

Building Skills 4.0 through University and Enterprise Collaboration

SHYFTE 4.0

WP5: SHYFTE 4.0

D5.1: Project Handbook vs:1.0.0

Deliverable Lead and Editor: Yacine OUZROUT, ULL

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Abstract

This document identifies the Shyfte 4.0 Project Management Handbook. It has as a purpose to ensure that all project partners cooperate in a smooth, effective and coherent way in order to develop the project activities within the agreed timetable so to achieve the expected milestones and results.

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Deliverable Lead	Yacine OUZROUT, ULL
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Internal Reviewer 2	J. Sarraipa, UNL
Internal Reviewer 3	A. Sali, UPM
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Status

This deliverable is subject to final acceptance by the EACEA.

Further Information

<http://www.shyfte.eu/>

Project Partners:



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1. Executive Summary

The Project Management Handbook serves to ensure that all project partners cooperate in a smooth, effective and coherent way in order to develop the project activities within the agreed timetable to achieve the expected milestones and results.

It provides clear specifications on the characteristics of the project management, the structures and bodies needed for the achievement of the Shyfte 4.0 project goals, includes a detailed description of the Work Packages coordinators, representatives for the project's core tasks and a thorough budget description.

The Shyfte 4.0 Handbook is based on and extends the project procedures as defined within the Shyfte 4.0 consortium agreement. It is one of the cornerstones for achieving the project results, identified as follows:

- Grant Agreement (GA): Contractual agreement between the beneficiaries and the European Commission.
- Partnership Agreement (PA): Contractual agreement dealing with legal aspects between the Shyfte 4.0 project beneficiaries
- Project Handbook: Defines guidelines and best practices for the daily project work. Once approved by the Shyfte Board of Partners, as defined in the PA, it is also binding on partners.

In summary, the Project Management Handbook, sets the rules to:

- Create confidence in the quality of the work that the consortium will perform by showing how the project will be carried out, measured, monitored, accounted for and safeguarded during and after development,
- Define roles and responsibilities, with emphasis on the required skill sets to address the complexities and risks of the project,
- Show how changes and problems can be identified and reported,
- Clearly define the content for each project result.

The Project Management Handbook addresses the following aspects:

1. Presentation of the project, the partners, the work plan and budget, as in chapters 3, 4 and 5.
2. Project management structure and procedures as in chapters 6, 7 and 8.
3. Quality assurance system in chapter 9.
4. Risk Management procedures in chapter 10
5. Information Management in chapter 11

Although formally delivered only at Month 4, the Project Handbook is however a “living concept”, in that its content may be adapted through the project duration in order to reflect changes made within the project management procedures.

2. Introduction

The scope of this deliverable is to describe what will be delivered within the project framework and also to describe the boundaries of the Shyfte 4.0 project. The project framework, its goals, objectives and scope have been provided in the approved application form which include the detailed description of the work, at which the work plan, budget, implementation timeframe schedules and deliverables and outputs. It is within this framework that the Project Management Plan will find its application.

The present handbook is aligned with the **Grant Agreement** and the **Partnership Agreement** as signed by all the partners.

The formal rules concerning the project, its management and execution are laid down in the following documents:

1. Shyfte 4.0 Application Form: Description of the objectives and the project's activities. In the Application is included as well the work plan and Partner's tasks;
2. Partnership Agreements between the coordinator and the consortium members (considered an integral Annex of the present document).

3. The Consortium

The Shyfte 4.0 project consortium is composed of ten partners from six countries:

EU Program Countries

1. ULL - Université LUMIERE Lyon 2, **France (coordinator)**
2. UNS - University of Sannio, **Italy**
3. UNL – University Nueva of Lisboa, **Portugal**
4. COGNITUS - SME, **France**

ASIA Partners Countries

1. CMU - Chiang Mai University, **Thailand**
2. KU - Kasetsart University, **Thailand**
3. CDU - Chengdu University, **China**
4. CUIT - Chengdu University of Information Technology, **China**
5. UPM - Universiti Putra Malaysia, **Malaysia**
6. UTM - Universiti Teknologi Malaysia, **Malaysia**

Associated Partners

Lind Homecare (SME, France); KnowledgeBiz (SME, Portugal); MCMC (Gov. Agency, Malaysia); CAIRO (Stakeholder, Malaysia)

4. Project Summary and Objectives

The main motivation of Shyfte 4.0 is to bring together the targeted countries with their specific skills in ICT to optimize and manage productivity, human labour, safety and social issues related to Industry 4.0.

Asian Partner Countries (PCs) involved in this proposal are facing rapid radical changes in their industrial systems, due to the high expectation from their stakeholders to be efficient, costs efficient by following the 4th wave of industrial revolution to improve their skills and competencies. Asian PCs need better learning and teaching methodologies to get clear instructions on how to prepare workforce for the industry of the future, and for HEIs, in association with SMEs, to bridge the skills gap and boost the job market at regional, national and international level.”

The overall aims of Shyfte 4.0 project are:

- To support academic and administrative staff in Asian HEIs to design and implement new methodology and learning materials to enhance and improve the competencies and skills related to Industry 4.0. This will enable HEIs organisations to aligning their learning program strategy both to the expectation of the regional industry and the global labour market.
- To build and strengthen links between HEIs and Industry, and promote the job market by reducing the skills gap.
- To build Skills 4.0 Labs or Learning centers of excellence in Asian Partner's countries to enable them to become the reference center in their respective countries and disseminate the results of the project nationally and regionally.

Shyfte 4.0 will provide the basic and novel skills development strategy in both EU and Asia, focusing on four research domains:

- Industrial Engineering and Management,
- Software Engineering and Big Data Analytics,
- Wireless and Networks Analytics,
- Artificial Intelligence.

The Specific Project Objectives are to:

- Analyse the **gap between the skills** acquired in HEIs and the skills required by the industry of the future (WP1),
- Develop a **Skills 4.0 based learning framework** (WP1),
- **Design and implement teaching programs** and learning materials for four domains of expertise (WP1 & WP2),
- **Implement four Pilots**, based on the four domains of expertise, in the HEIs of the Asian partners (WP2),
- Develop a **Skills 4.0 based Training and Learning Center of Excellence** in each Partner country (WP2),
- Define a **Quality Assurance Plan** for the learning programs based on quality audits to ensure the sustainability (WP3).
- Develop a successful **Exploitation and Dissemination strategy** (WP4)

5. Shyfte 4.0 Work Plan

5.1 Project Work Plan & Time Plan

Shyfte divided the 3 years activities into 3 stages and 5 inter-related work packages.

Part1: a prospective review will be conducted, M1-8. A literature review on Industry 4.0 and required skills in Asia and Europe. A set of questions will be conducted and compiled in questionnaires and reported by the target partners. A report (M8), consists of an overview on Skills 4.0 vision in both Europe and Asia and the Skills needed to empower Asian HEIs and Industries. A workshop grouping trainers/teachers and academic institution will be set up in Thailand to complete the vision of the skills needed for HEIs in association with Industry 4.0.

Methodology: Top down approach mixing literature review and conducting questionnaires to identify the real requirements in developing skill sets in the target partner's countries

Part2: dedicated to develop the learning programs and materials for training and teaching, M12-M24. Shyfte proposes 4 meta-training program:

1. Skills needed for Industry 4.0;
2. Skills to implement in HEIs;
3. Advanced teaching and learning strategies for trainers and for students;
4. Quality assessments (audits) for trainers and students.

These programs will be implemented in 4 specific pilots:

- Pilot 1: Industrial Engineering and Management in Thailand (CMU/KU with all partners),
- Pilot 2: Software Engineering &–and Big Data Analytics in China (CUIT/CDU with all partners),
- Pilot 3: Wireless and Networks Analytics in Malaysia (UPM and all partners),
- Pilot 4: Artificial Intelligence in Malaysia (UTM and all partners).

For each pilot, the European countries train skills 4.0 trainers (10/PCs) and certify them to be able to train and coach students (20 students/skills 4.0).

Methodology: The training programs addresses both “train-the-trainer” and “train-the-students” types of training. The development will follow the appropriate adaptive learning approach for skills enhancement.

A Skills 4.0 based Training and Learning Center of Excellence will be developed in each Partner country (WP2) to disseminate and sustain the outcomes of the project.

During the project, **50 students per PC** will benefit from the Shyfte 4.0 four domains. Each program will take 5 days. At least, **60 trainers/teachers and 300 students will be trained**. With this approach, skills and knowledge transfer will be fast and efficient. The number of trained teachers will be adjusted according to the requirement.

Part3: Shyfte 4.0 goes in quality assessment training process and project. The EU countries will develop the quality certification for trainers to validate the skills and develop standard/procedures of the programs.

Five Work Packages are defined (WPs):

- WP1 Preparation - CMU-COGNITUS
- WP2 Development - ULL-UPM
- WP3 Quality Plan - CUIT-UNS
- WP4 Dissemination and Exploitation - UNL-CDU
- WP5 Management - ULL

The work plan for the first year of the project is described in the following Gantt chart:

SHYFT 4.0						Year 1											
WP	WP LEADER	DELIVRABLE	WP/Task	FROM	TO	1	2	3	4	5	6	7	8	9	10	11	12
						déc-18	janv-19	févr-19	mars-19	avr-19	mai-19	juin-19	juil-19	####	sept-19	oct-19	nov-19
						WP5 1 ULL			WP1 2 CMU		WP1 4 UNL				WP1 3 CDU		WP1 1 UNS
WP1	CMU & COGNITUS		PREPARATION	1	16												
T1.1	ULL	D1.1	Literature review of Industry4.0 in Europe, Asia and over the world	1	6						D1.1 v1						
T1.2	UNS	D1.1	Identify the skills requested by Industry4.0- Questionnaires; workshop with Industry; relevant reports from EU commission	1	6						D1.1 v2						
T1.3	UNL	D1.2	Analyse the gap by overlapping the skills4.0 with the existing skills in HEIs. Develop an emerging model (emerging skills; disparate skills, shift skills,...)	6	12												D1.2
T1.4	CUIT	D1.3	Develop the Skills 4.0 learning framework - Identify the relationship between the skill4.0 and the SHYFTE 4 domains	6	12												D1.3
T1.5	ULL	D1.4	Design teaching programs and learning materials for the 4 domains.	6	16												
WP2	ULL & UPM		DEVELOPMENT (implementation of shyfte4.0 framework - Learning and training	10	36												
T2.1	KU-CMU	D2.1	Pilot in Domain1- Industrial engineering and management (Training materials)	10	32												
T2.2	CUIT-CDU	D2.2	Pilot in domain2 - Software Engineering and big data analysis (Training materials)	10	32												
T2.3	UPM-CUIT	D2.3	Pilot in domain3 Wireless networks analytics (Training materials)	10	32												
T2.4	TMU-UPM	D2.4	Pilot in Domain4 - Artificial Intelligence (Training materials)	10	32												
T2.5	UNL	D2.5, D2.6 & D2.7	Develop the skills4.0 training and learning center	18	36												
WP3	CUIT & UNS		QUALITY PLAN	1	36												
T3.1	UNS	D3.1 v1	Strategic Quality Plan Quality plan to verify the effectiveness of the learning program	1	12												D3.1 v1
T3.2	UNL	D3.1 v2	Formation Quality Plan (FQP)	12	36												
T3.3	CUIT	D3.2	Quality audits to analyse and evaluate the transfer of skills4.0 Measuring the impact of these skills in SME	24	36												
T3.4	CMU	D3.3	Sustainability assurance plan	24	36												
WP4	UNL & CDU		DISSEMINATION AND EXPLOITATION	1	36												
T4.1	UNS	D4.1	Dissemination and exploitation strategy (Create strategic plan)	1	36			D4.1									
T4.2	CDU	D4.5	Awarness dissemination and acceptance of emerging skills4.0	4	18												D4.5 v1
T4.3	UNL	D4.2, D4.3 & D4.4	Exploitation and dissemination for action (Web site, meetings, ...)	4	36				D4.2								D4.3 v1
T4.4	ULL	D4.6 & D4.7	Scientific and technical dissemination (Conferences, workshops, seminars, ...)	12	36												D4.7 v1
WP5	ULL		MANAGEMENT	1	36												
T5.1	ULL	D5.1 & D5.2	Project management coordination and reporting	1	36			D5.1 v1									
T5.2	UNS	D5.3	Quality, Risk and Innovation management	1	36												D5.3 v1

