 4.0. For the special requirements of an ETAT Smart Lab, this learning hardware could then be modified or extended accordingly. One possible learning hardware from today's perspective would be e.g. the Eduline system from the German's company Phoenix Contact.
Tasks	CUAS: The lead partner has to coordinate the development of the training modules (content) and the ETAT Smart Labs (box and assembly). He is also responsible for the meetings and the coaching of the workgroups working around the training modules. The leader should also organize workgroup meetings. He is responsible for the communication with the management team, organization of WS together with P1. UAntwerp, UNIOVI, HSD, STU: The team member are responsible to deliver content to the training modules assigned to them. The partners are responsible for development as well as assembly of ESL, participation in the special WS. BUU, RMUTTO, RRU, KMUTNB, KU, KMIL: The partner is responsible of organizing training center at his university, providing rooms for the training center and needed infrastructure, participating in the special WS.

Estimated Start Date (dd-mm-yyyy)	15-04-2020	**Estimated End Date (dd-mm-yyyy)**	14-02-2021
Lead Organisation	CUAS		
Participating Organisation	P1 – P3, P5, P7, P8 - P13		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.*	Equipment: The equipment costs to assemble one ETAT Smart Lab (ESL) = 12.000 € The costs are realistic are based on the results of the TATU-TEMPUS project and are calculated in order to know the real costs of one Smart Lab. It is planned to equip 6 Training centers (each with 4 ESLs) In general 24 TSLs will be assembled (12.000 € * 24 = 288.000 €) Subcontracting: Box shipping - The 24 ESLs will be assembled in Germany and/or Austria and shipped to Thailand (Shipment of one box costs ca 800 €): 24 boxes x 800 = 19.200 €		

Deliverables/results/outcomes

Expected Deliverable/Results/	Work Package and Outcome ref.nr	**4.1.**

Outcomes	Title	Development of structural scheme	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report X Service/Product
	Description	As soon as the concept of the ESL is defined the structural scheme of the ESL assembling will be developed. The ESL will be assembles with the support of the industrial suppliers and manufacturers. Is planned one special WS in DE in order to discuss the assembling of the ESLs (3 days) ESLs will be assembled in DE or AT with help of industrial suppliers and manufacturers and shipped to Thailand.	
	Due date	6 months after project start	
	Languages	EN	
Target groups	☐ Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians X Other		
	Industrial suppliers and manufacturers (e. g, Phoenix Contact, Festo, Siemens)		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	☐ National X International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr		**4.2.**
	Title	Assembling of ETAT Smart Labs	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report X Service/Product
	Description	For the practical implementation of the trainings and equiping of 6 Thai training center ETAT Smart Lab (2000 mm x 800 mm) will be developed, assembled and multiplied 24 times. The content of the ESL depends of the needs of the Thai market. To save costs the ESL will be partly equipped with the support from companies (if possible).	
	Due date	10 months after project start	
	Languages	EN, Thai	
Target groups	X Teaching staff X Students X Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians X Other		
	Thai universities, enterprises		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	☐ National X International

Expected	Work Package and		**4.3.**

Deliverable/Results/ Outcomes	Outcome ref.nr		
	Title	Equipping of training centers	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report X Service/Product
	Description	As soon as 24 ESL are ready the 6 training centers in Thailand can be equiped (1/university - each with 4 ESL). P5 (with help of P1) assembled the ESLs in Austria or Germany with help of German/Austrian suppliers and manufacturer and organized ESLs shipping to Thailand.	
	Due date	15 months after project start	
	Languages	EN, Thai	
Target groups	X Teaching staff X Students X Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians X Other		
	Thai universities, enterprises		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	X National ☐ International

Work package type and ref.nr	**DEVELOPMENT**		**WP5**
Title	Development of the structure, methodology and scheme of the EU trainings		
Related assumptions and risks	Language difficulties - all Thai trainees should possess enough knowledge of technical English		
Description	In this WP the structure of the courses for Thai trainers according to the requirements of the engineering pedagogy will be developed. *Methodology:* Engineering pedagogy methodologies and aspects. *Deliverables and Outcomes:* Courses structure for different teaching cases defined in WP3.		
Tasks	RMUTTO: Coordinating the development of the structure, methodologies and content of the trainings from the pedagogical aspects under considering of Thai specifics. HSD, UAntwerp, UNIOVI, UPorto, CUAS, STU, BUU, RRU, KMUTNB, KU, KMIL: Development of the structure, deliver content, suggestions		
Estimated Start Date (dd-mm-yyyy)	15-02-2020	**Estimated End Date (dd-mm-yyyy)**	14-05-2020
Lead Organisation	RMUTTO		
Participating Organisation	P1 – P5, P7 - P13		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If*			

equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.	

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**5.1.**	
	Title	Methodology of the EU trainings for trainers	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report X Service/Product
	Description	The structure, methodology and scheme of the EU-trainings in order to prepare the trainers for the Thai training centers (3 trainers for each university) will be prepared. The structure should consist 2 International Workshops for academic staff of the Thai universities. 1 – in Belgium – Provided by P2 (in cooperation with the automation industry). 2 – in Slovak provided by P7. and one training in Thailand for academic staff & master students. All trainings are planned to realize in WP6.	
	Due date	5 months after project start	
	Languages	EN	
Target groups	X Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	☐ National X International

Please copy and paste tables as necessary.

Work package type and ref.nr	**QUALITY PLAN**	**WP6**
Title	Testing and evaluation ETAT Smart Labs	
Related assumptions and risks	Academic staff should be free from the university activity for days of trainings in Thailand as well as for 2 workshops in EU. The materials should be integrated to the curricula of the universities (problems with the university management). The curricula of the Thai partner universities in teaching of automation technologies can be different.	

Description	During the first two years it is planned to organize two international Workshops (each 4 days) for 2 trainers from each Thai university (12 people) • International Workshop WS1 for academic staff of the Thai universities provided by P2 (in cooperation with the automation industry). • International Workshop WS2 for academic staff of the Thai universities provided by P7. Providing one training (3-days) for university academic staff (18 people- 3/each university) - during the third year. In this training also Master students can take part (5 persons from each Thai university). As soon as the didactical materials for training centers are ready they will be tested on students by integrating of them to the currricula. In order to evaluate the training, a detailed questionnaire will be used, covering the following topics: course content, methodology, learning behaviour, etc. Results and report of the National Resonance Group (NRG) are consolidated by the internal quality coordinator. During the next General Meetings the results will be discussed and a working plan will be made up to adapt the materials and methodology. All methodologies and the needed changes in the curricula will be discussed with P14.
Tasks	KMUTNB: Responsible for evaluation and relevance of the teaching materials, The lead partner will develop a questionnaire that has to be completed by 2) the trained Thai academic staff 3) the students He collects the questionnaires and processes the data and writes a report which is also sent to the overall coordinator. HSD, UAntwerp, UNIOVI, UPorto, CUAS, STU: Will train Thai academic staff during international workshops and trainings in Thailand, fill in the evaluation form, discuss the materials, define improvement actions, improve the materials and the training. EWA: Will share the experiences in organizing of training centers in automation technologies from other international universities (e.g. TATU Training Center in Odessa National Polytechnic University) BUU, RMUTTO, RRU, KMUTNB, KU, KMITL: Will provide academic staff to be trained, will provide test integrating of the teaching materials to the university curricula, fill in evaluation forms, provide needed by WP leader information. EEC-HDC: P14 will assist P8-P13 in all administrative work and documents relating to the changes in the curricula using European experience in lifelong education, universities' ranking, and assisting in accreditation of the curricula.

Estimated Start Date (dd-mm-yyyy)	15-08-2020	**Estimated End Date (dd-mm-yyyy)**	14-05-2022
Lead Organisation	KMUTNB		
Participating Organisation	P1 – P14		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is*	Travel&Accomodation: Workshop WS 1 in Antwerp = 90 person days Workshop WS 2 in Bratislava = 88 person days Training in Bangkok for university staff members and master students = 138 person days		

requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.	

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**6.1.**	
	Title	International Workshop WS1	
	Type	X Teaching material ☐ Learning material ☐ Training material	X Event ☐ Report ☐ Service/Product
	Description	International Workshop WS1 for academic staff of the Thai universities provided by P2 in Antwerp (in cooperation with the automation industry). Programm of the training developed in WP 5 should be used	
	Due date	10 months after project start	
	Languages	EN	
Target groups	X Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	☐ National X International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**6.2.**	
	Title	International Workshop WS2	
	Type	X Teaching material ☐ Learning material ☐ Training material	X Event ☐ Report ☐ Service/Product
	Description	International Workshop WS2 for academic staff of the Thai universities provided by P7 in Bratislava (in cooperation with the EU automation industry). Programm of the training developed in WP 5 should be used	
	Due date	19 months after project start	
	Languages	EN	
Target groups	X Teaching staff ☐ Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		

Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	☐ National X International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**6.3.**	
	Title	3 days Training for the Thai academy staff	
	Type	X Teaching material ☐ Learning material ☐ Training material	X Event ☐ Report ☐ Service/Product
	Description	3 days training by EU academic staff to the Thai academic staff (18 people- 3/university) + 30 Master students (5 from each Thai university) organized by P11 in Bangkok using the structure, materials and methodologies developed in WP 5.	
	Due date	26 months after project start	
	Languages	EN, Thai	
Target groups	X Teaching staff X Students ☐ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	☐ National X International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**6.4.**	
	Title	Testing teaching materials for training centers	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	X Event X Report ☐ Service/Product
	Description	Testing, evaluation, improvement of the quality and relevance of the teaching material (by test introduction of the developed courses into the teaching process in Thai universities for one semester) – P11 Leader –P8-P13. *Methodology: S*tatistic methods, engineering pedagogy methodologies and aspects. *Deliverables and Outcomes:* Graphics of relevance of learning outcomes, recommendations for further revisions of teaching materials.	
	Due date	31 months after project start	
	Languages	EN, Thai	
Target groups	☐ Teaching staff X Students X Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		

Dissemination level	☐ Department / Faculty X Institution	☐ Local ☐ Regional	☐ National ☐ International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**6.5.**	
	Title	Evaluation forms	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event X Report ☐ Service/Product
	Description	After the ETAT Smart Labs are delivered, the participants and the training staff has to fill in a questionnaire about the lectures. The questionnaire concerns about the following non-exhaustive list: • Course content • Methodology • Learning behaviour • Organisation • Clarity, • etc. The finished questionnaires are processed and will be the basis for improvement actions.	
	Due date	16 months after project start	
	Languages	EN, Thai	
Target groups	X Teaching staff X Students X Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	☐ National X International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**6.6.**	
	Title	Improving and modernisation of the curricula	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event X Report ☐ Service/Product
	Description	Thai universities in co-operation with P14 will develop on the basis of ETAT experiences recommendations and proposals for realization and administration of educational establishments, considering the European experience in lifelong education, universities' ranking and Bologna process; support of all administrative work in improving the curricula in automation subjects due to the results of the WP 5.	
	Due date	30 months after project start	
	Languages	Thai	
Target groups	☐ Teaching staff ☐ Students ☐ Trainees X Administrative staff ☐ Technical staff		

	☐ Librarians ☐ Other
Dissemination level	☐ Department / Faculty ☐ Local ☐ National X Institution ☐ Regional ☐ International

Work package type and ref.nr	**DEVELOPMENT**		**WP7**
Title	Translation		
Related assumptions and risks	The content shouldn't be delivered in time.		
Description	Translation of the re-edited teaching materials based on the didactical documents developed in WP 3. *Methodology:* Technical translation methodologies. *Deliverables and Outcomes:* ETAT teaching materials in national language, internal quality control.		
Tasks	KMITL: P13 Lead partner responsible for the translation all kind of the materials into national language, coordinate the work in this WP. RMUTTO, RRU, KMUTNB, KU: Translate the materials according to the tasks of P13 HSD: P1 coordinate the quality of the translation with help of native speakers.		
Estimated Start Date (dd-mm-yyyy)	15-03-2021	**Estimated End Date (dd-mm-yyyy)**	14-07-2021
Lead Organisation	KMITL		
Participating Organisation	P1, P9 - P13		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.*	Subcontracting: Translation of the teaching materials into national Thai language. To ensure the quality of the translation for the documents it is required to use a professional translation service. Estimated costs: 6.000 € (ca. 850 pages)		

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**7.1.**	
	Title	Teaching materials	
	Type	X Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report ☐ Service/Product
	Description	The materials in English should be translated into national Thai	

		language in order to use them in teaching process and to provide trainings in national languages.
	Due date	21 months after project start
	Languages	Thai
Target groups	X Teaching staff X Students X Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other	
Dissemination level	☐ Department / Faculty ☐ Institution ☐ Local ☐ Regional X National ☐ International	

Please copy and paste tables as necessary.

Work package type and ref.nr	**DISSEMINATION & EXPLOITATION**	**WP8**
Title	E-Learning & Collaboration platform	
Related assumptions and risks	Language difficulties - the platform should be available in 2 languages - EN, Thai	
Description	Setting up of E-Learning and Collaboration platform in order to provide e-Learning courses and to share materials and information between partners. *Methodology: A*nalysis of the Learning Management Systems (LMS), decision making, establishment of the E-Learning Platform for ETAT. *Deliverables and Outcomes:* ETAT Learning management and collaboration system. In order to support the exchange of technical expertise and the transition of teaching structures and concepts between the technical universities from a pedagogical point of view. We want to work on building a shared vision of what it could mean to create learning opportunities for students that leads to joyful learning and a broad application of what was to be learned. We will install and run a web-based open source collaboration platform to support the mutual exchange of relevant teaching and learning material to be used by the partners as they need it. This platform shall be equiped with tools and process descriptions which ensure that all partners benefit from using the platform so that it will survive the end of this project. We will contribute to the development of learning materials that will help to use the collaboration platform and an additionally installed open source learning management system. Both systems shall be jointly managed and run by the project partners. Development of the certificates to provide EU-certificated courses. It is planned one training in the Int. Workshop WS2 provided by P8 for training of the possibilities of the ETAT E-Learning & Collaboration Platform.	
Tasks	STU: WP Leader, development of the ETAT E-Learning & Collaboration Platform concept. One training provided by P8 for training of the possibilities of the E-Learning and Collaboration Platform. To use the ETAT E-Learning & Collaboration Platform, give input to the platform. HSD:	

	Responsible for the realization of the E-Learning platform, available in 2 languages To use the collaboration and E-Learning platform, give input to the platform. EWA: Development of certificates to provide EU-certificated courses; responsible for running the E-learning platform; to use the collaboration and E-Learning platform, give input to the platform. UAntwerp, UNIOVI, UPorto, CUAS, BUU, RMUTTO, RRU, KMUTNB, KU, KMITL, EEC-HDC: To use the ETAT E-Learning & Collaboration Platform, give input to the platform.		
Estimated Start Date (dd-mm-yyyy)	15-04-2020	**Estimated End Date (dd-mm-yyyy)**	14-11-2022
Lead Organisation	STU		
Participating Organisation	P1 – P13		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.*	Subcontracting: Rent a cloud server for the E-Learning & Collaboration Platform = 1.700 € for the project time (3 years) (Example offer from German company STRATO: Virtual Server Windows Level 4 including Managed Backup = 47 € per month)		

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**8.1.**	
	Title	ETAT Collaboration platform	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report X Service/Product
	Description	As part of dissemination and exploitation strategy it is planned to develop ETAT E-Learning & Collaboration Platform to share the materials and to provide distance Learning and remote courses to install and to run a web-based open source collaboration platform to support the mutual exchange of relevant teaching and learning material to be used by the partners as they need it.	
	Due date	5 months after project start (platform is ready)	
	Languages	En, Thai	
Target groups	X Teaching staff X Students X Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		

Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	☐ National X International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**8.2.**	
	Title	ETAT E-Learning Platform	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report X Service/Product
	Description	As the part of dissemination strategy the E-Learning platform will be set up and used in order to provide E-Learning and remote courses; one training in Bratislava (WS 2) provided by P7 and P6 for training of the possibilities of the ETAT E-Learning & Collaboration Platform.	
	Due date	12 months after project start (platform is ready)	
	Languages	EN. Thai	
Target groups	X Teaching staff X Students X Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	☐ National X International

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr	**8.3.**	
	Title	Certificates	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report X Service/Product
	Description	Part of the dissemination strategy - development of the certificates to provide EU-certificated E-Learning courses.	
	Due date	34 months after project start	
	Languages	EN, Thai	
Target groups	☐ Teaching staff X Students X Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians X Other		
	Employees of the Thai enterprises		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	☐ National X International

Please copy and paste tables as necessary.

Work package type and ref.nr ☒	**DISSEMINATION & EXPLOITATION**		**WP9**
Title	ETAT Training Centers		
Related assumptions and risks	Language difficulties Business and working plan should be realistic		
Description	In this WP business and working plan of the ETAT Training Centers working after the end of the project will be developed as well as an exploitation strategy. The certification of the ETAT Training Centers will be done.		
Tasks	BUU: P8 is WP leader - is responsible for the certification of the training centers, working and business plan and together with External Evaluator for the exploitation strategy. EEC-HDC: P14 assist P8 in all administrative problems because of the certification of the ETAT Training Centers.		
Estimated Start Date (dd-mm-yyyy)	15-07-2022	**Estimated End Date (dd-mm-yyyy)**	14-11-2022
Lead Organisation	BUU		
Participating Organisation	P8, P14		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.*	Subcontracting: External Evaluator – amongst others exploitation strategy (see WP 1) – 15.000 €		

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes ☒	Work Package and Outcome ref.nr	**9.1.**	
	Title	Business and working plan	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event X Report ☐ Service/Product
	Description	The business and working plan will be developed with the support of P14 and the External Evaluator	
	Due date	36 months after project start	
	Languages	EN, Thai	
Target groups	☐ Teaching staff ☐ Students X Trainees X Administrative staff ☐ Technical staff ☐ Librarians X Other		
	Thai enterprises, Thai universities, Thai associations		

Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	X National ☐ International

Expected Deliverable/Results/ Outcomes ☒	Work Package and Outcome ref.nr	**9.2.**	
	Title	Certification of the ETAT training centers	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report X Service/Product
	Description	The ETAT Training center will be certified by P8 for the work according to business and working plan after the end of the project.	
	Due date	36 months after project start	
	Languages	EN, Thai	
Target groups	X Teaching staff X Students X Trainees X Administrative staff ☐ Technical staff ☐ Librarians X Other		
	Thai enterprises, Thai universities, Thai associations		
Dissemination level	☐ Department / Faculty ☐ Institution	☐ Local ☐ Regional	X National ☐ International

Work package type and ref.nr ☒	**DISSEMINATION & EXPLOITATION**	**WP10**
Title	Dissemination	
Related assumptions and risks	Language problems – All Thai partners should possess enougs knowledge of EN.	
Description	At the beginning of the project a website will be created. The collaboration platform will be set up member-part only part where every partner can up- and download different versions of reports, work documents, etc. It is mainly used to communicate between experts in the installed workgroups. Within the first month of the project, every partner in the consortium receives an account name and a password to log in the members - only collaboration platform. The websites of all partners will be linked to the project website and vice versa. This website will be used for dissemination of the activities of the results. Newsletters, articles, leaflets, posters will be made for the following target groups: Industrial partners, academic institutions, adult education, providers associations, etc. at national and European levels. All partners are involved in the dissemination activities, using their own networks. Associated partners and the NRG will be involved in this dissemination activity too, to ensure the broadest possible diffusion of information over the world. Apart from the website, the results of the project will be disseminated through the trainings in Thailand and EU, International Education Network (P6 - EWA), trainings for the Thai enterprises, the NRG, the International Workshops and network of P14. The results will also be presented in other conferences dedicated to teaching, in order to have a wide dissemination.	
Tasks	EWA: The leading partner is responsible for • Coordination of the dissemination activities • Conferences and exhibitions activity • Activating all partners in order to obtain information for the newsletter and	

	disseminate the newsletter • Activating all partners to write articles • Creation of leaflets and posters BUU: Creation of the website with public and internal parts; responsible for the creation and maintenance of the dissemination website All the partners are responsible to give input to the website, to link the website with the university's website, to write articles, to distribute leaflets, posters, etc. To disseminate the project using their own networks, to include the resonance groups and associated partners in the dissemination. HSD, UAntwerp, UNIOVI, UPorto, CUAS, STU: All the partners are responsible to give input to the website, to link the website with the university's website, to write articles, to distribute leaflets, posters, etc. To disseminate the project using their own networks. RMUTTO, RRU, KMUTNB, KU, KMITL: All the partners are responsible to give input to the website, to link the website with the university's website, to write articles, to distribute leaflets, posters, etc. To disseminate the project using their own networks, to include the resonance groups and associated Thai partners in the dissemination. EEC-HDC: To disseminate the project using their own networks; to include industrial Thai associations and enterprises in the dissemination.		
Estimated Start Date (dd-mm-yyyy)	15-11-2019	**Estimated End Date (dd-mm-yyyy)**	14-11-2022
Lead Organisation	EWA		
Participating Organisation	P1 – P14		
Costs *Please explain the necessary costs for this WP: What travels are necessary? If equipment is requested, explain why it is required. If subcontracting is necessary, explain why the task cannot be performed by the partner.*	Subcontracting: Design of flyers,website, leaflets, posters, advertising video by external subcontracting – 9.000 €. To realize a professional design of documents and a professional dissemination video about the project the consortium needs an external support.		

Deliverables/results/outcomes

Expected Deliverable/Results/ Outcomes ☒	Work Package and Outcome ref.nr	**10.1.**	
	Title	Project website	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report X Service/Product
	Description	An essential part of the dissemination and exploitation of the project is a website. The main and most important part of the website, will be the pages open for the public. The following is a non-exhaustive list of topics covered:	

		- General information about the training module - the consortium, the general idea, innovative power, the European spirit, etc. - A page consisting of important links - all consortium's member: full partners as well as associated partners, the European Union, etc.
	Due date	Permanently during the project work
	Languages	EN, Thai
Target groups	X Teaching staff X Students X Trainees X Administrative staff ☐ Technical staff ☐ Librarians X Other	
	Thai Enterprises, NRG members, Thai universities	
Dissemination level	☐ Department / Faculty ☐ Local ☐ National ☐ Institution ☐ Regional X International	

Expected Deliverable/Results/ Outcomes ☒	Work Package and Outcome ref.nr	**10.2.**	
	Title	Collaboration Platform as a dissemination tool	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☐ Report X Service/Product
	Description	Collaboration platform will be used for the collaboration between partners.	
	Due date	From 7 months after project start permanently during the project work	
	Languages	EN, Thai	
Target groups	X Teaching staff ☐ Students X Trainees X Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. *(Max. 250 words)*		
Dissemination level	☐ Department / Faculty ☐ Local ☐ National ☐ Institution ☐ Regional X International		

Expected Deliverable/Results/ Outcomes ☒	Work Package and Outcome ref.nr	**10.3.**	
	Title	Publicity materials, conferences and seminars	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	X Event ☐ Report ☐ Service/Product
	Description	Newsletters and articles will be written to disseminate the results of the project and to share the experiences with everybody who might be interested in automation and cooperation between HEIs and Enterprises.	

		Some articles will be uploaded on the project website, others will be published in journals: professional journals, trade journals, technical journals, etc. – or will be published at conferences. Participation in different conferences related to the theme of the project.
	Due date	Permanently during the project work
	Languages	EN, Thai
Target groups	X Teaching staff X Students ☐ Trainees ☐ Administrative staff ☐ Technical staff X Librarians X Other	
	Project partners, associated partners, Thai enterprises, universities worldwide	
Dissemination level	☐ Department / Faculty ☐ Local ☐ National ☐ Institution ☐ Regional X International	

Please copy and paste tables as necessary.

E.7 Consortium partners involved and human resources required to complete the work packages

Indicative input of consortium staff *- The total number of days per staff category should correspond with the information provided in the budget tables.*

Work Package Ref.nr	Partner nr	Partner acronym	Country	Number of staff days[1]					Exact Role and tasks of each person in the work package
				Category 1	Category 2	Category 3	Category 4	Total	
MANAGEMENT (WP1)	1	HSD	DE	65	27	72	0	164	**Langmann:** Project coordination **Jacques:** Project coordination (deputy) **Dohmen:** Support of project coordination **Ossenberg-Engels:** Project administration
	2	UAntwerp	BE	6	14	0	3	23	**Krol:** Support of project coordination, participation on General Meetings, member of the Steering Committee, internal coordinator of the project works for UAntwerp **Smet:** Support of project coordination, participation on General Meetings, member of Steering Committee
	3	UNIOVI	ES	5	10	0	3	18	**Mateos:** Support of project coordination, participation on General Meetings, internal coordinator of the project works for this partner
	4	UPorto	PT	5	12	0	2	19	**Restivo:** Support of project coordination, participation on General Meetings, internal coordinator of the project works for UPorto
	5	CUAS	AT	5	16	0	2	23	**Madritsch:** Support of project coordination, participation on General Meetings, member of the Steering Committee, internal coordinator of the project works for this partner **Werth:** Support of project coordination, participation on General Meetings
	6	EWA	DE	6	14	0	2	22	**Schaffrath:** Support of project coordination, participation on General Meetings, member of the Steering Committee, internal coordinator of the project works for this partner
	7	STU	SK	4	13	0	2	19	**Zakova:** Support of project coordination, participation on General Meetings, internal coordinator of the project works for this partner
	8	BUU	THAI	6	14	0	3	23	**Chinnasarn:** Support of project coordination, participation on General Meetings **Jitngernmadan:** Support of project coordination, participation on General Meetings, member of the Steering Committee, internal coordinator of the project works for this partner
	9	RMUTTO	THAI	4	10	0	2	16	**Suwannatat:** Support of project coordination, participation on General Meetings, internal coordinator of the project works for this partner

[1] *Please see Programme Guide, Part B for your action, Table A – Project Implementation (amounts in Euro per day) Programme Countries and Table B - Project Implementation (amounts in Euro per day) Partner Countries.*

	10	RRU	THAI	3	9	0	2	14	**Putpuek:** Support of project coordination, participation on General Meetings, internal coordinator of the project works for this partner
	11	KMUTNB	THAI	4	10	0	2	16	**Kumpakeaw:** Support of project coordination, participation on General Meetings, internal coordinator of the project works for this partner
	12	KU	THAI	3	9	0	2	14	**Bundasak:** Support of project coordination, participation on General Meetings, internal coordinator of the project works for this partner
	13	KMITL	THAI	4	10	0	2	16	**Kimpan:** Support of project coordination, participation on General Meetings, internal coordinator of the project works for this partner
	14	EEC-HDC	THAI	6	11	0	2	19	**Kurukitkoson:** Support of project coordination, participation on General Meetings, internal coordinator of the project works for this partner
SUBTOTAL				126	179	72	29	406	
QUALITY PLAN (WP2)	1	HSD	DE	5	20	0	0	25	**Langmann:** Ensure quality of the project in close cooperation with the Internal Quality Manager and the External Quality Evaluator **Ossenberg-Engels**: Support relating the project administration
	2	UAntwerp	BE	15	86	8	10	119	**Smet:** Leader of WP2, Internal Quality Manager **Krol:** Support of the internal quality plan, cooperation with external evaluator **Daens:** Support of the internal quality plan
QUALITY PLAN (WP6)	1	HSD	DE	3	16	0	0	19	**Langmann:** Will train Thai academic staff during international workshops WS1 + WS2 **Jacques**: Will train Thai academic staff during EU trainings in Thailand **Gömükpinar**: Support of the practical training in the WS1 + WS2
	2	UAntwerp	BE	3	12	0	0	15	**Daens:** Will train Thai academic staff during international workshops WS1 + WS2 & during EU trainings in Thailand (Industrial Communication – OPC UA) **Copot:** Will train Thai academic staff during international workshops WS1 + WS2 & during EU trainings in Thailand (Robotics) **Vanlanduit:** Organize the Int. workshop WS1
	3	UNIOVI	ES	3	14	0	0	17	**Robles:** Will train Thai academic staff during international workshops and trainings in Thailand (System Control)
	4	UPorto	PT	5	41	0	0	46	**Restivo:** Discuss improvement actions and give suggestions, improve the training **Abreu:** Will train Thai academic staff during international workshops and trainings in Thailand (robotics online simulation) **Carneiro:** Will train Thai academic staff during international workshops and trainings in Thailand (LabView based control)
	5	CUAS	AT	3	15	0	0	18	**Madritsch:** Will train Thai academic staff during international workshops and trainings in Thailand (Feedback Control Technology) **Werth:** Will train Thai academic staff during international workshops and trainings in Thailand (Matlab/Simulink)
	6	EWA	DE	6	10	0	0	16	**Schaffrath:** Support of WS organisation **Shaporin:** Will share the experiences in organizing of training centers in automation technologies on the base of HEI

