



Deliverable 1.3

Detailed planning of twinning activities for year 3+9M

WP1 Detailed Planning of Twinning Activities

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Introduction

The overall goal of TRUST project is to boost research excellence in industrial sustainability. Through the establishment of a long-lasting partnership between ISQ, UCAM and CHALMERS, the Scientific & Technological capacity of ISQ shall be improved and the partnership at European level leveraged, fostering therefore the conditions for an effective support and engagement of the European in its pathway to the achievement of the Sustainable Development Goals.

The concept of sustainability is broad and has been used in different contexts, but the economic, social and environmental aspects, which are inextricably linked, remain the three fundamental pillars that must always be appropriately addressed. Nevertheless, evaluating sustainability and its evolution is a challenging task. For these reasons, this project is focused in two main aspects of sustainability, namely, assessment tools and methods as well as sustainability management, planning and business models.

This document presents the detailed planning of the TRUST twinning activities for the Year 3+9M (October 2020-June 2022)

The detailed planning of twinning activities for Year 3+9M is an internal document of the TRUST project, delivered in the context of WP1 – Detailed planning of twinning activities. The objective of WP1 is to design the detailed TRUST training program plan.

1. Detailed planning for year 3+9M

1.1 Detailed Training Program plan

The Detailed Training Program plan (DTP Plan) reflects the skills and needs as well as the longer-term personal and professional development goals of ISQ researchers and technicians. The DTP plan describes the didactic training that trainees will receive and the desired training goals, according to each trainee's specific experience levels and needs as well as ISQ research priorities within TRUST focus areas. The DTP planning entailed two steps:

- In a first step, a training need analysis was undertaken, consisting of an assessment of current skill levels and knowledge of ISQ researchers/technicians, in two perspectives: technical knowledge/experience and personal development interests. For this purpose, all ISQ researchers and technicians working in the TRUST project research areas have been consulted. This information was then used to define skills development needs, according to the academic background, professional experience and area of activity, personal interests and ISQ priorities.
- In a second step, once the training needs identified, available courses at UCAM and CHALMERS (virtual and or on-campus) and respective calendars have been compiled. The selection of the trainees and respective courses also consider the planning of the staff exchanges (WP3), taking advantage of the presence of ISQ technicians at UCAM and or CHALMERS in a logic of resource and cost optimization. This information was then mapped in a DTP plan.

As a result of these two steps, the following tables present the training needs analysis and the DTP Plan for year 3+9M (October 2020-June 2022).

Table 1 – Training needs analysis

Trainee	Academic profile	Professional background	Skill gaps/Development needs & interests
Junior 1	MSc in Environmental engineering at University of Coimbra in 2017.	1-year experience working as environmental engineer. Currently working on industrial sustainability and waste valorisation techniques.	<ul style="list-style-type: none"> • Strategic Marketing and Business Development • New Business Models • Material flow cost accounting tools • Risk assessment
Senior 1	Degree in ME at University of Minho in 2005, MSC in Logistics of Biomass in 2008. PhD in Sustainability and Renewable Energies in 2016.	10-year experience in sustainable development and participation in national and EU funded projects. Presently, promoting and participating in R&D projects in the areas of resource efficiency, circular economy and industrial symbiosis.	<ul style="list-style-type: none"> • Business models for the Circular Economy • How to create value across value chains • How to identify, capture and create value • Material flow cost accounting tools • Risk assessment
Senior 2	MSc and BSc in Environmental Engineering, PhD in Energy and Sustainability.	Her ongoing research focuses on energy efficiency and management in industries and buildings by the integration of the key strands applications of heat recovery, sensible and latent thermal heat storages as well as heat transfer enhancement solutions. Her MSc and PhD studies allowed the publication of several papers in international scientific journals and conferences in the same research domain.	<ul style="list-style-type: none"> • Sustainable development practices • Driving change towards sustainability • Development of business models for sustainable services.
Senior 3	PhD in Sustainable Energy Systems at University of Coimbra, MIT-Portugal program (2017), MSc in Energy for Sustainability at University of Coimbra (2010), and degree in Architecture at FEUP University of Porto (2007).	She has been working in energy efficiency and Life cycle assessment. 8-year experience in scientific research focusing on modelling environmental Life Cycle Assessment (LCA) of buildings, building components, construction materials, industrial processes, operational energy analysis and eco-efficiency measures applied to industrial thermal processes. She is author of publications in international scientific journals and conferences.	<ul style="list-style-type: none"> • Advanced LCA • Environmental product footprint • Project management • Business Models for sustainable products • Strategic Planning of Research and Development activities
Senior 4	BSc and MSc in Chemical Engineering, Diploma of Advanced Training, Sustainable Energy Systems, and MBA.	More than 20 years' experience working in industrial and environmental sustainability issues, project management and coordination. In recent years his research has been focused in industrial symbiosis and resource efficiency.	<ul style="list-style-type: none"> • Circular Business models • Circularity KPIs
Senior 5	B.Sc. in Chemical Engineering; M.Sc. in Renewable Energy, Fuel Cells and Hydrogen; and, PhD in Industrial Technologies.	8-year experience in EU, National and private projects related to energy systems modelling and analysis (economic and environmental sustainability). Currently focused on energy efficiency, waste heat valorisation and renewable energy systems in industry.	<ul style="list-style-type: none"> • Strategic Marketing and Business Development • Technology-based innovation and IPR • Intellectual assets and property • IP issues in the context of new technologies and innovation • Energy markets