The work plan for the second year of the project is described in the following Gantt chart:

SHYFT 4.0					FROM		TO		Year 2										
WP	WP LEADER	DELIVRABLE	WP/Task	13					14	15	16	17	18	19	20	21	22	23	24
								déc-19	janv-20	févr-20	mars-20	avr-20	mai-20	juin-20	juil-20	août-20	sept-20	oct-20	nov-20
										WP2 2 ULL	WP2 4 UNS	WP2 3 KU		WP2 5 CUIT		WP2 1 UPM		WP2 2 COG	
WP1	CMU & COGNITUS		PREPARATION		1	16													
T1.1	ULL	D1.1	Literature review of Industry4.0 in Europe, Asia and over the world		1	6													
T1.2	UNS	D1.1	Identify the skills requested by Industry4.0- Questionnaires; workshop with Industry; relevant reports from EU commission		1	6													
T1.3	UNL	D1.2	Analyse the gap by overlapping the skills4.0 with the existing skills in HEIs. Develop an emerging model (emerging skills; disparate skills, shift skills,...)		6	12													
T1.4	CUIT	D1.3	Develop the Skills 4.0 learning framework - Identify the relationship between the skill4.0 and the SHYFTE 4 domains		6	12													
T1.5	ULL	D1.4	Design teaching programs and learning materials for the 4 domains.		6	16						D1.4							
WP2	ULL & UPM		DEVELOPMENT (implementation of shyfte4.0 framework - Learning and treaning		10	36													
T2.1	KU-CMU	D2.1	Pilot in Domain1- Industrial engineering and management (Training materials)		10	32													
T2.2	CUIT-CDU	D2.2	Pilot in domain2 - Software Engineering and big data analysis (Training materials)		10	32													
T2.3	UPM-CUIT	D2.3	Pilot in domain3 Wireless networks analytics (Training materials)		10	32													
T2.4	TMU-UPM	D2.4	Pilot in Domain4 - Artificial Intelligence (Training materials)		10	32													
T2.5	UNL	D2.5, D2.6 & D27	Develop the skills4.0 training and learning center		18	36													D2.5
WP3	CUIT & UNS		QUALITY PLAN		1	36													
T3.1	UNS	D3.1 v1	Strategic Quality Plan Quality plan to verify the effectiveness of the learning program		1	12													
T3.2	UNL	D3.1 v2	Formation Quality Plan (FQP)		12	36								D3.1 v2					
T3.3	CUIT	D3.2	Quality audits to analyse and evaluate the transfer of skills4.0 Measuring the impact of these skills in SME		24	36													
T3.4	CMU	D3.3	Sustainability assurance plan		24	36													
WP4	UNL & CDU		DISSEMINATION AND EXPLOITATION		1	36													
T4.1	UNS	D4.1	Dissemination and exploitation strategy (Create strategic plan)		1	36													
T4.2	CDU	D4.5	Awarness dissemination and acceptance of emerging skills4.0		4	18													D4.5 v2
T4.3	UNL	D4.2, D4.3 & D4.4	Exploitation and dissemination for action (Web site, meetings, ...)		4	36													D4.3 v2
T4.4	ULL	D4.6 & D4.7	Scientific and technical dissemination (Conferences, workshops, seminars, ...)		12	36													D4.7 v2
WP5	ULL		MANAGEMENT		1	36													
T5.1	ULL	D5.1 & D5.2	Project management coordination and reporting		1	36			D5.1 v2										
T5.2	UNS	D5.3	Quality, Risk and Innovation management		1	36													D5.3 v2

The work plan for the third year of the project is described in the following Gantt chart:

SHYFT 4.0						Year 3											
WP	WP LEADER	DELIVRABLE	WP/Task	FROM	TO	25	26	27	28	29	30	31	32	33	34	35	36
						déc-20	janv-21	févr-21	mars-21	avr-21	mai-21	juin-21	juil-21	août-21	sept-21	oct-21	nov-21
						WP2 6 UTM			WP3 1 UNS		WP2 7 ASJA		WP2 8 KU		WP2 9 CMU		WP4 1 UNL
WP1	CMU & COGNITUS		PREPARATION	1	16												
T1.1	ULL	D1.1	Literature review of Industry4.0 in Europe, Asia and over the world	1	6												
T1.2	UNS	D1.1	Identify the skills requested by Industry4.0- Questionnaires; workshop with Industry; relevant reports from EU commission	1	6												
T1.3	UNL	D1.2	Analyse the gap by overlapping the skills4.0 with the existing skills in HEIs. Develop an emerging model (emerging skills; disparate skills, shift skills,...)	6	12												
T1.4	CUIT	D1.3	Develop the Skills 4.0 learning framework - Identify the relationship between the skill4.0 and the SHYFTE 4 domains	6	12												
T1.5	ULL	D1.4	Design teaching programs and learning materials for the 4 domains.	6	16												
WP2	ULL & UPM		DEVELOPMENT (implementation of shyfte4.0 framework - Learning and treaning	10	36												
T2.1	KU-CMU	D2.1	Pilot in Domain1- Industrial engineering and management (Training materials)	10	32				D2.1								
T2.2	CUIT-CDU	D2.2	Pilot in domain2 - Software Engineering and big data analysis (Training materials)	10	32				D2.2								
T2.3	UPM-CUIT	D2.3	Pilot in domain3 Wireless networks analytics (Training materials)	10	32				D2.3								
T2.4	TMU-UPM	D2.4	Pilot in Domain4 - Artificial Intelligence (Training materials)	10	32				D2.4								
T2.5	UNL	D2.5, D2.6 & D2.7	Develop the skills4.0 training and learning center	18	36							D2.6 D2.7					
WP3	CUIT & UNS		QUALITY PLAN	1	36												
T3.1	UNS	D3.1 v1	Strategic Quality Plan Quality plan to verify the effectiveness of the learning program	1	12												
T3.2	UNL	D3.1 v2	Formation Quality Plan (FQP)	12	36												
T3.3	CUIT	D3.2	Quality audits to analyse and evaluate the transfer of skills4.0 Measuring the impact of these skills in SME	24	36								D3.2				
T3.4	CMU	D3.3	Sustainability assurance plan	24	36										D3.3		
WP4	UNL & CDU		DISSEMINATION AND EXPLOITATION	1	36												
T4.1	UNS	D4.1	Dissemination and exploitation strategy (Create strategic plan)	1	36												
T4.2	CDU	D4.5	Awareness dissemination and acceptance of emerging skills4.0	4	18												D4.5 v3
T4.3	UNL	D4.2, D4.3 & D4.4	Exploitation and dissemination for action (Web site, meetings, ...)	4	36												D4.3 v3
T4.4	ULL	D4.6 & D4.7	Scientific and technical dissemination (Conferences, workshops, seminars, ...)	12	36								D4.6				D4.7 3
WP5	ULL		MANAGEMENT	1	36												
T5.1	ULL	D5.1 & D5.2	Project management coordination and reporting	1	36												D5.2
T5.2	UNS	D5.3	Quality, Risk and Innovation management	1	36												D5.3 v3

The travel plan of the project is defined based on the WPs and the possible associated events:

N°	Year	WP	Location	Nb days	Physical Meetings	Associated Event	Virtual Meetings
1	1	WP5 Management	Lyon	5	21/01/2019 to 25/01/2019	Kick-off meeting	15/02/2019 10h-12h am (Fr)
2	1	WP1 Preparation	Chiang Mai	5	25/03/2019 to 29/03/2019	Workshop "Faculties of Industrial Engineering"	08/03/2019 10h-12h am (Fr)
3	1	WP1 Preparation	Lisbon	5	27/05/2019 to 31/05/2019	15th China-EU International Symposium (UNL)	03/05/2019 10h-12h am (Fr)
4	1	WP1 Preparation	Chengdu	5	28/10/2019 to 01/11/2019	Industrial Workshop (CDU)	05/07/2019 08h-10h am (Fr)
5	1	WP1 Preparation	Benevento	5	09/12/2019 to 13/12/2019	Workshop "Skills 4.0"	
6	2	WP2 Development	Lyon	5	03/02/2020 to 07/02/2020	Workshop "Skills 4.0"	27/03/2020 09h12h am (Fr)
7	2	WP2 Development	Benevento	5	01/06/2020 to 05/06/2020	Industrial Workshop	03/04/2020 08h30-11h (Fr)
8	2	WP2 Development	Bangkok	5	02/03/2020 to 06/03/2020	Industrial Workshop	10/04/2020 08h30-11h (Fr)
9	2	WP2 Development	Chengdu (CDU)	10	12/10/20 to 21/10/20	Training of the trainers	27/04/2020 08h30-11h (Fr)
10	2	WP2 Development	Kuala Lumpur	10	07/12/20 to 11/12/20 Meeting + Skima 12	Training of the trainers + International Conference SKIMA'20	30/04/2020 08h30-11h (Fr)
11	2	WP5 Management	Paris	5	16 to 20 november 2020	International Conference ICLT'20	11/05/2020 08h30-11h (Fr)
12	3	WP2 Development	Kuala Lumpur	10	Beg 03/2021	Training of the trainers	14/05/2020 08h30-11h (Fr)
13	3	WP3 Quality Plan	Benevento	5	Beg 03/2021	Quality plan	22/05/2020 08h30-11h (Fr)
14	3	WP2 Development	Bangkok	15	Beg 02/2021	Training of the trainers	26/06/2020 08h30-11h (Fr)
15	3	WP2 Development	Chiang Mai	10	Beg 05/2021	Training of the trainers	03/07/2020 08h30-11h (Fr)
16	3	WP2 Development	EU <--> ASIA	20	Beg 07/2021	Training of the students	13/07/2020 08h30-11h (Fr)
17	3	WP4 Dissemination	Lisbon	5	Beg 11/2021		17/07/2020 08h30-11h (Fr)

Meetings per WP	Number
WP1 Preparation	4
WP2 Development	9
WP3 Quality Plan	1
WP5 Management	2
WP4 Dissemination	1
Total	17

5.2 Role of the Partners

All project partners are involved in all the WP

- **Role of the WP leaders:**
 - To organize with the Tasks leaders the work plan of each of the task of the WP,
 - To verify that the reports are submitted on time, that they are of high quality and that they meet the project's expectations.
- **Role of the Tasks leaders:**
 - Responsible for the timely implementation of the activities in the task and the reporting to the WP Leader.
- **All project partners:**
 - To fulfill their tasks duly, timely and according to the distribution of work,
 - To deliver all financial statements and reports to the Coordinator in a timely manner.