	7	STU	SK	5	18	0	0	23	**Žáková:** Will train Thai academic staff during international workshops and trainings in Thailand (Online education) **Huba:** Will train Thai academic staff during international workshops and trainings in Thailand (E-mobility, Drives)
	8	BUU	THAI	3	10	0	0	13	**Jitngernmadan:** Provide test integrating of the teaching materials to the university curricula, Participation on the Int. training workshop WS1 + WS2 **Fongsamut:** Participation on the Int. training workshop WS1 + WS2
	9	RMUTTO	THAI	4	11	0	0	15	**Suwannatat**: Provide test integrating of the teaching materials to the university curricula, participation on the Int. training workshop WS1 + WS2 **Singsri:** Participation on the Int. training workshop WS1 + WS2
	10	RRU	THAI	4	13	0	2	19	**Phawandee:** Provide test integrating of the teaching materials to the university curricula **Sungthong:** Participation on the Int. training workshop WS1 + WS2 **Kakham:** Participation on the Int. training workshop WS1 + WS2
	11	KMUTNB	THAI	3	60	6	4	73	**Kumpakeaw:** Leading of WP6, participation on the Int. training workshop WS1 + WS2 **Joochim:** Responsible for evaluation and relevance of the teaching materials **Saneeyeng:** Develop a questionnaire for evaluation, participation on the Int. training workshop WS1 + WS2 **Wiboonchan:** Support of administration in the WP
	12	KU	THAI	3	14	0	2	19	**Bundasak:** Provide test integrating of the teaching materials to the university curricula **Pimpaporn:** Participation on the Int. training workshop WS1 + WS2 **Roopngam:** Participation on the Int. training workshop WS1 + WS2
	13	KMITL	THAI	4	12	0	0	16	**Tangwongcharoen:** Provide test integrating of the teaching materials to the university curricula **Budsara:** Participation on the Int. training workshop WS1 + WS2 **Jitkajornwanich:** Participation on the Int. training workshop WS1 + WS2
	14	EEC-HDC	THAI	6	12	0	0	18	**Kurukitkoson**: Assist P8-P13 in all administrative work and documents relating to the changes in the curricula **Suntornvibhat:** Assisting in accreditation of the curricula
			SUBTOTAL	75	364	14	18	471	
PREPARATION (WP3)	3	UNIOVI	ES	6	73	3	4	86	**Mateos:** Leading the workpackage WP3, preparation of documents and reports **Poo:** Preparation and revision of learning-teaching materials **Sirgo:** Support of the development of didcatic structure & content **Robles:** Coaching of the workgroups working around the training modules
	5	CUAS	AT	3	15	0	0	18	**Madritsch:** Coordination of the development of the ETAT didactical content **Ungermanns:** Revision of the documents developed by Thai partners.
	8	BUU	THAI	5	30	0	2	37	**Jitngernmadan**: Organizing national work group meetings

									Fongsamut: Developing of the content, developing of simulation models in Automation 4.0 for Smart City applications
	9	RMUTTO	THAI	5	30	0	2	37	**Suwannatat**: Organizing national work group meetings **Singsri**: Developing of the content, developing of simulation models in Automation 4.0 for Robotics applications
	10	RRU	THAI	3	27	0	2	32	**Putpuek:** Organizing national work group meetings **Phawandee**: Developing of the content **Sungthong:** Developing of simulation models in Smart Farming applications **Kakham:** Support the integration of Smart Farming applications in the ETAT Smart Lab
	11	KMUTNB	THAI	5	30	0	2	37	**Kumpakeaw:** Organizing national work group meetings **Joochim:** Developing of simulation models in Automation 4.0 for Logistics & Traffic, Environment & Energy, developing of the content **Saneeyeng:** Developing of the content, communication with enterprises in the EEC region **Wiboonchan:** Administration of national work group meetings
	12	KU	THAI	3	27	0	2	32	**Pimpaporn:** Organizing national work group meetings **Jitnupong:** Developing of simulation models in Automation 4.0 for Smart Home **Roopngam:** Developing of the content,
	13	KMITL	THAI	5	30	0	2	37	**Kimpan:** Organizing national work group meetings **Tangwongcharoen:** Developing of simulation models in Automation 4.0 for Smart City & Smart Home **Budsara:** Developing of the content **Jitkajornwanich:** Communication with enterprises in the EEC region
SUBTOTAL				35	262	3	16	316	
DEVELOPMENT (WP4)	1	HSD	DE	4	21	0	0	25	**Langmann:** Deliver content to the training modules **Dohmen:** Participation in the special WS **Gömükpinar:** Support of assembling of ESL
	2	UAntwerp	BE	2	16	0	0	18	**Daens:** Deliver content to the training modules , participation in the special WS **Copot:** Deliver content to the training modules
	3	UNIOVI	ES	2	30	0	2	34	**Robles:** Deliver content to the ETAT Smart Lab , suggestions for the assembling of ESL, participation in the special WS
	5	CUAS	AT	8	93	10	7	118	**Madritsch:** Leading of WP4 **Werth:** Coaching of the workgroups in the WP, support of WP management **Ungermanns:** Support of the development of ETAT Smart box **Bihlo:** Support of assembling of ETAT Smart Labs
	7	STU	SK	3	19	0	0	22	**Žáková:** Deliver content to the training modules assigned to STU, participation in special WS **Bisták:** Support of developing/assembling of ETAT Smart Lab
	8	BUU	THAI	1	13	0	0	14	**Chinnasarn:** Responsible of organizing training center at his university **Jitngernmadan:** Participating in the special WS
	9	RMUTTO	THAI	1	13	0	0	14	**Suwannatat:** Responsible of organizing training center at his

								university **Singsri:** Participating in the special WS
	10	RRU	THAI	3	15	0	0	18	**Putpuek:** Responsible of organizing training center at his university **Phawandee:** Participating in the special WS
	11	KMUTNB	THAI	1	13	0	0	14	**Kumpakeaw:** Participating in the special WS **Joochim:** Responsible of organizing training center at his university **Wiboonchan:** Support the administration of the training courses
	12	KU	THAI	3	15	0	0	18	**Bundasak:** Responsible of organizing training center at his university **Jitnupong:** Participating in the special WS
	13	KMITL	THAI	1	13	0	0	14	**Kimpan:** Responsible of organizing training center at his university **Tangwongcharoen:** Participating in the special WS
DEVELOPMENT (WP5)	1	HSD	DE	3	19	0	0	22	**Langmann:** Give experiences for the course structure **Jacques:** Deliver content & suggestions
	2	UAntwerp	BE	2	17	0	0	19	**Daens:** Give experiences for the course structure **Vanlanduit:** Give experiences & suggestions for the course structure
	3	UNIOVI	ES	3	17	0	0	20	**Mateos:** Give experiences for the course structure **Poo:** Deliver content & suggestions
	4	UPorto	PT	5	38	5	0	48	**Restivo:** Give experiences for the course structure **Chouzal:** Support relating engineering pedagogy **Urbano:** Integrate Remote Labs in the training structure
	5	CUAS	AT	3	15	0	0	18	**Madritsch:** Give experiences for the course structure **Werth:** Support relating engineering pedagogy
	7	STU	SK	3	23	0	0	26	**Žáková, Huba:** Give experiences for the course structure **Bisták:** Integrate Online Labs in the training structure **Rábek:** Integrate Online Labs in the training structure
	8	BUU	THAI	1	13	0	0	14	**Chinnasarn:** Give experiences for the course structure **Jitngernmadan:** Development of the structure
	9	RMUTTO	THAI	3	62	6	3	74	**Suwannatat:** Leading WP5, coordinating the development of the structure, methodologies and content of the trainings. **Singsri:** Support of the development of the structure
	10	RRU	THAI	3	25	0	0	28	**Putpuek:** Give experiences for the course structure **Sungthong:** Development of the structure **Kakham:** Support of the development of the structure
	11	KMUTNB	THAI	1	13	0	0	14	**Joochim:** Give experiences for the course structure, advising the course outline **Saneeyeng:** Development of the structure
	12	KU	THAI	3	25	0	0	28	**Pimpaporn:** Give experiences for the course structure, advising the course outline **Jitnupong:** Development of the structure **Roopngam:** Development of the structure
	13	KMITL	THAI	1	15	0	0	16	**Kimpan:** Give experiences for the course structure, advising the course outline **Budsara:** Development of the structure **Wiangsripanawan:** Development of the structure
DEVELOPMENT (WP7)	1	HSD	DE	3	16	0	0	19	**Langmann:** Coordinate the quality of translation **Jacques:** Check content of EN documents
	9	RMUTTO	THAI	4	35	0	0	39	**Suwannatat:** Ensure the quality of the translated documents, translate the materials according to the tasks of P13

									Singsri: Translate the materials according to the tasks of P13
	10	RRU	THAI	3	35	0	0	38	**Phawandee:** Translate the materials according to the tasks of P13 **Sungthong:** Ensure the quality of the translated documents, translate the materials according to the tasks of P13 **Kakham:** Translate the materials according to the tasks of P13
	11	KMUTNB	THAI	4	35	0	0	39	**Kumpakeaw:** Ensure the quality of the translated documents, translate the materials according to the tasks of P11 **Joochim**: Translate the materials according to the tasks of P13 **Saneeyeng:** Translate the materials according to the tasks of P13
	12	KU	THAI	4	27	0	0	31	**Bundasak:** Ensure the quality of the translated documents, translate the materials according to the tasks of P13 **Pimpaporn:** Translate the materials according to the tasks of P13 **Jitnupong:** Translate the materials according to the tasks of P13
	13	KMITL	THAI	5	82	6	4	97	**Kimpan:** Leading of WP7, ensure the quality of the translated documents **Tangwongcharoen:** Translate the materials according to the tasks **Budsara:** Translate the materials according to the tasks **Wiangsripanawan:** Translate the materials according to the tasks
			SUBTOTAL	83	773	27	16	899	
DISSEMINATION & EXPLOITATION (WP8)	1	HSD	DE	2	24	0	0	26	**Langmann:** Realization of the E-Learning and Collaboration platform **Jacques**: Give input to the E-Learning and Collaboration platform **Dohmen**: Support of the administration of the platform
	2	UAntwerp	BE	2	14	0	0	16	**Smet:** Give input to the E-Learning and Collaboration platform **Vanlanduit:** Give input to the E-Learning and Collaboration platform **Krol:** Give input to the E-Learning and Collaboration platform
	3	UNIOVI	ES	2	30	0	3	35	**Sirgo:** Support of the development of E-Learning&Collaboration platform **Poo:** Give input to the platform **Robles:** Give input to the platform
	4	UPorto	PT	6	35	4	3	48	**Abreu:** Give input to the E-Learning and Collaboration platform **Urbano:** Integrate Online Experiments into the platform (Energy, Logistics) **ChouzaL:** Integrate Online Experiments into the platform (Process Automation)
	5	CUAS	AT	3	15	0	0	18	**Werth:** Give input to the E-Learning and Collaboration platform **Ungermanns:** Give input to the E-Learning and Collaboration platform
	6	EWA	DE	5	11	0	0	16	**Schaffrath:** Development of certificates to provide EU-certificated courses **Shaporin:** Responsible for running the E-learning platform
	7	STU	SK	8	96	6	5	115	**Žáková:** Leading of WP8 **Huba:** Development of the E-Learning and Collaboration platform concept **Bisták:** Provide training of the possibilities of the E-Learning and Collaboration Platform **Rábek:** Give input to the E-Learning and Collaboration platform

	8	BUU	THAI	3	10	0	0	13	**Jitngernmadan:** Give input to the E-Learning and Collaboration platform **Fongsamut:** Give input to the E-Learning and Collaboration platform
	9	RMUTTO	THAI	4	11	0	0	15	**Suwannatat:** Use the collaboration and E-Learning platform, give input to the platform. **Singsri:** Use the collaboration and E-Learning platform, give input to the platform.
	10	RRU	THAI	2	11	0	0	13	**Sungthong:** Use the collaboration and E-Learning platform, give input to the platform. **Kakham:** Use the collaboration and E-Learning platform, give input to the platform.
	11	KMUTNB	THAI	3	15	0	0	18	**Kumpakeaw:** Use the collaboration and E-Learning platform, give input to the platform **Joochim:** Use the collaboration and E-Learning platform, give input to the platform
	12	KU	THAI	3	15	0	0	18	**Pimpaporn:** Use the collaboration and E-Learning platform, give input to the platform **Roopngam:** Use the collaboration and E-Learning platform, give input to the platform **Loetkitjaronepo:** Support the administration of the platform
	13	KMITL	THAI	3	12	0	0	15	**Kimpan:** Use the collaboration and E-Learning platform, give input to the platform **Tangwongcharoen:** Use the collaboration and E-Learning platform, give input to the platform **Budsara:** Use the collaboration and E-Learning platform, give input to the platform
DISSEMINATION & EXPLOITATION (WP9)	8	BUU	THAI	5	82	6	4	97	**Chinnasarn:** Development and support of the working and business plan **Jitngernmadan:** Leading of WP9, responsible for the certification of the training centers **Fongsamut:** Support in the working and business plan
	14	EEC-HDC	THAI	6	12	0	0	18	**Kurukitkoson:** Assist P8 in all administrative problems because of the certification of the ETAT training centers. **Suntornvibhat:** Support of evaluation of the ETAT training centers.
DISSEMINATION & EXPLOITATION (WP10)	1	HSD	DE	5	16	2	0	23	**Jacques:** Give input to the website, write articles **Dohmen:** Support the project dissemination by different social networks **Gömükpinar:** Realization of flyers, posters etc.
	2	UAntwerp	BE	5	16	0	2	23	**Smet:** Give input to the website **Daens:** Write articles, papers etc. **Krol:** Disseminate the project using their own networks.
	3	UNIOVI	ES	5	11	0	2	18	**Mateos:** Give input to the website **Poo:** Write articles, papers etc **Robles:** Disseminate the project using their own networks
	4	UPorto	PT	4	21	2	2	29	**Restivo:** Disseminate the project using their own networks, Give input to the website **Abreu:** Write articles, papers etc **Urbano:** Write articles, papers etc

	5	CUAS	AT	5	11	0	2	18	**Madritsch:** Give input to the website**,** write articles, papers etc **Werth:** Disseminate the project using their own networks, Give input to the website
	6	EWA	DE	6	45	5	3	59	**Schaffrath:** Leading of WP10, activating all partners for dissemination activities **Shaporin:** Support with experiences from the TATU project, conference and exhibition activities, using of social networks
	7	STU	SK	5	16	0	2	23	**Žáková:** Disseminate the project using their own networks, Give input to the website **Bisták:** Write articles, papers etc **Rábek:** Write articles, papers etc
	8	BUU	THAI	6	15	0	2	23	**Chinnasarn:** Disseminate the project using their own networks **Jitngernmadan:** Give input to the website, include the resonance groups and associated partners in the dissemination. **Fongsamut:** Write articles, papers etc
	9	RMUTTO	THAI	6	15	0	2	23	**Suwannatat:** Disseminate the project using their own networks; Include the resonance groups and associated partners in the dissemination. **Singsri:** Give input to the website, write articles, papers etc
	10	RRU	THAI	6	20	0	2	28	**Putpuek:** Disseminate the project using their own networks **Phawandee:** Give input to the website **Sungthong:** Include the resonance groups and associated partners in the dissemination. **Kakham:** Write articles, papers etc
	11	KMUTNB	THAI	6	15	0	2	23	**Kumpakeaw:** Write articles, papers etc **Joochim:** Disseminate the project using their own networks **Saneeyeng**: Include the resonance groups and associated partners in the dissemination. **Wiboonchan:** Give input to the website
	12	KU	THAI	6	20	0	2	28	**Pimpaporn:** Disseminate the project using their own networks **Roopngam:** Give input to the website **Jitnupong:** Include the resonance groups and associated partners in the dissemination. **Loetkitjaronepo:** Supervise and update the information on the website.
	13	KMITL	THAI	6	15	0	2	23	**Kimpan:** Disseminate the project using their own networks **Tangwongcharoen:** Give input to the website **Budsara:** Write articles, papers etc **Jitkajornwanich**: Include the resonance groups and associated partners in the dissemination
	14	EEC-HDC	THAI	8	27	2	2	39	**Kurukitkoson**: Disseminate the project using their own networks **Suntornvibhat:** Include industrial Thai accociations and industrial enterprises in the dissemination
			SUBTOTAL	136	656	27	42	861	
			TOTAL	455	2234	143	121	2953	

Please insert rows as necessary

PART F – Quality of the Project Team and Cooperation Arrangements

F.1 Background of partnership and the proposal preparation

Please provide shortly the history of cooperation between partners (if any). How the idea of the project was developed and which/ who among partners contributed to the proposal development. (limit 3.000 characters)

The partnership for creation of an ETAT project consortium was chosen by Steering Committee mainly consisting of the leading partners of the TATU (TEMPUS) project. The consortium comprises 14 partners - 7 partners from 6 different EU countries, 6 partners from Thailand (HEI) and the Digital Economy Promotion Agency (DEAP) as a Thai government institution for promoting amongst others also the training&education for digital technologies in the East Economic Corridor (EEC) in Thailand.

The idea for the ETAT project arose from a request from the BUU to the HSD for support and cooperation for the strengthening of education and training in the field of Industry 4.0 automation technology in the EEC. The BUU is said to play a leading role in EEC for the quality training of engineers for the digital industry in the EEC and needs help and support. The HSD has been carrying out at the BUU Summer / Winter Schools in Automation Engineering for some years now. The cooperation was not least due to the fact that the WP head of the BUU listed in the project proposal in WP 9 (Prajaks Jitngernmadan) is a former Master graduate of HSD. The BUU will play a key role in ETAT as it will take over the coordination within the Partner Country.

The project idea was developed in the course of the year 2018 through various meetings of the partners. These included e.g. meetings at the International Conference for Remote Engineering & Virtual Instrumentation (REV2018) in Dusseldorf (meeting of P1, P4, P5, P6, P7), the Annual EduNet Conference in Heerlen (meeting of P1, P2, P3, P6) as well as a special preparatory meeting at the BUU in Chonburi (meeting of P1 with P8 - P14).

All European Universities are well-know to the Project Coordinator from following projects and events:
- CoNet project (TEMPUS): working together P1 and P2
- TATU project (Tempus): working together P1, P2 and P5
- International Education Network EduNet & EduNet World Association: working together P1, P2, P3 and P6. EduNet is currently a consortium of about 100 universities worldwide. The objective is the exchange of experiences and knowledge in the field of automation engineering in order to ensure a high-quality practically-oriented education.
- International Association of Online Engineering (IAOE): working together on P1, P4 and P7

All Thai universities in the ETAT consortium are leading universities in the EEC for education of automation engineers in different branches (Environment & Energy, Agriculture, City &Home, Logistics, Robotics, Big Data Analysis)

As the consortium is a multi-actor consortium, it brings together the skills and competences required to carry out the work program:

• The academics from EU have expertise in the field of automation, in the development of training courses, cooperation with enterprises and international projects.
• The Thai partners are leading HEIs in different automation branches in the EEC.
• The External Evaluator has expertise in international projects as evaluator, coordinator and partner.

Taking into consideration the existing skills, expertise and competences in the consortium, the projects tasks will be successfully completed.

If relevant, please explain how and to which extent the project benefits from the experience and participation of non–academic partners. (limit 3.000 characters)

P14 is a Thai government organization ((http://www.eeco.or.th) and was established to promote and support the development of digital industry and innovation and the digital technology adoption in Thailand including the human resource planning and development within Thailand's EEC areas. The goal is to achieve the economic, social, cultural and security benefits in the national level in accordance with the Digital Development for Economy and Society Act B.E. 2560 (A.D. 2017) promulgated on 23 January 2017, the 2nd year of the reign of King Rama X.

The strategies of EEC-HDC in the digital economy include amongst others:

• Supporting and promoting the digital technology adoption to create or spread the content via the media, which benefits the national economy, society, culture, and security.
• Supporting and promoting the human resource creation and development in relation to the digital industry and innovation in line with the national situation.
• Supporting and developing the digital technology adoption in the business or industry.
• Supporting and promoting the education, research, and transfer of technology and innovation necessary to the digital industry development.
• Supporting institutions to develop training facilities and equipment through the government funding and private donations.

The support of P14 in ETAT is therefore important in order to align the planned training centers to the needs of the industry in the EEC and to support the dissemination and exploitation of the project results in Thailand. P14 is therefore particularly involved in WP 6 (ETAT Smart Labs), WP 9 (ETAT Education & Training Centers) and WP10 (Dissemination).

Please explain the role and the participation of the Programme Country partners and their support in the development of the different activities (e.g. in the development of the curricula) and (limit 3.000 characters)

All European Universities involved to the ETAT project have great experience in providing trainings in industrial technologies as well as in Automation Engineering. Moreover all EU universities have a lot of experiences in development of international curricula for industrial technologies e.g. for Master students in automotive technology, in remote engineering.

P1 - has experience in participating and coordinating of national and EU projects in Automation Engineering and Industry 4.0; has large experience in working with international partnerships e.g. with HEIs in Asia (Thailand, China, Indonesia). In ETAT is going to manage the work of the partnership, provide university staff for trainings in Thai universities, develop training materials.

P2 - has more than 20 years in internal quality control for EU projects ; was the project coordinator in CoNet (TEMPUS) project; worked together with P1 in TATU (TEMPUS) project; in ETAT is going to be responsible for the quality management.

P3 - is one of the first department of UNIOVI in terms of contracts and projects in collaboration with industry; works together with P1 and P6 in the International Education Network; in ETAT is responsible for preparation of the structure and revision of didactical and practice-oriented learning/teaching materials.

P4 - has great experiences with ERASMUS+ projects; was working together with P1 in different events; in ETAT besides providing trainings will support the course structure for trainers, evaluation of ETAT Smart Labs and E-learning materials;

P5 - has great experiences in development of training hardware&software for Electronics and Automation Engineering; was working together with P1 in different projects, will be responsible for the realization of the ETAT Smart Labs.

P6 - P1, P2 and P3 are members of EWA and worked together with P6 in different events; in ETAT P6 will support the project by their international educational expertise/network and will lead the dissemination activities.

P7 - has a lot of experiences in E-Learning for Automation Engineering (Remote Labs); was working together with P1 in different events; in ETAT is responsible for the E-Learning & Collaboration platform

F.2 Cooperation arrangements, management and communication

Please define the organisation of the implementation of the project and the division of tasks between the partners. Please explain the allocation of resources for each activity. Explain also how the tasks are distributed amongst the partners and how project "ownership" is ensured (limit 3.000 characters).

The project co-ordinator arranged a two-days ETAT preparation meeting in June 2018 (30.05. - 01.06.18) in BUU in Chonburi financed by the HSD, attended by the WP leaders from Thai partners and further representatives from Thai project partners. In this workshop the main principles of co-operation in the consortium were discussed and fixed in corresponding rules.

The consortium has been constructed under the guidance of three principles:

1) That the stakeholder interests representing the main views should be represented within the consortium.

2) The skills required to achieve the objectives of the project are represented in the consortium.

3) The critical mass analysis of the team based on the background of the partners should give a positive result for the realization of the project results.

Following the first principle, the consortium represents those motivated to operate Industry 4.0 training centers in the universities of East Economic Corridor (EEC) in Thailand (EEC-HDC, BUU, RMUTTO, RRU, KMUTNB, KU, KMITL), and also those motivated to develop Industry 4.0 courseware (UAntwerp, STU, UPorto), organise the training and education in Automation Technology (UAntwerp, CUAS, UNIOVI, STU), develop and operate community services (HSD, EWA, EEC-HDC), and those representing different range of Automation Engineering disciplines (Industrial Automation - HSD, BUU; Robotics - UAntwerp, RMUTTO, UPorto; CPS-Systems - HSD, CUAS, BUU, KU; Man-Machine-Systems - HSD, UAntwerp, KMITL); Big Data Analysis for Industrial Applications - CUAS, UNIOVI, KU; IoT and IIoT - HSD, STU, RRTU, KU). There are representatives of the Thai government for digitalisation in production in the EEC (EEC-HDC) as well as the leading institutions in education and training in the EEC (BUU, RRU, KMUTNB, RMUTTO, KU, KMITL). With the involvement of the project partner EWA and indirectly with the International Education Network EduNet (HSD, UAntwerp, UNIOVI and BUU are members of EduNet), which dispose of a large user base and therefore can contribute significantly to the dissemination of ETAT results by, for example, strengthens the worldwide visibility of European competence considerably, and supports the in-ternational cooperation of interdisciplinary education groups in a virtual community. Lastly, the project leadership has been put into the hands of an individual (R. Langmann) in an university which has a long experience of international project and training activities in Asia.

The consortium members also bring complementary skills to the project following the second principle.

The main effort in each work package is being contributed to by the WP leaders. Each of these leaders has been deemed to have the skills required to achieve the objective that the WP addresses. In this way the participants collectively constitute a consortium capable of achieving the project objectives, who are suited and committed to the tasks assigned to them.

Following the third principle the participation in the consortium is limited to 14 with corresponding background for efficiency and flexibility reasons. An early reasonable involvement of industry companies (associate partners) during the project work (e.g. participation in workshops, trainees from industry) is however envisaged.

Please explain the overall project and partnership management making specific reference to the management plan and how decisions will be taken. Please describe how permanent and effective communication and reporting will be ensured as well as the measures put in place for conflict resolution (limit 2.000 characters).

The main goal of a good project management is to ensure that the project goals are achieved. The project management architecture adopted in ETAT defines a lean structure and a set of procedures which are important and indispensable for ensuring effective and successful execution of the project and subsequent generation of results. This goal is achieved by establishing efficient management procedures for two managerial aspects: administrative and financial management as well as operational management together with quality assurance. Corresponding mechanisms will be provided to take decisions affecting the project's outcome as well as for the administrative and operational co-ordination of the project. Additionally, the project management defines the means of communication within and outside the project, and represents the sole interface to the European Commission Project Officer.

Owing to the size of the consortium a managerial structure for ETAT is proposed, consisting of the following core bodies:
- Project Coordinator PC (HSD)
- Steering Committee SC (HSD, UAntwerp, CUAS, EWA, BUU)
- Internal Quality Manager IQM (UAntwerp)
- Work packadge Leader WL
- External Evaluator EE (planned: Margret Gfrerer - Austria)
- Data Security Officer DSO (UNIOVI)

ETAT will be carried out by a mid-size consortium, which allows simplifying management issues. However, as a precaution considered relevant, a procedure for conflict management is implemented as guidance for the SC. The responsibility for conflict management lies with the PC. The PC establishes responsibility for conflict management by explicitly taking charge of resolving/managing the conflict. However, it is the responsibility of all partners to report any identified issues as soon as possible to the PC, preferably before the development of conflicts.

The project's conflict management strategy is achieved through these three key goals:
1. Discover and resolve issues before they develop into a serious conflict.
2. Create a climate of trust where partners feel free to exchange ideas.
3. Encourage and engage partners to speak out their minds and without any hidden agendas.

F.3 Organisations and activities

This part must be completed separately by each organisation participating in the project (applicant and partners with its affiliated entities (if any)).