Trainee	Academic profile	Professional background	Skill gaps/Development needs & interests
			<ul style="list-style-type: none"> • Energy systems modelling and analysis: large scale, temporal scale. • Applications of Heating, Ventilating and Air Conditioning (HVAC) engineering • Energy balance of buildings and conditioned spaces
Junior 2	MSc. Mechanical Engineering (ISEC) and PhD candidate in Sustainable Energy Systems (IST, University of Lisbon)	Background of 2 years in industry. Three years' experience in R&D projects mainly focused in the industrial sustainability topics and its diverse concepts, such as, resource efficiency, circular economy and industrial symbiosis.	<ul style="list-style-type: none"> • Business strategy • Sustainable Business Models • Business Development & innovation • Strategic environmental assessment
Junior 3	MSc in Chemical Engineering (2013 – 2018) and PhD candidate in Sustainable Energy Systems, IST, University of Lisbon	Chemical Engineer with experience on the field of energy efficiency. Within this research domain, his area of activity includes the optimisation of industrial water systems and thermal processes. Currently, he is a PhD Candidate in Sustainable Energy Systems. He is the author of several publications in scientific journals and conferences.	<ul style="list-style-type: none"> • Energy efficiency • Energy management • Process integration • Heat recovery in the industrial sector • Process modelling • Energy system optimisation

Table 2 – Courses to be attended by ISQ researchers (not exhaustive list). Provisional planning for October 2020-June 2022

Trainee ISQ	Course	Place/Dates	Duration	Skill gaps to be filled
Junior 1 Senior 1 Senior 3 Senior 4 Senior 5	Management and Economics of Innovation, MSc: <ul style="list-style-type: none"> • Technological change and Industrial transformation 	Chalmers Online (Autumn) tbc	Sp1 (Sep-Nov) Tbc	<ul style="list-style-type: none"> • Managing technology to address market opportunities • Manufacturing changes and design towards innovation • Tools and methods for product and service development
Junior 1 Senior 1 Senior 3 Senior 4	Supply chain Management, MSc: <ul style="list-style-type: none"> • ITR363 Sustainable supply chains 	Chalmers Online	Sp2 (Out-Jan) Tbc	<ul style="list-style-type: none"> • Manufacturing sustainability • System thinking approach • Managing organisational sustainability
Junior 1 Senior 1 Senior 3 Senior 4	Supply chain Management MSc: <ul style="list-style-type: none"> • Supply chains analytics 	Chalmers Online (Spring) tbc	Sp4 (Apr-Jun) Tbc	<ul style="list-style-type: none"> • Optimization and decision analysis for industry supply chains • New tools for sustainable businesses • Sustainability analysis and decision-making • Multi criteria decision Analysis
Senior 3 Senior 4	MTT096 - Production management	Chalmers Online Tbc	Sp2 (Out-Jan) Tbc	<ul style="list-style-type: none"> • Production management and improvement: key performance indicators • investment, product, profitability calculations
Senior 3	MTT120 - Additive manufacturing	Chalmers Online Tbc	Sp3 (Jan-Apr) Tbc	<ul style="list-style-type: none"> • Additive manufacturing (AM) principles • AM processes (powder-bed and blown powder/wire-based)
Senior 3 Senior 5	BOM250 – Life cycle engineering	Chalmers Online Tbc	Sp3 (Jan-Apr) Tbc	<ul style="list-style-type: none"> • Life cycle engineering methods such as Life Cycle Cost Assessment (LCCA) and Social Life Cycle Analysis (SLCA).