The efforts of the partners are defined per year in the following tables:

Efforts Year 1 (879 days):

SHYFTE4.0			Year	ULL	UNS	UNL	COGNITUS	KU	CDU	CUIT	UPM	TMU	CMU	TOTAL
WP1	T1.1	Literature review of Industry4.0	Year 1	10	10	16	3	6	6	6	6	6	6	75
WP1	T1.2	Identify the skills requested by Industry4.0	Year 1	11	10	10	5	8	8	8	8	8	8	84
WP1	T1.3	Analyse the gap by overlapping the skills4.0	Year 1	15	12	12	5	6	6	6	6	6	6	80
WP1	T1.4	Develop the Skills 4.0 learning framework	Year 1	15	12	20	3	8	8	8	8	8	8	98
WP1	T1.5	Design teaching programs and learning materials	Year 1	20	15	15	3	9	9	9	9	9	9	107
WP2	T2.1	Pilot in Domain1 - Thailand	Year 1	4	2	2	1	5	3	1	1	3	5	27
WP2	T2.2	Pilot in domain2 - China	Year 1	3	3	3	1	3	5	5	1	3	3	30
WP2	T2.3	Pilot in domain3 - China and Malaysia	Year 1	3	3	3	1	3	3	5	5	3	3	32
WP2	T2.4	Pilot in Domain4 - Malaysia	Year 1	3	3	3	1	3	3	1	5	5	3	30
WP3	T3.1	Quality certification of program learning	Year 1	8	8	8	3	5	5	5	5	5	5	57
WP3	T3.2	Quality certification skills4.0 (trainer)	Year 1	3	3	3	1	1	1	1	1	1	1	16
WP4	T4.1	Dissimination and exploitation strategy	Year 1	10	5	7	3	5	5	5	5	5	5	55
WP4	T4.2	Awariness dissimination & acceptance of skills4.0	Year 1	15	6	6	3	3	3	3	3	3	3	48
WP4	T4.3	Exploitation and dissemination for action	Year 1	4	2	2	2	2	2	2	2	2	2	22
WP5	T5.1	Project monitoring and management	Year 1	9	6	10	4	5	5	5	5	5	5	59
WP5	T5.2	Progress and Asset monitoring of project	Year 1	9	5	10	5	5	5	5	5	5	5	59

Efforts Year 2 (1148 days):

SHYFTE 4.0			Year	ULL	UNS	UNL	COGNITUS	KU	CDU	CUIT	UPM	TMU	CMU	TOTAL
WP1	T1.5	Design teaching programs and learning materials	Year 2	15	12	12	5	3	3	3	3	3	3	62
WP2	T2.1	Pilot in Domain1 - Thailand	Year 2	18	12	15	3	30	12	5	5	12	30	142
WP2	T2.2	Pilot in domain2 - China	Year 2	13	11	17	7	12	30	30	5	12	12	149
WP2	T2.3	Pilot in domain3 - China and Malaysia	Year 2	13	11	17	3	12	12	30	30	12	12	152
WP2	T2.4	Pilot in Domain4 - Malaysia	Year 2	13	11	17	3	12	12	5	30	30	12	145
WP2	T2.5	Develop le skills4.0 treaning and learning center	Year 2	30	20	20	13	10	10	10	10	10	10	143
WP3	T3.2	Quality certification skills4.0 (trainer)	Year 2	5	5	5	2	4	4	4	4	4	4	41
WP3	T3.3	Analyse and evaluate the transfert of Skills4.0	Year 2	4	4	5	1	5	5	5	5	5	5	44
WP4	T4.1	Dissimination and exploitation strategy	Year 2	10	5	8	3	5	5	5	5	5	5	56
WP4	T4.2	Awarness dissimination & acceptance of skills4.0	Year 2	5	4	6	3	3	3	3	3	3	3	36
WP4	T4.3	Exploitation and dissemination for action	Year 2	8	4	4	2	3	3	3	3	3	3	36
WP4	T4.4	Scientific and technical dissemination	Year 2	5	5	4	2	2	2	2	2	2	2	28
WP5	T5.1	Project monitoring and management	Year 2	10	5	5	4	6	6	6	6	6	6	60
WP5	T5.2	Progress and Asset monitoring of project	Year 2	10	5	5	4	5	5	5	5	5	5	54

Efforts Year 3 (717 days):

SHYFT 4.0			Year	ULL	UNS	UNL	COGNITUS	KU	CDU	CUIT	UPM	TMU	CMU	TOTAL
WP2	T2.1	Pilot in Domain1 - Thailand	Year 3	5	4	4	1	11	5	1	1	5	11	48
WP2	T2.2	Pilot in domain2 - China	Year 3	4	4	5	2	5	11	11	1	5	5	53
WP2	T2.3	Pilot in domain3 - China and Malaysia	Year 3	4	4	5	1	5	5	11	11	5	5	56
WP2	T2.4	Pilot in Domain4 - Malaysia	Year 3	4	4	5	1	5	5	1	11	11	5	52
WP2	T2.5	Develop le skills4.0 treaning and learning center	Year 3	30	30	30	20	20	20	20	20	20	20	230
WP3	T3.3	Measuring the impact of these skills in SME	Year 3	5	5	5	2	5	5	5	5	5	5	47
WP3	T3.4	Sustainability assurance plan	Year 3	5	5	10	4	5	5	5	5	5	5	54
WP4	T4.3	Exploitation and dissemination for action	Year 3	8	4	4	2	3	3	3	3	3	3	36
WP4	T4.4	Scientific and technical dissemination	Year 3	5	4	4	2	3	3	3	3	3	3	33
WP5	T5.1	Project monitoring and management	Year 3	10	5	5	4	5	5	5	5	5	5	54
WP5	T5.2	Progress and Asset monitoring of project	Year 3	10	5	5	4	5	5	5	5	5	5	54

5.3 Deliverables

The total number of Deliverables is 23:

- WP1: D1.1 to D1.4,
- WP2: D2.1 to D2.7,
- WP3: D3.1 to D3.3,
- WP4: D4.1 to D4.7
- WP5: D5.1 & D5.2.

The project deliverables are presented annually and per work package as in the following table:

Year	YEAR 1 Activities		Due Date	Leader	Total duration (number of weeks)
	Ref.nr.	Title			
Year 1	D5.1 v1 (T5.1)	D5.1 v1 - SHYFTE Quality Plan and project Handbook (Kick-off meeting in Lyon)	15/03/2019	ULL	15
Year 1	D3.1 v1 (T3.1)	D3.1. v1 - Strategic quality plan (Project meeting in UNSento & workshop in Chiang Mai)	14/11/2019	UNS	6
Year 1	D1.1 v1 (T1.1)	D1.1 v1 - Literature review of Industry4.0 (Project meeting UNSento & workshop in Chiang Mai)	14/05/2019	ULL	12
Year 1	D1.1 v2 (T1.2)	D1.1 v2 - Identify the skills required by Industry 4.0 (Questionnaire, workshop with Industry, relevant reports from EU...) (Project meeting in UNSento & workshop in Chiang Mai)	14/05/2019	UNS	18
Year 1	D1.2 (T1.3)	D1.2 - Analyse the gap by overlapping the skills 4.0 with the existing skills and develop an emerging skills model. (Project meetings in UNSento & Lisbon and workshop in Chiang Mai & Chengdu)	14/11/2019	UNL	18
Year 1	D1.3 (T1.4)	D1.3 - Develop the Skill4.0 learning framework in 4 interesting Domains (Project meeting in Lisbon and workshop in Chengdu)	14/11/2019	CUIT	21
Year 1	D1.4 (T1.5)	Design teaching programs and learning materials for the 4 domains. (Project meeting in Lisbon and workshop in Chengdu)		ULL	21
Year 1	D5.3 v1 (T5.2)	D5.3 v1 - SHYFTE Project Periodic report (yearly) (Project meeting in Lisbon)	15/11/2019	UNS	6
Year 1	D4.1 (T4.1)	D4.1 - Strategic Plan for Dissemination and exploitation strategy	02/02/2019	UNS	7
Year 1	D4.2 & D4.3 & D4.4 (T4.3)	D4.2 - Project Website (15-03-2019) D4.3 v1 - Publicity: report about dissemination in partners countries (yearly) (15-11-2019) D4.4 - Formal & informal meetings report (Quarterly) (15-11-2019) (Project meeting in Lisbon)	15/11/2019	UNL	7
Year 1	D4.5 v1 (T4.2)	D4.5 v1 - Campaign to encourage similar initiatives (yearly)(15-11-2019) (Project meeting in Chengdu)	15/11/2019	CDU	3
Year 1	D2.1 (T2.1)	Pilot 1 Industrial engineering and management (14-03-21) (Project meeting in Bangkok & Chiang Mai)		CMU+KU	9
Year 1	D2.2 (T2.2)	Pilot 2 Big data analytics (14-03-21) (Project meeting in Chengdu)		CUIT+CDU	9
Year 1	D2.3 (T2.3)	Pilot 3 Wireless networks analytics (14-03-21) (Project meeting in Chengdu & Kuala Lumpur)		UPM+CUIT	9
Year 1	D2.4 (T2.4)	Pilot 4 Artificial Intelligence (14-03-21) (Project meeting in Kuala Lumpur)		UTM+UPM	9

Year	YEAR 2 Activities		Due Date	Leader	Total duration (number of weeks)
	Refnr	Title			
Year 2	D5.1 v2 (T5.1)	D5.1 v2 - SHYFTE Quality Plan and project Handbook (Project meeting in UNS)	15/01/2020	ULL	6
Year 2	D3.1 v2 (T3.1)	D3.1 v2 - Formation quality plan (14-06-2020) (Project meeting in UNS)	14/06/2020	UNS	5
Year 2	D1.4 (T1.5)	D1.4 - Design teaching programs and learning materials for the 4 domains. (Project meeting in Bangkok)	14/04/2020	ULL	12
Year 2	D5.3 v2 (T5.2)	D5.3 v2 - SHYFTE Project Periodic report (Project management meeting in Paris)	15/11/2020	UNS	12
Year 2	D4.3 v2 & D4.4 (T4.3)	D4.3 v2 - Publicity: report about dissemination in partners countries (yearly) (15-11-2020) D4.4 - Formal & informal meetings report (quarterly) (15-11-2020) (Project management meeting in Paris)	15/11/2020	UNL	10
Year 2	D4.5 v2 (T4.2)	D4.5 v2 - Campaign to encourage similar initiatives (yearly)(15-11-2020) (Project management meeting in Lyon)	15/11/2020	CDU	5
Year 2	D2.1 (T2.1)	D2.1 - Pilot 1 Industrial engineering and management (14-03-21) (Project meeting in Bangkok & Chiang Mai)	14/03/2021	CMU+KU	28
Year 2	D2.2 (T2.2)	D2.2 - Pilot 2 Big data analytics (14-03-21) (Project meeting in Chengdu)	14/03/2021	CUIT+CDU	28
Year 2	D2.3 (T2.3)	D2.3 - Pilot 3 Wireless networks analytics (14-03-21) (Project meeting in Chengdu & Kuala Lumpur)	14/03/2021	UPM+CUIT	28
Year 2	D2.4 (T2.4)	D2.4 - Pilot 4 Artificial Intelligence (14-03-21) (Project meeting in Kuala Lumpur)	14/03/2021	UTM+UPM	28
Year 2	D2.5 (T2.5)	D2.5 - Skills 4.0 Learning center of excellence (14-11-20)	14/11/2020	UNL	19
Year 2	D3.2 (T3.3)	Quality audit report (14-07-2021) (Project meeting in Chengdu, Bangkok & Kuala Lumpur)		UNL	7
Year 2	D3.3 (T3.4)	Sustainability assurance plan (14-09-2021) (Project meeting in Chengdu, Bangkok & Kuala Lumpur)		CMU	6
Year 2	D4.6 (T4.3)	Network center and observatory exploitation (01-06-2021) (Project meeting in Chengdu, Chiangmai & KualaLumpur)		CDU	5
Year 2	D4.7 v2 (T4.4)	D4.7 v2 - Report of publications in indexed journals (yearly) (15-11-2020) (Project management meeting in Lyon)	15/11/2020	ULL	3