Partner number		**P1**
Organisation name & acronym	Hochschule Duesseldorf University of Applied Sciences (HSD)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

The planned project is to be accomplished in the Faculty of Electrical and Information Technology (FBEI) of the HSD by the Competence Center Automation Dusseldorf (CCAD). HSD has approx. 10.000 full-time students, 170 full-time professors and 355 scientific and administrative staff members. The university is connected worldwide by cooperations with 118 international universities and higher education institutions.

FBEI has approx. 1.600 full-time students, 24 full-time professors as well as 35 scientific/non-scientific employees in part- and full time. Major task of FEI is the training of students with the certification of bachelor and master degrees in the education areas of electrical and information technology. The faculty offers three Bachelor study courses and one Master study course in specialized courses of automation technology, power engineering, micro technology, information and communication technology and industrial engineering. There are co-operation agreements in the FEIT with eight partner universities world-wide.

The CCAD is the competence center of the faculty FBEI relating Automation Engineering. Since more the 10 years the research & training focus of CCAD is the application of Internet technology in Automation. CCAD forces a lot of research e.g. in the industrial automation area and is involved in R&D projects for Industry 4.0 and international activities e.g. in European summer schools of remote engineering and other international projects. Since 2015 CCAD offers specialized training courses relating Industry 4.0 & Smart Factory in particular for further education of engineers and teachers from Asian academic and vocational education institutions. 2018 were already trained about 200 participants from China and Indonesia in short-term and long-term trainings.

HSD is one of the founding member of the International Education Network EduNet (http://elms.ccad.eu) and of the EduNet World Association e.V. (www.edunet-wa.com).

From 2013 up to 2017 the FBEI/CCAD was the project coordinator in the TEMPUS projekt “Training in Automation Technology for Ukraine - TATU (544010-TEMPUS-1-2013-1-DE-TEMPUS-JPHES).

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

- Project Coordinator (PC) in charge of the financial and administrative management of the project, and the coordination of the workpackages activities, in collaboration with WP2 leader (Quality Management), responsible for the production of the Activity Document, chair of the managing team, organisation of web meetings. Will be the main contact to the Executive Agency, chairman of the Project Steering Committee.
- Ensures quality of the project in close cooperation with the Internal Quality Manager and the External Evaluator.
- Responsible to deliver content to the training modules assigned to them.
- Development of the structure, deliver content, suggestions for Train the Trainer.
- Will train Thai academic staff during international workshops and.
- Coordinate the quality of the translation with help of native speakers.
- Responsible for the realization of the E-Learning platform, available in 2 languages.
- Give input to the website, to link the website with the university’s website, to write articles, to distribute leaflets, posters, etc.
- To disseminate the project using their own networks.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	Choose an item.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Reinhard Langmann	Prof. Dr.-Ing. Reinhard Langmann is professor of Process Informatics at HSD, who has worked in automation technology and realtime systems since 1983, with a special focus since 1996 on Internet technologies in industrial automation, remote labs and Industry 4.0. He has participated in several national and international research projects and has authored more than 100 scientific papers in journals, and conference proceedings. He is the director of the Competence Center Automation Dusseldorf (CCAD) and the head of the Duesseldorf Telelaboratory. Moreover Dr. Langmann is the Chairman of the Edunet World Association (www.edunet-wa.com) and a board member of the New Automation e.V. (www.new-automation.de). In ETAT he is designated as the Project Coordinator with an appointment to dedicate 15% of his working time to the project. *Selected recent publications:* • *Langmann, R.:* Industry 4.0 & Education 4.0. - Industry 4.0 Symposium — Tomorrow's manufacturing today, Festo & Nanyang Polytechnic, June 4, 2014, Singapore • *Langmann, R.; Stiller, M.:* Industrial Cloud - Status und Ausblick . - HMD (2015) 52, Springer Publisher, (editorial), pp. 647–664 • *Langmann, R. (Hrsg.):* Taschenbuch der Automatisierung. – Carl Hanser Verlag, Leipzig, 3. Edition, 2017 • *Langmann, R.; Coppenrath, M.:* A cloud-based, blended learning lab for PLC education. - 15th International Conference on Remote Engineering and Virtual Instrumentation (REV2018), Proceedings • *Langmann, R.:* Didactical Experiments with Smartphone Sensors in the Internet of Things. – Int. Konferenz IEEE EDUCON 2018, Proceedings • *Langmann, R.:* A CPS Integration Platform as a Framework for Generic Remote Labs in Automation Engineering. – in Auer, M.; u.a. (Ed.): Cyber-Physical Laboratories in Engineering and Science Education, Springer, 2018, pp. 305 - 330 • *Auer, M.E.; Langmann, R. (Hrsg.):* Smart Industry & Smart Education. – Lecture Notes in Networks and Systems Vol. 47, Springer Publisher, 2018
Harald Jacques	Prof. Dr. rer. nat. Harald Jacques is professor for measurement and control at HSD since 1995. He worked in industry for 11 years (1983 – 1994) on development, production and marketing of sensor systems. His focus in HSD is on open and closed loop control in automation technology, especially PLC (Programmable Logic Controller) technology. Prof. Jacques took part in different national and international projects and held various lectures in summer-/winterschools at partner universities worldwide. He was 13 years dean of the faculty of electrical engineering and information technology of HSD, therefore he is able to manage education projects. Prof. Jacques is chairman of "Association of Electrical and Information Engineering Departments (FBTEI)" in Germany (www.fbtei.de), president of the German Professional Qualification Federation, member of the management board of "Association of Electrical, Electronic and Information Technologies" (www.vde-duesseldorf.de/du-de) and auditor of ASIIN for (national/international) accreditation of study courses. In ETAT he is designated as the Vice Project Coordinator with an appointment to dedicate 10% of his working time to the project.

	Selected recent publications: • *Langmann, R.; Jacques, H*.: Industrie 4.0 – der Weg zur Fabrik der Zukunft.– Sommerschool at Odessa National Polytechnic University, Odessa(Ukraine), September 2013 • *Jacques, H*: Practical Oriented Engineers for Industrial Use – the German Model. – Huanghuai University / Zhumadian (China), July 2014 • *Langmann, R.; Jacques, H*: Training and Development System for Production Management in the Target Market of China (DRAGON). – Huanghuai University / Zhumadian (China), September2015 • *Langmann. R.; Jacques, H.:* Industrial Automation in the light of industry 4.0. – Winterschool at Universidad de Oriente, Santiago de Cuba, February 2016 • *Langmann, R.; Jacques, H.:* Generic Remote Labs in Automation Engineering. – Global Engineering Education Conference (EDUCON2016), Abu Dhabi, April 2016 • *Jacques, H.:* Industry 4.0 and Education 4.0 – VIII Conferencia Internacional de Ingenería Eléctrica (FIE2016), Santiago de Cuba, June 2016 • *Langmann, R.; Jacques, H*.: The Connected World of Things, Services and People. – Winterschool at Universidad de Oriente, Santiago de Cuba, February 2017 • *Cano-Ortiz, S. D.; Jacques, H. et al*.: A Web - Based Tool for Biomedical Signal Management.– Proceedings of 14th International Conference on Remote Engineering and Virtual Instrumentation (REV2017), New York, March 2017, Springer Verlag • *Martinez-Canete, Y.; Jacques, H. et al.:* Virtual Learning Environment for Digital Signal Processing. – Proceedings of 15th International Conference on Remote Engineering and Virtual Instrumentation (REV2018), Düsseldorf, March 2018, Springer Verlag
Markus Dohmen	Markus Dohmen has graduated in 2017 in HSD with a Bachelor degree in Electrical Engineering. In October 2017 he started with his Master study in the Faculty of Media. In parallel with his study he is working in CCAD as a scientific assistant (Working field: Augmented Reality for Automation 4.0, Cloud-Computing, Webbased communication). In ETAT his workforce will be concentrated in support of dissemination by different media, support of hand-on trainings and support of assembling of ETAT Smart Labs.
Sezgin Gömükpinar	Sezgin Gömükpinar has graduated in 2018 in HSD with a Bachelor degree in Electrical Engineering. In October 2018 he started to work in CCAD as a scientific assistant (Working field: Automation 4.0, industrial communication networks, SCADA systems). In ETAT his workforce will be concentrated in conducting trainings.
Dorothea Ossenberg-Engels	Dorothea Ossenberg-Engels has a Master degree in Business Management and is working in HSD in the EU Office especially for support in administrative and project management of EU and other international programs. In ETAT she will support the project consortium on the realization of all administrative and financial work.

Partner number		**P2**
Organisation name & acronym	University of Antwerp (UAntwerp)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

The project will be supported at the University of Antwerp by staff of the study programme of Elektromechanical Engineering Technology and researchers of Op3Mech. The University of Antwerp has nine faculties and 17 research institutes and centres. The University of Antwerp has more than 5600 members of staff (670 professors, 3071 researchers, …) and almost 20000 students (19 % international, 123 nationalities). Since 2013 the studies of applied engineering in Antwerp are part of the faculty of applied engineering. In this faculty approx. 300 students are

studying for a degree in bachelor and master of Elektromechanical Engineering Technology. The research group Op3Mech has state-of-the-art industrial knowledge in the key areas of advanced mechanical design and industrial 3D-vision technology. The Op3Mech team members also share important expertise with respect to Computer Aided Engineering, automation and robotics. The University of Antwerp is one of the founding members of the International Education Network EduNet (http://elms.ccad.eu) and of the EduNet World Association (www.edunet-wa.com). The staff of UAntwerp that will be involved in this project was participating in several Tempus and Erasmus projects, e.g. TATU ("Trainings in Automation Technologies for Ukraine" - 544010-TEMPUS-1-2013-1-DE-TEMPUS-JPHES), Incode ("Innovation Competencies Development" - 518132-LLP-1-2011-1-FI-ERASMUS-FEXI), CoNet ("Co-operative Network Training" - 502106-LLP-1-2009-1-BE-ERASMUS-ECUE; as project coordinator).

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

- Will lead the WP2, in close cooperation with the PC, and External Evaluator, member of the Project Steering Committee.
- Ensures quality of the project in close cooperation with the Internal Quality Manager and the External Evaluator.
- Responsible to deliver content to the training modules assigned to them.
- Development of the structure, deliver content, suggestions for train the trainer
- Will train Thai academic staff during international workshops and trainings in Thailand.
- To use the ETAT E-Learning&Collaboration Platform, give input to the platform.
- Give input to the website, to link the website with the university's website, to write articles, to distribute leaflets, posters, etc.
- To disseminate the project using their own networks.

The department of Electromechanical Engineering has experience in robotics, industrial vision and industrial communication. In the project P2 will use their expertise to develop a robotics and vision teaching platform that can be remotely accessed through the internet by students in the participating Thai universities. This will allow students to learn the basics of vision and robotics

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	Choose an item.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Erwin Smet	Prof. Ing. Erwin Smet Msc. is since 1986 lecturer in robotics, mechanical design and total quality management in bachelor and master programs. He was consultant in different European companies for the introduction of KAIZEN, principles of continuous improvement and total quality management (e.g. Pauwels Trafo, Hydro Agri Sluiskil, Campine). He was Total Quality Management coordinator of the faculty of Industrial Sciences and Technology at Karel de Grote University College from 2002 until 2013. He is now member of CIKO, the workgroup for innovation and quality management of the faculty of applied engineering. He coordinated the quality activities in several European projects, e.g. TATU ("Trainings in Automation Technologies for Ukraine" - 544010-TEMPUS-1-2013-1-DE-TEMPUS-JPHES), Incode ("Innovation Competencies Development" - 518132-LLP-1-2011-1-FI-ERASMUS-FEXI), CoNet "(Co-operative Network Training" - 502106-LLP-1-2009-1-BE-ERASMUS-ECUE). Erwin Smet will be the internal quality manager of the ETAT project. *Selected recent publications:* • Erwin Smet, "Industriële robots – capita selecta deel 1 Uitgave 2", 2018, Uitgeverij Universitas, ISBN: 978 90 3370 1658.

	• Erwin Smet, “Industriële robots – capita selecta deel 2 Uitgave 2”, 2018, Uitgeverij Universitas, ISBN: 978 90 3370 1665. • Erwin Smet, “Integrale Kwaliteitszorg – capita selecta”, 2017, Uitgeverij Universitas, ISBN 9789033701474. • Rudi Penne, Erwin Smet, Przemyslaw Klosiewicz, "A Short Note on Point Singularities for Robot Manipulators”, In: Journal of Intelligent and Robotic Systems (Volume 62 Issue 2, May 2011). • Erwin Smet & Emiel Billiet, “Visualizing improvement projects: more than ten years of experience”, In: Proceedings of The 5th International Seminar on the Quality Management in Higher Education (12-14 June 2008), Technical University “Gheorghe Asachi” of Iasi, Tulcea, Romania. • Erwin Smet & Emiel Billiet, “Visualizing improvement projects: on the move towards a computer aided version.”, In: TRANSCOMP 2006 – Vol. 1 (4-7 December 2006). • Erwin Smet & Emiel Billiet, “Visualizing improvement projects: a useful tool in higher education” In: Proceedings University of Rousse “Angel Kanchev”, Volume 44, book 4 Transport and Machine Design, Rousse, 2005.
Dominique Daens	Dominique Daens Msc. is since 1986 lecturer in Control and Automation Systems in bachelor and master programs. He was developer and projectleader in in several European projects, e.g. TATU (“Trainings in Automation Technologies for Ukraine” - 544010-TEMPUS-1-2013-1-DE-TEMPUS-JPHES), Incode (“Innovation Competencies Development” - 518132-LLP-1-2011-1-FI-ERASMUS-FEXI), CoNet “(Co-operative Network Training” - 502106-LLP-1-2009-1-BE-ERASMUS-ECUE. He was involved as project leader in several Flemisch Research Projects (HOBU and TETRA) always in cooperation with companies. He is specialised in Industrial Network systems like PROFINET, Industrial Ethernet, Profibus and OPC connectivity. *Selected recent publications.* • Caluwé Michel, Dobbeleers Thomas, D' aes Jolien, Miele Solange, Akkermans Veerle, Daens Dominique, Kiekens Filip, Geuens Luc, Blust Ronny, Dries Jan : Formation of aerobic granular sludge during the treatment of industrial chemical wastewater • Caluwé Michel, Dobbeleers Thomas, D' aes Jolien, Miele Solange, Akkermans Veerle, Daens Dominique, Kiekens Filip, Geuens Luc, Blust Ronny, Dries Jan : Formation of aerobic granular sludge during the treatment of industrial chemical wastewater • Dobbeleers Thomas, D' aes Jolien, Miele Solange, Caluwé Michel, Akkermans Veerle, Daens Dominique, Geuens Luc, Dries Jan : Aeration control strategies to stimulate simultaneous nitrification-denitrification via nitrite during the formation of aerobic granular sludge • Caluwé Michel, Dobbeleers Thomas, Daens Dominique, Geuens Luc, Blust Ronny, Dries Jan: SBR treatment of tank truck cleaning wastewater : sludge characteristics, chemical and ecotoxicological effluent quality • Dobbeleers Thomas, Caluwé Michel, Daens Dominique, Geuens Luc, Dries Jan: Evaluation of two start-up strategies to obtain nitrogen removal via nitrite and examination of the nitrous oxide emissions for different nitritation levels during the treatment of slaughterhouse wastewater
Cosmin Copot	Dr. ir. Cosmin Copot received his M.Sc. and M.E. degrees in systems engineering from Technical University of Iasi, Romania, in 2007, and 2008, respectively. He performs his master thesis as Erasmus student at Ghent University (Carpet Wear Classification using Support Vector Machine). In 2011 he received Ph.D. degree from Technical University of Iasi on control techniques for visual servoing systems. In 2012 he started at Ghent University as a post-doctoral researcher within the department of Electrical energy, Systems and Automation. Beginning with 1 December 2015 he is employed at University of Antwerp as doctor assistent within the Electromechanics department. His research interests include robotics, mechatronic systems, visual servoing systems and control engineering. Since 2008,

	he has published over 70 papers in technical journals and conference proceedings and has served as reviewer for several journals and conferences. *Selected recent publications:* • Cosmin Copot, Cristina Muresan, Clara Ionescu, Steve Vanlanduit, Robin De Keyser, Calibration of UR10 robot controller through simple auto-tuning approach, Robotics, 7(3), 35; doi:10.3390/robotics7030035, 2018. • Mac T., Copot C., De Keyser R., Tran D.T., Ionescu C.M.: The Development of an Autonomous Navigation System with Optimal Control of an UAV in Partly Unknown Indoor Environment, Mechatronics, vol. 49, pp. 187-196, 2018. • Copot C., Ionescu C., Vanlanduit S. and De Keyser R.: Vibration suppression in multi-body systems by means of disturbance filter design methods, Journal of Vibration and Control, doi: 10.1177/1077546317736190, vol. 24(14), pp. 2957–2969, 2018. • Copot C.,Burlacu A., Ionescu C.M., Lazar C., De Keyser R.: A Fractional Order Control Strategy for visual servoing Systems, Journal of Mechatronics (Special Issue Fractional), 23, pp. 848-855, 2013. • Copot C., Lazar C., Burlacu A.: Predictive Control of Nonlinear Visual Servoing Systems using Image Moments. IET Control Theory and Applications, pp. 1486-1496, 2012.
Steve Vanlanduit	Steve Vanlanduit is head of the department of Electromechanical Engineering at the University of Antwerp and part time lecturer at the department of Mechanical Engineering of the Vrije Universiteit Brussel. He is currently supervising 9 PhDs in the field of industrial vision and robotics and has supervised 12 finalized PhDs in the past. Steve Vanlanduit is author of more than 150 ISI Web of Science publications. In the last ten years he obtained funds for more than 20 research projects (both national and EU projects) with a total budget of more than 2 million EUR. He is the initiator of the Optimess FWO Scientific Research Network on Optical Measurement Techniques for Structures and Systems. In the last 10 years he was involved in the organization of 12 international conferences on optical measurement techniques (and he is in the scientific committee of about two conferences every year). Steve is a reviewer for many scientific project proposals, both at the national level (FWO, VLAIO, FNRS) and international (H2020 FET and Italian abilitation committee). He is guest editor of the scientific journal “Optics and Lasers in Engineering” and editor of the journal “Measurement”.
Sofie Krol	Sofie Krol (MSc.) is the international coordinator in the Faculty of Applied Engineering since September 2001. She participated in the training course “Survival Kit for European Project Management” in Hull (UK) in October 2002. She was project assistant in the Minerva project LINK and project coordinator in the Minerva project LABLINK (virtual and tele labs) and partner in the CD-project “German for engineers”. In 2004, 2005, 2006 she submitted and coordinated the IP “New Fuels and Drive Systems in Vehicles”. She has been giving support to Radom Technical University (2007), AGH (2010) and TEI of Thessaloniki (2010), when they were submitting an Intensive Program. All applications were successful. Between October 2006 and September 2009 she was coordinating the Curriculum Development project “CarEcology”, a Master in Automotive Engineering and since 2017 she is the program coordinator of a new Joint Master’s Degree in Sustainable Automotive Engineering. From October 2009 to September 2012 she coordinated the European project CoNeT (www.conet-eu.com) and was a partner in the follow-up project, TATU (TEMPUS).

Partner number		**P3**
Organisation name & acronym	Universidad de Oviedo (UNIOVI)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

The planned project is to be accomplished in the Area of Systems and Automation Engineering (ISA), wich is part of the Electrical, Electronic, Computers and Systems Engineering Department (DIEECS) of the Univertity of Oviedo (UNIOVI). Major figures in UNIOVI: 25.000 Students, 2.000 Lecturers and Researchers, 1.000 Administrative Staff members, 57 Undergraduate Degree programmes, 50 Master's Degree programmes, 6 Erasmus Mundus Master's programmes, 24 PhD Programmes, 17 Faculties and Schools, 38 Departments and mobility agreements with more than a thousand universities and research centres around the world.

DIEECS has approx. 2700 students, and 100 teachers, lecturers and researches. DIEECS teaches in several faculties or Schools of UNIOVI. Most of the teaching work is carried out in the following 4 Grades of the Polytechnic School of Engineering of Gijón: Industrial Electronic and Automation Engineering, Electrical Engineering, Engineering in Telecommunication Technologies and Services, Engineering in Industrial Technologies. DIEECS teachers also participate in several Master's and Doctoral Programs and carry out research in almost all fields of electrical engineering, from digital electronics, systems theory, electrical machines, communications, control systems, bioengineering, microelectronics, signal processing, power generation and transport, robotics, power electronics, artificial intelligence, embedded systems, electronic lighting, process monitoring... It is also one of the first departments of the university in terms of contracts and projects in collaboration with industry.
The Area of ISA is integrated by 25 teachers, lecturers and researches. Teaching and research are mainly focused on control systems and automation technologies.

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

- Coordinating the work in this WP, preparation and revision of learning-teaching materials, preparation of documents and reports. –
- Coordination of the preparation of the ETAT didactical content, responsible for the meetings and the coaching of the workgroups working around the training modules.
- Responsible to deliver content to the training modules assigned to them.
- Development of the structure, deliver content, suggestions for Train the Trainer
- Will train Thai academic staff during international workshops and trainings in Thailand and Europe.
- To use the ETAT E-Learning&Collaboration Platform, give input to the platform.
- Give input to the website, to link the website with the university's website, to write articles, to distribute leaflets, posters, etc.
- To disseminate the project using their own networks.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	Choose an item.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Felipe Mateos Martín	Associate Professor, vinculated to ISA since nov 1988. Dr. Mateos has participated in multiple I+D projects in industrial automation. Coordinator of the *Master Program in Industrial Automation and Computer Engineering*. In the last year he deals especially with Industry 4.0 projects and with the development of a I4.0 lab platform. In ETAT his workforce can be mainly directed to Project Management (WP 1) and to the structure of the courses (WP 5).

	Selected recent publications: • Paulino J. García Nieto, E. García-Gonzalo, Juan C. Álvarez Antón, Victor M. González Suárez, Ricardo Mayo Bayón, **Felipe Mateos Martín**, A comparison of several machine learning techniques for the centerline segregation prediction in continuous cast Steel slabs and evaluation of its performance, Journal of Computational and Applied Mathematics, Vol. 330, pp. 877-895, March, 2018, Elsevier • Ricardo Mayo Bayón, Víctor M. González Suárez, **Felipe Mateos Martín**, Juan M. Lopera Ronda y Juan C. Álvarez Antón, A Wireless Portable High Temperature Data Monitor for Tunnel Ovens, Sensors, Vol. 14, pp. 14712-14731, 2014, MDPI AG (Basel, Switzerland) • **Reyes Poo Argüelles**, Jesús A. García Maza, **Felipe Mateos Martín,** Specification and Design of Safety Functions for the Prevention of Ship-to-Ship Collisions on the High Seas, The Journal of Navigation, Vol. 72, pp. 53-58, January, 2019, Cambridge University Press
Reyes Poo Argüelles	Tenured Professor, vinculated to ISA since nov 1989. Her teaching focuses mainly in advanced automation and safety systems and PLC programming. In ETAT her workforce can be directed to the development of didactical structures and contents (WP 3, WP 5) *Selected recent publications:* • **Reyes Poo Argüelles**, Jesús A. García Maza, **Felipe Mateos Martín,** Specification and Design of Safety Functions for the Prevention of Ship-to-Ship Collisions on the High Seas, The Journal of Navigation, Vol. 72, pp. 53-58, January, 2019, Cambridge University Press
Antonio Robles Álvarez	Tenured Professor, vinculated to ISA since 1992. Specialized in advanced technologies for systems control and integration and industrial communications. In ETAT his workforce can be mainly directed to smart lab hardware (WP4), testing and evaluation (WP 6)
José Ángel Sirgo Blanco	Associate Professor, vinculated to ISA since 1989. The main field of his teaching and is the design and simulation of advanced control systems. In ETAT his workforce can be mainly directed to the development of ETAT E-Learning&Collaboration Platform (WP 8) *Selected recent publications:* • Juan Zuloaga Gómez, Miguel A. José Prieto, Fernando Nuño García, Alberto Martín Pernía, Ignacio Álvarez García, **José A. Sirgo Blanco,** Aprendizaje orientado a proyectos integradores y perfeccionamiento del trabajo en equipo: Caso Máster Erasmus Mundus en Ingeniería Mecatrónica, Congreso Universitario de Innovación Educativa en las Enseñanzas Técnicas, CUIEET (26º, 2018, Gijón), pp. 339-348, 2018, University of Oviedo • Miguel A. José Prieto, David Blanco Fernández, Ignacio Álvarez García, Juan Díaz González, Gonzalo Valiño Riestra, **José A. Sirgo Blanco**, Alberto García Martínez, Alberto Martín Pernía, Definición de tareas de aprendizaje basado en proyecto colaborativo para Ingeniería Mecatrónica, Congreso Universitario de Innovación Educativa en las Enseñanzas Técnicas, CUIEET (26º, 2018, Gijón), pp. 883-894, 2018, University of Oviedo • ISBN: 978-84-17445-02-7 • Paulino J. García Nieto; Víctor M. González Suárez; Juan C. Álvarez Antón; Ricardo Mayo Bayón; **José Ä. Sirgo Blanco**; Ana M. Díaz Fernández, A New Predictive Model of Centerline Segregation in Continuous Cast Steel Slabs by Using Multivariate Adaptive Regression Splines Approach, Materials, Vol. 8, pp. 3562-3583, 2015, Materials

Partner number		**P4**
Organisation name & acronym	University of Porto (UPorto)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

With origins dating back to the eighteenth century, University of Porto (UPorto) is currently among the top 200 European Universities in most relevant international rankings. Close to 33.000 students, 2.436 teachers and

researchers (over 89% PhD) along with 1.593 administrative staff within its 15 faculties, 49 scientific research units, all spread across 3 university campuses located in the city of Porto and one incubator center. It is responsible for 23% of the Portuguese scientific ISI indexed papers. Its Faculty of Engineering (FEUP) is the largest faculty of UPORTO, with about 9300 students and 754 teachers and researchers (over 92 % PhD) across 9 departments.

It is located in Asprela Campus, the main university campus in the city of Porto. All its integrated Masters courses are accredited by EUR-ACE - European Accreditation of Engineering Programs. FEUP occupies relevant positions in most international rankings: Best Global University Ranking – engineering field@UPorto is within position 28 (in Europe)/97 (in World); NTU Ranking (Taiwan) - engineering field@UPorto is within position (35 in Europe) /(164-165 in World), Civil Eng. within positions (10 in Europe)/ (53 in World), Mechanical Eng. (21 in Europe)/(73-74 in world), Chemical Eng. Within (17 in Europe)/(82-83 in World), Qs Ranking engineering field@UPorto is within position (67 in Europe)/(184 in World).

In FP7, FEUP was partner and/or coordinator in a total of 48 projects, including as host institution of two ERC Grants and three Individual Marie Curies. Under Horizon 2020, FEUP is already partner in 22 funded projects and is coordinator of 5 other funded projects. Concerning other international funds, since 2014, FEUP has also been very successful in programs such as: EEA Grants, COST, ECHO, CEF, Interreg, ERA-NET and RFCS.

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

P4 provides huge, diverse and open access to experimental online resources and has been one of the first Universities in the world providing online environmental monitoring data (1998-), and is available to share its materials with ETAT. The traditional use of these resources in teaching/learning/disseminating has been justifying the need of structuring training courses and the use of methodologies/strategies for evaluation/assess their effectiveness. Then, the team is familiar with ETAT focus to cooperate in testing and evaluation of Smart Labs.
P4 team leader has been co-organizing Experiment@International Conf.(2011-) focused on online experimentation, technically supported by IEEE. She will be co-organizer of IEEE EDUCON 2020 and often cooperates with organizers of many other confs - Int. conf. on Remote Eng. & Virtual Instrumentation (REV), Int. Conf. on Interactive Collaborative Learning (ICL), among others, and with FEUP's team will help to promote ETAT dissemination.