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Trainee ISQ	Course	Place/Dates	Duration	Skill gaps to be filled
Senior 3	KBT135 - Waste management	Chalmers Online Tbc	Sp2 (Out-Jan) Tbc	<ul style="list-style-type: none"> Waste management practices and recycling
Senior 3	KPO021 - Polymer technology	Chalmers Online Tbc	Sp4 (Apr-Jun) Tbc	<ul style="list-style-type: none"> Polymeric materials and processing of polymers
Senior 3	TEK195 - Manufacturing strategy	Chalmers Online Tbc	Sp4 (Apr-Jun) Tbc	<ul style="list-style-type: none"> Develop, analyse and improve manufacturing strategies
Senior 4 Senior 5 Senior 6 Senior 7	Management and Economics of Innovation, MSc: <ul style="list-style-type: none"> Intellectual property and innovation strategies 	Chalmers Online? (Spring) To be confirmed	tbc	<ul style="list-style-type: none"> Technology-based innovation and IPR Intellectual assets and property in relation to innovation and business strategy
Senior 4 Senior 5 Senior 6	Management and Economics of Innovation, MSc: <ul style="list-style-type: none"> Strategic management and economics of intellectual property 	Chalmers Online? (Spring) To be confirmed	tbc	<ul style="list-style-type: none"> Strategic and economic thinking to manage problems related to new technologies, R&D, IP, innovation, competitiveness and economic performance. Identify and analyse IP issues and formulate international strategies in the context of new technologies and innovation
Senior 3 Senior 5 Junior 4	Sustainable Energy Systems, MSc: <ul style="list-style-type: none"> Energy systems modelling and planning 	Chalmers Online? (Spring) To be confirmed	Sp4 (Apr-Jun) tbc	<ul style="list-style-type: none"> Energy markets System analysis tools (energy systems modelling and optimization tools) Time scales in analysis Intermittent Power production
Senior 5	Sustainable Energy Systems, MSc: <ul style="list-style-type: none"> Heating, ventilation and air conditioning 	Chalmers Online? (Spring) To be confirmed	tbc	<ul style="list-style-type: none"> Applications of Heating, Ventilating and Air Conditioning (HVAC) engineering Energy balance of conditioned spaces
Junior 1 Senior 1 Senior 3	ESD150 - Driving change Towards Sustainability	UCAM online	15 Oct – 3 Dec 2020	<ul style="list-style-type: none"> Dealing with complexity requires a systems approach. Dealing with change by challenging orthodoxy when it is rooted in 20th Century criteria. Dealing with people through consultation processes and negotiation.
Junior 5 Senior 2 Senior 7	ESD200 - Sustainability Methods and Metrics	UCAM online	12 Oct – 30 Nov 2020	<ul style="list-style-type: none"> Principles, mindsets and complexity systems thinking Life Cycle Analysis Multi criteria decision analysis
Junior 1 Senior 1 Senior 2	ESD560 - Innovations in Sustainable Design and Manufacturing	UCAM online	2021	<ul style="list-style-type: none"> Innovation for sustainability in design and manufacturing Industrial Ecology and the role of the circular economy. Analyse products and service offerings for sustainability challenges and opportunities

Courses in Table 2 will be delivered online by Chalmers and UCAM as a result of the measures taken to fight the Covid-19 pandemic. This offer will be extended to 2021. During this following period we foresee that up to two courses will be attended on-campus by ISQ researchers at Chalmers and UCAM but only in 2022 if by then the situation regarding the covid-19 pandemic has improved and allows it. The concrete courses to be attended and by whom will be defined by end of 2021 when courses availability will be known as well as the researchers to be involved.