Year	YEAR 3 Activities		Due Date	Leader	Total duration (number of weeks)
	Refnr	Title			
Year 3	D5.1 (T5.1)	SHYFTE Quality Plan and project Handbook (15-01-2020) (Project meeting in Lisbon)		ULL	7
Year 3	D5.3 v3 (T5.2)	D5.3 v3 - SHYFTE Project Periodic report (15-11-2021) (Project meeting in Lisbon)	14/11/2021	UNS	12
Year 3	D4.3 & D4.4 (T4.3)	D4.3 v3 - Publicity: report about dissemination in partners countries (yearly) (15-11-2021) D4.4 - Formal & informal meetings report (quarterly)(15-11-2021) (Project meeting in Lisbon)	15/11/2021	UNL	6
Year 3	D4.5 v3 (T4.2)	D4.5 v3 - Campaign to encourage similar initiatives (yearly)(15-11-2021) (Project meeting in Bangkok, ChiangMai & KualaLumpur)	15/11/2021	CDU	9
Year 3	D2.1 (T2.1)	D2.1 - Pilot 1 Industrial engineering and management (14-03-21) (Project meeting in Bangkok & Chiang Mai)	14/03/2021	CMU+KU	15
Year 3	D2.2 (T2.2)	D2.2 - Pilot 2 Big data analytics (14-03-21) (Project meeting in Chengdu)	14/03/2021	CUIT+CDU	15
Year 3	D2.3 (T2.3)	D2.3 - Pilot 3 Wireless networks analytics (14-03-21) (Project meeting in Chengdu & Kuala Lumpur)	14/03/2021	UPM+CUIT	15
Year 3	D2.4 (T2.4)	D2.4 - Pilot 4 Artificial Intelligence (14-03-21) (Project meeting in Kuala Lumpur)	14/03/2021	UTM+UPM	15
Year 3	D2.6 & D2.7 (T2.5)	D2.6 - Learning center as innovation Lab. (14-06-21) D2.7 - Evaluation of innovative solutions for training & exploitation (14-06-21) (Project meeting in Bangkok, ChiangMai & KualaLumpur)	14/06/2021	UNL	30
Year 3	D3.2 (T3.3)	D3.2 - Quality audit report (14-07-2021) (Project meeting in UNSento)	14/07/2021	UNL	18
Year 3	D3.3 (T3.4)	D3.3 - Sustainability assurance plan (14-09-2021) (Project meeting in UNSento)	14/09/2021	CMU	10
Year 3	D4.6 (T4.3)	D4.6 - Network center and observatory exploitation (01-06-2021) (Project meeting in Bangkok, ChiangMai & KualaLumpur)	01/06/2021	CDU	8
Year 3	D4.7 v3 (T4.4)	D4.7 v3 Report of publications in indexed journals (yearly) (15-11-2021) (Project meeting in UNSento)	15/11/2021	ULL	7
Year 3	D5.2 (T5.2)	D5.2 SHYFTE Final report (15-11-2021) (Project meeting in UNSento)	15/11/2021	ULL	10

5.4 Shyfte 4.0 Budget

Grant Breakdown							
Partner No.	Name of Partners	Staff Costs.	Travel Costs.	Costs of Stay.	Equipment Costs	Subcontracting Cost	Total Costs.
P1	University Lyon 2	81 244,00	30 110,00	28 200,00	-	5 000,00	144 554,00
P2	Università degli Studi del Sannio	60 664,00	29 750,00	27 000,00	-	-	117 414,00
P3	UNINOVA Institute	45 179,00	28 800,00	26 100,00	-	-	100 079,00
P4	COGNITUS	30 491,00	13 735,00	12 600,00	-	-	56 826,00
P5	Chiang Mai University	19 708,00	27 980,00	22 800,00	20 000,00	5 000,00	95 488,00
P6	Kasetsart University	19 708,00	27 600,00	21 600,00	20 000,00	5 000,00	93 908,00
P7	Chengdu University of Information and Technology	14 025,00	28 320,00	22 800,00	20 000,00	5 000,00	90 145,00
P8	Chengdu University	14 025,00	28 320,00	22 800,00	20 000,00	5 000,00	90 145,00
P9	University Putra Malaysia	8 109,00	28 320,00	21 600,00	20 000,00	4 000,00	82 029,00
P10	University of Technology Malaysia	8 109,00	28 320,00	21 600,00	20 000,00	4 000,00	82 029,00

6. Shyfte 4.0 Impacts

Short term impact (Shyfte 4.0)	Target groups/potential beneficiaries	Quantitative indicators	Qualitative indicators
To develop skill sets in Asian partner countries in-line with HEIs and Industry 4.0 for boosting the job market at regional, national and international level	Academic researchers, administrative staff, PhD and Postdoc students	<ul style="list-style-type: none"> - Questionnaires with the analysis of skill sets with respective to associated needs of HEIs and the Industry - 30% of Asian curriculum has embedded Skills 4.0 in their curriculum - 10% improvement in graduate employability including self-employability 	<ul style="list-style-type: none"> - Skills gap will be identified by reviewing the needs of job market in association with Industry 4.0 - Critical challenges in universities and industries in Europe & Asia are reviewed and identified, then an extensively and elaborative reports shall be prepared by CDU, CUIT, CMU, ULL and all partners - Technical and Social skill of students are improved - Short visits will be organized by all EU and Asian Partners to discuss the needs and for preparing the material and methods to train the trainers
To promote the skills for capacity building in the HEIs in Asia	Trainers/staff/administrative/academic and collaborators	<ul style="list-style-type: none"> - 12 trainings to train and prepare the teachers/trainers - 24 awareness workshops, seminars and teleconferences for realizing the importance of the current industrial demands. 	<ul style="list-style-type: none"> - Skills will be learnt and enhanced at higher education level, then students will be trained by understanding the needs of the Industry 4.0 - Internal workshops to replicate the trainings conducted at the national level - Skills will be practiced and transformed in Asian countries in collaboration with EU partners
To develop the curriculum in collaboration and coordination of HEIs, SMEs and Industries	Trainers/staff/administrative/academic and collaborators	- Numbers of materials and manuals prepared with rigorous explanation of novel skill learning and developing strategies	- Syllabus will be re-shaped with practical and hands-on tricks and tips at national, regional and international level
Strengthening the trainers/trainers skills	Teachers, trainers, students, HEIs	Increases in job market through skill enhancement	Highly effective and maximum use of the digital technology, and novel teaching/training techniques
Have a solid expertise in the Skills 4.0	Trainers, teachers HEIs,	<ul style="list-style-type: none"> - Number of trainers/teachers trained during Shyfte project - Number of students trained by the trainers/teachers 	Development and proposal of innovative teaching, training and learning approaches for bridging the gap between HEIs and Industry 4.0
To enhance the knowledge and awareness of the Asian partner countries about the emerging role and importance of the Skills 4.0 according to the market needs.	HEIs, teachers/trainers, students	Number of conventional teaching and learning methodologies revised to to the lack of skill improvement	Promote the technology use and importance of Skills 4.0

To align with the European agenda in the field of Skills 4.0 according to global vision and perspective.	Skills 4.0 Labs and Center of Excellence in both at Asia and European Level	Number of conventional learning methods transformed with the technology-oriented one'	A balanced international economic growth on the basis of learned and adopted skills.
Research outputs after learning and adopting innovative teaching and learning strategies	Researchers, Students, HEIs	Number of publications in journals/conferences	Noteworthy contribution and added value in research

Long term impact (SHYFTE)	Target groups/potential beneficiaries	Quantitative indicators	Qualitative indicators
Beyond 2022	Trainers/staff/administrative/academic and collaborators in Asian partner countries	50% IR4.0 related job market are filled	More skilfull workforce
Skills 4.0 Labs or Center of Excellence in Asian Partner Countries	Trainers/staff/administrative/academic and collaborators	10% Increase in GDP	Improved socio-economy
Reformation of the conventional training and teaching methodologies with novel outcome-based learning, and teaching methods in Asian countries by raising their technology-oriented education standard.	Academic researchers, administrative staff, PhD and Postdocs	<ul style="list-style-type: none"> - Multiple sets of questionnaires, reporting templates and manuals for Asian partner countries (PCs) to publicize by creating official website of the project to sustain its impact and lifetime after project's ending, lifetime. - 200 copies will to be made available in the printed form for future awareness and guideline. 	To encourage dialogue and discussion in all Asian PCs by publishing the report with existing start-ups, current trends, comparisons, practices and recommendations. Non-consortium can also use the material for the getting better feedback and out-reach to further improvement.
To develop the novel Skills 4.0 framework by keeping in view the needs of HEIs, and job market in association with Industry 4.0	Academic researchers, administrative staff, HEIs, experts from industry	Tight and close ties between HEIs, SMEs and Industries to facilitate the students from every perspective.	Setting up the evaluation committees for analyzing the performance of the HEIs and students with respect to the Industry 4.0 needs.
Elevating the economic level and hence the living standard on individual level basis	HEIs, trainers/teachers	Increase in earnings and benefits.	Improve the socio-economic level of each partner country in Asia
Transform the conventional teaching and learning techniques with the innovative ideas for Skills 4.0	All	Reduction in frustration and anxiety level of the society and regions.	Less likely to be jobless and keep with low income after learning Skills 4.0
National Economy growth based on digital or industry-oriented skills	HEIs of all partner countries	Skills transformation from EU to partner countries then in the whole Asia region by understanding the	Contribution in National Economy

		job market needs according to Industry 4.0.	
Significant improvement in the skills learning abilities and adaptation of Industry 4.0's trends and practices	HEIs, Trainers/Teachers, Students	Emerging use of smart digital technologies in the HEIs, Skills 4.0 Labs and centers.	To enhance the expertise of trainers and students
Integration of different domains and pilots giving great synergy in skills development with state-of-the-art learning and teaching techniques	HEIs of Partner countries	Cross pilot for sharing and transforming the skills from EU to Asian partner countries and in between Asian countries.	To promote the job market according to the learnt skill sets for improving the economy level.
Living Standard of each partner country	Partner countries	Transformation of digital technologies, Skills 4.0 and the learning-teaching/ training methods from EU to Asia	To bring the prosperity and happiness by introducing innovative skillsets to minimize the gap between job market and HEIs
To develop and publicize the Skills 4.0's Curriculum in-line with HEIs, Industry 4.0 interlinked with Shyfte	HEIs	Number of handbooks, manuals, tutorials and course contents followed by HEIs and Students.	Innovative education programmes with digital technology-based teaching, learning and training methods to promote the Skills 4.0.

7. Project Management Structure

Shyfte 4.0 management structure is composed of five main pillars:

- Project Coordinator (PC) for monitoring and centralizing the project progress by ensuring administrative and contractual ties to both consortium members and EACEA,
- Project Management Board (PMB) for management of how the results are transferred to reach the expected impacts. The MB will deal with exploitation and dissemination objectives,
- Project Technical Board (PTB) that will consist of the leaders of all WPs. The PTB will carry out the technical management, coordinate the WPs and monitor technical progress. The PTB will also be competent for the resources management, if tasks and workloads need any amendment.
- The Advisory Board will comprise of the associated partners; they are namely Linde Home care , knowledgeBiz, Malaysians Communications and Multimedia Commission (MCMC), and Centre of Artificial Intelligence and Robotics (CAIRO))
- The project office (PO), represented by the Finance and Administrator Manager, comprises of infrastructure and resources supporting the project management structure from time to time management and administration of the project. The Finance and Administrator Manager will be appointed by ULL.

Regular consortium meetings are scheduled every 2-3 months. These meeting will leverage online conference features as well as planned workshop to save travel costs. In addition to traditional means of communication, Shyfte will use an online management platform to share projects documents, including grant agreement, reporting, meeting minutes and training materials.

7.1 The Project Coordinator

Coordinates the activities of all partners in the project according to work plan, and provides the EACEA with technical, managerial and financial information. In this role, he/she will be assisted by the Project Office (see below). In particular, the Coordinator is responsible for:

- monitoring compliance by the partners with their obligations
- keeping the address list of members and other contact persons updated and available
- collecting, reviewing and submitting information on the progress of the project and reports and other deliverables to the European Commission
- preparing the meetings, proposing decisions and preparing the agenda of Project Board meetings, chairing the meetings, preparing the minutes of the meetings and monitoring the implementation of decisions taken at meetings (to include virtual project board meetings).
- distribute the documents and information connected with the project promptly
- administering the European Commission financial contribution and fulfilling the financial tasks

7.2 Project Management Board (PMB)

The PMB is the ultimate and main decision body of the project, chaired by the Coordinator and consists of the partner local coordinators and WP leaders.

The PMB will be responsible for: (i) the on-going revision of the Project Vision, taking into account results generated within the project, other relevant process, technological or market developments and the long term strategies of the EU and Project Partners; (ii) the definition and on-going revision of guidelines for specific research activities within the framework of the project; (iii) the analysis and solution of strategic problems in the implementation of the Project Work Plan and the approval of changes to the Work Plan (iv) the discussion and solution of problems among partners or Work Packages. The Committee will hold formal face-to-face meetings, at least every six months and at least a month before the periodic reporting dates (Months 18 and 36). In addition Virtual PMB meetings will be held at least every 3 months via Skype. PMB members are permanent for the project duration, except if they wish to leave the Project Board themselves or due to EU intervention. One representative person from each Beneficiary will participate in the Project Board.