- Development of the structure, deliver content, suggestions for Train the Trainer
- Will train Thai academic staff during international workshops and trainings in Thailand.
- To use the ETAT E-Learning&Collaboration Platform, give input to the platform.
- Give input to the website, to link the website with the university's website, to write articles, to distribute leaflets, posters, etc.
- To disseminate the project using their own networks.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	Choose an item.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Maria Teresa Restivo	***Maria Teresa Restivo*** has a degree in Solid State Physics and PhD in Eng. Sciences, by Univ. of Porto (U.Porto). Her teaching and research activities have been accomplished within the Automation, Instrumentation and Control Group in Mech. Department at the Faculty of Engineering of U.Porto (FEUP) and with the System Integration and Process Automation Research Unit (USIPA), which

	coordinates. UISPA is within the Associated Laboratory of Aeronautics, Energy and Transports, funded by the Portuguese National Science Foundation and hosted in the Research Pillar of INEGI - Institute of Science and Innovation in Mechanical and Industrial Engineering. INEGI is an interface Institute of U.Porto. She is member of the FEUP Scientific Board. Currently, topics of interest within applied research are among the development of Medical Instrumented Devices, Smart Sensors and Online Experimentation and the Use of Emerging Technologies in Training and in Education. She has participated in the creation of several non-formal learning activities organized at University of Porto and by its Faculty of Engineering and collaborated with some of those editions. She is author (co-author) of articles and 5 books at National and International publishers (one awarded at national and international levels, among other prizes in R&D). She has been project co-ordinator and team member at national level and as FEUP's partner in European projects. She has been involved in supervising MSc and PhD theses. She has four national patents and one international, two international still pending. She is institutional member of the Global Online Laboratory Consortium (GOLC), Co-Chair of the Advisory Board of International Association of Online Engineering (IAOE) and Past-President of International Society for Engineering Pedagogy (IGIP). She has the "ING PAED IGIP" diploma of International Engineering Educator. Publications related with ETAT (*Last 4 years*): • Maria T. Restivo, António M. Lopes, Liliane Machado, Ronei Moraes, Maria F. Chouzal, "Feeling Materials' Stiffness by Haptics for Training", (2014), J. Mater. Ed. 36 (3-4). Pp. 51-67. • P. J. Sousa, R. Tavares, P. Abreu, M. T. Restivo, "NSensor - wireless sensor network for environmental monitoring", International Journal of Interactive Mobile Technologies (iJIM), March 2017. • T. F. Andrade, P. Abreu, M. T. Restivo, M. F. Chouzal, B. F. Santos and J. Rodrigues, "Enhancing a 3D printer with online access", International Journal of Interactive Mobile Technologies (iJIM), Vol 11, No 5 (2017), pp 44-55, https://doi.org/10.3991/ijim.v11i5.7069 • P. Menezes, F. Chouzal, Urbano D., Restivo T., "Augmented reality in engineering Technologies", 19th International Conference on Interactive Collaborative Learning. ICL 2016, in Advances in Intelligent Systems and Computing, vol. 545, 2017. • Diana Urbano, Fátima Chouzal, Maria Teresa Restivo, "Usefulness of remote experiments", 2017, 4th Experiment@International Conference, DOI: 10.1109/EXPAT.2017.7984404 Books related with ETAT (*Last 5 years*): • Online Experimentation: Emerging Technologies and IoT, Maria Teresa Restivo, Alberto Cardoso and António Mendes Lopes (*Eds*.), International Frequency Sensor Association (IFSA) Publishing, ISBN 978-84-608-5977-2, December 2015, http://www.sensorsportal.com/HTML/BOOKSTORE/Online_Experimentation.htm Book Chapters related with ETAT (*Last 5 years*): • Maria Teresa Restivo, Gustavo R. Alves, "Acquisition of higher-order experimental skills through remote and virtual laboratories", Chapter XIII, pp 321-347, in IT Innovative Practices in Secondary Schools: Remote Experiments, Olga Dziabenko and Javier García-Zubía (eds.), Univ. Deusto, ISBN: 978-84-15772-01-9, 2013. • X. Ping-Jun, António M. Lopes, Maria Teresa Restivo, Virtual Reality and Haptics for Product Assembly, Surgical Simulation and Online Experimentation, Chapter XXIII, Online Experimentation: Emerging Technologies and IoT, (IFSA) Publishing, ISBN 978-84-608-5977-2, December 2015.
Paulo Augusto Ferreira de Abreu	***Paulo Abreu*** has a Mechanical Engineering degree from the Faculty of Engineering of University of Porto (FEUP) and, is with it the since 1985. He has an MSc on Industrial Robotics from Cranfield Institute of Technology, UK, 1988 and, a PhD by the University of Bristol, UK, 1995. He is Assistant Professor, in the area of

	Automation, Instrumentation and Control within the Faculty of Engineering of University of Porto. He has been involved since 1995 in teaching and research on the subjects of Industrial Robotics, Pneumatic Driving Systems and Industrial Automation. He is member of the INEGI (*Instituto de Ciência e Inovação em Engenharia Mecânica e Engenharia Industrial)* and member of the research Unit of System Integration and Process Automation (UISPA, being also its executive committee member) within the Associated Laboratory of Energy, Transports and Aeronautics (LAETA) funded by the Portuguese Foundation for Science and Technology. Between 2001-03 he was Head of Automation, Instrumentation and Control group and, Member of the Mechanical Department Scientific Board at FEUP (july2010-dec 2104). Currently, he is cooperating with Experiment@International Conference 2019, by Co-organizing a Special Track named "Remote and Digital Pneumatics: Learn and Digital and control from distance". Main recent Publications *(last 5 years).* • P. J. Sousa, R. Tavares, P. Abreu and M. T. Restivo, NSensor – Wireless Sensor Network for Environmental Monitoring, iJIM, 2017, pp. 25-36, – Vol. 11, No. 5, doi.org/10.3991/ijim.v11i5.7067 • Paulo Abreu, Tiago Andrade, Rafael Tavares, Fernando Carneiro, Maria Teresa Restivo, Vasco Peixoto de Freitas, VENTI: Experimental controller for inline duct fan, IEEE Conference Publications, 4th Experiment@International Conference, (2017), pp. 149 - 150, DOI: 10.1109/EXPAT.2017.7984393 • Pedro Sousa, Rafael Tavares, Paulo Abreu, Manuel Quintas, Ana Reis, Maria Teresa Restivo, (2015), Wireless Control and Network Management of Door Locks, pp 141-142, Proceedings of 3rd Experiment@International Conference (exp.at'15) IEEE, 2-4 June, Ponta Delgada, Azores, Portugal, 141 - 142, DOI: 10.1109/EXPAT.2015.7463244, IEEE • Carneiro, F; Quintas, MR; Paulo Abreu; Maria Teresa Restivo, Design and test of a 1 DOF haptic device for online experimentation, International Journal of Online Engineering, (2016), Vol. 12 p. 55-57, DOI: 10.3991/ijoe.v12i04.5152. • Experiments with a Virtual Lab for Industrial Robots Programming. Paulo Abreu, Manuel Romano Barbosa, António Mendes Lopes. International Journal of Online Engineering (iJOE), Vol 11, No 5 (2015).
João Falcão Carneiro	**João Falcão Carneiro** has Engineering, Master and PhD degrees in Mechanical Engineering granted by the Faculty of Engineering of University of Porto (FEUP). His main research background is focused on the development of models and nonlinear control laws for industrial fluid power systems, integrated in the System Integration and Process Automation Research Unit (UISPA), which he co-coordinates. UISPA is part of the Associated Laboratory of Aeronautics, Energy and Transports, funded by the Portuguese National Science Foundation and hosted in the Institute of Science and Innovation in Mechanical and Industrial Engineering (INEGI), an interface Institute of the University of Porto. In addition, he is an Assistant Professor at the Mechanical Engineering department of FEUP. He teaches Automatic Control Systems, Fluid Power systems and Instrumentation for Measurement subjects for more than one decade, with a strong focus on experimental laboratory work. His skills include control systems design, modelling of fluid power systems, development of data acquisition systems, Matlab and LabView based control, simulation and data acquisition. Besides the activity as reviewer for several International Journals, he is currently cooperating with the organisers of the Experiment@International Conferences (EXP.AT'19), by Co-organizing a Special Track Ocean entitled "Ocean Monitoring". Publications (*last 5 years*) • Carneiro, J.F. and F. Gomes Almeida, Model and simulation of the energy retrieved by thermoelectric generators in an underwater glider. Energy Conversion and Management, 2018. 163: p. 38-49.

	• Falcão Carneiro, J. and F. Gomes Almeida, Friction characteristics and servo control of a linear peristaltic actuator. Int. J. of Adv. Manuf. Technol., 2018. 96(5–8): p. 2117–2126. • Falcão Carneiro, J. and F. Gomes Almeida, Endurance tests of a linear peristaltic actuator. Int J Adv Manuf Technol, 2018. in press. • Falcão Carneiro, J. and F. Gomes Almeida, On the influence of velocity and acceleration estimators on a servopneumatic system behaviour. IEEE Access, 2016. 4: p. 6541 - 6553. • Falcão Carneiro, J. and F. Gomes Almeida, On the influence of velocity and acceleration estimators on a servopneumatic system behaviour. IEEE Access, 2016. 4: p. 6541 - 6553.
Diana Urbano	**Diana Urbano** has a degree and a PhD in Theoretical Physics. She is Assistant Professor at the Engineering Physics Department of the Faculty of Engineering of University of Porto (FEUP), supporting Physics topics in several Engineering Masters degrees. Since 2015 she is within the System Integration and Process Automation Research Unit (UISPA) of the Associated Laboratory for Energy, Transports and Aeronautics (LAETA), funded by the Portuguese National Science Foundation. UISPA-LAETA is hosted in the Research Pillar of the Institute of Science and Innovation in Mechanical and Industrial Engineering. Her research activities within UISPA-LAETA are mainly related with data analysis applied to data gathered by instrumented devices developed by the group applied research to areas as e-health, environment and e-education. Looking at educational area she has published several conference papers and has been awarded with 2 prizes in education. She has participated in national and international projects. She has been cooperating with Conferences Organizers (IEEE EDUCON, ICL), delivering workshops. She is currently cooperating with the organizers of the Experiment@International Conferences, exp.at'19, by Co-organizing a Special Track entitled "Online Experimentation in Science and Engineering Education ". Publications related ETAT*(last 5 years)* • Urbano D. (2018) Effectiveness of Traditional Laboratory Classes to Learn Basic Concepts of Electric Circuits: A Case Study. In: Auer M., Guralnick D., Simonics I. (eds) Teaching and Learning in a Digital World. ICL 2017. Advances in Intelligent Systems and Computing, vol 716. Springer, Cham • "Usefulness of remote experiments", Urbano, D; Maria de Fátima Chouzal; Restivo, MT, Proceedings of 2017 4th Experiment at International Conference: Online Experimentation, exp.at 2017 p. 253-257, DOI: 10.1109/expat.2017.7984404 • "Haptic interaction with virtual interface to learn strength of materials", Luciano Andreatta-da-Costa ; Diana Urbano ; Teresa Restivo, 2017 IEEE Global Engineering Education Conference (EDUCON), pages: 1498 - 1501 • Radojka Krneta, Maria Teresa Restivo, Andreja Rojko, Diana Urbano, "Evaluation of remote experiments by different target groups: NeReLa project case study", 2016 13th International Conference on Remote Engineering and Virtual Instrumentation (REV) , 2016, Pages: 326 - 331, DOI: 10.1109/REV.2016.7444493, IEEE Conference Publications • Menezes, Paulo; Chouzal, Maria de Fátima; Urbano, Diana; Restivo, Maria Teresa, "Augmented Reality in Engineering", Special Track: "Talking about Teaching 2016" (TAT'16), ICL2016
Maria de Fátima Chouzal	***Maria de Fátima Chouzal*** has a degree in Electrical Engineering, MSc in Electrical and Computer Engineering from Universidade do Porto, and a PhD. in Electrical and Computer Engineering, Toulouse, France. She is Assistant Professor at FEUP since 1996. She teaches subjects on Instrumentation for Measurement, Logic systems and Industrial Automation. Her R&D activities at Faculty of Engineering, Univ. Porto and with the Associated Lab. for Energy, Transports and Aeronautics through its System Integration and Process Automation Research Unit are related with instrumented devices, mechatronics systems and the use of emerging technologies in

	training/education. She is co-author of articles and books and some awards prizes in R&D areas. She has an "ING PAED IGIP" diploma as an International Engineering Educator (2014). Publications related ETAT*(last 5 years)* • MT. Restivo, J. Rodrigues, MF. Chouzal, P. Menezes, J. Almacinha, (2013), "Online Systems for Training the Evaluation of Deviations of Geometrical Characteristics", Special Issue: Exp.at'13, iJOE, Vol. 9, pp. 16-18. • Diana Urbano; José Couto Marques; Maria de Fátima; Chouzal, M. Teresa Restivo; Luciano Andreatta-da-Costa, "Experimental Training in Engineering", 2016 IEEE Global Engineering Education Conference (EDUCON), 2016, Pages: 1046 - 1050, DOI: 10.1109/EDUCON.2016.7474682, IEEE Conference Publications • Menezes, Paulo; Chouzal, Maria de Fátima; Urbano, Diana; Restivo, Maria Teresa, "Augmented Reality in Engineering", Special Track: "Talking about Teaching 2016" (TAT'16), ICL2016 • M. de Fátima Chouzal, M. T. Restivo, F. G. Silva, F. G. Almeida, and T. F. Andrade, "Remote Level Monitoring and Control Solution," Proceedings of the 11th IFAC Symposium on Advances in Control Education ACE 2016, Bratislava, Slovakia, 1-3 June 2016, IFAC-PapersOnLine, Vol.49, nº6, pp. 194-197, 2016. • Maria Teresa Restivo, Maria de Fátima Chouzal, Paulo Abreu, "The role of an Experimental Laboratory in Engineering Education", Special Track: "Talking about Teaching 2018" (TAT'18), ICL2018. Books *(last 5 years)* • Maria Teresa Restivo, Fernando Gomes de Almeida, Maria de Fátima Chouzal, Displacement Measurement (Book Series: Measurement of Physical and Chemical Quantities), International Frequency Sensor Association (IFSA) Publishing, ISBN 9788461735990, December 2014.

Partner number		**P5**
Organisation name & acronym	Carinthia University of Applied Sciences (CUAS)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

Carinthia University of Applied Sciences (CUAS) is a university in the south of Austria. It was established in 1995. CUAS has almost 2.000 students and is running about 30 bachelor and master programs in the area of engineering, health and business. Some programs are organized job-friendly as well as suitable for part time students. The School of Systems Engineering is located in Villach, which is one of the 4 sites of CUAS in Carinthia. The Systems Engineering curriculum is focusing on electronics engineering as well as mechatronics/robotics and automation/control systems. The study programs have been established in accordance with the specific demands of industry.
CUAS provides and organizes already for more than 15 years one of the well-established international conferences in e-learning ICL and is co-organizer of other international conferences in e-learning like IMCL, ICBL and on Remote Engineering and Virtual Instrumentation REV (since 2005).
CUAS is involved in a variety of national and international projects. One of the research focuses is technology-enhanced learning. In CUAS, research is organized among research groups. Each group covers a specialty, like Remote and Virtual Laboratories and is comprised of Professors, senior- and junior researchers as well as students from our study programs.
In the area of Systems Engineering, Mechatronics and Automation CUAS was partner in four international projects, one of them was the TEMPUS project "Training in Automation Technology for Ukraine - TATU (544010-TEMPUS-1-2013-1-DE-TEMPUS-JPHES).

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

- Will lead the WP4; has to coordinate the development of the training modules (content) and the ETAT Smart Labs (box and assembly); is also responsible for the meetings and the coaching of the workgroups working around the training modules; is a member of the Project Steering Committee.
- Development of the structure, deliver content, suggestions for Train the Trainer
- Will train Thai academic staff during international workshops and trainings in Thailand.
- To use the ETAT E-Learning&Collaboration Platform, give input to the platform.
- Give input to the website, to link the website with the university's website, to write articles, to distribute leaflets, posters, etc.
- To disseminate the project using their own networks.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	Choose an item.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Christian Madritsch	Christian Madritsch is researcher, program manager and professor for Computer Science and Real-Time Systems at the Engineering & IT department of the Carinthia University of Applied Sciences (CUAS) in Austria. He received his Masters Degree in Electronics in 2000. His main research interests are automotive bus-systems and the development and application of image processing methods for industrial applications. He is a senior

	expert in Embedded Software Development, Automotive and Industrial Bus-systems, as well as Safety Critical Distributed Embedded Systems. Christian Madritsch holds weekly lectures in Computer Science, Bus-Systems, Real-Time Systems, Automotive Safety, Measurement and Monitoring, etc. He has been guest professor at more than 10 international universities like: UPC Barcelona, BTH Karlskrona, KPI Kiev, FH Technikum Vienna, etc. *Selected recent publications:* • Madritsch C., Klinger T., "Work in Progress: Computing Cluster using IoT Technologies", IEEE Global Engineering Education Conference EDUCON 2018, Santa Cruz de Tenerife, Canary Islands, Spain, March 17-20, 2018 • Madritsch C., Klinger T., Pester A., "Work In Progress: Pocket Labs in IoT Education", International Conference on Remote Engineering and Virtual Instrumentation, Düsseldorf, Germany, March 21-23, 2018 • Madritsch C., Werth W., "TATU Study Book, Trainings in Automation Technology for Ukraine", FH Kärnten, Villach, Austria, 2017 • Klinger T., Garbi Zutin D., Madritsch C., "Parallel Use of Remote Labs and Pocket Labs in Engineering Education", International Conference on Remote and Virtual Instrumentation, New York, USA, March 15-17, 2017 • Madritsch C., Klinger T., "Work In Progress: Pocket Labs in IoT Education", International Conference on Interactive Collaborative Learning, Budapest, Hungary, September 26-29, 2017
Wolfgang Werth	More than 20 years experience in teaching control engineering, signal processing, simulation technologies, mechatronics and robotics. Research interests in the field of mathematical modeling and computer aides control design methods, mainly with Matlab/Simulink, LabView etc.,.was involved in EU- and national projects in process automation and robotics, more than 7 years experience in robocup, in strategic planning for mechatronic programs. *Selected recent publications:* • W. Werth, C. Ungermanns (2018). High Education Concept in Applied Systems Design, Mipro 2018, Croatia. • C., Madritsch (Editor), W., Werth (Editor), TATU Study Book, Eigenverlag, 2017 • Hofer, P. Quendler, S, Sereinig, M., Werth, W. (2017). RoboCup Rescue 2017 Team Description Paper CUAS RRR, Japan • Ungermanns, C., Werth, W. (2017). Didactic Concepts of Modern Data Analysis, Mipro 2017, Croatia. • Werth, W., Ungermanns, C. (2016). Mobile Robots approach for teaching programming skills in schools, Mipro 2017, Croatia.
Christoph Ungermanns	Research focus on semiconductor physics and data analysis. Teaching focus on statistics, data analysis and physics. Experience 2009 – now: Carinthia University of Applied Sciences; Villach, Austria, Professor of Process Engineering, Systems Engineering/ Systems Design 2006- 2009: Carinthia University of Applied Sciences, Villach,Austria, Part-time lecturer in the subject Process Engineering 1999–2006: Infineon Technologies Austria: Process Engineer plasma etching (1999-2002), Process Engineer SMART-power-products (2003-2005), Technology development power semiconductors (2006-2009), Advanced data analysis of power semiconductors (2009-today) *Selected recent publications:* • Ch. Ungermanns, W. Werth: Future-Oriented Education with a Modern Flexible Production Unit, MIPRO 2013 • Ungermanns, C., Werth W. (2015). Effective knowledge exchange with modern didactic concepts, Mipro 2015, Croatia. • Werth W., Ungermanns C. (2016). Mobile robots approach for teaching programming skills in schools, Mipro 2016, Croatia. • Ungermanns C., Werth W. (2017). Didactic concepts of modern data analysis,

	Mipro 2017, Croatia. • W. Werth, C. Ungermanns (2018). High Education Concept in Applied Systems Design, Mipro 2018, Croatia.
Ingmar Bihlo	Ingmar Bihlo, Ing. was educated at the institute of technology (HTBLA in Klagenfurt/Austria) in the field of Electronics from 1986-1991. Professional career: 1991-1992 EB-Technician at Austrian Broadcasting Corporation (ORF), 1992-2004 at G&S GmbH Villach as service technician for RF-Plasmaetching, RF-Matching networks and Production machine improvements. 2006-now at CUAS Villach as hardware developer, responsible for High Speed PCB design, circuit design and layout. Researcher in project Homefibre, EM-Personendetector (RF-absorbtion and reflection on humanbody), responsible for the HF-Measurement Laboratory, PCB and Circuit Design Laboratory. *Selected recent publications:* • I. Bihlo, Improvement of an Antenna Sensor for Occupant Detection in Passenger Transportation, Publication EP2529981, International Application 12004001.9.

Partner number		**P6**
Organisation name & acronym	EduNet World Association e.V. (EWA)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

The Edunet World Association is a non profit association, that established and operates an international network to strengthen and promote the cooperation of industrial companies, public and private educational institutions, universities, universities of applied science, technical schools, corresponding institutions of teaching and research, political institutions as well as people who are committed to teaching and research. The purpose is the promotion of science and research as well as vocational training, in particular the international transfer of knowledge to lecturers, students, learners and apprentices in the fields of electrical engineering, automation technology and information technology.
Focus of the work of the Association are initiating, arranging, coordinating and supporting cooperations between educational institutions and industrial companies both at home and abroad and the publication of the work results of these cooperations. The Association informs the interested public and the more than 100 universities in its network and take part in trade fairs, lecture events and conferences which serve the purpose of the Association, and organize such events.
The key activities of the Association in particular are:

- the planning, organization and implementation of practice and application-oriented teaching and training projects as well as seminars and training courses,
- the support and coordination when applying for subsidies for research and education projects, publication of the results.
- organization of echanges
- organization of international education conferences
- the development, monitoring and evaluation of learning and training concepts,
- the provision of technical devices and other means for the purpose of transferring knowledge to educational institutions.

The association is closely networked with national and international initiatives and bundles under its roof a network of over 100 universities plus numerous other educational institutions in the field of vocational education and training.
In the context of the intended project it should be one of the task of EWA to disseminate the project results and to enable a know-how transfer to the universities of the Edunet network. In this way, EWA want to ensure the sustainability of the investments made.

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

- Will lead the WP10; is a member of the Project Steering Committee.
- Will share the experiences in organizing of training centers in automation technologies on the base of HEI from other universities worldwide (e.g. TATU Training Center in Odessa National Polytechnic University).
- Development of certificates to provide EU-certificated courses; responsible for running the E-learning platform.
- To use the ETAT E-Learning&Collaboration Platform, give input to the platform.
- Activating all partners in order to obtain information for the newsletter and disseminate the newsletter; activating all partners to write articles and creation of leaflets and posters.
- To disseminate the project using their own wolrdwide network of universities (ca. 100 universities).

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	Choose an item.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Jenny Schaffrath	Jenny Schaffrath is working in the EWA member company Phoenix Contact (Germany) and is the Manager of the EWA office; 10 years experiences as project manager and marketing coordinator (international projects in the field of education), governmental funded or free of money/ industry projects; University degree in success-oriented communication; Doctoral studies in Organizational Psychology
Ruslan Shaporin	Ruslan Shaporin (PhD, associated professor) is working in the EWA member Odessa National Polytechnic University (Ukraine) as a Head of Computer Intellectual Systems and Networks Department. Since 2002 for 2012, he worked on a vice-director position of Computer Systems Institute. His areas of scientific interests are designing and diagnostics of computer networks, relevant approach to teaching. He published more than 40 scientific and methodical works, 4 Authors Certificates and Patents of Ukraine, 2 monographies. He prepared seven lecture courses on a direction "Computer engineering". He has experience of participation and coordination of international projects under Tempus/Erasmus+ frameworks (LeAGUe, TATU, PICASA, GameHub). *Selected recent publications:* • Shaporin R., Mikolyuk M., Oleshko D. Methodology for distributed information systems designing. Scientific Bulletin of Chernivtsi University. 2014. vol. 5, Issue 1. – pp. 22-27 • Shaporin R., Shaporin V., Tishin P. Linguistic assessment of assets of a complex computer system for the analysis of information security risks. Electrotechnic And Computer Systems, vol. 18 (94), 2015 – pp. 28-32 • Shaporin R., Shaporin V., Tishin P., Kopytchuk M. Development of a linguistic model for assessing the risks of information system assets. Eastern European Journal of Advanced Technology, vol. 4/2 (76), 2015 – pp. 30-35 • Shaporin R., Stetsyuk E. Evaluating the ram energy consumption at the stage of software development. Electrotechnic And Computer Systems, vol. 22 (98), 2016 – pp. 318-322 • Shaporin R.O., Shaporin V.O., Shaporina E.L., Mileyko I.G. Structure hierarchical method of computer networks representation. Electrotechnic And Computer Systems, vol. 28 (104), 2018 – pp. 178-185 • Shaporin R.O., Stetsuyk E.D., Maevsky D.A., Maevskaya E.J. Information technology for evaluating the computer energy consumption at the stage of software development. In book: Green IT Engineering: Social, Business and Industrial Applications, Studies in

	Systems, Decision and Control, V. Kharchenko, Y. Kondratenko, J. Kacprzyk (Edits), Vol. 171. Berlin, Heidelberg: Springer International Publishing, P. 21 – 40, 2018

Partner number		**P7**
Organisation name & acronym	Slovak University of Technology in Bratislava (STU)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

Slovak University of Technology in Bratislava (STU) is a modern educational and scientific institution. Since its foundation in the year 1937 almost 150.000 students have graduated there. In average, 17.000 students study at the STU every year.

At present, STU consists of seven faculties that provide research in a number of research departments and several centres of excellence following a long-term strategy when the priority areas are biotechnology; cybernetics, robotics, mechatronics; information society technologies; sustainable resources and development: energy and raw materials; sustainable resources and development: environment, landscape and urbanism; nanotechnology, nanosciences and multifunctional intelligent materials; life, health and environment; safety, reliability and quality.

The planned project will be realized at Faculty of Electrical Engineering and Information Technology (FEI) by the Institute of Automotive Mechatronics (IAM).

FEI has approx. 2.250 full time students in 8 Bachelor study courses, 8 Master courses and 10 courses for PhD study. It has 34 full-time professors, 46 associate professors as well as 69 researchers.

Faculty staff are members of many major international professional organizations, e.g. Institute of Electrical and Electronics Engineers (IEEE), International Association for Computational Mechanics (IACM), European Community on Computational Methods in Applied Sciences and Engineering, European Association for Education in Electrical and Information Engineering, International Federation of Automatic Control (IFAC), etc.
IAM provides research, development and education in automotive mechatronics and mechatronic systems based on the integration and synergy of mechanical, electronic, information, communication and control technologies into complex mechatronic systems. Except of this the institute staff is dealing with problems from automation, IoT and Industry 4.0, online experiments, computer based education.