1.2 Detailed planning of joint activities

1.2.1 Staff exchanges

The consortium will promote cooperative work of relatively small-scale and short periods in order to strengthen research partnerships through staff exchanges. Researchers will have the opportunity to share knowledge and skills, and thus find new possibilities in their R&D activities and foster interdisciplinary research.

The joint activities to develop within staff exchanges include: (i) joint supervision of MSc/PhD Thesis and Supervision; (ii) discussion of new R&D proposals/projects; (iii) learning of different management approaches for research and innovation teams and activities; (iv) scientific review (UCAM and CHALMERS) of ongoing ISQ RTD projects; (v) attendance of running on-campus courses (Task 2.1) related to emerging industrial sustainability trends and tools and to the improvement of scientific research performance and (vi) preparation of joint summer schools (Task 3.2).

Overall, the staff exchange aims not only to enhance ISQ capability in industrial sustainability research, but also to strengthen and establish long-term cooperation between the partners. Staff exchange will consequently be arranged across all the participating institutions namely: (i) ISQ / Cambridge; (ii) ISQ / Chalmers and (iii) Cambridge / Chalmers.

The staff exchange between each organization will take place annually and involve one senior researcher (up to 2-week residence period) and one junior researcher (up to 8-week residence period). The following table details the staff exchanges that will take place in Year 3 + 9M (October 2020 – June 2022).

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Table 3 – Staff exchanges for October 2020 - June 2022

Staff exchange	Planned period	Objectives	Workplan	Researcher
ISQ-UCAM	May-June 2021	Collaboration on on-going research projects and joint publications	<ul style="list-style-type: none"> - Draft/build joint paper (Scaler results, New BM case study, others) - Training on IfM tools - Specific UCAM tool application in ISQ real case study (Value uncaptured) - Paper development and research methodologies 	Junior
ISQ-CHALMERS	May-June 2021	Workshops, networking, initiation/coordination of collaborative efforts	<ul style="list-style-type: none"> - Facilitate workshops and professional training - Meetings and discussions with local stakeholders - Initiate collaborative project(s) and joint papers 	Senior
		Collaboration on on-going research projects and joint publications	<ul style="list-style-type: none"> - Collaborate on sustainable manufacturing systems and/or sustainable manufacturing capabilities for resilient and sustainable industrial systems - Initiate joint publications - Attend relevant events (workshop, seminar, conferences, etc.) and courses 	Junior
UCAM-ISQ	May-June 2021	Workshops, networking, initiation/coordination of collaborative efforts	<ul style="list-style-type: none"> - Facilitate workshops and professional training - Meetings and discussions with local stakeholders - Initiate collaborative project(s) and joint papers 	Senior
		Collaboration on on-going research projects and joint publications	<ul style="list-style-type: none"> - Collaborate on sustainable manufacturing and/or sustainable manufacturing capabilities for resilient and sustainable industrial systems - Initiate joint publications - Attend relevant events (workshop, seminar, conferences, etc.) and courses 	Junior
CHALMERS-ISQ	August - September 2021	Workshops, networking, initiation/coordination of collaborative efforts	<ul style="list-style-type: none"> - Facilitate workshops and professional training - Meetings and discussions with local stakeholders - Initiate collaborative project(s) and joint papers 	Senior
		Collaboration on on-going research projects and joint publications	<ul style="list-style-type: none"> - Collaborate on sustainable and digitalized manufacturing systems and/or sustainable manufacturing capabilities for resilient and sustainable industrial systems - Initiate joint publications - Attend relevant events (workshop, seminar, conferences, etc.) and courses 	Junior
ISQ-UCAM	October-December 2021	Collaboration on on-going research projects and joint publications/proposals	<ul style="list-style-type: none"> - Create a framework for new Circular/Sustainable Business models implementation - Draft a New BM project proposal concept (Retail sector?) - Define strategies for IS ISQ services improvement 	Senior
		Collaboration on on-going research projects and joint publications	<ul style="list-style-type: none"> - Collaborate on sustainable manufacturing systems and/or sustainable manufacturing capabilities for resilient and sustainable industrial systems - Initiate joint publications - Attend relevant events (workshop, seminar, conferences, etc.) and courses 	Junior
CHALMERS-UCAM	October-December 2021	Teaching and examination, networking, initiation/coordination of collaborative efforts	<ul style="list-style-type: none"> - Facilitate workshops and professional training - Meetings and discussions with local stakeholders - Initiate collaborative project(s) and joint papers 	Senior
		Collaboration on on-going research projects and joint publications	<ul style="list-style-type: none"> - Collaborate on sustainable and digitalized manufacturing systems and/or sustainable manufacturing capabilities for resilient and sustainable industrial systems - Initiate joint publications - Attend relevant events (workshop, seminar, conferences, etc.) and courses 	Junior