The PMB shall be in charge of supervising the project progress and deciding upon all relevant process, technical and administrative issues, such as redirection of work in a WP, major transfer of resources across WP or Partners (over 10%), technological choices, changes in time plans, inclusion of a new Associate Partner, substitution or exclusion of existing Partner, in case of conflict between different partners.

7.3 The Project Office (PO)

The project office (PO), represented by the Finance and Administrator Manager, comprises of infrastructure and resources supporting the project management structure from time to time management and administration of the project. The Finance and Administrator Manager will be appointed by ULL.

7.4 The Project Technical Board - Work Package Leaders (WPL)

Work package Leaders will manage their WP, in cooperation with Task Leaders within them. They may arrange technical meetings for their WP. WP Leaders will communicate ordinarily with the Tasks Leaders and the Coordinator.

The WP leaders have been designated at the project start as follows:

- WP1 is led by CMU-COGNITUS
- WP2 is led by ULL-UPM
- WP3 is led by CUIT-UNS
- WP4 is led by UNL-CDU
- WP5 is led by ULL

The Work package leader shall have the following functions:

- managing and coordinating the work within the Work package
- organizing virtual Work package discussion meetings at least once per month

- ensuring that the deliverables within the Work package are produced and delivered according to the Project plan
- proposing detailed work plans for the Work package
- participating in the Project Board meetings and providing help and advice to the Project Tasks Leaders as required

7.5 The Advisory Board (AB)

The advisory board is composed of the associated partners (LindHome care , knowledgeBiz, Malaysians Communications and Multimedia Commission (MCMC), Centre of Artificial Intelligence and Robotics (CAIRO)) which have distinct profiles and are relevant to Europe and Asia. It will be critical that they comment on the Shyfte project as it develops and ensure synergies with other programs and initiatives. The advisory board will ensure that the project's approach is sound and accommodating to diverse national and international institutional needs. It will also serve as a sounding board for the overall strategy and goals of the project and provide advice on how to enhance the impact of the project in both regions (EU and Asia) more broadly and secure future funding.

8. Project Management Processes

8.1 Progress monitoring

On a regular basis, progress meetings will be held and formal reports will be written to ensure that the project produces timely and high quality deliverables. Each partner will report to the WPLs and to the PM about the progress of activities. The reports will include information on the technical progress and the achieved results.

Results will be reviewed during each meeting. Each WP Leader will report to the Project Manager on a quarterly basis by email to provide updates and to point any potential threat to meet objectives. The consortium will provide reports and other deliverables to the Project Management Board, where the work done and the conclusions achieved will be presented.

This will also generate deliverables following the project proposal. The Project Coordinator will submit them to the Managing Authority.

8.2 Collaboration Platform and Communication

Communication and collaboration within the Shyfte 4.0 consortium is going to be implemented through a Collaboration and Communication Platform (ownCloud). Since project partners are distributed across three European and three South-Asian countries, the communication, coordination and co-operation of the project team members will be supported by a collaboration platform.

Through this platform, users will have access to a wide range of tools and features necessary for the successful coordination of the team. The platform will support the team to share project files, exchange and co-create files, share information and organize discussions across members of the consortium.

Communication platform (Skype) will be also used from the beginning of the project and provide a digital workspace to support the virtual communication and cooperation between project team members.

8.3 Decision making process

Decisions will normally be taken by the responsible partners based on the work plan to be performed, as stated in the Grant Agreement and the Partnership Agreement, the Shyfte Summary and Work Plan (including any updates recorded in the Meeting Minutes), the individual Work Package or Task plans (as defined by the WP Leader for internal control procedures).

8.3.1 Voting procedure

In voting, each Party shall have one vote. A quorum shall be a minimum of 4/5 of the Parties. Where decisions are to be taken unanimously, all Parties must be represented at the meeting. In the case of in other cases not referred to below, decisions shall be taken by the majority of the votes of the Parties present or represented by proxy at a quorate meeting, provided always that

any Party whose scope of work, time for performance, costs or liabilities are changed or whose information is to be published, may veto such decisions.

Any decision requiring a vote at a PMB meeting must be identified as such on the pre-meeting agenda, unless there is unanimous agreement to vote on a decision at that meeting and all Parties are present or represented. Issues of liabilities and force majeure should be settled upon the preparation of the Partnership Agreement.

In case there is a dispute between two or more partners an agreement will be sought by informal communication. In case no agreement is reached, the Conflict Resolution procedure will be resorted to the Project Management Board. The PMB will take a decision by simple majority vote; each member will hold one vote and the Project Coordinator, if necessary, will count for an additional, decisive vote.

For serious and urgent matters, the Project Coordinator can call an extraordinary management meeting. A Quorum of 2/3 of the PMB members is needed for a decision to be binding.

8.3.2 Conflict resolution

The consortium foresees two levels for conflict resolution: the first level is within a WP, the second level represents a conflict escalation within the consortium (last escalation level, strategic issues).

The resolution will depend on its origin:

- **Resource allocation and contractual terms issues:** will be treated directly in at PMB level, however the Project Coordinator will mediate and inform the Work Package leader(s) in case the resolution affects the technical and research related activities.
- **Technical, technological or activity related issues:** first will be attempted to be resolved on WP level, where the WP Leader will mediate. In the case the resolution affects the work plan and expected results, WPL will inform the Project Coordinator. When no agreement can be reached on WP level, the Project Coordinator will mediate and when no agreement can be reached, the Project Coordinator will refer the conflict to the Project Management Board, who will take a binding decision. The PMB will take a decision by simple majority vote; each member will hold one vote and the Project Coordinator, if necessary, will count for an additional, decisive vote.

For serious and urgent matters, the Project Coordinator can call an extraordinary management meeting. All disputes or differences arising in connection with the project which cannot be settled within the consortium shall be first resolved by mediation and finally by arbitration in Brussels under the rules of the arbitration of the EACEA.

9. Quality Assurance System

The objectives of Quality Assurance System are to assure the quality of project and to ensure that stated deliverables can be realized. The purpose of each WP is to answer the main two questions: How well is the WP achieving what it set out to accomplish? And Is it doing what it should be doing?

The main objectives of the Quality Assurance System are:

- to support the improvement of processes and activities by applying a monitoring approach;
- to guarantee the correct fulfilment of project tasks and aims;
- to measure the degree of effectiveness of actions implemented and of results obtained;
- to establish the procedures to face delays in the development of the outcomes or inappropriate partner performance.

The Quality Assurance Committee (QA Committee) will be composed by the PMB (each of the partners coordinators) and by the Work Package Leaders (PTB).

9.1 Quality Assurance Strategy (QA Strategy)

Project activities and work progress, control and evaluation will be carried out on a regular basis by all the partners through project meetings, skype meetings and internal reports.

The Project Management Board will periodically check and analyse time and activities gaps and periodic Skype or Physical meetings (at least one in a month) will be organised to monitor project activities. Every six months a more organic control of project advancements (time, budget,.) will be carried on.

The QA Strategy will ensure the control and support the process and activities improvement by applying a monitoring approach, guaranteeing the correct fulfilment of project tasks and aims, establishing procedures to face delays in the development of the outcomes or inappropriate partner performance. The QA Strategy will also allow the evaluation and the effectiveness of project tasks in terms of attainment of project goals, focusing on project results, outcomes and impact and on the implementation of project activities, as well as the key drivers for project impact fulfilment.

The project will include an internal and external evaluation approach, with the purpose of ensuring: the correct achievement of project indicators, the quality of project activities and events and the relevance of project outcomes and results. For that purpose, a set of standardised questionnaires are prepared that all Consortium members will apply when implementing the activities.

Each partner country will be responsible for distributing and ensuring the collection of self-assessment questionnaires during local training sessions, according to the templates defined in the WP3, and for sending to the WP Leader the answers obtained for further analysis and valorisation. One report will be produced after each activity/event/meeting assessed.

Partners are must ensure that a bilingual version of the document is provided if necessary. The English for the original version and a translation into the national language if needed. The partners should provide the answers in English in order to facilitate the analysis.

9.2 Quality Assurance Procedures (QA Procedures)

QA Procedures will be part of the QA Strategy that will be developed for the implementation of the Shytfe project. The procedures of the QA system will have to demonstrate the overall compliance of the project with the rules and regulations of the EACEA and the partner countries.

The QA procedures will be based on qualitative data (i.e. meeting the specified deadlines, achievement of targets and indicators) and on quantitative data (i.e. answers to questionnaires and reports). Data will be gathered from all project partners and key stakeholders (trainers, staffs, students, SME's...).

The QA Procedures will be based on a QA Matrix, QA Indicators, and Internal & External Evaluations:

9.2.1 Quality Assurance Matrix (QA Matrix)

Project Process	Quality Assurance Standard	Documentation
WP1Preparation	<p><u>Objective:</u> Verification that project preparation activities are performed via a documented process</p> <ul style="list-style-type: none"> - The gap between industry requirements and the existing curricula is analyzed - A new Skills.0 model is proposed - A learning strategy and framework are defined per domain - The pilots and learning material are defined per domain - The sessions for training of the trainers are scheduled, carried out and assessed - The sessions for training of the students are scheduled, carried out and assessed 	<ul style="list-style-type: none"> - Literature review of Skills 4.0 and curricula Analysis (D1.1) - Skills required by Industry (Survey in D1.1) - Gap Analysis (D1.2) - New Skills 4.0 model documented (D1.2) - The learning Framework (D1.3) - The learning strategy is defined (D1.4) - The learning plan is scheduled (D1.4)
WP2 Development	<p><u>Objective:</u> Verification that project development activities are performed via a documented process</p> <ul style="list-style-type: none"> - Modules are developed - Equipment are used - SME's and industrial partners are involved - Training of the trainers are carried out - Training of the students are carried out - Learning materials are assessed - Learning centers are developed and accessible 	<ul style="list-style-type: none"> - Modules description per domain (D1.4) - Pilots definition per domain (D2.1 to D2.4) - Pilots implementation and assessment per domain (D2.1 to D2.4) - Learning centers implementation (D2.5 to D2.7)
WP3 Quality Control	<p><u>Objective:</u> Verification that project quality control activities are performed via a documented process</p> <ul style="list-style-type: none"> - Quality Assurance strategy defined 	<ul style="list-style-type: none"> - Quality Control plan - Quality control and management reports

	<ul style="list-style-type: none"> - Developed and approved quality plan - Quality Plan for the learning programs and trainer's qualification - Audit Plan for the evaluation of the transfer of Skills 4.0 to the Trainers and Students - Internal & External evaluation 	<ul style="list-style-type: none"> - Quality Plan for trainers qualification - Audit Plan - A sustainability assurance plan - External evaluation reports and recommendations
WP4 Dissemination & Exploitation	<p><u>Objective:</u> Verification that Dissemination & Exploitation activities are performed via a documented process.</p> <p>Dissemination & Exploitation standard documents:</p> <ul style="list-style-type: none"> - Dissemination Plan - Website - Dissemination material - Dissemination events & reports - Training of the Trainers (ToT) report - Training of the Students (ToS) report 	<ul style="list-style-type: none"> - Dissemination Plan - Website updated regularly - Dissemination material - Dissemination events & reports (D4.2 to D4.4) - "Training of the Trainers" program & report - "Training of the Students" program & report - "Training of Companies" report
WP5 Project Management (1)	<p><u>Objective:</u> verification that Project Schedule Management activities are performed via a documented process.</p> <p><u>Project Schedule Management Plan:</u></p> <ul style="list-style-type: none"> - Project management plan developed - Work plan with clear division of tasks and responsibilities between partners and time table produced; - Roles and responsibilities are well defined - Approved methods and tools of communication between partners; - Approved decision-making procedures; - Project schedule review meetings are being held - Project schedule review meetings are well attended - Modifications to the project schedule are approved and tracked - Action items from review meetings are documented and tracked to completion 	<ul style="list-style-type: none"> - PMB meeting agendas - PMB meeting minutes - PMB meeting participants' list and signatures - Project Work plan - Project website updated monthly
WP5 Project Management (2)	<p><u>Objective:</u> Verification that project management activities are performed via a documented process</p> <p><u>Project Management standard documents:</u></p> <ul style="list-style-type: none"> - Grant Agreement - Partnership Agreement - Project communication platform - Physical & Virtual meetings - Project management reports - Progress report to EACEA 	<ul style="list-style-type: none"> - Partnership Agreement - Project platform - Progress report to EACEA - Final report to EACEA

9.2.2 Quality Assurance Indicators

The Shyfte project QA indicators are described in the official project Logical Framework Matrix (see. *Annex B*). For the purposes of QA, the main indicators are detailed in a table of performance indicators.