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

- Will lead the WP 8; development of the ETAT E-Learning&Collaboration Platform concept.
- Deliver content to the training modules assigned to them.
- Development of the structure, deliver content, suggestions for Train the Trainer.
- One training provided by P7 for training of the possibilities of the E ETAT E-Learning&Collaboration Platform.
- To use the ETAT E-Learning&Collaboration Platform, give input to the platform.
- Give input to the website, to link the website with the university's website, to write articles, to distribute leaflets, posters, etc.
- To disseminate the project using their own networks.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	Choose an item.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Katarína Žáková	Doc. Ing. Katarína Žáková, PhD. is associate professor of Cybernetics at Institute of Automotive Mechatronics where she is also Deputy Director for Educational Activities. She has special interest in Internet based control applications, virtual and remote laboratories and computer aided and online education. She has participated in several national and international projects and she is author or co-author more than 140 papers in journals, conference proceedings, textbooks or chapters in books. She has also many experiences with the organization of conferences, workshops and seminars as well as with the organization of national and international projects. Currently she acts as a Vice Head of IFAC TC 9.4 Control Education technical committee *Selected recent publications:* • ŽÁKOVÁ, Katarína. Interactive online tools for control engineering. In exp.at´15 : 3rd Experiment@ international conference. Ponta Delgada, Portugal, 2-4 June 2015. [s.l.] : IEEE, 2015, S. 71-74. ISBN 978-1-4673-7716-4. • ŽÁKOVÁ, Katarína - ČECH, Michal. Design of control education interactive examples via web service for OpenModelica. In CONTROLO 2018 : 13th APCA International conference on automatic control and soft computing. Ponta Delgada, Portugal. June 4-6, 2018. Piscataway : IEEE, 2018, S. 242-246. ISBN 978-1-5386-5346-6.
Mikuláš Huba	Prof. Ing. Mikuláš Huba, PhD. is professor of Automation at Institute of Automotive Mechatronics. He is leading the Department of E-mobility, Drives and Automation. He is author and co-author of more than 400 papers in journals and proceedings of international conferences and 20 monographs on Constrained, Nonlinear and Remote Control and about e-Learning. He has organized 11 international conferences Virtual University and several other IFAC and IEEE conferences, whereby in IFAC he currently acts as a Vice Head of TC 9.4 Control Education technical committee. In organization of numerous international conferences he has also been involved as a reviewer, IPC member, or jury member of e-learning competitions. *Selected recent publications:* • HUBA, Mikuláš - ŽÁKOVÁ, Katarína - BISTÁK, Pavol. Flipping the courses on automatic control: Why and how. In CONTROLO 2018 : 13th APCA International conference on automatic control and soft computing. Ponta Delgada, Portugal. June 4-6, 2018. Piscataway : IEEE, 2018, S. 236-241. ISBN 978-1-5386-5346-6. • HUBA, Mikuláš - ŽÁKOVÁ, Katarína. A web based support for the performance portrait based controller design. In IFAC-PapersOnLine. Vol. 51, Iss. 4 : 3rd IFAC Conference on Advances in Proportional-Integral-Derivative Control (PID 2018). Ghent, Belgium. May 9-11, 2018, s. 196-201. ISSN 2405-8963. V databáze: WOS: 000435709300035 ; SCOPUS: 2-s2.0-85048935462.
Pavol Bisták	Ing. Pavol Bisták, PhD. is a university teacher and researcher. His main research activities are concentrated on nonlinear control systems and advanced information technologies. Last years of his research is focused on virtual and remote laboratories for control of dynamical systems. He is lecturing subjects from the area of multimedia and telematics and information technology. He published several scientific papers focused on constrained control, telematics, virtual and remote laboratories. Together with his coauthors he wrote several books on multimedia, control and e-learning topics. *Selected recent publications:*

	• BISTÁK, Pavol - ŤAPÁK, Peter - HUBA, Mikuláš. Constrained Pole Assignment Control of Double and Triple Integrator. In International Journal of Computing Anticipatory Systems. Vol. 18 (2006), s.34-49. ISSN 1373-5411. • BÉLAI, Igor - BISTÁK, Pavol - HUBA, Mikuláš. Matlab based interactive model of a speed servo drive. In IFAC-PapersOnLine : 3rd IFAC workshop on internet based control education IBCE 2015. Brescia, Italy, November 4-6, 2015. Vol. 48, No. 29 (2015), s. 235-240. ISSN 2405-8963.
Matej Rábek	Ing. Matej Rábek is PhD. student in the last year of study. His research is focused on virtual and remote experiments in the control area. He is author of several articles about web-based design of applications for online control presented on international conferences. He has several years of experiences in development of internet applications. *Recent publications:* • RÁBEK, Matej - ŽÁKOVÁ, Katarína. Online laboratory manager for remote experiments in control. In IFAC-PapersOnLine. Vol. 50, 20th World congress on the international federation of automatic control. Toulouse, France. July 9-14, 2017 (2017), [6] s. ISSN 2405-8963. V databáze: WOS: 000423965200239. • RÁBEK, Matej - ŽÁKOVÁ, Katarína. Management of control algoritms for remote experiments. In Smart industry & Smart education : 15th International conference on remote engineering and virtual instrumentation (REV 2018). Düsseldorf, Germany. March 21-23, 2018. Cham : Springer, 2019, S. 283-289. ISBN 978-3-319-95677-0.

Partner number		**P8**
Organisation name & acronym	Burapha University (BUU)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

The planned project will be set up at Faculty of Informatics, Burapha University (BUU) by Digital Media and Interaction Technology Research Laboratory (DMI) and Knowledge and Smart Technology Research Laboratory (KST). BUU itself has approx. 39,000 full-time students, 1,327 full-time lecturers, and 2,019 scientific and administrative staff members. The university is connected worldwide by cooperating with 19 countries, which are 69 international universities and higher education institutions.

The Faculty of Informatics has approx. 1,700 full-time students, 26 full-time professors and lecturers, 15 invited professors and lecturers, and 17 full-time scientific and administrative employees. There are three major missions the Faculty of Informatics follows; 1) Study and Intensive Training for students with bachelor, master, and doctoral degrees in Computer Science, Information Technology, Software Engineering, and Informatics, 2) Research in informatics and computing-related fields, and 3) Academic Services for technology and knowledge transfer with industries and governmental units. Faculty of Informatics has cooperation agreements in terms of Memorandum of Understanding (MoU) with 7 universities and educational institutes world-wide and with 5 national companies and institutes.

The DMI is a research laboratory at the Faculty of Informatics focusing on interactive technology and education. The research and training are mainly conducted within a framework of using interactive technology in education, e.g. using virtual reality (VR) technology to enhance hands-on training, training to work with augmented reality (AR) technology, etc. With the development of Industry 4.0 in the Eastern Economic Corridor (EEC) (https://www.eeco.or.th/en) in Thailand, the DMI concentrates on agile training environment development for supporting Automation Training, which will become the one of the important part for Digital Transformation in Thailand. The KST is a research laboratory at the Faculty of Informatics, too. It concentrates on research and training in the fields of Data Analysis, Medical Image Processing, and Decision Support Modeling. The KST annually organizes an international conference called KST International Conference and provides a platform for international researchers for discussing about computer science, information technology, software engineering, and related

fields for more than 11 years.

The Faculty of Informatics, Burapha University is a member of the Council of IT Deans of Thailand, which embraces 20 information technology and communication related faculties from different universities. Furthermore, the Faculty of Informatics works actively with international university and educational partners for reaching our common objectives and goals.

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	69
Number of students	38.883
Number of Bachelor degrees offered	119
Number of Master degrees offered	80
Number of PhD degrees offered	41
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	Yes • Strategic IP Management for Effective R&I in Asian Higher Education (573907-EPP-1-2016-1-MY-EPPKA2-CBHE-JP) • Assessing and Improving Research Performance at South East Asian Universities (574092-EPP-1-2016-1-SK-EPPKA2-CBHE-JP) • Competence centres for the development of sustainable tourism and innovative financial management strategies to increase the positive impact of local tourism in Thailand and Vietnam (585785-EPP-1-2017-1-AT-EPPKA2-CBHE-JP) • Improving enGineers' Employability with multi-Competencies, Knowledge and Opportunities (585934-EPP-1-2017-1-FR-EPPKA2-CBHE-JP)

F.3.2 – Role of your organisation in the project

Please describe also the role of your organisation in the project (limit 1000 characters).

- Coordinating the work in WP 9; is responsible for the certification of the ETAT Training Centers, working and business plan and together with External Evaluator for the exploitation strategy; is a member of the Project Steering Committee.
- Organizing national work group meetings, developing of the content, developing of simulation models in Automation 4.0 for Smart City applications, assisting in engineering pedagogical approaches.
- Is responsible of organizing training center at his university.
- Development of the structure, deliver content, suggestions for Train the Trainer.
- Will provide academic staff to be trained; will provide test integrating of the teaching materials to the university curricula.
- To use the collaboration and E-Learning platform, give input to the platform.
- Creation of the website with public and internal parts; responsible for the creation and maintenance of the dissemination website.
- Give input to the website, to link the website with the university's website, to write articles, to distribute leaflets, posters, etc.
- To disseminate the project using their own networks includeing the National Resonance Group and associated Thai partners.

P8 will build up a hands-on learning and training environment for automation training within the ETAT project. The automation training environment will be set up at physically, and will be accessed with a virtual environment. The training courses will be organized and performed by automation experts. It will be a Train-the-Trainer program for tuning the trainer to the state of the art in automation with well-prepared course materials.
The services in the ETAT framework P8 will offer include, e.g. hands-on training on ETAT Smart Labs with well-prepared course materials, virtual learning environment, industrial process data analysis in depth, and consulting center or contact point for research and industry.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	**I confirm**

For new courses

What new courses will the project implement in your HEI?	N/A

For updated courses

Which existing courses will be updated in your HEI?	

For each course please fill the following nested table:

Title	**Selected Topic in Information Technology II (Hands-on Automation Technology for SCADA System)**
Level of study	Bachelor Degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3
Estimated date of accreditation and accreditation body	-
% of the modernised subjects compared to total subjects included in the course	80%
Number of students to be accepted in the first year/ second year	30
Number of teaching staff to be trained	2
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, PLC (Profinet), Computers, Simulation Plant, Managed Switches, Projector

Title	**Embedded Systems**
Level of study	Bachelor Degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3
Estimated date of accreditation and accreditation body	-
% of the modernised subjects compared to total subjects included in the course	60%
Number of students to be accepted in the first year/ second year	25
Number of teaching staff to be trained	2
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs , PLC, Computers, Simulation Plant, Managed Switches, Projector

Title	**Control Systems (Faculty of Engineering)**
Level of study	Bachelor Degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3
Estimated date of accreditation and accreditation body	-

% of the modernised subjects compared to total subjects included in the course	60%
Number of students to be accepted in the first year/ second year	30
Number of teaching staff to be trained	2
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs , PLC, Computers, Simulation Plant, Managed Switches, Projector

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

The Faculty of Informatics, Burapha University locates in the heart of the Eastern Economic Corridor (EEC) where the Industry 4.0 in Thailand is in the process of establishing. We have potentials to provide knowledge on digital technology and its application to, especially, the local SMEs, which are the economic driving engine in this area. Not just only the Automation Technology that we can support them, the Big Data Collecting and Analysis, Information System Integration, Organization Digitalization, ERP, CRM and Digital Marketing are the knowledge packages that are necessary nowadays. With our cooperation with Thailand leading software companies (such as MFEC Public Company Limited (https://www.mfec.co.th/en/) or Clicknext Company Limited (https://clicknext.co.th)) and local production manufacturers (such as Vanachai Group (http://www.vanachai.com/en_index.html) or Techron Corporation Group Co.Ltd. (http://www.techroncorp.com)), we can find solutions for emerging problems and producing sustainable university-industry ecosystem.

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	- A Hands-on ETAT Training Center for Automation 4.0 System - At least 50 Graduates with automation skill per year - Improvement of local SMEs in automation technology
How will the impact of these results be measured in your HEI?	- Number of graduates - Number of companies that involved in the training courses.
What financial means and human and other resources will be provided to sustain these results after the project ends?	- After the end of the project, the equipment will be left at the training center as it is, as well as the prepared course materials. - The training courses will be run and maintain by our faculty members. - In case of financial situation, the center should provide purchasable short-course trainings for employees or trainees who are interested in. And the center can provide consults on automation technology against fees.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Prajaks Jitngernmadan	Dr. Prajaks Jitngernmadan has studied master degree in Electrical Engineering and Information Technology at Hochschule Duesseldorf University of Applied Sciences

	(HSD) in the area of process data visualization, and finished his Ph.D. at Johannes Kepler University, Linz in the field of didactic user interface environment development. His teaching and research focuses include didactic virtual learning environment including remote access, process data visualization and analysis, remote education in automation technology. He has participated national and international research projects and published a number of papers in international journals and conference proceedings. Currently he is a vice head of Digital Media and Interaction Research Laboratory (DMI) and deputy dean of Faculty of Informatics. In the ETAT project he is designated as the Thai coordinator and will dedicate 20% of his working time to this project. *Selected recent publications:* • Jitngernmadan, P., Petz, A., Stöger, B., & Miesenberger, K. (2017). IDMILE: An Interactive Didactic Math Inclusion Learning Environment for Blind Students. Technology and Disability, 29(1-2), 47-61. • Jitngernmadan, P., & Kubola, K. (2015). Real-time Helpdesk System Architecture Approach for e-Learning using Asterisk. In Thailand Cyber University Project, Office of the Higher Education Commission (Ed.), The Sixth TCU International e-Learning Conference. Bangkok.
Krisana Chinnasarn	Assist.Prof.Dr. Krisana Chinnasarn is a professor of Image Processing and Numerical Computing at Faculty of informatics, Burapha University. His works mainly focus on medical image processing and data analysis, including simulation modeling. He was a leader of several national projects and has participated a number of national and international research projects concerning image processing and simulation modeling. He published more than 30 scientific papers in international journals and conference proceedings. He is currently the Dean of the Faculty of Informatics and the Head of Knowledge and Smart Technology Research Laboratory (KST). *Selected recent publications:* • Wong-od, A., Rodtook, A., Rasmequan, S. & Chinnasarn, K. (2017). Automated segmentation of media-adventitia and lumen from intravascular ultrasound images using non-parametric thresholding. In Proceedings of 9th International Conference on Knowledge and Smart Technologies 2017 (pp. 220-225). Pattaya: Thailand. • P. Voraboot, S. Rasmequan, K. Chinnasarn, and C. Lursinsap, "Hybrid Algorithms for Improving the Classification Rate on Highly Overlapping Imbalanced Data Sets", Accepted for publication in the NeuroComputing, 2015.
Chalermpan Fongsamut	Dr. Chalermpan Fongsamut finished his Ph.D. in Electrical Engineering and has been working as a lecturer for System Control and Power Engineering at Faculty of Engineering, Burapha University since 2007. He has participated several national and international research projects and published a number of papers in international journals and conference proceedings. In his faculty, he has conducted several capstone projects of bachelor graduates that are related to automation control systems. His research mainly focuses on network and control system optimization. In the ETAT project, he will work with Assist.Prof.Dr. Chinnasarn and Dr. Jitngernmadan for contributing didactic courses in automation technology. *Selected recent publications:* • B. Rankhamrat, S. Gaintanasilp, C. Fongsamut, and S. Promwong, “Link Budget Evaluation Scheme of Ultra Wideband Two path Model for WPAN Communications,” 2012 International Conference on Embedded System and Intelligent Technology (ICESIT 2012), January 27-28, 2012, Nara, Japan. • Fongsamut, C. and Surakampontorn, W. (2010). Minimal realization for single-element-controlled sinusoidal oscillators using single current conveyor. ISCIT 2010 - 2010 10th International Symposium on

	Communications and Information Technologies. (196-199). Tokyo, Japan.
Kanuengnij Kubola	Dr. Kanuengnij Kubola finished her Ph.D. in Computer Science from University of Louisiana at Lafayette, USA and has been teaching at Burapha University since 2003. She is currently the head of DMI Research Laboratory. Her research and teaching focus mainly on computer vision and virtual reality for training and education. In the ETAT project she will help to construct a virtual learning environment for automation technology with remote access, and helping to develop didactic concepts for virtual training. *Selected recent publications:* • K. Kubola, and P. Wayalun, Automatic Detemination of The G-band Chromosome Number based on Geometric Features in The 15th International Joint Conference on Computer Science and Software Engineering (JCSSE2018), Mahidol University, Nakhon Pathom, Thailand., 2018, pp. 1-5. • Jitngernmadan, P., & Kubola, K. (2015). Real-time Helpdesk System Architecture Approach for e-Learning using Asterisk. In Proceedings of The Sixth TCU International e-Learning conference (pp. 248). Bangkok: Thailand Cyber University.
Pakpong Jantapremjit	He is an Assistant Professor of Mechanical Engineering within the Department of Mechanical Engineering, Burapha University, Thailand. He studied Mechanical Engineering for his first degree at King Mongkut's University of Technology Thonburi, Thailand. He was then awarded a Master of Engineering Science degree by the University of New South Wales, Australia. Then he joined the team of Prof. Philip A. Wilson within the autonomous underwater vehicle, and he received the Ph.D. degree control and guidance for underwater vehicles from University of Southampton, UK. Pakpong has supported research in the following areas: control of autonomous underwater vehicle, control of unmanned surface vehicle, docking maneuvering for unmanned vehicle. *Selected recent publications:* • Daengchat K. and Jantapremjit, P. (2018). Design of Depth Controller for an Underwater Glider. In proceedings of the 9th TSME International Conference on Mechanical Engineering (6 pages). Phuket:Thailand. • Prasertsang P. and Jantapremjit, P. (2018). Hydrodynamics Estimation of an Underwater Glider. In proceedings of the 9th TSME International Conference on Mechanical Engineering (6 pages). Phuket:Thailand.
Paiboon Limpitipanich	Dr. Paiboon Limpitipanich graduated Ph.D. in Mechanical Engineering. He has been working as a lecturer for Mechanical Engineering Design at Faculty of Engineering, Burapha University since 2000. He has participated several national and international research projects and published a number of papers in international journals and conference proceedings. His research mainly focuses on Material Selection in Mechanical Design and also on the using of automation technology in Mechanism. Currently he is the Head of Department of Mechanical Engineering. In the ETAT project. *Selected recent publications:* • Paiboon Limpitipanich and Anucha Promwungkwa (In Press 2019). Axial Response of Hemp-Fiber Composite Tube under Quasi-Static Compression and Impact Crushing, Chiang Mai University Journal of Natural Sciences. • Lek-ngam, S., Suksuntornsiri, S., Panyavaraporn, J. and P. Limpitipanich (2017). A performance investigation of dirty affected to a room air conditioning unit, 2017 International Conference on Alternative Energy in Developing Countries and Emerging Economies (AEDCEE2017), Bangkok. • Limpitipanich, P. and A. Promwungkwa (2014). Determination of tensile properties of hemp-fiber bundle by using tensile testing equipment with Raspberry Pi, Advanced Material Research, 931-932, 1308-1312, May 2014.

Partner number		**P9**
Organisation name & acronym	Rajamangala University of Technology Tawan-ok (RMUTTO)	

F.3.1 - Aims and activities of the organisation

Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

The planned project will be set up at Faculty of Science and Technology, Rajamangala University of Technology Tawan-ok (RMUTTO) by Internet of Things Technology Research Laboratory (IoT), Robotic and Automation Technology Research Laboratory (RA), Bio Technology Research Laboratory (BTR), . RMUTTO itself has approx. 10,577 full-time students, 554 full-time lecturers, and 654 scientific and administrative staff members. The university is connected worldwide by cooperating with 19 countries, which are 69 international universities and higher education institutions.

The Faculty of Science and Technology has approx. 570 full-time students, 30 full-time professors and lecturers, and 26 full-time scientific and administrative employees. There are three major missions the Faculty of Science and Technology follows; 1) Study and Intensive Training for students with bachelor degrees in Information and Communication Technology, Mechatronic Engineering, Biotechnology, Food Industry and Service, Food Science and Technology, Computer Science, and Agicultural Engineering and master degree in Energy Technology, 2) Research in information, electronics and computing-related fields, mechanic and agriculture engineering, and food-related fields and 3) Academic Services for technology and knowledge transfer with industries and governmental units. Faculty of Science and Technology has cooperation agreements in terms of Memorandum of Understanding (MoU) with 5 universities and educational institutes world-wide and with 10 national companies and institutes.

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	69
Number of students	10,577
Number of Bachelor degrees offered	492
Number of Master degrees offered	21
Number of PhD degrees offered	-
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	-

F.3.2 – Role of your organisation in the project

Please describe also the role of your organisation in the project (limit 1000 characters).

- Will lead the WP 5; coordinating the developement of the structure, methologies and content of the trainings from the pedagogical aspects under considering of Thai specifics.
- Organizing national work group meetings, developing of the content, developing of simulation models in Automation 4.0 for Robotics; assisting in engineering pedagogical approaches.
- Is responsible of organizing the ETAT Training Center at his university.
- Development of the structure, deliver content, suggestions for Train the Trainer.
- Will provide academic staff to be trained; will provide test integrating of the teaching materials to the university curricula.
- To use the ETAT E-Learning&Collaboration Platform, give input to the platform.
- Give input to the website, to link the website with the university's website, to write articles, to distribute leaflets, posters, etc.
- To disseminate the project using their own networks including the National Resonance Group and associated Thai

partners.

P9 will build up a hands-on learning and training environment for automation training within the ETAT project. The automation training environment will be set physically, and will be accessed with a virtual environment created by P9. The training courses will be organized and performed by automation experts who come from P9 and the industries. It will be a Train-the-Trainer program for tuning the trainer to the state of the art in automation with well-prepared course materials. Furthermore, we will work hand-in-hand on ETAT Smart Labs with the industries within the EEC area. The services in the ETAT framework P9 will offer include, e.g. hands-on training with well-prepared course materials, virtual learning environment, industrial process data analysis in depth, and consulting center or contact point for research and industry.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	**I confirm**

For new courses

What new courses will the project implement in your HEI?	N/A

For updated courses

Which existing courses will be updated in your HEI?	

For each course please fill the following nested table:

Title	**Selected Topic in Information Technology II (Hands-on Automation Technology for SCADA System)**
Level of study	Bachelor Degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3
Estimated date of accreditation and accreditation body	-
% of the modernised subjects compared to total subjects included in the course	80%
Number of students to be accepted in the first year/ second year	30
Number of teaching staff to be trained	2
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, PLC (Profinet), Computers, Simulation Plant, Managed Switches, Projector, etc.

Title	**Embedded Systems**
Level of study	Bachelor Degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3
Estimated date of accreditation and accreditation body	-
% of the modernised subjects compared to total subjects included in the course	60%
Number of students to be accepted in the first year/ second year	25
Number of teaching staff to be trained	2
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, PLC, Computers, Simulation Plant, Managed Switches, Projector, etc.

Title	**Control Systems (Faculty of Engineering)**
Level of study	Bachelor Degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3
Estimated date of accreditation and accreditation body	-
% of the modernised subjects compared to total subjects included in the course	60%
Number of students to be accepted in the first year/ second year	30
Number of teaching staff to be trained	2
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, PLC, Computers, Simulation Plant, Managed Switches, Projector, etc.

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

The Faculty of Science and Technology, Rajamangala University of Technology Tawan-ok locates in the heart of the Eastern Economic Corridor (EEC) where the Industry 4.0 in Thailand is in the process of establishing. We have potentials to provide knowledge on digital technology and its application to, especially, the local SMEs, which are the economic driving engine in this area. Not just only the Automation Technology that we can support them, the Big Data Collecting and Analysis, Information System Integration, Organization Digitalization, ERP, CRM and Digital Marketing are the knowledge packages that are necessary nowadays.

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	- A Hands-on ETAT Training Center for Automation 4.0 - At least 60 graduates with automation skill per year - Improvement of local SMEs in automation technology
How will the impact of these results be measured in your HEI?	- Number of graduates - Number of companies that involved in the training courses.
What financial means and human and other resources will be provided to sustain these results after the project ends?	- After the end of the project, the equipment will be left at the training center as it is, as well as the prepared course materials. - The training courses will be run and maintained by our faculty members. - In case of financial situation, the center should provide purchasable short-course trainings for employees or trainees who are interested in. In addition, the center can provide consults on automation technology against fees.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***

Tassaphan Suwannatat	Mr. Tassaphan Suwannatat is a lecturer at Faculty of Science and Technology, Rajamangala University of Technology Tawan-ok. His works mainly focus on mechanic, robot and automation for industrial. He is currently the associate dean of Faculty of Science and Technology and the Head of Robotic and Automation Technology Research Laboratory (RA). In ETAT project, he will dedicate 20% of his working time to the project. *Selected recent publications:* • Suwannatat, T., Chinnasarn, K., Indra-Payoong, N. (2015). Multi-features particle PHD filtering for multiple humans tracking. International Computer Science and Engineering Conference (ICSEC) 2015 IEEE International Conference on. DOI: 10.1109/ICSEC.2015.7401442
Pongpat Singsri	Mr. Pongpat Singsri is a lecturer at Faculty of Science and Technology, Rajamangala University of Technology Tawan-ok. His works mainly focus on Data Analysis and Internet of Things in agriculture, including classification, automation farm. He is currently the Head of committee of Information and Communication Technology program and the Head of Internet of Things Technology Research Laboratory (IoT). In ETAT project, he will dedicate 15% of his working time to the project. *Selected recent publications:* • Singsri, P., Chansamorn, S., Wongjak A., Saramat S., & Singsri, K. (2017). Synoptic Weather Forecast System Using Classification Technique and Micro-Controller Case Study: Rajamangala University of Technology Tawan-Ok. In Proceedings of the 11th International Conference on Applied Computer Technology and Information Systems (pp. 17-21). Bangkok: Thailand. • Suksawatchon, U., & Singsri, P. (2014). Factor Analysis Influencing Quail Gender Classification Considering from the External Factors of Quail Eggs Using Classification Techniques. Joint Conference on Computer Science and Software Engineering (JCSSE) 2014 IEEE International Conference on, 11, 297-301. DOI: 10.1109/JCSSE.2014.6841884

Partner number		**P10**
Organisation name & acronym	Rajabhat Rajanagarindra University (RRU)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

Rajabhat Rajanagarindra University (RRU) was originally located in the Muang district of Chachoengsao. RRU is closely situated near the 2nd Engineer Battalion Base (Srisothon Army Camp) and the well-known royal temple of Wat Sothon Wararam Woraviharn that is enshrined with Phra Phutasothon which is highly regarded as one of the most respected Buddha images by all Thai people across the nation. Currently, RRU has two recognized regional properties as followed: 1)The main property also known as the main campus is located on 422, Maruphong Road, Namuang subdistrict, Muang district, Chachoengsao province, 24000 and covers an area approximately 70 square kilometers (43 rai). 2) RRU's second property is located on 6, Moo 4, Huasai sub-district, Bangkhla district, Chachoengsao, 24110. This campus is a large rural institute that is commonly known as the Bangkhla Campus and is approximately 30 kilometers from the township of Chachoengsao, it is located on. This campus was formerly used as by the public for many local activities and has total area of approximately 800 square kilometers (500 rai). On the 19th of July 1996 the Bangkhla Campus was previously granted by the Ministry of Interior and allowed the site to be built and used as RRU's Bangkhla Campus.

RRU itself has approx. 8,000 full-time students, 400 full-time lecturers, and 400 scientific and administrative staff members. The university is connected worldwide by cooperating with 6 countries, which are 11 international universities and higher education institutions. The planned project will be set up at Faculty of Science and Technology, Rajabhat Rajanagarindra University (RRU) by Department of Information Technology.

The Faculty of Science and Technology has approx. 1,887 full-time students, 88 full-time professors and lecturers, and 20 full-time scientific and administrative employees. There are three major missions the Faculty of Informatics follows; 1) Study and Intensive Training for students with bachelor, master, and doctoral degrees in Agricultural Technology, Food and Service, Chemistry, Biology, Information Technology, Physics, Computer Science, Occupational Safety and Health, Environmental Science, Public Health, Science Education, Health Management, 2) Research in science and technology-related fields with focus on local community, and 3) Academic Services for technology and knowledge transfer with industries, governmental units and local community in the Eastern Economic Corridor (EEC) (https://www.eeco.or.th/en) in Thailand.

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	6
Number of students	7,200
Number of Bachelor degrees offered	38
Number of Master degrees offered	7
Number of PhD degrees offered	2
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	No

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

- Organizing national work group meetings, developing of the content, developing of simulation models in Automation 4.0 for Agriculture (Smart Farming); assisting in engineering pedagogical approaches.
- Is responsible of organizing the ETAT Training Center at his university.
- Development of the structure, deliver content, suggestions for Train the Trainer.
- Will provide academic staff to be trained; will provide test integrating of the teaching materials to the university curricula.
- Translate the documents according to the tasks of P13.
- To use the ETAT E-Learning&Collaboration Platform, give input to the platform.
- Give input to the website, to link the website with the university's website, to write articles, to distribute leaflets, posters, etc.
- To disseminate the project using their own networks including the resonance groups and associated Thai partners.