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Staff exchange	Planned period	Objectives	Workplan	Researcher
UCAM-CHALMERS	October-November 2021	Teaching and examination, networking, initiation/coordination of collaborative efforts	<ul style="list-style-type: none"> - Facilitate workshops and professional training - Meetings and discussions with local stakeholders - Initiate collaborative project(s) and joint papers 	Senior
		Collaboration on on-going research projects and joint publications	<ul style="list-style-type: none"> - Collaborate on sustainable manufacturing systems and/or sustainable manufacturing capabilities for resilient and sustainable industrial systems - Initiate joint publications - Attend relevant events (workshop, seminar, conferences, etc.) and courses 	Junior
CHALMERS-ISQ	January-February 2022	Workshops, networking, initiation/coordination of collaborative efforts	<ul style="list-style-type: none"> - Facilitate workshops and professional training - Meetings and discussions with local stakeholders - Initiate collaborative project(s) and joint papers 	Senior
		Collaboration on on-going research projects and joint publications	<ul style="list-style-type: none"> - Collaborate on sustainable and digitalized manufacturing systems and/or sustainable manufacturing capabilities for resilient and sustainable industrial systems - Initiate joint publications - Attend relevant events (workshop, seminar, conferences, etc.) and courses 	Junior
ISQ-CHALMERS	February-April 2022	Collaboration on on-going research projects and joint publications/proposals	<ul style="list-style-type: none"> - Facilitate workshops and professional training - Meetings and discussions with local stakeholders - Initiate collaborative project(s) and joint papers 	Senior
		Collaboration on on-going research projects and joint publications	<ul style="list-style-type: none"> - Work on joint publications - Attend relevant events (workshop, seminar, conferences, etc.) and courses - Attend the JSS 5 	Junior
UCAM-CHALMERS	February-April 2022	Teaching and examination, networking, initiation/coordination of collaborative efforts	<ul style="list-style-type: none"> - Facilitate workshops and professional training - Meetings and discussions with local stakeholders - Initiate collaborative project(s) and joint papers - Attend JSS 5 	Senior
		Collaboration on on-going research projects and joint publications	<ul style="list-style-type: none"> - Collaborate on sustainable manufacturing systems and/or sustainable manufacturing capabilities for resilient and sustainable industrial systems - Work on joint publications - Attend relevant events (workshop, seminar, conferences, etc.) and courses - Attend JSS 5 	Junior
CHALMERS-UCAM	February-April 2022	Teaching and examination, networking, initiation/coordination of collaborative efforts	<ul style="list-style-type: none"> - Facilitate workshops and professional training - Meetings and discussions with local stakeholders - Work on collaborative project(s) and joint papers 	Senior
		Collaboration on on-going research projects and joint publications	<ul style="list-style-type: none"> - Collaborate on sustainable and digitalized manufacturing systems and/or sustainable manufacturing capabilities for resilient and sustainable industrial systems - Work on joint publications - Attend relevant events (workshop, seminar, conferences, etc.) and courses 	Junior
UCAM-ISQ	April-June 2022	Workshops, networking, initiation/coordination of collaborative efforts	<ul style="list-style-type: none"> - Facilitate workshops and professional training - Meetings and discussions with local stakeholders - Work on collaborative project(s) and joint papers - Attend JSS 6 	Senior
		Collaboration on on-going research projects and joint publications	<ul style="list-style-type: none"> - Collaborate on sustainable manufacturing systems and/or sustainable manufacturing capabilities for resilient and sustainable industrial systems - Work on joint publications - Attend relevant events (workshop, seminar, conferences, etc.) and courses 	Junior