For all the work packages, every task, activity and sub-activity will have QA Indicators, which will be filled out by the tasks leaders under the control of the WP Leaders. These indicators will be used to complete the EACEA report documents “Table of Achieved/Planned Results”.

WP – Tasks Number	Quality Assurance Indicator	Evaluation Level	Measurable Indicators
WP1 Preparation			
WP1 – T1.1	<ul style="list-style-type: none"> - The quality of the literature review referenced <ul style="list-style-type: none"> • High relevance between the subject of the literature and project topic. • The referenced articles are peer reviewed • The referenced articles have been selected from tier-1 and tier-2 conferences and journals. • The referenced articles are taken from well reputed research databases - The curricula analyzed in the literature review - The teaching methods analyzed for the four domains in EU and in Asia - The learning method analyzed for the four domains - A study of knowledge and skill requirements - A comparative study for understanding the evolution of skills 4.0 	<ul style="list-style-type: none"> - Internal - Internal - Internal - Internal - Internal - External - External 	<ol style="list-style-type: none"> 1. Number of literatures referenced 2. % of the referenced articles have been published in recent years 3. Mean value of total citations of literature referenced 4. Number of curricula and programs studied 5. Number of teaching methods analyzed for the four domains in EU 6. Number of teaching methods analyzed for the four domains in Asia 7. Number of learning method analyzed for the four domains
WP1 – T1.2	<ul style="list-style-type: none"> - A questionnaire is developed in collaboration with industry - The number of SMEs surveyed in partners countries - The sectors and size of the SME's - The number of replies returned - Number of workshops - Quality of the reports studied/investigated - Maturity model defined successfully in collaboration between the industry and academic partners 	<ul style="list-style-type: none"> - External - External - Internal - External - External 	<ol style="list-style-type: none"> 8. Number of SMEs surveyed in partners countries 9. Number of small companies surveyed 10. Number of medium and big size companies surveyed 11. The global number of replies 12. Number of replies per partner country 13. Number of relevant reports studied/investigated 14. Number of workshops organized in PC country

	<ul style="list-style-type: none"> - A quality analysis is completed successfully - Quality of the recommendations based on this analysis 		
WP1 – T1.3	<ul style="list-style-type: none"> - A quality gap analysis is completed successfully - Quality of the recommendations based on this analysis - The curricula coverage according to the importance of the topics for companies - A high quality skill model is developed. - The new skill model allows to quantify and qualify knowledge transference based on KPIs associated to the maturity in the 4 Shyfte domains. 	<ul style="list-style-type: none"> - Internal - External - Internal - Internal - External 	<ul style="list-style-type: none"> 15. Number of topics offered by HEIs Asian curricula that correspond to Industry 4.0 required skills studied 16. Curricula coverage according to the importance of the topics for companies 17. Number of the recommendations based on the gap analysis 18. Number of publications
WP1 – T1.4	<ul style="list-style-type: none"> - The relationships between the skills and the Shyfte four domains are defined - The "required" skill set are identified - The "required" maturity levels of the trainees are identified - An efficient learning framework is defined - The modules' syllabus are defined 	<ul style="list-style-type: none"> - Internal - External - Internal - External - Internal 	<ul style="list-style-type: none"> 19. Number of skill set per domain 20. Number of modules is defined per domain 21. Numbers of generic/per sector modules 22. Number of modules' syllabus 23. Number of publications
WP1 – T1.5	<ul style="list-style-type: none"> - A learning strategy per domain is defined - The sessions for training of the trainers are scheduled - The sessions for training of the students are scheduled 	<ul style="list-style-type: none"> - Internal - Internal - Internal 	<ul style="list-style-type: none"> 24. Number of detailed syllabus defined per domain 25. Number of training sessions of the trainers scheduled 26. Number of training sessions for the students are scheduled 27. Number of potential trainers projected 28. Number of potential students projected
WP2 Development			
WP2 – T2.1	<ul style="list-style-type: none"> - The modules identified for the Industrial Engineering domain (based on the skills set and level of the trainees) - The modules identified for the Business Mgt domain (based on the skills set and level of the trainees) - The training session for the trainers occurred - The maturity level is defined for each category of students - The training session for the students occurred - Quality assessment of the training session 	<ul style="list-style-type: none"> - Internal - External - Internal - External - External - Internal - Internal 	<ul style="list-style-type: none"> 1. Number of modules identified for IE domain 2. Number of modules identified for Business Mgt domain 3. Number of trainers trained from CMU & KU 4. Number of staff per partner trained 5. Number of staff completing quality assessment 6. Number of students trained from CMU and from KU 7. Number of students completing quality assessment

	<ul style="list-style-type: none"> - Analysis of the training quality questionnaire - One improvement plan per module is defined - All the modules are updated 	<ul style="list-style-type: none"> - Internal - Internal 	8. Number of students satisfied
WP2 – T2.2	<ul style="list-style-type: none"> - The modules identified for Software Engineering and bigdata analytics domain (based on the skills set and level of the trainees) - The training session for the trainers occurred - The maturity level is defined for each category of students - The training session for the students occurred - Quality assessment of the training session - Analysis of the training quality questionnaire - One improvement plan per module is defined - All the modules are updated 	<ul style="list-style-type: none"> - Internal - External - Internal - External - External - Internal - Internal - Internal 	9. Number of modules identified for Software Engineering and bigdata analytics domain 10. Number of trainers trained from CDU & CUIT 11. Number of staff per partner trained 12. Number of staff completing quality assessment 13. Number of students trained from CDU and from CUIT 14. Number of students completing quality assessment 15. Number of students satisfied
WP2 – T2.3	<ul style="list-style-type: none"> - The modules identified for wireless and network analytics domain (based on the skills set and level of the trainees) - The training session for the trainers occurred - The maturity level is defined for each category of students - The training session for the students occurred - Quality assessment of the training session - Analysis of the training quality questionnaire - One improvement plan per module is defined - All the modules are updated 	<ul style="list-style-type: none"> - Internal - External - Internal - External - External - Internal - Internal - Internal 	16. Number of modules identified for wireless and network analytics domain 17. Number of trainers trained from UTM & UPM 18. Number of staff per partner trained 19. Number of staff completing quality assessment 20. Number of students trained from UTM and from UPM 21. Number of students completing quality assessment 22. Number of students satisfied
WP2 – T2.4	<ul style="list-style-type: none"> - The modules identified for Artificial Intelligence domain (based on the skills set and level of the trainees) - The training session for the trainers occurred - The maturity level is defined for each category of students - The training session for the students occurred - Quality assessment of the training session - Analysis of the training quality questionnaire - One improvement plan per module is defined - All the modules are updated 	<ul style="list-style-type: none"> - Internal - External - Internal - External - External - Internal - Internal - Internal 	23. Number of modules identified for Artificial Intelligence domain 24. Number of trainers trained from UPM & UTM 25. Number of staff per partner trained 26. Number of staff completing quality assessment 27. Number of students trained from UPM and from UTM 28. Number of students completing quality assessment 29. Number of students satisfied

WP2 – T2.5	<ul style="list-style-type: none"> - The architecture of the 6 learning centers is defined - the functionalities and main services are described (communication, identification, selection, registration, evaluation...). - The interactions between the global website and the local ones are identified - A dissemination strategy is proposed - A methodology for creation and testing is defined for the 6 Learning centers - A Business plan is defined for each Learning Center - A Knowledge-based framework is defined for each learning center - A methodology for technical and business evaluation is defined for the Learning centers 	<ul style="list-style-type: none"> - Internal - Internal - Internal - Internal - External - External - External - External - External 	<p>30. Number of Skills 4.0 learning center implemented</p> <p>31. Number of guidelines for teachers are defined (one per domain)</p> <p>32. Number of guidelines for students are defined (one per domain)</p>
WP3 Quality Control			
WP3 – T3.1	<ul style="list-style-type: none"> - Validation of the learning program by the companies (advisory board) - Define an evaluation quality questionnaire for the trainers (per domain) - Define an evaluation quality questionnaire for the students (per domain) 	<ul style="list-style-type: none"> - External - Internal 	<p>1. Number of professional experts per domain</p> <p>2. Number of external academic experts per domain/HEIs</p> <p>3. Number of quality indicators defined</p> <p>4. Number of questions per questionnaire</p> <p>5. Number of trainers filling the evaluation questionnaire</p> <p>6. Number of potential students filling the evaluation questionnaire</p> <p>7. % of the students that are globally satisfied</p>
WP3 – T3.2	<ul style="list-style-type: none"> - Define a Training Quality Plan - Develop a Quality Management System (QMS) training session for trainers - Organize and Schedule quality audits to evaluate the skills 4.0 transfer and measuring the impact of these skills in SME's 	<ul style="list-style-type: none"> - Internal - Internal - External 	<p>8. Number of indicators defined in the TQP per domain (pilot)</p> <p>9. Number of trainers trained on QMS</p> <p>10. Number of trainers satisfied by the QMS training</p> <p>11. Number of potential quality managers per Learning Centers</p> <p>12. Number of training quality audits scheduled per Learning Centers</p>
WP3 – T3.3	<ul style="list-style-type: none"> - Implementation of the Learning Centers audits - Evaluation of the Impact indicators 	<ul style="list-style-type: none"> - External 	<p>13. Number of training of the trainers quality audits carried out</p>

	<ul style="list-style-type: none"> - Assessment of the QMS system and continuous Improvement - Audits of SMEs in the Partners Countries with impact indicators conducted. 	- Internal	14. Number of indicators of Skills 4.0 transfer 15. Number of Trainers certified 16. Number of non- conformities 17. Number of improvement actions defined 18. Number of improvement actions implemented 19. Numbers of SME's involved 20. Number of companies salaries audited
WP3 – T3.4	<ul style="list-style-type: none"> - A sustainability assurance plan is designed with the HEIs partners and SMEs. - A SME's survey is done to assess the Learning Centers indicators - The sustainability plan ensures that the activities of the Learning Centers will continue beyond the end of the project. 	- External - External - External	21. Number of companies globally satisfied by the Learning materials (per domain, per country) 22. Number of companies globally satisfied by the Learning Centers services (per domain, per country) 23. Number of SMEs that would recommend learning centers (per domain, per countries)
WP4 Dissemination			
WP4 – T4.1	<ul style="list-style-type: none"> - Shyfte project dissemination to other universities - Shyfte project dissemination to companies 	- External - External - Internal - Internal - Internal - Internal - Internal	1. Number of entities where the project was spread 2. Number of external universities identified to disseminate the project 3. Number of external industries identified to disseminate the project 4. Number of Shyfte proposed activities in universities 5. Number of Shyfte proposed activities in industry 6. Number of events where the project was spread 7. Number of conferences, formal, informal meetings, etc. 8. Number events/activity per partner in the Map
WP4 – T4.2	<ul style="list-style-type: none"> - Awareness dissemination and acceptance of emergent skills - Development of a COST (European Cooperation in Science and Technology) proposal aligned with the dissemination of the Centers of Excellence; 	- Internal - External	9. Number of awareness dissemination events 10. Number of partners involved 11. Number of external entities involved 12. Number of Shyfte seminars & workshop 13. Number of partners 14. COST proposal acceptance