P10 will build up a hands-on learning and training environment for internet of things (IoT) for Agriculture within the ETAT project. The training courses will be organized and performed by internet of things (IoT) experts who come from P10. It will be a Train-the-Trainer program for tuning the trainer to the state of the art in internet of things (IoT) with well-prepared course materials. Furthermore, P10 will work hand-in-hand with the industries within the EEC area. The services in the ETAT framework P10 will offer include, e.g. hands-on training on ETAT Smart Labs with well-prepared course materials, virtual learning environment, industrial process data analysis in depth, and consulting center or contact point for research and industry.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	**I confirm**

For new courses

What new courses will the project implement in your	N/A

HEI?	
For updated courses	
Which existing courses will be updated in your HEI?	
For each course please fill the following nested table:	

Title	**Special Topics in Information Technology (Internet of Things)**
Level of study	Bachelor Degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3
Estimated date of accreditation and accreditation body	-
% of the modernised subjects compared to total subjects included in the course	80%
Number of students to be accepted in the first year/ second year	30
Number of teaching staff to be trained	1
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, Computers, IoT devices, Projector etc.

Title	**Special Topics in Computer Science (Internet of Things)**
Level of study	Bachelor Degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3
Estimated date of accreditation and accreditation body	-
% of the modernised subjects compared to total subjects included in the course	60%
Number of students to be accepted in the first year/ second year	30
Number of teaching staff to be trained	1
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, Computers, IoT devices, Projector etc.

Title	**Microprocessor (Faculty of Industrial Technology)**
Level of study	Bachelor Degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3
Estimated date of accreditation and accreditation body	-
% of the modernised subjects compared to total subjects included in the course	20%
Number of students to be accepted in the first year/ second year	30
Number of teaching staff to be trained	1
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, Computers, IoT devices, Projector etc.

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

The Faculty of Science and Technology, Rajabhat Rajanagarindra University locates in the heart of the Eastern Economic Corridor (EEC) where the Industry 4.0 in Thailand is in the process of establishing. We have potentials to provide knowledge on digital technology and its application to, especially, the local SMEs, which are the economic driving engine in this area. Not just only the IoT Technology that we can support them, the Information System Integration, Organization Digitalization, and Digital Marketing are the knowledge packages that are necessary nowadays.

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	- A hands-on ETAT Training Center for IoT for Agriculture (Smart Farming) - At least 50 graduates with IoT skill per year - Improvement of local SMEs and community in IoT technology
How will the impact of these results be measured in your HEI?	- Number of graduates - Number of local community and companies that involved in the training courses.
What financial means and human and other resources will be provided to sustain these results after the project ends?	- After the end of the project, the equipment will be left at the training center as it is, as well as the prepared course materials. - The training courses will be run and maintained by our faculty members. - In case of financial situation, the center should provide purchasable short-course trainings for employees or trainees who are interested in. In addition, the center can provide consults on Iot technology against fees.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Narongsak Putpuek	Dr. Narongsak Putpuek is a lecturer of Image and Video Processing at Faculty of Science and Technology, Rajabhat Rajanagarindra University. His works mainly focus on image and video processing, including redundant detection, multimedia retrieval. He published more than 10 scientific papers in international journals and conference proceedings. He is currently the Director, Office of Academic Resources and Information Technology. In ETAT project, he will dedicate 5% of his working time to the project. *Selected recent publications:* • N. Putpuek, N. Rojanaprasert, K. Atchariyachanvanich and T. Thamrongthanyawong, "Comparative Study of Prediction Models for Final GPA Score: A Case Study of Rajabhat Rajanagarindra University," 2018 IEEE/ACIS 17th International Conference on Computer and Information Science (ICIS), Singapore, 2018, pp. 92-97.

	• N. Putpuek, N. Cooharojananone and S. Satoh, "A modification of retake detection using simple signature and LCS algorithm," 2017 18th IEEE/ACIS International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD), Kanazawa, 2017, pp. 257-261.
Sansern Phawandee	Sansern Phawandee has studied master degree in Informatics at Burapha University in the area of data mining. His teaching and research focuses include Web Programming, Smart Farm technology and Internet of Things (IoT). In ETAT project, he will dedicate 10% of his working time to the project.
Apichart Sungthong	Dr. Apichart Sungthong graduated Ph.D. in Applied Physics at King Mongkut's Institute of Technology Ladkrabang. His teaching and research focuses include Physic, Smart Farm technology and Internet of Things (IoT). In ETAT project, he will dedicate 10% of his working time to the project. *Selected recent publications:* • W. Bunjongpru, A. Sungthong, S. Porntheeraphat, Y. Rayanasukha, A. Pankiewa, W. Jeamsaksiri, A. Srisuwan, W. Chaisriratanakul, E. Chaowicharat, N. Klunngien, C. Hruanun, A. Poyai, J. Nukeaw.," Very low drift and high sensitivity of nanocrystal-TiO2 sensing membrane on pH-ISFET fabricated by CMOS compatible process", Applied Surface Science, Vols. 267(2013)206-211. • K.Amnuyswat, P.Thanomngam, S.Sopitpan, A.Sungthong, S.Porntheerapat and J.Nukeaw, "Investigation of Oxygen Contamination in Indium Nitride Thin Film by X-ray Absorption Fine Structure", Advanced Materials Research Vols. 93-94 (2010), pp 493-496.
Phumiphat Kakham	Asst. Prof. Phumiphat Kakham finished his Master Degree in Nuclear Technology from Chulalongkorn University. His research and teaching focus mainly on Embedded System, Microprocessor and Internet of Things (IoT). In ETAT project, he will dedicate 5% of his working time to the project. *Selected recent publications:* • Phumiphat Kakham, Chatchawarn Mongkon and Sataporn Deeying. " Design and Development of Embedded System for Greenhouse of Cantaloupe (Cucumis melo) Cultivation". Journal of Industrial Technology Ubon Ratchathani Rajabhat University, Vol. 8(2) July-December 2018. • Phumiphat Kakham* and Bancha Ounpanich. " The LED Lighting Systems with Integrated Daylighting for Enhancing Energy Performance", Engineering Journal Chiang Mai University, Vol. 24(3) September-December 2017. • Phumiphat Kakham and Bancha Ounpanich " The Room Model Using LED Lighting Systems with Integrated Daylighting". Engineering Journal Chiang Mai University, Vol. 24(1) January-April 2017.

Partner number		**P11**
Organisation name & acronym	King Mongkut's University of Technology North Bangkok (KMUTNB)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

King Mongkut's University of Technology North Bangkok (KMUTNB) – former known as Thai-German Technical College – is the outstanding technical university of Thailand with dominancy in engineering, technology, and technology-transfer didactic fields. KMUTNB has approx. 30,000 full-time students, 1,000 full-time professors and 1,500 technical and administrative staffs. The main goal of KMUTNB is to develop human resource with workability and creativity skills.

The recent campus of KMUTNB at Rayong is located in the Eastern Economic Corridor (EEC) – the 3-province area

with modernization plan for industrial estates with high technology in the next 20 years, due to the National Development Roadmap. The campus consists of three faculties, which are Faculty of Engineering and Technology (EAT), Faculty of Science Energy and Environment (SciEE), and Faculty of Business Administration (FBA). Faculty of Engineering and Technology offers 5 bachelor programs, which are suitable for industrial estates in EEC, in fields of instrumentation and automation, industrial and logistic engineering, automotive engineering, and chemical and material engineering. Furthermore, the university organization with specialization in industrial training – The Research and Human Development Training Centre for Industry (RHTC) – is also located in Rayong. The RHTC was founded with the aim to improve and re-train workers and technicians in EEC industrial estate, so that they are prepared and hands-on for the new wave of technology coming through "Industry 4.0". Moreover, the KMUTNB has the Thai-German Dual Education and E-learning Development Institute (TGDE), which is the institute with high experiences in industrial trainings and modern e-learning didactic and production.

KMUTNB as partner for this proposed project, has cooperation mainly with the area-based Faculty (EAT) in Rayong, the TGDE for e-learning didactic/materials, and the RHTC for evaluation of training programs. With this proposed project, KMUTNB aims to improve working skills for new graduates and to re-train/re-skill technicians and engineers in EEC towards the Industry 4.0.

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	8 (North America) 50 (Europe) 1 (South Africa) 2 (Middle-East Asia) 32 (East Asia) 19 (ASEAN) 2 (Australia)
Number of students	Approx. 28,500 students
Number of Bachelor degrees offered	86 degree programs
Number of Master degrees offered	58 degree programs
Number of PhD degrees offered	30 degree programs
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	1) MEISTER program - Re-training programs for Thai technicians and also technicians from Myanmar and Cambodia. - Aims are re-training technical skills of technicians with up-to-date knowledge and training for business management

F.3.2 – Role of your organisation in the project

Please describe also the role of your organisation in the project (limit 1000 characters).

- Will lead the WP 6; responsible for evaluation and relevance of the teaching materials.
- Organizing national work group meetings, developing of the content; developing of simulation models in Automation 4.0 for for Logstics & Traffic, Environment & Energy; assisting in engineering pedagogical approaches.
- Is responsible of organizing the ETAT Training Center at his university.
- Development of the structure, deliver content, suggestions for Train the Trainer.
- Will provide academic staff to be trained; will provide test integrating of the teaching materials to the university curricula.
- Translate the documents according to the tasks of P13.
- To use the ETAT E-Learning&Collaboration Platform, give input to the platform.
- Give input to the website, to link the website with the university's website, to write articles, to distribute leaflets, posters, etc.
- To disseminate the project using their own networks including the National Resonance Group and associated Thai partners.

Roles of P11 in this proposed project are primarily to contribute training course guideline and to implement contents/syllabus of those courses in which KMUTNB are specialized. The responsibility of P11 is also to test and evaluate courses, both locally at centre and as online courses. P11 is responsive as an area-based partner for the target group of training in EEC. P11 will guide and suggest the area-based partner about training courses. And the RHTC of P11 acts as a new institute for training and re-training technicians to advanced industrial skills and will help also for evaluation of training programs.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	**I confirm**

For new courses

What new courses will the project implement in your HEI?	

For each course please fill the following nested table:

Title	**Industrial IoT (IIoT)**
Level of study	beginner
List of subjects and credits (ECTS or comparable credit system) for each of them	(2 ECTS credits) - Learn/revise traditional style programming of PLC - Learn programming in IoT - Learn to connect PLC with IoT - Overview of data management (big data) in IoT
Estimated date of accreditation and accreditation body	After the course has evaluated (8 months after course beginning)
Estimated starting date of the new programme	3 months after project has launched.
Number of students to be accepted in the first year/ second year	100 students in 1st year 100 students in 2nd year
Number of teaching staff to be trained	10
Internship /placements (if applicable)	Possible, after inquiry
List of equipment to be purchased for this course? (if applicable)	- ETAT Smart Labs, - Programmable Logic Controller with IoT supported and software - Various industrial sensors and actuators - Multimeter/Oscilloscopes - Computer

Title	**Industrial Robotics**
Level of study	intermediate
List of subjects and credits (ECTS or comparable credit system) for each of them	(2 ECTS credits) - Introduction and state-of-the-art of industrial robotics - Learn/revise traditional style programming of industrial robotics - Learn new technology and programming methods to control industrial robotics - Overview of machine learning in robotics
Estimated date of accreditation and accreditation body	After the course has evaluated (8 months after course beginning)

Estimated starting date of the new programme	6 months after project has launched.
Number of students to be accepted in the first year/ second year	50 students in 1st year 50 students in 2nd year
Number of teaching staff to be trained	10
Internship /placements (if applicable)	Possible, after inquiry
List of equipment to be purchased for this course? (if applicable)	- ETAT Smart Labs, - Programmable Logic Controller and software - Various industrial sensors and actuators - Robot manipulators (and simulation programs) - Multimeter/Oscilloscopes - Computer

Title	**Machine Learning with Big Data**
Level of study	intermediate to advanced
List of subjects and credits (ECTS or comparable credit system) for each of them	(2 ECTS credits) - Introduction and state-of-the-art of machine learning and big data - Learn new technology and programming methods of machine learning - Case study projects (problem-based learning)
Estimated date of accreditation and accreditation body	After the course has evaluated (8 months after course beginning)
Estimated starting date of the new programme	6 months after project has launched.
Number of students to be accepted in the first year/ second year	50 students in 1st year 50 students in 2nd year
Number of teaching staff to be trained	10
Internship /placements (if applicable)	Possible, after inquiry
List of equipment to be purchased for this course? (if applicable)	- Computers - Various sensors and actuators for PBL-projects

Title	**Automatic Guidance Systems in Industry**
Level of study	intermediate to advanced
List of subjects and credits (ECTS or comparable credit system) for each of them	(2 ECTS credits) - Introduction and state-of-the-art of automatic guidance systems in industry - Learn new technology and programming methods of automatic guidance systems. - Case study projects (problem-based learning)
Estimated date of accreditation and accreditation body	After the course has evaluated (8 months after course beginning)
Estimated starting date of the new programme	8 months after project has launched.
Number of students to be accepted in the first year/ second year	50 students in 1st year 50 students in 2nd year
Number of teaching staff to be trained	10
Internship /placements (if applicable)	Possible, after inquiry
List of equipment to be purchased for this course? (if applicable)	- ETAT Smart Labs, - Computers - Simulation software - Automatic Guided Vehicle (AGV) - Various sensors and actuators for PBL-projects

Title	**Automatic Traffic/ Logistic Solution**
Level of study	intermediate to advanced
List of subjects and credits (ECTS or comparable credit system) for each of them	(2 ECTS credits) - Introduction and state-of-the-art of automatic system solution in traffics e.g. aviation and railway system, logistic management. - Learn new technology and programming methods for automatic system solution in traffic and logistic management. - Case study projects (problem-based learning)
Estimated date of accreditation and accreditation body	After the course has evaluated (8 months after course beginning)
Estimated starting date of the new programme	8 months after project has launched.
Number of students to be accepted in the first year/ second year	50 students in 1st year 50 students in 2nd year
Number of teaching staff to be trained	10
Internship /placements (if applicable)	Possible, after inquiry
List of equipment to be purchased for this course? (if applicable)	- ETAT Smart Labs, - Computers - Simulation software - Various sensors and actuators for PBL-projects (if needed)

For updated courses

Which existing courses will be updated in your HEI?	

For each course please fill the following nested table:

Title	**Modern Automation Technology in Vehicles**
Level of study	beginner to intermediate
List of subjects and credits (ECTS or comparable credit system) for each of them	(2 ECTS credits) - Introduction and state-of-the-art of automatic system solution in automobiles - Introduction and state-of-the-art of electric vehicle (EV) - Learn new technology and solutions for automatic system in automobile - Case study projects (problem-based learning)
Estimated date of accreditation and accreditation body	After the course has evaluated (8 months after course beginning)
% of the modernised subjects compared to total subjects included in the course	70%
Number of students to be accepted in the first year/ second year	50 students in 1st year 50 students in 2nd year
Number of teaching staff to be trained	10
Internship /placements (if applicable)	Possible, after inquiry
List of equipment to be purchased for this course? (if applicable)	- Computers - Simulation software - Various sensors and actuators for automatic systems of EV.

Title	**Scalable Manufacturing Execution System (MES) for Industry**
Level of study	intermediate
List of subjects and credits (ECTS or comparable credit system) for each of them	(2 ECTS credits) - Introduction to Manufacturing Execution System (MES) and the state-of-the-art - Learn new technology, standards and solutions for MES - Problem-based learning)
Estimated date of accreditation and accreditation body	After the course has evaluated (8 months after course beginning)
% of the modernised subjects compared to total subjects included in the course	60%
Number of students to be accepted in the first year/ second year	50 students in 1st year 50 students in 2nd year
Number of teaching staff to be trained	10
Internship /placements (if applicable)	Possible, after inquiry
List of equipment to be purchased for this course? (if applicable)	- ETAT Smart Labs - Computers - Simulation software - ETAT Smart Labs

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

KMUTNB is, since for long, well-known as good industrial partner and provided outstanding graduates to working and developing industrial sector of Thailand. Especially the new campus at Rayong, KMUTNB aims to be host of knowledges for new and high technology that could be profited by all current and new-coming industrial estates in EEC area. As an essential part to industrial sector, governance sector and public sector, KMUTNB in Rayong has not only faculties for full-time students, but also professional training centre for life-long learning. The important activities of KMUTNB are not only teaching, but also consulting and making economical solutions for all partners with in-house research outcomes. This can help driving and develop the human resource in Thailand forwards and sustainably.

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	Development of human resources in EEC for Industry 4.0
How will the impact of these results be measured in your HEI?	- Numbers of new trainees and re-trainees in programs - Requirement for re-training after project ended.
What financial means and human and other resources will be provided to sustain these results after the project ends?	Staffs from Rayong Campus and RHTC will continue to maintain and provide training courses and to contribute the annual strategic and financial plans together with KMUTNB headquarter.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Saman Kumpakeaw	Dipl.-Ing. Saman Kumpakeaw is lecturer and researcher of Instrumentation and Automation Engineering Program at Faculty of Engineering and Technology, KMUTNB Rayong campus. His expertise are modern electronics design/computing and automation solutions in production, robotics, and traffic control. In ETAT, he is designated as the area-based coordinator to contribute courses due to industrial requirements and also evaluate and maintain courses provided in the project. *Recent publication/certification related to the domain of the project.* • "NETPIE Certified Trainer", 2017, * NETPIE is the IoT Ecosystem provided by National Electronics and Computer Technology Center (NECTEC). [online resource: https://netpie.io/trainers#eastern]. • "Certified Educational Trainer in Metrology" by National Institute of Metrology Thailand (NIMT), 2014. • S. Kumpakeaw, "Twin low-cost infrared range finders for detecting obstacles using in mobile platforms", IEEE International Conference on Robotics and Biomimetics (ROBIO), 11-14 December 2012, Guangzhou, China
Chanin Joochim	Asst.Prof. Dr.-Ing. Chanin Joochim is vice-director of TGDE. His duty by TGDE is cooperating with industrial affairs e.g; train the trainer and internship. He is also professors in Mechatronics Engineering Technology Program, Department of Mechanical Engineering Technology, College of Industrial Technology. In ETAT his workforce will be concentrated in advising the course outline and conducing trainings (if needed). *Recent publication/certification related to the domain of the project.* • C. Joochim, R. Phadungthin, and S. Srikitsuwan, "Design and development of a Remotely Operated Underwater Vehicle", the 16th International Conference on Research and Education in Mechatronics 2015, 18-20 November 2015, Bochum, Germany. • C. Joochim and H. Roth, "The indoor SLAM using multiple three dimension sensors integration", IEEE International Workshop on Intelligent Data Acquisition and Advanced Computing Systems, 21-23 September 2009, Rende, Italy.
Teeratorn Saneeyeng	Mr. Teeratorn Saneeyeng is vice-director of TGDE with responsibility for e-learning/e-didactic development. He is also lecturer and researcher at Faculty of Technical Education (Department of Computer Education). In ETAT, he will advise the online courses and conducing trainings (if needed). *Recent publication/certification related to the domain of the project.* • P. Keeratiwintakorn, C. Joochim, T. Saneeyeng, and R. Petcharak. "Development of Industrial Skilled Labours with Improvement of Trainer through German Guideline Standard", Journal of Technical Education Development, 2017 Issue 102, (in Thai) ISSN: 0857-5452
Yuwadee Wiboonchan	Ms. Yuwadee Wiboonchan is an assistant of director of Research and Human Resource Training Center for Industry (RHTC) at Rayong. In ETAT, she will support the project consortium on the realization of all administrative works and organize facilities for training courses held at RHTC.

Partner number		**P12**
Organisation name & acronym	Kasetsart University (KU)	

F.3.1 - Aims and activities of the organisation

Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

Kasetsart University (KU)) is one of the leading universities in Thailand. KU consist of Central Kaset Bangkhen in Bangkok, Kamphaeng Saen Campus in Nakhon Pathom, Sriracha Campus in Chon Buri and Chalermphrakiat Sakon Nakhon Province Campus in Sakon Nakhon. Whereas located of the planned project will be set up at Faculty of Science at Sriracha campus in Chon buri.

KU has 68,326 of regular and special students; undergraduate, postgraduate and doctoral degree. There are 3,651 full-time lecturers; 42 Professors, 551 Associate Professors, 880 Assistant Professors and 2,178 Instructors that provides a total of 401 approved courses, 36 international programs and improved 167 curriculums and 167 majors. KU has focused on the development of research or creative work, research promotion, innovation and invention. There are systems and mechanisms such as a comprehensive management support tool for science, the develop advanced labs, information systems and manage information resources to provide knowledge, network services, information technology, intellectual property management, and transfer technology to utilization for supporting the potential research for social and commercial.

Kasetsart University Sriracha campus occupies the area of 199 rai (32 hectares) at the distance of approximately 107 kilometers to the east of Bangkok. There are 11,080 students, 578 academic and administrative staffs with the vision “A leading university in research and learning in eastern Thailand, aiming to world university” which was dictated by the pressing of the country shortage of high quality manpower as a consequence of the Eastern Seaboard Development Project. The campus offers degree courses and short-term training programs in four faculties and one college; Management Sciences, Engineering, Science, Economics and International Maritime College. Moreover, the campus also provides master's degree programs in Business Economics, Agribusiness, Industrial and Engineering.

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	502 Active MOU
Number of students	68,326
Number of Bachelor degrees offered	155
Number of Master degrees offered	159
Number of PhD degrees offered	86
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	Yes • South East Asia Academy for Beverage Technology(561515-EPP-1-2015-1-AT-EPPKA2-CBHE-JP) • Universities as key partners for the new challenges regarding food safety & quality in ASEAN(561630-EPP-1-2015-1-FR-EPPKA2-CBHE-JP) • Reinforcement of Veterinary Studies in Asian Universities(561668-EPP-1-2015-1-ES-EPPKA2-CBHE-JP) • Advancing university financial management practices in Southeast Asia(561905-EPP-1-2015-1-AT-EPPKA2-CBHE-JP) • Southeast Asian Social Innovation Network(573701-EPP-1-2016-1-UK-EPPKA2-CBHE-JP) • Joint Master Degree - Food Security and Climate Change(573957-EPP-1-2016-1-TH-EPPKA2-CBHE-JP) • Support of International Platform Merging Labour and Education(574019-EPP-1-2016-1-CZ-EPPKA2-CBHE-JP

	• Competence centres for the development of sustainable tourism and innovative financial management strategies to increase the positive impact of local tourism in Thailand and Vietnam(585785-EPP-1-2017-1-AT-EPPKA2-CBHE-JP) • Improving enGineers' Employability with multi-Competencies, Knowledge and Opportunities(585934-EPP-1-2017-1-FR-EPPKA2-CBHE-JP) • Participatory and Integrative Support for Agricultural Initiative(586157-EPP-1-2017-1-TH-EPPKA2-CBHE-JP) • Learning to Investigate by Field Experiment for Southeast Asian Emerging Diseases(586245-EPP-1-2017-1-FR-EPPKA2-CBHE-JP)

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

- Organizing national work group meetings, developing of the content, developing of simulation models in Automation 4.0 for Smart Home applications; assisting in engineering pedagogical approaches.
- Is responsible of organizing the ETAT Training Center at his university.
- Development of the structure, deliver content, suggestions for train the trainer.
- Will provide academic staff to be trained; will provide test integrating of the teaching materials to the university curricula.
- Translate the documents according to the tasks of P13.
- To use the ETAT E-Learning&Collaboration Platform, give input to the platform.
- Give input to the website, to link the website with the university's website, to write articles, to distribute leaflets, posters, etc.
- To disseminate the project using their own networks including the National Resonance Group and associated Thai partners.

P12 will build up a hands-on learning, collect and analyze the industrial process data in depth based on the data science technology, distribute the development solutions of the problem of management, production and logistic in the industry, set up the training and testing environment, and prepare the meeting and seminar for automation training within the ETAT project. Furthermore, KU has the International Computer Driving License (ICDL) and Thailand Professional Qualification Institute (TPQI) testing center and will be the 5G center to support and to work hand-in-hand with the industries within the EEC area.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	**I confirm**

For new courses

What new courses will the project implement in your HEI?	

For each course please fill the following nested table:

Title	**Basic of Data Science for the Industrial**
Level of study	Bachelor degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3
Estimated date of accreditation and accreditation body	-
Estimated starting date of the new programme	2021
Number of students to be accepted in the first year/ second year	30
Number of teaching staff to be trained	2
Internship /placements (if applicable)	
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, PLC, Computers, Projector, software for Data Analytics, Server

For updated courses

Which existing courses will be updated in your HEI?	

For each course please fill the following nested table:

Title	Decision Support System
Level of study	Bachelor degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3
Estimated date of accreditation and accreditation body	-
% of the modernised subjects compared to total subjects included in the course	20-50%
Number of students to be accepted in the first year/ second year	30
Number of teaching staff to be trained	2
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, PLC, Computers, Projector, software for Data Analytics, Server

Title	Data Mining Technologies and Applications
Level of study	Bachelor degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3
Estimated date of accreditation and accreditation body	-
% of the modernised subjects compared to total subjects included in the course	20-50%
Number of students to be accepted in the first year/ second year	30
Number of teaching staff to be trained	2
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, PLC, Computers, Projector, software for Data Analytics, Server

Title	Manufacturing Information System
Level of study	Bachelor degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3

Estimated date of accreditation and accreditation body	-
% of the modernised subjects compared to total subjects included in the course	10-50%
Number of students to be accepted in the first year/ second year	30
Number of teaching staff to be trained	2
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, PLC, Computers, Projector, software for Data Analytics, Server

Title	Expert System
Level of study	Bachelor degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3
Estimated date of accreditation and accreditation body	-
% of the modernised subjects compared to total subjects included in the course	10-50%
Number of students to be accepted in the first year/ second year	30
Number of teaching staff to be trained	2
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	PLC, Computers, Projector, software for Data Analytics, Server

Title	Knowledge Management
Level of study	Bachelor degree
List of subjects and credits (ECTS or comparable credit system) for each of them	3
Estimated date of accreditation and accreditation body	-
% of the modernised subjects compared to total subjects included in the course	10-50%
Number of students to be accepted in the first year/ second year	30
Number of teaching staff to be trained	2
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, PLC, Computers, Projector, software for Data Analytics, Server

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

With the vision “A leading university in research and learning in eastern Thailand, aiming to world university” which was dictated by the pressing of the country shortage of high quality manpower as a consequence of the Eastern Seaboard Development Project, the Industry 4.0 and Digital Transformation in Thailand will be established within the EEC area and the services in the ETAT framework will support to solve, consult and develop the industry. So the center will be importance for the improving and developing the industries to be the highest performance in

business and easy to access the precious knowledge.
The Faculty of Science at Sriracha campus, Kasetsart University is located close to the industrial zone which has very good the relationship and co-develops with the industrial sector through the technology cooperation and the computerized personnel development as well in the domain of the industry to establish the professional standards and the Digital Development Center.