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Staff exchange	Planned period	Objectives	Workplan	Researcher
			- Attend JSS 6	
CHALMERS-ISQ	April-June 2022	Workshops, networking, initiation/coordination of collaborative efforts	- Facilitate workshops and professional training - Meetings and discussions with local stakeholders - Initiate collaborative project(s) and joint papers	Senior
		Collaboration on on-going research projects and joint publications	- Collaborate on sustainable manufacturing systems and/or sustainable manufacturing capabilities for resilient and sustainable industrial systems - Initiate joint publications - Attend relevant events (workshop, seminar, conferences, etc.) and courses	Junior

Researchers to be involved in the staff exchanges:

ISQ Senior Exchanges: Senior researchers 2, 3, 4, 5 or other researchers with relevant expertise for the collaboration, based upon availability at the time of the planned exchange.

ISQ Junior Exchanges: Junior researchers 1, 2, 3 or other researchers with relevant expertise for the collaboration, based upon availability at the time of the planned exchange.

UCAM Senior Exchanges: Researchers with relevant expertise for the collaboration, based upon availability at the time of the planned exchange.

UCAM Junior Exchanges: Researchers with relevant expertise for the collaboration, based upon availability at the time of the planned exchange.

Chalmers Senior Exchanges: Researchers with relevant expertise for the collaboration, based upon availability at the time of the planned exchange.

Chalmers Junior Exchanges: Researchers with relevant expertise for the collaboration, based upon availability at the time of the planned exchange.

1.2.2 Joint Summer Schools

Each joint summer school (JSS) is dedicated to a specific theme, aiming to provide a learning experience of considerable and lasting added value for all participants. The activities to be developed include: (i) lectures from senior researchers; (ii) thematic short courses on industrial sustainability issues with practical examples; (iii) visits to local industries and/or invitation of specific stakeholders (industries, R&D projects, etc..) to provide examples on best practices and/or case studies to be addressed.

These events will be organized simultaneously with stakeholder exchange forums (Task 3.3) and dissemination workshops (task 4.4) to benefit as much as possible from stakeholder participation while reducing travel and accommodation costs. The following tables present the four JSS to be held until the project end date, June 2022.

In case travelling restrictions due to covid-19 do not allow the realization of physical events, they will be organised online. All necessary adaptations will be made in order to ensure that all objectives, expected impacts and results are met. The decision to have them organised online will be taken at least one month before the planned date. The final programme for the JSS will also be set by that time.

Table 4 – JSS 3

JSS 3			
Location:	UCAM, UK	Dates:	April 2021
Theme:	Resource and Energy Efficiency tools (Environmental systems analysis; Sustainability methods and metrics; Sustainable energy futures)		
Participants:	All TRUST partners		
Activities:	<ul style="list-style-type: none"> • Lectures from UCAM/CHALMERS senior researchers or short courses taught by senior trainers; • Study of specific industrial case studies; • 1 or 2 visits to local industrial stakeholders (see best practices, identify needs); • Identification of new R&D opportunities to develop within staff exchange activities – Task 3.1; • Identification of themes for MSc and PhD thesis for joint orientation within staff exchange activities – Task 3.1) • Starting the definition of a joint research agenda for 2030. 		

Table 5 – Tentative planning for JSS 3

Monday	Tuesday	Wednesday	Thursday	Friday
Welcome & Workshop with UCAM tool	Industrial case visit	UCAM-ISQ-CHALMERS Teams Meeting	Research methods & Writing papers lecture	UCAM Buns Talk and network with external stakeholders
Application of UCAM tool to an industrial case		UCAM-ISQ-CHALMERS collaborative breakout sessions	Joint paper development breakout sessions	Next steps for joint research agenda