			15. Number of initiatives urged to the COST
WP4 – T4.3	<ul style="list-style-type: none"> - The Website is online - The Website is updated regularly - The events organized - Social Networks created and updated - Cluster of blogs indicators developed - Publication indicators - Conferences indicators 	<ul style="list-style-type: none"> - External - Internal - Internal - External - External - Internal 	16. Number of website visitors 17. Average time on page 18. Number of events organized 19. Number of events (conference, seminars, workshops...) in which Shyfte partners participate 20. Social networks number of follows 21. Social networks number of likes 22. Social networks number of shares Cluster of blogs indicators: 23. Number of visitors 24. Number of topics 25. Number of posts 26. Number of papers published Conferences indicators: 27. Number of people 28. Number of organizations 29. Nb of Industrial companies
WP4 – T4.4	<ul style="list-style-type: none"> - Scientific and technical dissemination 	<ul style="list-style-type: none"> - Internal - Internal - Internal 	30. Number of papers in scientific conferences (per domain) 31. Number of publications in international scientific journals (per domain) 32. Number of workshops & seminars organized
WP5 Management			
WP5 – T5.1	<ul style="list-style-type: none"> - The assigned tasks start and finish on time - The project Handbook is defined and validated - The project meetings are scheduled - The minutes of the meetings are done and validated - The deliverables are finished and validated on time - The periodic reports are done on time - The final report is ready on time 	<ul style="list-style-type: none"> - Internal - Internal - Internal - Internal - Internal - External 	1. The number of physical meetings 2. The number of virtual meetings 3. The duration of each task is respected 4. Number of deliverables finished on time
WP5 – T5.2	<ul style="list-style-type: none"> - The Quality Assurance Plan is defined and validated - The Quality Assurance Procedures are defined - A work plan with clear division of tasks and responsibilities between partners and time table is produced 	<ul style="list-style-type: none"> - External - Internal - Internal - Internal 	Quality Evaluation system indicators: 5. Number of QA procedures defined 6. Number of PMB reports 7. Number of travel reports 8. Number of Timesheets produced (per month, per person, per category)

	<ul style="list-style-type: none"> - Conflict are identified and resolved by the partners - Monitoring of the innovation being developed through the project 	<ul style="list-style-type: none"> - Internal - External 	9. Number of conflicts solved 10. Number of publications in international conferences 11. Number of international journal submitted
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9.2.3 Internal and External Quality Assurance evaluation

Internal QA evaluation: Internal QA evaluation will include the development of the main following standard templates/guidelines:

- PMB meeting reports,
- internal deliverable review,
- internal review of the results,
- Work Package reports,
- feedback forms for internal evaluation (level of satisfaction, challenges faced, recommendations for improvement),
- travel reports (official EACEA form),
- financial reporting forms (timesheets + staff declarations – official EACEA forms).

It will also include continuous review of progress & partners' feedback. A yearly evaluation will be carried out. The PMB will prepare a mid-term and a final evaluation reports based on feedback collected from the partners.

External QA evaluation : The external QA evaluation will be performed in close cooperation with the European and Asian experts of the Associated Partners (AP). The experts have a role of adviser to the consortium on the strategic orientations of the project and validate the results of the Work Packages submitted to them. External QA evaluation mechanisms will include:

- The deliverables defined for each WP and Tasks
- The Skill 4.0 model (ontology, maturity model, skill sets...)
- The learning framework per domain (skills sets, modules, maturity level of the trainees...)
- The Learning materials (learning methods/approach, modules' syllabus, industrial use cases, equipment used...)
- Training of the Trainers (ToT) evaluation questionnaire will be distributed at the end of each training session, to assess their satisfaction and gather feedback and possible suggestions for improvement.
- At the end of each training session, a questionnaire will be sent out to staff having participated in the training sessions to assess to what extent the skills developed during the session were put into practice.
- Training of Students (ToS) evaluation questionnaires will be distributed at the end of each training session, to assess their satisfaction and gather feedback and possible suggestions for improvement.

Feedback from relevant stakeholders will be essential to properly guide project actions and to validate Shyfte outcomes, especially considering its main goal of contributing to provide an answer to the gap between the requirements in terms of skills by the SME's and the existing curricula in the universities of partners countries.

10. Quality Assurance - Risk Management Plan

The risk management plan describes the events and parameters that may generate potential risks in the implementation of the Shyfte project activities. The plan also identifies the potential impact of risks and ways to mitigate them. The structure of this plan consists of a global overview on the Shyfte project risk management (table in section 10.1) and a more detailed description of the risks per WP/ Task (table 10.2).

10.1 Shyfte Global Risk Management

In this section, we provide an overview of general events that may generate risks in the implementation of the project. For each of these risks, an assessment of the likelihood and impact is proposed, and actions are defined to correct and mitigate them.

The following key overall risks have been identified for the Shyfte project:

Risk description	Probability/Impact	Action to mitigate risks
Replacement of project representative of a partner organization	Probability: medium Impact: medium	- Identify a staff member in the partner organization that is able to replace the project representative.
Change of beneficiary during the project	Probability: medium, Impact: high	- Reallocate resources taking into account the maintenance of the right skills and competencies.
Weak implementation of project activities by one partner	Probability: low Impact: medium	- Define and implement a plan for catching up; - Analyse possible solutions like the reallocation of tasks; - If necessary, contact the EACEA to request changes.
Lack of support from institutions and national bodies	Probability: low Impact: medium	- Increase the dissemination and communication about the objectives of the project, and its impact on the economy.
Improper use of budget by one partner	Probability: medium Impact: low	- Advice from the project coordinator to partners' financial managers; - Cut of ineligible/excessive expenditure before submitting reports to EACEA; - In case of expenditure much lower than planned, re-allocation of unspent budget among other partners; - If all other means prove useless, send request of budget to EACEA.
Withdrawal of a partner institution	Probability: low Impact: high	- The project coordinator will discuss the situation with the defecting partner, trying to find a solution (find a possible replacement); - In case a solution proves impossible, the project coordinator will immediately report to EACEA and proceed according to provisions set out in the Grant and Partnership Agreements.
The members of the project team could not agree on the final recommendations	Probability: low Impact: medium	- The project coordinator will discuss the situation with the partners to try to find a solution; - In case a solution proves impossible, the project coordinator will immediately report to EACEA and proceed according to provisions set out in the Grant and Partnership Agreements

Poor interim assessment by the experts of the EACEA	Probability: low Impact: high	- Take into consideration the evaluators' comments on the progress report and implement the corrective actions.
The impacts and benefits of the project are not sufficiently visible	Probability: low Impact: high	- Multiply the relevant communication and dissemination actions throughout the duration of the project.
Travel difficulties at certain periods of the project (strikes, crisis, occasional atmospheric problems, pandemic, etc.).	Probability: low Impact: high	- Anticipate as much as possible, and plan remote meetings/trainings

10.2 Shyfte Specific Risk Management (per WP/Task)

In the context of the Shyfte project, we consider that a risk is characterized by the probability of an event happening and its consequences. In the following section, we describe the main potential risks for each of the project tasks.

Risk description	WP-Task concerned	Probability/ Impact	Risk mitigation measures
Deadlines are not met	All tasks	Probability: low Impact: medium	Special measures are needed to accelerate some activities
The number of replies to the questionnaire by companies is not sufficient	WP1 - T1.1	Probability: medium Impact: high	Re-launching companies survey campaigns
The number of modules defined per domain is not enough	WP1 - T1.4	Probability: low Impact: medium	Involve more staffs in partner universities for module development
Pilots definitions do not match business needs	WP1 - T1.5	Probability: low Impact: high	. Anticipate the validation of pilots by companies . Validate the pilots in stages
The learning strategy per domain is not relevant	WP1 - T1.5	Probability: low Impact: medium	. Anticipate the validation of the learning strategy by academic experts . Validate the learning strategy in stages
Problems in the development of the modules	WP2 - T2.1 to T2.4	Probability: medium Impact: high	Involve more staffs in partner universities for module development
Problems purchasing and installing equipment	WP2 - T2.1 to T2.4	Probability: low Impact: medium	. Anticipate the drawing up of quotations . Getting the support of the university
Problems with the assignments of local trainers	WP2 - T2.1 to T2.4	Probability: low Impact: medium	. Anticipating and developing communication . Getting the support of the university
Problems in planning training sessions with students	WP2 - T2.1 to T2.4	Probability: low Impact: high	Validate periods and dates with departments and faculties
Difficulties in the preparation of the training sessions	WP2 - T2.1 to T2.4	Probability: low Impact: medium	. Plan and organize training sessions well in advance . Involve more departments and faculties
Language difficulties during the training sessions	WP2 - T2.1 to T2.4	Probability: medium Impact: high	. All documents must be provided in English . Arrange for simultaneous translation if necessary

Difficulties in the development of the Skills 4.0 learning centers in a partner university	WP2 - T2.5	Probability: low Impact: high	Communicate interest and benefits to students and companies
Problems with the quality plan and the trainers qualification	WP3 - T3.1	Probability: medium Impact: high	Validate the quality plan and prepare the set of documents for the trainers in advance
The audits do not meet the deadlines	WP3 - T3.3	Probability: medium Impact: high	Accelerate the training and audit phases
The sustainable assurance plan is not relevant	WP3 - T3.4	Probability: medium Impact: high	. Assess the indicators through a dedicated surveys in a set of SMEs . The sustainability assurance plan is designed with the HEIs to ensure the continuation of this key activity beyond the end of the project.
Dissemination and exploitation strategy does not produce the expected results	WP4 - T4.1	Probability: low Impact: medium	Multiply communication and dissemination campaigns
Awareness and acceptance of industry 4.0 concepts by the academic community and industrial sector does not work	WP4 - T4.2 & T4.3	Probability: medium Impact: high	Increase the number of seminars and workshops to present the results and benefits to the academic community and companies.
The quality assurance indicators are not met	WP5 - T5.2	Probability: medium Impact: high	. Regular monitoring of indicators . Quickly correct any observed deviation

11. Information Management

All documents will be produced using the appropriate Word and PowerPoint templates agreed for the purpose by the Shyfte partners (see *Handbook Style Guide*).

11.1 Deliverable review and approval

Each deliverable will be reviewed by members of the PMB (at least 2), each of them not working in the institutes of the partners involved in preparing the deliverable. In isolated cases, if all main partners are involved in the preparation, a choice will be made among members of the PMB. In the instance that shortcomings in quality are found, the responsible task leader will be informed within a pre-defined period (max. 2 weeks), in order to be able to make amendments.

All document published within the Shyfte project will mention:

“The Shyfte project referred by “598649-EPP-1-2018-1-FR-EPPKA2-CBHE-JP” has been funded with support from the European Commission. (Grant Agreement No: 2018-3316/001-001)”

11.2 Meeting minutes and action point numbering

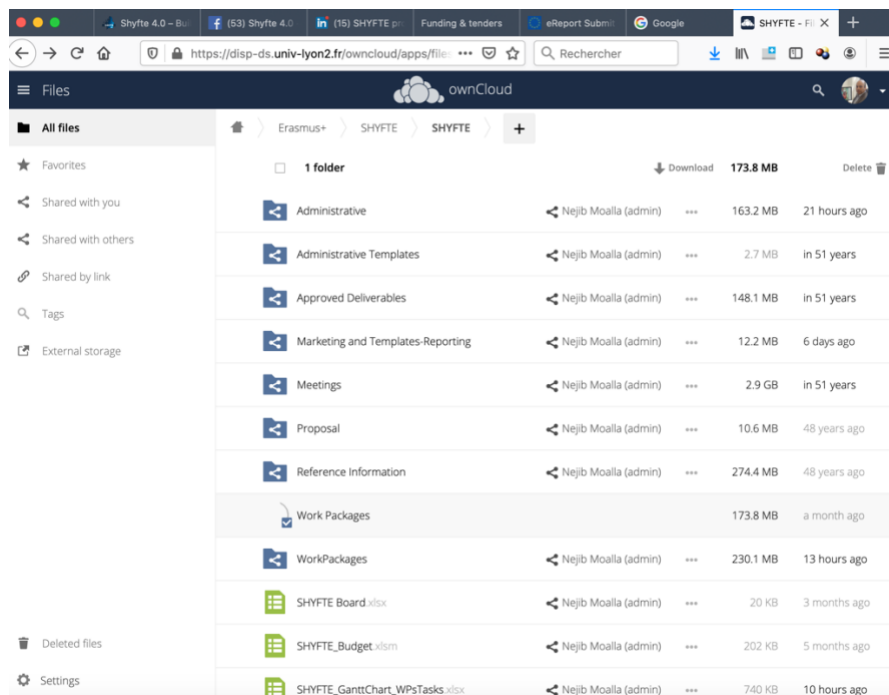
A specific template as used for the Kick-off meeting shall be used for the minutes of meetings. Among others, meeting minutes shall sum-up, for each discussion, the main arguments and the conclusion(s) reached. For each decision, a short summary of the arguments/assumptions having led to that decision shall be recorded for each action point, it is proposed to specify the person(s) (respectively partner(s)) in action. In case of several persons (respective partners) in action, it is proposed to underline the leader of the action.