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	- An ETAT Training Center for Automation 4.0 System - At least 50 graduates pass the testing and get certificate of the automation skill - Improvement of the performance of industries within the EEC area by the automation technology
How will the impact of these results be measured in your HEI?	- Number of graduates - Number of companies that involved in the training courses. - Number of the certificate of the automation skill
What financial means and human and other resources will be provided to sustain these results after the project ends?	- After the end of the project, the equipment will be left at the training center as it is, as well as the prepared course materials. - The training courses will be run and maintain by our faculty members. - In case of financial situation, the center should provide purchasable short-course trainings for employees or trainees who are interested in.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Supaporn Bundasak	Ms. Supaporn Bundasak is a lecturer of Data mining at Faculty of Science at Sriracha, Kasetsart University., who has worked in data mining since 2005 with a special focus on Data mining and Big data as industrial information for developing the Decision Support system, the Recommandation system and the Expert system. In ETAT, she is designated as the project coordinator. *Selected recent publications :* • Supaporn Bundasak(2017),A healthy food recommendation system by combining clustering technology with the Weighted slope one Predictor,5th International Electrical Engineering Congress ,Pattaya ,Thailand,2017, pp427-431. • Supaporn Bundasak, Krisana Chinnasarn(2013), eMenu Recommender System Using Collaborative Filtering and Slope One Predictor, International Joint Conference on Computer Science and Software Engineering (JCSSE2013),p.114 ,2013 • Supaporn Bundasak, Krisana Chinnasarn (2013),Dimensionality Reduction on Slope One Predictor in the Food Recommender System , 2013 International Computer Science and Engineering Conference (ICSEC2013), p.37 ,2013.
Weerayut Pimpaporn	Assistant Professor Dr. Weerayut Pimpaporn who has worked in data science file and he focus on big data, data warehouse. He is director of the Digital Training Center at Faculty of Science at Sriracha. *Selected recent publications :* • Weerayut Pimpaporn(2018). Development of Data Warehouse for Decision Supporting in Educational Management, Faculty of

	Science at Si Racha Kasetsart University Sriracha Campus, Payap University Research Symposium 2018
Boonchoo Jitnupong	Mr. Boonchoo Jitnupong has the degree of Ph.D. in Science (Computer Science and Information Systems), and working as a lecturer in the Faculty of Science at Sriracha, KU Sriracha Campus. He experienced in information system development. In particular, user centered design (UCD), user interface (UI) design and user experience (UX) analysis are his interested fields. *Selected recent publications :* • Jitnupong, B., & Jirachiefpattana, W. (2018). Information System User Interface Design in Software Services Organization: A Small-Clan Case Study. In MATEC Web of Conferences (Vol. 164). https://doi.org/10.1051/matecconf/201816401006 • Jitnupong B, & Jirachiefpattana W. (2016). Understanding the Relationship Between Organizational Culture and User Interface Design in Thai Software Services Industry. International Journal of Economic Research, 13(3), 871–899.
Panatda Roopngam	Ms.Panatda Roopngam has a Bachelor degree in Science Program in Computer Science. She is Academic audio-visual in Faculty of Science at Sriracha, Kasetsart University. She is provide computer services to personnel teacher, students and staffs. Prepare and control of audio-visual equipment. Design and produce the media as assigned. Management photo activities on website.
Sumonrat Loetkitjaronepo	Ms. Sumonrat Loetkitjaronepo has a Bachelor degree in Computer Science and she is computer technical in Faculty of Science at Sriracha, Kasetsart University. She is supporting to install the computer and operating system for teachers, student and staffs. Take care and development website. Supervise and update the information on the website.

Partner number		**P13**
Organisation name & acronym	King Mongkut's Institute of Technology Ladkrabang (KMITL)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

The planned project is to be accomplished in the Faculty of Science, Department of Computer Science, KMITL. The name of the institute was derived from the name of King Rama IV. The royal grand crown seal has been graciously used as the emblem of the institute. The name "Chao Khun Taharn" has been used in honor of Chao Phya Surawong Waiyawat (Won Boonnak) of whom the heiress, Liam Prot Pitaya Payat, donated her own land to establish the institute.

In 1977, the Faculty of Industrial Education and Science was established to offer fundamental courses for all faculties and to provide education and promoting research in science. In 1979, the Chao Khun Taharn Agricultural College, which was affiliated with the Department of Vocational Education, Ministry of Education, was transferred to KMITL, and became the Faculty of Agricultural Technology. The Computer Research and Service Center, and the School of Graduate Studies were founded in 1981 and 1986, respectively. In 1988, the Faculty of Industrial Education and Science was separated into two faculties: the Faculty of Industrial Education and the Faculty of Science. In 1991, the Central Library was founded. In 1995, KMITL opened its first remote campus with 1,800 hectares of land located in Chumphon Province in order to support the development of industry in the southern part of Thailand. Later in 1996, the Faculty of Information Technology was founded with the aim to provide higher education and research programs in information technology.

In 2000, the department of Agricultural Industry within the Faculty of Agricultural Technology was endorsed to

become the Faculty of Agroindustry. Now, KMITL has 10 Faculties, 4 Colleges 2 Institutes, and 1 school in the main campus : Faculty of Engineering, Faculty of Architecture, Faculty of Science, Faculty of Industrial Education and Technology, Faculty of Agricultural Technology, Faculty of Information Technology, Faculty of Agroindustry, Faculty of Administration and Management, Faculty of Liberal Arts, Faculty of Medicine, International College, College of Nanotechnology, College of Advanced Manufacturing Innovation, International Academy of Aviation Industry, College of Educational Innovation Research, Institute of Music Science and Engineering, King Mongkut's International Demonstration School. Chumphon Campus has 10 study courses in Bachelor degree and 5 study courses in Master degree.

Recently, KMITL has approximately 21,572 full-time Bachelor degree students, 3,998 Graduate degree students, and 1,033 academic staffs : 6 professors, 233 associate professors, 335 assistant professors, and 459 lecturers. The university is connected worldwide by cooperations with 133 international universities.

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	133
Number of students	21,572
Number of Bachelor degrees offered	94
Number of Master degrees offered	62
Number of PhD degrees offered	29
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	Yes South East Asia Academy for Beverage Technology (561515-EPP-1-2015-1-AT-EPPKA2-CBHE-JP)

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

- Will lead the WP 7; responsible for the translation all kind of the materials into national language; coordinate the work in this WP.
- Organizing national work group meetings, developing of the content; developing of simulation models in Automation 4.0 for Smart City & Smart Home applications; assisting in engineering pedagogical approaches.
- Is responsible of organizing the ETAT Training Center at his university.
- Development of the structure, deliver content, suggestions for Train the Trainer.
- Will provide academic staff to be trained; will provide test integrating of the teaching materials to the university curricula.
- Translate the documents according to the tasks.
- To use the the ETAT E-Learning&Collaboration Platform, give input to the platform.
- Give input to the website, to link the website with the university's website, to write articles, to distribute leaflets, posters, etc.
- To disseminate the project using their own networks including the National Resonance Group and associated Thai partners.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	**I confirm**

For new courses

What new courses will the project implement in your HEI?	N/A
For updated courses	
Which existing courses will be updated in your HEI?	- Big Data Analysis for Industrial Applications - Web User Interface for Industrial Applications - E-learning and Cloud-based learning courses
For each course please fill the following nested table:	

Title	Big Data Analysis for Industrial Applications
Level of study	Bachelor Degree Master Degree
List of subjects and credits (ECTS or comparable credit system) for each of them	- Big Data Analysis (3 credits) for Bachelor - Big Data Analysis (3 credits) for Master
Estimated date of accreditation and accreditation body	2021
% of the modernised subjects compared to total subjects included in the course	- 40% for Bachelor - 20% for Master
Number of students to be accepted in the first year/ second year	- approx. 60 (Bachelor) - approx. 15 (Master)
Number of teaching staff to be trained	2
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, Server, Computer, Projector, etc.

Title	Web User Interface for Industrial Applications
Level of study	Bachelor Degree
List of subjects and credits (ECTS or comparable credit system) for each of them	- Web Programming (3 credits) - Software Analysis and Design (3 credits)
Estimated date of accreditation and accreditation body	2021
% of the modernised subjects compared to total subjects included in the course	30%
Number of students to be accepted in the first year/ second year	approx. 200
Number of teaching staff to be trained	3
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, Server, Computer, Projector, etc.

Title	E-learning and Cloud-based Learning
Level of study	Bachelor Degree
List of subjects and credits (ECTS or comparable credit system) for each of them	- Information Management (3 credits)
Estimated date of accreditation and accreditation body	2022
% of the modernised subjects compared to total subjects included in the course	20%
Number of students to be accepted in the first year/ second year	approx. 150
Number of teaching staff to be trained	2
Internship /placements (if applicable)	-
List of equipment to be purchased for this course? (if applicable)	ETAT Smart Labs, Server, Computer, Projector, etc.

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution
(limit 2000 characters)

Faculty of Science, King Mongkut's Institute of Technology Ladkrabang is located on the outskirts of Bangkok connecting to Chachoengsao and Chonburi province which are in the Eastern Economic Corridor (EEC). Faculty of Science comprises of 6 departments : Applied Mathematics, Computer Science, Chemistry, Biology, Physics, and Statistics which can cooperate to find the solution to serve the established of industry in Thailand 4.0. Faculty of Science also have 2 centers: Laboratory Instrument Center and KMITL Digital Analytics and Intelligence Center (K-DAI Center) which was established as the newest organization in the Faculty of Science at the begining of 2018. K-DAI center has missions in serving the new study courses in data science and analytics, and research areas of Internet of Things (IoT), Integrated Information System, Blockchain and Security System, Database, Data Warehouse and Big Data, Data Science, Information and Communication Technology (ICT), and the researches in Integration fields of Mathematics, Computer Science and Statistics, as well as other academic services which can serve and provide knowledge in Data science and analytics solution for EEC. We also have our cooperation under MOU such as CDG Systems Limited (Software company), and Thai IoT Association. Our qualifications, location, and connections certainly enable us to use digital technology in managing and solving problems for industries within EEC ; furthermore, we can become a bridge for university-industry collaboration in EEC and those in Bangkok area.

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	- At least 60 graduates per year gain knowledge in using Big data to analyse industrial project as well as the knowledge about Web user interface for industrial applications or E-learning courses - Improvement of automation technology research skills for Master students
How will the impact of these results be measured in your HEI?	- Number of graduates - Number of successful trained staffs as trainers - Number of companies involved in the training courses
What financial means and human and other resources will be provided to sustain these results after the project ends?	- All equipment and prepared course materials will be left at the training center after finishing the project. - The faculty members will run and update the training courses for further training. - In terms of financial means, the center should provide purchasable short-course trainings for employees or trainees who are interested in.

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Warangkhana Kimpan	Assistant Professor Dr.Warangkhana Kimpan is currently an assistant professor in Department of Computer Science, Faculty of Science, King Mongkut's Institute of Technology Ladkrabang (KMITL), Bangkok, Thailand. Her teaching includes Bachelor, Master, and Doctoral degree in Computer Science. The teaching in Bachelor degree mainly focuses on Software Engineering, Software Analysis and Design, and Software Testing, while researches for Master and Doctoral degree students focus

	on Computational Intelligence. Her main research interests are Swarm Intelligence, Artificial Intelligence, Biomedical Engineering, Big Data, Data Science and analytics, Cloud Computing, and Internet of Things. In ETAT, she is a main coordinator of KMITL. *Selected recent publications :* • **Som-in S. and Kimpan W**., "NexusPSO: A Novel Algorithm to Detect Transcription Factor Binding Sites", IAENG International Journal of Computer Science, 45:3, 28 August 2018. • **Tumsri J. and Kimpan W.**, "Applied Finite Automata and Quadtree Technique for Thai Sign Language Translation", In: Ao SI., Kim H., Castillo O., Chan AS., Katagiri H. (eds) Transactions on Engineering Technologies. IMECS 2017. Springer, Singapore, 2018, pp. 351-365. • **Kimpan, W.** and Sirivimonsattaya, P., "Using Mobile Application as an Instrument for Ptosis Diagnosis", Proceedings of International Conference on Intelligent Informatics and BioMedical Sciences (ICIIBMS 2017), Japan, November, 2017, pp. 105-109. • **Kimpan, W.** and Kruekaew, B., "Heuristic Task Scheduling with Artificial Bee Colony Algorithm for Virtual Machines", Proceedings of the Joint 8th International Conference on Soft Computing and Intelligent Systems and 17th International Symposium on Advanced Intelligent, IEEE, 2016, Japan, pp. 281-286.
Wisan Tangwongcharoen	Assistant Professor Wisan Tangwongcharoen is currently an assistant professor in Department of Computer Science, Faculty of Science, King Mongkut's Institute of Technology Ladkrabang (KMITL), Bangkok, Thailand. His teaching includes Information System Development, Small Circuit Integration Program, Web Application, Mobile Application, Object Oriented Analysis and Design. His main research interests are Biomedical Engineering, Small Circuit Integration Program. *Selected recent publications :* • **Tangwongchalearn,** W., Saklertwilai, S., and Pimpunchat, B., "An Aid Detecting Program for Disability by Online Social Network ", The 9th National Conference for Disability and the 4th International Conference for Disability, The Centara Grand Hotel, Bangkok, Thailand, July 26-27, pp. 76-85, 2017. • Rientrakulchai, N., **Tangwongcharoen,** W., Budsara, K. and Churdchomjan W., "The Application of Motion Sensor with Tablet for Scapular Measurement", Proceedings of the 7th Conference of Electrical Engineering Network of Rajamangala University of Technology 2015 (EENET 2015), A-One The Royal Cruise Hotel, Pattaya, Thailand, 27-29 May, 2015, pp. 113-116. (in Thai)
Kridsada Budsara	Assistant Professor Kridsada Budsara is currently an assistant professor in Department of Computer Science, Faculty of Science, King Mongkut's Institute of Technology Ladkrabang (KMITL), Bangkok, Thailand. His teaching includes Database System, Database Design, Data Warehouse Design and Implementation, and Business Analytics in Data Warehouse Using R Language. His reseach interests topics are a development of a system for the active and productive aging on an online social network using the data science technique, prototype of the Disaster Management Information System Development for Public Consciousness Community, and Water Sufferer Center Support Information System Development for Social Community. *Selected recent publications :* • Rientrakulchai, N., Tangwongcharoen, W., **Budsara, K**. and Churdchomjan W., "The Application of Motion Sensor with Tablet for Scapular Measurement", Proceedings of the 7th Conference of Electrical Engineering Network of Rajamangala University of Technology 2015 (EENET 2015), A-One The Royal Cruise Hotel, Pattaya, Thailand, 27-29 May, 2015, pp. 113-116. (in Thai) • **Budsara, K.**, Kaewjinda P., Nithinan C., Kraewnarongkul I.,"A prototype of the Disaster Management Information System Development for Public Consciousness Community", Proceedings of the 7th Conference of Electrical Engineering Network of Rajamangala

	University of Technology 2015 (EENET 2015), A-One The Royal Cruise Hotel, Pattaya, Thailand, 27-29 May, 2015, pp. 153-158. (in Thai)
Rungrat Wiangsripanawan	Dr.Rungrat Wiangsripanawan is currently working as a lecturer in Department of Computer Science, Faculty of Science, King Mongkut's Institute of Technology Ladkrabang (KMITL), Bangkok, Thailand. Her teaching in both undergraduate and graduate courses includes computer security, computer network and cryptography. Her main research interests are cryptography, anonymity, privacy, in particular graphical password security. *Selected recent publications :* • Ratchasan T. and **Wiangsripanawan R.**, "A study of graphical password usability on smartphones in a week," 8th International Workshop on Computer Science and Engineering (WCSE), 2018, pp. 610-617. • Klahan A., Pannoi S., Uewichitrapochana P., and **Wiangsripanawan R.**, " Thai word safe segmentation with bounding extension for data indexing in search engine," 14th International Conference on Computing and Information Technology (IC2IT), Springer, 2018, pp. 83-92.
Kulsawasd Jitkajornwanich	Dr. Kulsawasd Jitkajornwanich is now working as a lecturer in Department of Computer Science, Faculty of Science, King Mongkut's Institute of Technology Ladkrabang (KMITL), Bangkok, Thailand. His research areas are in big spatial data analytics, distributed computing/storage frameworks, and spatio-temporal databases and mining and he is used to participate in a collaboration project between UT Arlington and NOAA-WGRFC/TRWD to develop a flood forecasting system for North Texas. He also worked as a researcher at GISTDA, Geo-Informatics & Space Technology Development Agency under a supervision of Ministry of Science and Technology of Thailand for 2 years, during which GIS- and remote sensing-related projects were conducted. *Selected recent publications :* • Panboonyuen, T., Vateekul, P., **Jitkajornwanich, K.**, Lawawirojwong, S., "An enhanced deep convolutional encoder-decoder network for road segmentation on aerial imagery", Advances in Intelligent Systems and Computing, vol. 566, Springer International Publishing, 2018. • Pant, N., Fouladgar, M., Elmasri, R., and **Jitkajornwanich, K.**, "A Survey of Spatio-Temporal Database Research", Intelligent Information and Database Systems, In: Nguyen, N.T. et al. (eds.), LNAI, vol. 10752, Springer International Publishing. (2018)

Partner number		**P14**
Organisation name & acronym	Eastern Economic Corridor – Human Resource Development Center (EEC-HDC)	

F.3.1 - Aims and activities of the organisation
Please provide a short presentation of your organisation (key activities, affiliations, size of the organisation, etc.) relating to the area covered by the project (limit 2000 characters).

Eastern Economic Corridor – Human Resource Development Centre (EEC-HDC) is an affiliated entity under Thailand Eastern Economic Corridor Office (http://www.eeco.or.th). The primary missions of EEC-HDC includes the human resource planning and development within Thailand's EEC areas based on demand-driven concept. The office is in deep collaboration with universities, vocational colleges, schools as well as Thailand 4.0 target industries (10 s-curves) to perform demand for labour projections covering all 10 target industries in EEC areas. It is also working with those educational institutions to develop programs in all levels in order to response to the demand of the industry.

In addition, EEC-HDC is helping the said institutions to develop training facilities and equipment through the

government funding and private donations.

Only for Partner Country institutions, please provide information on:

Number of Memoranda of Cooperation/Understanding the HEI has signed with HEIs outside their own country?	N/A
Number of students	N/A
Number of Bachelor degrees offered	N/A
Number of Master degrees offered	N/A
Number of PhD degrees offered	N/A
Have you participated in CBHE? If yes, list CBHE projects titles and reference numbers. Describe curricular/ courses developed/ modernised, if any (name of the subject area and courses titles)	N/A

F.3.2 – Role of your organisation in the project
Please describe also the role of your organisation in the project (limit 1000 characters).

P14 has recently helped Burapha University to establish an EEC Automation Park, which will be officially opened in mid 2020. The Automation Park will be a comprehensive training centre for robotic and automation serving modern industries within EEC areas. At present, most strategic partners of the project are Japanese companies, who donate machines and equipment where Thai Government is funding the development of the building and training rooms. The training targets will be set and provided by P14 based on the demand study results ranging from basic skilled labours to design-and-build and system integrators.

In ETAT, P14 in general will help connect the project with wider range of modern industries both existing and prospecting to invest in EEC areas and integrate the ETAT activities with the existing Automation Park project. It can also enable the collaboration between ETAT and education networks (schools, vocational colleges and universities) within EEC areas.

In detail P14 will have the follooing role in the project:

- P14 assist P8 in all administrative problems because of the certification of the ETAT training centers.
- P14 will assist P8-P13 in all administrative work and documents relating to the changes in the curricula using European experience in lifelong education; universities' ranking; assisting in accreditation of the curricula.
- To use the ETAT E-Learning&Collaboration Platform, give input to the platform.
- Give input to the website, to link the website with the EEC-HDC's website, to write articles.
- To disseminate the project using their own networks.
- To include industrial Thai accociations and enterprises in the dissemination.

In the ETAT project, P14 will promote and support the activities such as connecting people from the wide-range areas, creating collaboration ambience between partners, support partners with industrial requirements, etc.

F.3.3 – Curriculum development project *(only for Partner Country institutions)*
Please fill in if you are applying for a curriculum development project

Please confirm that no similar curricula/ courses/modules were developed/modernised in Tempus IV projects in this HEI.	**I confirm**

For new courses

What new courses will the project implement in your HEI?	N/A
For updated courses	
Which existing courses will be updated in your HEI?	N/A

F.3.4 – Modernisation of governance, management and functioning of HEIs *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution (limit 2000 characters)

N/A

F.3.5 – Strengthening of relations between HEIs and the wider economic and social environment *(only for Partner Country institutions)*
Please fill in if you are applying for this type of project and define clear the activities to be held in your institution (limit 2000 characters)

P14 is an authority in the EEC areas to connect HEIs, other levels of educational institutions and industries to promote the demand driven human resource development. The main role of EEC-HDC includes the analysis of demand for labour in 10 target industries and support the educational institutions to create or update curricula in accordance with the said demands. EEC-HDC is holding a panel of experts in all 10 target industries from both HEIs and the key industries. In this aspect, ETAT will help strengthen the relations between HEIs and the industries.

F.3.6 – Expected results and impact *(only for Partner Country institutions)*

What are the expected tangible results from the project in your HEI?	- Graduates and trained personnel competent in Automation 4.0 - Competent trainers in automation and Industry 4.0 - Design and Build and System integrator personnel
How will the impact of these results be measured in your HEI?	- Number of graduates and trainees - Number of SI projects
What financial means and human and other resources will be provided to sustain these results after the project ends?	- Cooperate and support Thai universities in this project - Find business and technology partners to cooperate further projects

F.3.7 - Operational capacity: Skills and expertise of key staff involved in the project

Name of staff member	***Summary of relevant skills and experience, including where relevant a list of recent publications related to the domain of the project.***
Nayot Kurukitkoson	Asst. Prof. Dr Nayot Kurukitkoson is a committee member of EEC-HDC. He also serves as the Dean of Faculty of Engineering at Burapha University. Dr Kurukitkoson is a key person in the demand for labour projection workgroup and will help provide the information about demand for labour in automation industry in ETAT project. He is also an expert in Higher Education curriculum development.
Peerapong Suntornvibhat	Dr. Peerapong Suntornvibhat is a committee member of EEC-HDC responsible in Human Resource Development workgroup. He is an expert in HRD.

F.4 List of Associated Partners

(Where applicable)

Capacity-building projects can involve associated partners who contribute to the implementation of specific project tasks/activities or support the dissemination and sustainability of the project. Associated Partners cannot be responsible for core activities of the project (e.g. management, coordination, monitoring, leader of a work group etc.). ***No financial contribution from the project grant will be allocated to these organisations.***

Name of organisation	Type of institution	Website	City	Country	Role in the project	Activities and related Work Packages
Thaitechron Corporation Group Co., Ltd.	Privat company	http://www.techroncorp.com	Chonburi	Thailand	Will use the ETAT Training Center for their employees; member of the National Resonance Group	Training for employees (WP 9); supports the sustainibility of the project (WP9); give inputs to the need analysis (WP 3)
Vanachai Group Public Co.,Ltd.	Public company	http://www.vanachai.com/en_index.html	Bangkok	Thailand	Will use the ETAT Training Center for their employees; member of the National Resonance Group	Training for employees (WP 9); supports the sustainibility of the project (WP9); give inputs to the need analysis (WP 3)
T.M.C. Industrial Public Co., Ltd.	Privat company	http://www.tmc.co.th	Chonburi	Thailand	Will use the ETAT Training Center for their employees; member of the National Resonance Group	Training for employees (WP 9); supports the sustainibility of the project (WP9); give inputs to the need analysis (WP 3)
Korawan Engineering Part LIMITED PARTNERSHIP	Privat company	http://www.korawanengineer.com	Chonburi	Thailand	Will use the ETAT Training Center for their employees; member of the National Resonance	Training for employees (WP 9); supports the sustainibility of the project (WP9); give inputs to the need analysis (WP 3)

					Group	
Everything Engineering LIMITED PARTNERSHIP	Privat company	https://smelink.net/company/everything-engineering-limited-partnership.html	Nonthaburi	Thailand	Will use the ETAT Training Center for their employees; member of the National Resonance Group	Training for employees (WP 9); supports the sustainability of the project (WP9); give inputs to the need analysis (WP 3)

Please insert rows as necessary

PART G – Impact and Sustainability

G.1 Expected impact of the project

Please explain which target groups will use the project outputs /products /results. Describe how the target groups will be reached and involved during the life of the project and afterwards and how the project will benefit the target group at local, regional, national and/or regional level. Please structure your description according to the different levels of impact and stakeholders.

#	Project results	Who will they impact at national, regional level?	How?
1	Needs analysis	Teaching staff, students, trainees	Taking into account the comments from the needs analysis the outlines will be tuned.
2	Concept of the ETAT Smart Lab	Teaching staff, students, trainees	By use of the concept as the basics of the ETAT Smart Labs.
3	ETAT Smart Lab teaching possibilities	Teaching staff, students, trainees	Defines the scheme of the possibilities of ETAT Smart Lab usage in teaching process.
4	Teaching materials (lessons)	Teaching staff, students, trainees	By integrating the teaching materials in the curricula of the universities.
5	Teaching materials (practice)	Teaching staff, students, trainees	By integrating the teaching materials (hands-on exercises) in the curricula of the universities.
6	E-Learning materials	Teaching staff, students, trainees	By integrating the E-Learning materials (theory and remote labs) in the curricula of the universities.
7	Equipping of Training centers	Teaching staff, students, trainees	As soon as 24 ESL are ready the 6 training centers in Thailand can be equiped and used in teaching process.
8	Testing teaching materials for training centers	Students, trainees	By use of the teaching materials in the education process and evaluation by students/trainees.
9	Improving and modernisation of the curricula	Teaching staff, administrative staff	Recommendations and support of all administrative work in improving the curricula in automation subjects due to the results of WP 5.
10	Translation teaching materials	Teaching staff, students, trainees	By use of the teaching materials in the education

			process in national language.
11	Business and working plan	Trainees, administrative staff, Thai enterprises	By use as a business model for the ETAT Training Centers.
12	Certification of the ETAT training centers	Teaching staff, students, Trainees, administrative staff, Thai enterprises	By application of certified exams in the ETAT Training Centers.

Please insert rows as necessary

Overview of short term impact indicators (during the project EU funding period)

Short term impact	Target groups/potential beneficiaries	Quantitative indicators (in numbers please)	Qualitative indicators
Needs analysis	Teaching staff, students, Trainees	50 participants from Thai enterprises; 4 National Resonance Groups for different branches	Results of needs analysis can be integrated into the ETAT learning materials.
Concept of the ETAT Smart Lab	Teaching staff, students, trainees	Preparing 3 tenders for the hardware/ software of ETAT Smart Labs	The concept is sufficing as a basic for the realization/ assembling of ETAT Smart Labs.
ETAT Smart Lab teaching possibilities	Teaching staff, students, trainees	Teaching possibilities for at least 10 different course topics	The teaching possibilities cover the requirements of Thai universities for EEC in different branches.
Equipping of Training centers	Teaching staff, students, trainees	6 ETAT Training Centers with 24 ETAT Smart Labs (4 labs per Thai university)	The equipping of ETAT Training Centers are completely and in-time.
Testing teaching materials for training centers	Students, trainees	180 students/trainees will test the teaching materials during the project period	The teaching and education materials are understandable and applicable in the teaching process.

Please insert rows as necessary

Overview of long term impact indicators (after the projects EU funding period)

Long term impact	Target groups/potential beneficiaries	Quantitative indicators (in numbers please)	Qualitative indicators
Teaching materials (lessons)	Teaching staff, students, trainees	850 pages of teaching materials; 1.200 students/ trainees will use each year the ETAT learning	Teaching material contains all necessary theoretical topics for an Industry 4.0 automation

		materials	engineering education.
Teaching materials (practice)	Teaching staff, students, trainees	20 different hands-on exercises (practical courses) by use of ETAT Smart Labs; 1.200 students/ trainees will use each year the ETAT learning materials	Teaching material contains important practical lab exercises for an Industry 4.0 automation engineering education.
E-Learning materials	Teaching staff, students, trainees	Integration of 12 E-Learning courses/Remote Labs in the ETAT teaching materials; > 1.000 students/ trainees will use each year the ETAT E-Learning materials	E-learning materials can complement the Industry 4.0 automation engineering education.
Improving and modernisation of the curricula	Teaching staff, administrative staff	Modernisation of 35 curricula in 6 Thai universities	The corresponding curricula in the Thai partner universities will be improved by the recommendations of the ETAT project.
Translation teaching materials	Teaching staff, students, trainees	850 pages translated and checked	All teaching materials is well applicable in national language.
Business and working plan	Trainees, administrative staff, Thai enterprises	Business and working plan for the next 5 years after the end of the project	The ETAT Training Centers in the Thai partner universities are working successfully.
Certification of the ETAT training centers	Teaching staff, students, Trainees, administrative staff, Thai enterprises	12 certified courses for Thai enterprises; 180 participants from Thai enterprises each year in the ETAT Training Centers	Course/training certificates by the ETAT Training Centers are recognized by the Thai enterprises as a well-performed education badge.