Table 6 – JSS 4

JSS 4			
Location:	UCAM, UK	Dates:	October 2021
Theme:	Circular Economy & Industrial Symbiosis (Capturing value, Embedding natural capital, Circular Economy business models)		
Participants:	All TRUST partners		
Activities:	<ul style="list-style-type: none"> • Lectures from UCAM/CHALMERS senior researchers or short courses taught by senior trainers; • Study of specific industrial case studies; • 1 or 2 visits to local industrial stakeholders (see best practices, identify needs); • Identification of new R&D opportunities to develop within staff exchange activities – Task 3.1; • Identification of themes for MSc and PhD thesis for joint orientation within staff exchange activities – Task 3.1) 		

Table 7 – Tentative planning for JSS 4

Monday	Tuesday	Wednesday	Thursday	Friday
Welcome & Workshop with UCAM tool	Industrial case visit	UCAM-ISQ-CHALMERS Teams Meeting	Research methods & Writing papers lecture	UCAM Buns Talk and network with external stakeholders
Application of UCAM tool to an industrial case		UCAM-ISQ-CHALMERS collaborative breakout sessions	Joint paper development breakout sessions	Next steps for joint research agenda

Table 8 – JSS 5

JSS 5			
Location:	CHALMERS, Sweden	Dates:	April 2022
Theme:	Sustainability of production systems (Manufacturing processes, Production Planning, Automation/ Digitalization, Machine learning, Social sustainability in production, Predictive control)		
Participants:	All TRUST partners		
Activities:	<ul style="list-style-type: none"> • Lectures from CHALMERS/UCAM senior researchers or short courses taught by senior trainers; • Study of specific industrial case studies; • 1 or 2 visits to local industrial stakeholders (see best practices, identify needs); • Identification of new R&D opportunities to develop within staff exchange activities – Task 3.1); • Identification of themes for MSc and PhD thesis for joint orientation within staff exchange activities – Task 3.1. 		

Table 9 – Tentative planning for JSS 5

Monday	Tuesday	Wednesday	Thursday	Friday
Lectures from CHALMERS/UCAM senior researchers	Industrial case visit	Local Workshop	UCAM-ISQ-CHALMERS Teams Meeting	Next steps for joint research agenda
UCAM-ISQ-CHALMERS collaborative breakout sessions		Stakeholders exchange forum	Analysis of industrial case study	

Table 10 – JSS 6

JSS 6			
Location:	ISQ, Portugal	Dates:	June 2022
Theme:	Risk & Value Management and Business Models (De-risking innovation; decision making under uncertainty; business model innovation; Evaluating innovation opportunities)		
Participants:	All TRUST partners		
Activities:	<ul style="list-style-type: none"> • Lectures from UCAM, CHALMERS and ISQ senior researchers; • Study of specific industrial case studies in Portugal; • 1 internal workshop with a small group of local industrial stakeholders (including 1 or 2 site visits); • Identification of new R&D opportunities beyond TRUST; • Final version of the joint research agenda for 2030. 		

Table 11 – Tentative planning for JSS 6

Monday	Tuesday	Wednesday	Thursday	Friday
Lectures	Visit to industrial stakeholders	Local Workshop	Identification of new R&D opportunities	Working groups on specific themes
Analysis of industrial case study		ISQ/Chalmers/UCAM team meeting	Lectures	

1.2.3 Networking with relevant stakeholders

Networking will be accomplished through the organization of an annual stakeholder exchange forums (SEF) between TRUST partners and a selected group of external stakeholders from industry, industrial associations and R&D running projects. This event aims to promote discussion on industrial sustainability trends, challenges and opportunities. SEFs will be held simultaneously with joint summer schools, in order to benefit as much as possible from stakeholder participation and reduce travel and accommodation costs.

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The next SEF will take place during JSS 3 (April 2021), which will be organised and hosted by UCAM. The final SEF will be held simultaneously with the fifth JSS at Chalmers, on April 2022.

1.2.4 Organization of local workshops

The remaining four workshops will be organized in the United Kingdom, Sweden and Portugal, by each partner. These workshops will be carried out together with the joint summer school events (task 3.2).

The following table lists the workshops to be held until the end of the project.

Table 12 – Local workshops

Workshop #	Organizer	Date
3	UCAM	April 2021
4	UCAM	October 2021
5	CHALMERS	April 2022
6	ISQ	June 2022