11.3 Tools for Information Management

An effective project management system is crucial for the successful implementation of the Shyfte project. The proposed management system provides for effective decision-making, clear external communication and consultation with the project officer, operational internal communication, effective administrative and technical control of the project.

It ensures that the project will result in the expected outcome according to its objectives and the program's outlines and all WPs will jointly work according to their dependencies. To this end, each partner has a clear role in the project and each WP & task, while at the same time respecting the resource allocation plan and the predefined time schedule.

A project management tool has been set-up: <https://disp-ds.univ-lyon2.fr/owncloud> for location-independent team collaboration. All documents related to the project are stored on this cloud.



Mailing lists are used to ease communication; mailing lists can be used only by subscribers:

- The main mailing list is shyfte@shyfte.eu (for all the participants)
- The mailing lists for the WPs participants:
 - WP1@shyfte.eu, WP2@shyfte.eu, WP3@shyfte.eu, WP4@shyfte.eu, WP5@shyfte.eu
- PMB@shyfte.eu (Project Management Board, 1 leader per partner)
- PTB@shyfte.eu (Project Technical Board, leaders of the 5 WPs)
- ADB@shyfte.eu (Advisory Board, Associate partners)

In the subject of all emails the following subject is automatically used “[shyfte]...”.

Communication platform (Skype or Zoom) is also used from the beginning of the project and provide a digital workspace to support the virtual communication and cooperation between project team members.

12. Annexe A: Partnership Agreement

See the Partnership Agreement document

13. Annexe B: LOGICAL FRAMEWORK MATRIX

LOGICAL FRAMEWORK MATRIX – LFM

<p>Wider Objective: <i>What is the overall broader objective, to which the project will contribute?</i></p> <ul style="list-style-type: none"> • The overall aims of SHYFTE project are: • To support academic and administrative staff in Asian HEIs to design and implement new methodology and learning materials to enhance and improve the competences and skills related to Industry 4.0. That will enable HEIs organisations aligning their learning program strategy both to the requirements of the regional industry and the global labour market. • To build and strengthen links between HEIs and Industry 4.0, and promote the job market by minimizing the skills gap. • To build Skills 4.0 LABs or Learning centers of excellence in Asian Partner's HEI to enable each of them to become the reference center in it's country and disseminate the results of the project nationally and regionally. 	<p>Indicators of progress: <i>What are the key indicators related to the wider objective?</i></p> <ul style="list-style-type: none"> • Skills and expertise of trainers/teachers and students • Involvement of smart technology in HEIs, industries and enterprises • Economy growth on individual basis • Economic aspects of the project partners in the pilot projects • Student employment rate • Business satisfaction • Talent development program according to the CDIO conception 	<p>How indicators will be measured: <i>What are the sources of information on these indicators?</i></p> <ul style="list-style-type: none"> • Quality audits of the trainers/teachers and students • Report on feedback and recommendation implemented • To compare and analyse the job market before and after deploying proposed learning and teaching strategies in partner countries (medium-term indicator) 	
<p>Specific Project Objectives: <i>What are the specific objectives, which the project shall achieve?</i></p> <ul style="list-style-type: none"> • Analyse the gap between the skills acquired in HEIs and the skills required by industry of the future (WP1) • Develop a Skills 4.0 based learning framework (WP1) 	<p>Indicators of progress: <i>What are the quantitative and qualitative indicators showing whether and to what extent the project's specific objectives are achieved?</i></p> <ul style="list-style-type: none"> • Handbook • Number of trainers trained • Number of pilot implemented • Number of students trained 	<p>How indicators will be measured: <i>What are the sources of information that exist and can be collected? What are the methods required to get this information?</i></p> <ul style="list-style-type: none"> • Project technical reports • Training Quality audits • Questionnaire 	<p>Assumptions & risks: <i>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?</i></p> <ul style="list-style-type: none"> • The partner institutions can provide relevant information on their administrative teaching curriculum and programs
<ul style="list-style-type: none"> • Design and implement teaching programs and learning materials for four domains of expertise (WP1 & WP2) • Implement four Pilots, based on the four domains of expertise, in the HEIs of the Asian partners (WP2). • Develop a Skills 4.0 based Training and Learning Center of Excellence in each Partner country (WP2) • Define a quality assurance plan for the learning programs based on quality audits to ensure the sustainability (WP3). • Develop a successful exploitation and dissemination strategy (WP4) 	<ul style="list-style-type: none"> • Establishment of the Skills 4.0 Labs • Improved students skill set • Number of Quality Audits • Number of scientific and technical publications 		<ul style="list-style-type: none"> • Pilots can properly be defined according to the specifics of the Partner Countries • The institutional management is committed to support the project • Risk: diversity of the legal and administrative environment
<p>Outputs (tangible) and Outcomes (intangible): <i>Please provide the list of concrete DELIVERABLES - outputs/outcomes (grouped in Workpackages), leading to the specific objectives.</i></p> <p>D1.1: Skills for Industry 4.0 requirement (WP1)</p> <p>D1.2: Gap analysis between HEIs & Industry 4.0 requirements</p> <p>D1.3: Skills 4.0 based learning framework (WP1)</p> <p>D1.4: Design teaching programs and learning materials for 4 domains of expertise (WP1)</p> <p>D2.1: Pilot 1: Industrial Engineering and Management (WP2)</p> <p>D2.2: Pilot 2: Big data & data analytics (WP2)</p> <p>D2.3: Pilot 3: Wireless networks</p>	<p>Indicators of progress: <i>What are the indicators to measure whether and to what extent the project achieves the envisaged results and effects?</i></p> <ul style="list-style-type: none"> • Number of potential trainers • Number of trainers trained • Number of potential students • Number of students trained • Pilots implementation (number of learning sessions...) • Quantity and quality of self-assessment documents • Number of Skills 4.0 learning center implemented • Number of contacts based on the dissemination of the project • Number of scientific and technical publications 	<p>How indicators will be measured: <i>What are the sources of information on these indicators?</i></p> <ul style="list-style-type: none"> • Training quality audits results • Decision of institutional commitment • Measured against the checklist in the handbook 	<p>Assumptions & risks: <i>What external factors and conditions must be realised to obtain the expected outcomes and results on schedule?</i></p> <ul style="list-style-type: none"> • The assigned tasks will start and finish on time • All actors understand their roles and they are available • Reporting documents will be ready by the deadline with the proper content • Local project members will support the project in each institution • Consensus can be reached in process of implementation • The partner institutions can nominate trainers to be trained • The project members have the necessary expertise in Industry 4.0

<p>analytics</p> <p>D2.4: Pilot 4: Artificial Intelligence (WP2)</p> <p>D2.5: Skills 4.0 Learning center of excellence (WP2)</p> <p>D2.6: Learning center as innovation Lab (WP2)</p> <p>D2.7: Evaluation of innovation solutions for training and exploitation (WP2)</p> <p>D3.1: Strategic Quality Plan (WP3)</p> <p>D3.2: Quality Audit report (WP3)</p> <p>D3.3: Sustainability assurance plan (WP3)</p> <p>D4.1: Strategic plan for diffusion & dissemination (WP4)</p> <p>D4.2: Project website (WP4)</p> <p>D4.3: Publicity strategy (WP4)</p> <p>D4.4: Meetings report (WP4)</p> <p>D4.5: Campaign to encourage similar initiatives in other HEIs (WP4)</p> <p>D4.6: Network center and observatory exploitation (WP4)</p> <p>D4.7: Publications in indexed journals & books (WP4)</p> <p>D5.1: SHYFTE quality Plan and project handbook (WP5)</p> <p>D5.2: SHYFTE final report</p> <p>D5.3: SHYFTE project periodic reports (WP5)</p>			<p>requirements</p> <ul style="list-style-type: none"> • The audits can be organized according to the plans • All actors are well-prepared for an efficient evaluation • The visit of the project members team (EU/Asia) can be organized properly • Missing information can be collected on time • The findings of the expert teams can be discussed in open discussions • Risk: deadlines are not met, special measures are needed to accelerate some activities • Risk: problems with the assignments of local trainers • Risk: misunderstanding in key terms • Risk: the audits do not meet the deadlines • Risk: language difficulties • Risk: the audit reports does not provide the necessary information
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<p>Activities:</p> <p><i>What are the key activities to be carried out <u>grouped in Workpackages</u> and in what sequence in order to produce the expected results?</i></p> <ul style="list-style-type: none"> • Activities Starting Year 1: • T5.1 Project management coordination and reporting (WP5) • T5.2 Quality, Risk and Innovation management (WP5) • T3.1 Strategic Quality Plan (WP3) • T4.1 Dissemination and exploitation strategy (create strategic plan) (WP4) • T.1.1 Literature review of Industry 4.0 (WP1) • T1.2 Identify the skills requested by Industry 4.0 (questionnaires; workshop with Industry; relevant reports from EU commission and projects) (WP1) • T1.3 Analyse the gap by overlapping the skills 4.0 with the existing skills in HEIs and Develop an emerging model (emerging skills; disparate skills, shift skills,...) (WP1) • T4.2 Awareness dissemination and acceptance of emerging skills 4.0 (WP4) • T4.3 Exploitation and dissemination for action (Web site, flyers...) (WP4) • T1.4 Develop the Skills 4.0 learning framework (WP1) • T1.5 Design teaching programs and learning materials for 4 domains of expertise (WP1) • Activities starting end of Year 1 - Year 2 	<p>Inputs:</p> <p><i>What inputs are required to implement these activities, e.g. staff time, equipment, mobilities, publications etc.?</i></p> <ul style="list-style-type: none"> • Publications and EU reports on Industry4.0's challenges • Enterprise networks & professional associations • Quality management principles • Training materials • 44 FTE M/Y staff effort (time) 		<p>Assumptions, risks and pre-conditions:</p> <p><i>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?</i></p> <ul style="list-style-type: none"> • The assigned tasks will start and finish on time • All actors understand their roles and they are available • Workshops will be organized by the assigned institutions using their facilities • Local experts will support the project in each institution • The necessary documents will be ready on time • Organization of the trainings will go smoothly • All the documents will be written in English (e.g. the HEI's curriculum) • The visit of the project members team can be organized properly • The findings of the project members teams can be discussed in an open discussion • Risk: deadlines are not met, special measures are needed to accelerate some activities • Risk: travel difficulties in certain periods of the project • Risk: problems with the assignments of local trainers • Risk: difficulties in the preparation of the learning sessions (venue, printing) • Risk: the members of the project
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<ul style="list-style-type: none"> • T2.1 Pilot 1 - Industrial engineering and management (WP2) • T2.2 Pilot 2 -Software Engineering and big data analytics (WP2) • T2.3 Pilot 3 - Wireless networks analytics (WP2) • T2.4 Pilot 4 - Artificial Intelligence (WP2) • T2.5 Develop the skills4.0 training and learning center of excellence (WP2) • T3.2 Define a Formation Quality Plan (FQP) (WP3) • T3.2 Implement quality audits to analyse and evaluate the transfer of skills 4.0 and measuring the impact of these skills in SME (WP3) • T3.4 Sustainability assurance plan (WP3) • T4.4 Scientific and technical dissemination (Conferences, workshops, seminars...) (WP4) 			<p>team could not agree on the final recommendations</p> <ul style="list-style-type: none"> • Risk: the institutions are not motivated for an evolution of their curriculum
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