Please insert rows as necessary

G.2 Dissemination and exploitation strategy

Please explain how the dissemination will be organised during and after the project's lifetime. Define each target group and what communication channels will be used to reach them and when.

Target Group	**Means of Communication to Reach These Target Groups**	**When**	**Indicators to measure the effectiveness of the means of**

			communication
Project partners	General meetings, web meetings, ETAT Collaboration Platform,special workgroups, everyday communication, E-Mails	During the project's lifetime	Number of participants; number of emails, meetings etc.; number of logged in users in the ETAT Collaboration platform
Teaching staff	Project website, ETAT Collaboration Platform, leaflets, newsletter, social networks, conferences, workshops, ETAT trainings, published ETAT learning courses in the curricula of the Thai partner universities	During the project lifetime and partly also after the project's lifetime (leaflets, newsletter, social networks, curricula)	Hits on the website; number of newsletters; participants in workshops, trainings; number of teachers involved in ETAT learning courses
Students	Project website, social networks, published ETAT learning courses in the curricula of the Thai partner universities	During and after the project's lifetime	Hits on the website; number of students trained by ETAT learning courses
Trainees	Project website, social networks, published ETAT learning courses in the curricula of the Thai partner universities	During and after the project's lifetime	Hits on the website; number of trainees trained in the ETAT Training Centers
Thai enterprises	Survey about ETAT, members of the National Ressonance Groups, seminars, establishing of a network (Thai universities & enterprises), project website, leaflets, newsletter, social networks, business&working plan of the ETAT Training Centers	During and after the project's lifetime	Number of participants in NRGs, hits on the website, number of employees trained in the ETAT Training Centers
Interested internatio-nal educa-tional staff	Project website, conferences, leaflets, newsletter, social networks, int. network of the Edunet World Association (EWA)	During and after the project's lifetime	Number of distributed leaflets, newsletters; number of informed members in the EWA network; participants in conferences

Please insert rows as necessary

G.3 Sustainability

Explain how exploitation activities will ensure optimal use of the results within the project's lifetime and afterwards. Explain how the impact of the project will be sustained beyond its lifetime. Please list the outcomes that you consider sustainable and describe the strategy to ensure their long lasting use beyond the project's lifetime. Also explain how the results will be mainstreamed and multiplied at national/regional level. Describe the strategy foreseen to attract co-funding and other forms of non-EU support for the project.

Sustainable Outcomes	**Strategy to ensure their sustainability**	**Resources necessary to achieve this**	**Where will these resources be obtained?**

6 ETAT Training Centers equipped each with 4 ETAT Smart Labs	Business and working plan for the ETAT Training Centers	Administration, management and steady update of the ETAT Training Centers	Resources are coming from the business work of the ETAT Training Centers (training of employees from Thai enterprises); for the future is planned that Thai enterprises from EEC also will join the ETAT Training Centers by financial support (funding); moreover around the ETAT Training Centers is planned to submit new educational and/or R&D projects for Industry 4.0/digitalization in state promotional programs
Updated curricula in the Thai universities according to the requirements of EEC	Permanent revision of the content in the curricula and corresponding courses	Administrative and teaching work in the university	Usual resources from the university for modernisation of education and study courses
Certificated training courses in the ETAT Training Centers	All teaching staff working in the ETAT Training Center will be trained as a certified ETAT trainer (Train by Trainer)	Certified ETAT teaching staff	After the project each university will have at least 3 certified ETAT trainers; usual resources from the university can be used to continue the method “Train by Trainers”
Teaching materials (theory)	Integration of the ETAT content into the curricula of the Thai universities	Administrative work in the university, teaching staff for realization	Usual resources from the university for modernisation of education and study courses
Teaching materials (practice)	Integration of the ETAT content into the curricula of the Thai universities	Administrative work in the university, teaching staff for realization, ETAT Training Center with ETAT Smart Labs for the hands-on exercises	Usual resources from the university for modernisation of education and study courses; ETAT Training Center as the lab for the students
E-Learning materials including Remote Labs	Integration of the ETAT content into the curricula of the Thai universities	Administrative work in the university, teaching staff for realization, ETAT Training Center with access to ETAT Remote Labs	Usual resources from the university for modernisation of education and study courses; special agreements for free of charge using Remote Labs from other universities (e.g. from UPorto, STU)

Please insert rows as necessary

PART H - Other EU grants

*Please list the **projects** for which the organisations involved in this application have received financial support from EU programmes.*

Programme or initiative	Reference number	Beneficiary Organisation	Title of the Project
Creative Europe	597398	HSD	Moving Digits: Augmented Dance for Engaged Audience (MODI)
Erasmus +	2018-1-DE02-KA202-005228	HSD	INDEX - Industrial Expert
Erasmus +	585796-EPP-l-20l7-I-AT-EPPKA2-CBHE-JP	HSD	Competence centres for automotive engineering and sales management to increase the positive impact on regional economic development in Argentina, Brazil and Mexico (ASCENT)
INTERREG V A Deutschland Nederland	153201	HSD	Rahmenprojekt innovative Ennergieprodukte - EnerPRO
Erasmus +	2017-1-AT01-KA201-035034	HSD	Engineering Literacy Online - Teachers as Medium for Change
Horizon 2020	725349	HSD	Dialogue About Radicalisation and Equality (DARE)
INTERREG V A Deutschland Nederland	204100	HSD	High Potentials Crossing Borders
INTERREG V A Deutschland Nederland	142156	HSD	Smart Production
Creative Europe: Culture	552469	HSD	The People's Smart Sculpture
Tempus	544010-TEMPUS-1-2013-1-DE-TEMPUS-JPHES	HSD	Trainings in Automation Technologies for Ukraine (TATU)
FP 7	609775	HSD	Interfaces, the Art of Science
Lifelong Learning Programme	510484-LLP-1-2010-1-GR-LEONARDO-LMP	HSD	Health Reporting Training Project
Lifelong Learning Programme	518878-LLP-1-2011-1-DE-KA2-KA2MP	HSD	Kids2Write
Lifelong Learning Programme	502106-LLP-1-2009-1-BE-ERASMUS-ECUE	HSD	CoNeT: Co-operative Network Training
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2018-1-DE01-KA203-004220	UAntwerp	Innovative online learning environments:using business case studies in higher education: (e3cases)
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2018-1-EL01-KA203-047890	UAntwerp	Platform for Advancement of Self (PAS)
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2018-1-BE02-KA203-046861	UAntwerp	DEMOPHAC (Development of a model for nurses' role in interprofessional pharmaceutical care)
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2016-1-DE01-KA203-002900	UAntwerp	RMB - Re-use of modernist buildings. Design tools for sustainable transformations
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2016-1-LU01-KA203-013830	UAntwerp	SENSE in transnational transport in the EU
Erasmus+ KA2 Strategic Partnerships in the field of education, training	2016-1-SE01-KA201-022177	UAntwerp	RefuEdu - Exchange of knowledge and good practice to enhance the education of refugee and asylum

and youth			seeking youth
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2016-1-NL01-KA201-022997	UAntwerp	TeCoLa - Pedagogical differentiation through telecollaboration and gaming for intercultural and content integrated language teaching
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2016-1-FR01-KA203-024171	UAntwerp	IDEAL - Infectious Diseases teaching Europe/Africa Learning
Erasmus+ KA2 Capacity Building in the field of Higher Education	2015-3085/001-001	UAntwerp	IMPALA - Internationalisation and Modernisation Programme for Academics, Leaders and Administrators
Erasmus+ KA2 Capacity Building in the field of Higher Education	2015-3208/001-001	UAntwerp	Citylabs: Engaging Students with Sustainable Cities in Latin-America
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2017-1-LI01-KA203-000088	UAntwerp	Fostering learner-centered education in the field of taxation
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2017-1-NL01-KA203-035207	UAntwerp	Working in Europe to Connect Talent Development in Higher Education (WeTalent)
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2017-1-BE02-KA201-034714	UAntwerp	ARTIFEX
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2017-1-CZ01-KA201-035502	UAntwerp	Leading Learning by Networking project (LELENET)
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2017-1-IT01-KA202-006140	UAntwerp	Simulation of Logistics and Transport processes (SIMULTRA)
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2017-1-IE01-KA201-02563	UAntwerp	DEAPS
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2017-1-ES01-KA203-037948	UAntwerp	Interlingual Live Subtitling for Access (ILSA)
Erasmus Mundus Action 2	2014-0880	UAntwerp	EUR∞SA: -Europe & South Africa Sustainable Partnership for Human Development
Erasmus Mundus Action 2	2013-2712	UAntwerp	EUROSA+: Europe & South Africa Partnership for Human Development
Erasmus Mundus Action 2	2013-2588	UAntwerp	AMIDILA - Academic Mobility for Inclusive Development in Latin America
Erasmus Mundus Action 2	2013-2550	UAntwerp	JoinEU-SEE - PENTA – EU & South Eastern Europe: Participating, Exchanging and Networking in a Transnational Alliance for Internationalization in Higher Education
Erasmus+ KA2 Strategic Partnerships in the field	2014-1-BE02-KA200-000441	UAntwerp	Communication for Professionals – Nursing (ComforPrN)

of education, training and youth			
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2014-1-NL01-KA200-001295	UAntwerp	Professional Capacity dealing with Diversity
Erasmus+ KA2 Strategic Partnerships in the field of education, training and youth	2014-1-UK01-KA200-001821	UAntwerp	Interactive Teaching in Languages with technology (iTILT2)
Erasmus+ KA3 Policy Reform	2015-388450-EPP-1-2014-2-NL-EPPKA3-PI-POLICY	UAntwerp	Focus on Automatic Institutional Recognition
EUROPE FOR CITIZENS	562858-CITZ-1-2015-1-IT-CITIZ-REMEN	UNIOVI	Wall and Intergration: Images of Europe Building (WAI)
KA2 STRATEGIC PARTNERSHIP PROJECT	561703-EPP-1-2015-1-UK-EPPKA2-CBHE-JP	UNIOVI	Smart Control Systems for Energy Management: New Master Degree (SEM SEM)
KA2 STRATEGIC PARTNERSHIP PROJECT	2014-1-IT02-KA203-003482	UNIOVI	Biotech-Ma: Teaching biotechnology for human health: from the bench to the market
KA2 STRATEGIC PARTNERSHIP PROJECT	2014-1-ES01-KA201-004737	UNIOVI	EU Xarxa Clau
KA2 STRATEGIC PARTNERSHIP PROJECT	2014-1-LT01-KA203-000550-999848647	UNIOVI	Opening Universities for Virtual Mobility (OUVM)
TEMPUS	517401-TEMPUS-1-2011-1-ES-TEMPUS-JPCR	UNIOVI	Clean Energy and Research in Environmental Studies (CERES)
ALFA III CID	CID-DCI-ALA719.09.01/10/21526/245-484/ALFAIII (2010)58	UNIOVI	Conocimiento, inclusión, desarrollo
LLP ERASMUS JEAN MONNET	64797-EPP-1-2015-1-ES-EPPJMO-PROJECT	UNIOVI	En vivant l`Europe (EVE)
LIFELONG LEARNNING ERASMUS JEAN MONNET	553504-EPP-1-2014-1-ES-EPPJMO-PROJECT	UNIOVI	Les effects de l´integration europèenne sur la rapprochement èconomique et fiscale des Ètats membres (IEREF)
LLP MULTILATERAL PROGRAMME MULTILATERAL PROJECT	538716-LLP-1-2013-1-IT-ERASMUS-EQR	UNIOVI	Join European Doctorate in Women´s and Gender Sutidies (EDGES)
LIFELONG LEARNING PROGRAMME: MULTILATERAL PROJECT	526843-LLP-1-2012-1-ES-ERA,IS-ESMO	UNIOVI	Integrated Solution to Virtual Mobility Barries (UBICAMP)
LIFELONG LEARNING PROGRAMME ERASMUS ECUE	527793-LLP-1-2012-1-FI-ERASMUS-ECUE	UNIOVI	On the borders betwenn residential child care and mental health treatment in Europe (RESME)
LIFELONG LEARNING PROGRAMME CULTURE PROGRAMME	CECULT2014/COOP2 2014-2014 / 001 - 001	UNIOVI	Women´s creativity since the Modern Movement (MOMOWO)
LIFELONG LEARNING PROGRAMME NETWORK	531150-LP-2012-NL-KA3-KA3MP	UNIOVI	Social Networks in Theacher Education (SoNetTE)
LIFELONG LEARNING PROGRAMME ERASMUS NETWORKS	526773-LLP-1-2012-4843 / 001-001	UNIOVI	Science for prevention academic network (SPAN)
LIFELONG LEARNING PROGRAMME ERASMUS NETWORKS	527877-LLP-1-2012-1-UK-ERASMUS-ENW	UNIOVI	Strategic Alignemente of Electrical and Information Engineering in European Higher Education Insitutiones (SALEIE)
Erasmus+	2017-1-PT01-KA103-035262	UPorto	WORK+: Working Opportunities to Reinforce Knowledge
Erasmus+	2017-1-PT01-KA103-035324	UPorto	UNORTE International

Erasmus+	2017-1-PT01-KA107-035318	UPorto	MOBILE+ 3: MOBility for International Learning Experiences 3
Erasmus+	2017-1-PT01-KA107-035562	UPorto	MARE NOSTRUM
Erasmus+	2017-1-PT01-KA107-035465	UPorto	Merging Voices
Erasmus+	2017-I-PT01-KA107- 035575	UPorto	JAMIES: Joint Academic Middle East and South – Europe Mobility Scheme
Erasmus+	2017-1-PT01-KA203-035790	UPorto	GOAL: Geoethics Outcomes and Awareness Learning
Erasmus+	586107-EPP-1-2017-1-CO-EPPKA2-CBHE-JP	UPorto	EMPLE-AP: Observatorio para la inserción laboral y fortalecimiento de la empleabilidad en países de la Alianza del pacífico
Erasmus+	585760-EPP-1-2017-1-AM-EPPKA2-CBHE-JP	UPorto	PRINTeL - Change in Classroom: Promoting Innovative Teaching & Learning to Enhance Student Learning Experience in Eastern Partnership Countries
Erasmus+	586329-EPP-1-2017-1-PT-EPPKA2-CBHE-JP	UPorto	RecMat - Recognition Matters
Erasmus+	585845-EPP-1-2017-1-ES-EPPKA2-CBHE-JP	UPorto	CLASS: Development of the interdisciplinary master program on Computational Linguistics at Central Asian Universities
Erasmus+	586000-EPP-1-2017-1-PT-EPPKA2-CBHE-JP	UPorto	BUzNet – B-learning Uzbekistan Veterinary Network
Erasmus+	586264-EPP-1-2017-1-IT-EPPKA2-CBHE-JP	UPorto	DHIP: Development of Higher education istitutions Internationalization Policies
Erasmus+	588387-EPP-1-2017-1-UK-EPPKA2-KA	UPorto	AHEH - Arts and Humanities Entrepreneurship Hubs
Erasmus+	2017-1-PL01-KA202-038672	UPorto	Skills4Adherence - Increasing the capacity of medical professionals to manage patient adherence and polytherapy in elderly
Erasmus+	2017-1-HU01-KA203-035921	UPorto	LEA - Reading in Europe today - Reading and Writing Literary Texts at the Age of Digital Humanities (Lire en Europe Aujourd'hui)
Erasmus+	2017-1-NO01-KA204-034182	UPorto	ReGap - Reducing the Educational Gap for migrants and refugees in EU countries with highly relevant e-learning resources offering strong social belonging
Erasmus+	2017-1-UK01-KA203-036723	UPorto	STALWARTS – Sustaining teachers and learners with the arts
Erasmus+	2017-1-IE01-KA201-025698	UPorto	THRIECE: Teaching for Holistic, Relational and Inclusive Early Childhood Education
Erasmus+	2017-1-CY01-KA203-026745	UPorto	EPUM - Emerging Perspectives on Urban Morphology: Researching and Learning through multiple practices
Erasmus+	590192-EPP-1-2017-1-LU-EPPKA3-PI-FORWARD	UPorto	EWP2 – Erasmus without Paper 2.0
Intra-Africa	591872-PANAF-1-2017-1-DZ-PANAF-MOBAF	UPorto	ACADEMY - African Trans-Regional Cooperation through academic mobility
Erasmus+	574426-EPP-1-2016-1-FR-EPPKA1-JMD-MOB	UPorto	SERP+: Surface, Electro, Radiation and Photo-Chemistry Plus

Erasmus+	573760-EPP-1-2016-1-ES-EPPKA2-CBHE-JP	UPorto	TASE - Tuning Asia-South East
Erasmus+	573674-EPP-1-2016-1-ES-EPPKA2-CBHE-SP	UPorto	e-VAL: Exploitation des Compétences et Valorisation des acquis pour une Meilleure Insertion et Visibilité professionnelles
Erasmus+	575907-EPP-1-2016-1-EL-EPPKA2-SSA	UPorto	Mu.SA - MUseum Sector Alliance
Erasmus+	2016-1-PL01-KA205-025899	UPorto	VIAME - Values in Action – Methods Exchange
Erasmus+	2016-1-NO01-KA204-022090	UPorto	DOTRAR - Developing on-line training resources for adult refugees
Erasmus+	2016-1-CZ01-KA203-023949	UPorto	ENAI - European Network for Academic Integrity
Erasmus+	2016-1-UK01-KA203-024648	UPorto	CertSRA - Certificate in Social Responsibility Auditing
	2016-1-PT01-KA201-022986	UPorto	ELBigMAC: Educational Lab - Big Machine
Erasmus+	2016-1-ES01-KA204-024999	UPorto	SACHI - Sharing Childhood II
Erasmus+	2016-1-ES01-KA203-025646	UPorto	SUCTI - Systemic University Change Towards Internationalization
Erasmus+	2016-1-FR01-KA203-023980	UPorto	NEW FACES
Erasmus+	2015-1-PT01-KA201-012989	UPorto	CREARTE: Creative Primary School Partnerships with Visual Artists
Erasmus+	2015-1-PT01-KA202-012915	UPorto	Ad-Tech – European Harmonized Training for Personnel working with Adhesive Bonding Technology
Erasmus+	561945-EPP-1-2015-1-BE-EPPKA2-CBHE-JP	UPorto	NutriSEA: Network of universities and enterprises for training in food in Southeast Asia
Erasmus+	564513-EPP-1-2015-1-ES-EPPKA1-JMD-MOB	UPorto	WINTOUR: Wine Tourism Innovation
Erasmus+	2015-1-PL01-KA203-00116621	UPorto	WISE: Widening Interdisciplinary Sustainability Education
Erasmus+	2015-1-DE02-KA202-002274	UPorto	VDI - Development of a concept for the documentation and validation of non-formal and informal learning outcomes in engineering
Erasmus+	562148-EPP-1-2015-1-NL-EPPKA3-PI-FORWARD	UPorto	CALOHEE: Measuring and Comparing Achievements of Learning Outcomes in Higher Education in Europe
Erasmus+	1253645	UPorto	TOX-OER: Learning Toxicology through Open Educational Resources
Erasmus+	2015-1-UK01-KA201-013752	UPorto	LINK – Learning in a New Key
Erasmus+	2015-1-AT01-KA203-005033	UPorto	UNIBILITY - University meets Social Responsability
Erasmus+	562237-EPP-1-2015-1-BE-EPPKA3-PI-FORWARD	UPorto	HE4u2: Integrating cultural diversity in Higher Education
Erasmus+	561668-EPP-1-2015-1-ES-EPPKA2-CBHE-JP	UPorto	REVET: Reinforcement of Veterinary Studies in Asian Universities
Erasmus+	561843-EPP-1-2015-1-ES-EPPKA2-CBHE-JP	UPorto	PONCHO: Internationalization of Latin American peripheral Univeristies through sustainable integration and inclusive

			implementation of International Relations Offices
Erasmus+	2015-1-DE01-KA203-002196	UPorto	ProCivic-Stat
Erasmus +	562264-EPP-1-2015-1-BE-EPPKA3-PI-FORWARD	UPorto	Erasmus without Paper
Erasmus +	562147-EPP-1-2015-1-BE-EPPKA3-PI-FORWARD	UPorto	EFFECT – Feasibility study for a European Forum for Enhanced Collaboration in Teaching
Erasmus +	2015-1-PT01-KA201-013059	UPorto	Managing for @ School of Success
Erasmus +	2015-1-SE01-KA201-012269	UPorto	SPREAD - Spread share - connecting trainers of deaf pupils in Europe
Erasmus +	2015-1-FR01-KA202-015143	UPorto	Xeno-Tolerance
Erasmus +	561897-EPP-1-2015-1-ES-EPPKA2-CBHE-JP	UPorto	SOLA: Spin off Lean Acceleration
H2020-GV-2016-2017 (Green Vehicles)	Project ID: 769944	CUAS	Smart-Taylored L-category Electric Vehicle demonstration in hEtherogeneous urbanuse-cases
Erasmus+ KA2 Capacity Building in Higher Education, GA 2015-3195/001-001	Grant Agreement: 2015-3195/001-001	CUAS	Educational Modules for Electric and Electronic Circuits Theory and Practice following an Enquiry-based Teaching and Learning Methodology supported by VISIR
Erasmus+ Strategic Partnership	Project Reference: 2016-1-RO01-KA202-024519	CUAS	Transnational Technology Transfer Training: Training Blueprints for Accelerated Growth
Erasmus+ KA2 - Cooperation for Innovation and the Exchange of Good Practices Strategic Partnerships	Project Reference: 2016-1-ES01-KA203-025327	CUAS	Platform Integration of Laboratories based on the Architecture of visiR
Interreg SI-AT 2014-2022	SI-AT 2014-2022	CUAS	MMO - 3D - Stärkung der F&I in technischen und wirtschaftlichen Schwerpunktbereichen durch grenzübergreifende Zusammenarbeit relevanter Akteure
Erasmus+	2017-1-SK01-KA103-035043	STU	Learning Mobility for Individuals within Europe -Student and Staff Mobility with Programme Countries
Erasmus+	2017-1-SK01-KA107-035039	STU	Learning Mobility for Individuals within Europe -Student and Staff Mobility between Programme Countries and Partners Countries
Erasmus+	2018-1-SK01-KA103-045954	STU	Learning Mobility for Individuals within Europe -Student and Staff Mobility with Programme Countries
Erasmus+	2018-1-SK01-KA107-045949	STU	Learning Mobility for Individuals within Europe -Student and Staff Mobility between Programme Countries and Partners Countries
ERASMUS+	2017-1-CZ01-KA202-035479	STU	MoVET - Modernisation of VET through Collaboration with the Industry
H2020	H2020 ICT-20 2015	STU	NEWTON - Networked Labs for

			Training in Sciences and Technologies for Information and Communication
H2020	692480	STU	IoSense - Flexible FE/BE Sensor Pilot Line for the Internet of Everything
H2020	737434-1 - ECSEL-RIA	STU	CONNECT - Innovative smart components, modules and appliances for a truly connected, efficient and secure smart grid
H2020	737417-2 - ECSEL-IA	STU	R3-PowerUP - 300mm Pilot Line for Smart Power and Power Discretes
H2020	755151-RIA	STU	MEACTOS - Mitigating Environmentally Assissted Cracking Through Optimisation of Surface
H2020	783274 - ECSEL-RIA	STU	5G_GaN2 - Advanced RF Transceivers for 5G base stations based on GaN Technology
H2020	783174 - ECSEL-RIA	STU	HiPERFORM - High performant Wide Band Gap Power Electronics for Reliable, energy eFficient drivetrains and Optimization thRough Multi-physics simulation
H2020	783158 - ECSEL-IA	STU	REACTION - first and euRopEAn siC eigTh Inches pilOt liNe
7RP	605149	STU	ENEN RUII- Strengthening of Cooperation and Exchange for Nuclear Education and Training between the European Union and the Russian Federation
7RP	249674	STU	TRASNUSAFE-Tranining Schemes on nuclear safety culture
Modernisation of governance, management and functioning of HEIs	573907-EPP-1-2016-1-MY-EPPKA2-CBHE-JP	BUU	Strategic IP Management for Effective R&I in Asian Higher Education
Modernisation of governance, management and functioning of HEIs	574092-EPP-1-2016-1-SK-EPPKA2-CBHE-JP	BUU	Assessing and Improving Research Performance at South East Asian Universities
Strengthening of relations between HEIs and the wider economic and social environment	585785-EPP-1-2017-1-AT-EPPKA2-CBHE-JP	BUU	Competence centres for the development of sustainable tourism and innovative financial management strategies to increase the positive impact of local tourism in Thailand and Vietnam
Strengthening of relations between HEIs and the wider economic and social environment	585934-EPP-1-2017-1-FR-EPPKA2-CBHE-JP	BUU	Improving enGineers' Employability with multi-Competencies, Knowledge and Opportunities
Curriculum development	586137-EPP-1-2017-1-TH-EPPKA2-CBHE-JP	KMUTNB	Curriculum Development of Master's Degree Program in Industrial Engineering for Thailand Sustainable Smart Industry
Curriculum development	561515-EPP-1-2015-1-AT-EPPKA2-CBHE-JP	KU	South East Asia Academy for Beverage Technology
Strengthening of relations between HEIs and the wider economic	561630-EPP-1-2015-1-FR-EPPKA2-CBHE-JP	KU	Universities as key partners for the new challenges regarding food safety & quality in ASEAN

and social environment			
Curriculum development	561668-EPP-1-2015-1-ES-EPPKA2-CBHE-JP	KU	Reinforcement of Veterinary Studies in Asian Universities
Modernisation of governance, management and functioning of HEIs	561905-EPP-1-2015-1-AT-EPPKA2-CBHE-JP	KU	Advancing university financial management practices in Southeast Asia
Strengthening of relations between HEIs and the wider economic and social environment	573701-EPP-1-2016-1-UK-EPPKA2-CBHE-JP	KU	Southeast Asian Social Innovation Network
Curriculum development	573957-EPP-1-2016-1-TH-EPPKA2-CBHE-JP	KU	Joint Master Degree - Food Security and Climate Change
Strengthening of relations between HEIs and the wider economic and social environment	574019-EPP-1-2016-1-CZ-EPPKA2-CBHE-JP	KU	Support of International Platform Merging Labour and Education
Strengthening of relations between HEIs and the wider economic and social environment	585785-EPP-1-2017-1-AT-EPPKA2-CBHE-JP	KU	Competence centres for the development of sustainable tourism and innovative financial management strategies to increase the positive impact of local tourism in Thailand and Vietnam
Strengthening of relations between HEIs and the wider economic and social environment	585934-EPP-1-2017-1-FR-EPPKA2-CBHE-JP	KU	Improving enGineers' Employability with multi-Competencies, Knowledge and Opportunities
Curriculum development	586157-EPP-1-2017-1-TH-EPPKA2-CBHE-JP	KU	Participatory and Integrative Support for Agricultural Initiative
Curriculum development	586245-EPP-1-2017-1-FR-EPPKA2-CBHE-JP	KU	Learning to Investigate by Field Experiment for Southeast Asian Emerging Diseases
Curriculum development	561515-EPP-1-2015-1-AT-EPPKA2-CBHE-JP	KMITL	South East Asia Academy for Beverage Technology

Please insert rows as necessary.

*Please list **other EU grant proposals** submitted by your organisation, or by any partner organisation in this project proposal. For each grant application, please mention the EU Programme concerned and the amount requested.*

Programme concerned	Beneficiary Organisation	Amount requested

Please insert rows as necessary.

PART I - Check List

*Please make sure that you **fully** completed each part of this application form, as follows:*

- **x** PART D - RELEVANCE OF THE PROJECT
- **x** PART E - QUALITY OF THE PROJECT DESIGN AND IMPLEMENTATION
  - **x** E.4 Logical Framework Matrix
  - **x** E.5 Workplan
  - **x** E.6 Work packages
- **x** PART F - Quality of the Project Team and Cooperation Arrangements
- **x** PART G - Impact and Sustainability
- **x** PART H - Other EU grants
- **x** PART I - CHECK LIST