

FINAL EVALUATION & IMPACT ASSESSMENT REPORT ON RIS3 ROUND TABLE AND POLICY FRAMEWORK

D.T3.4.3 - Final Evaluation & Impact
Assessment Report on RIS3 Round Table and
Policy Framework

Version 2
5 2022

Authors:

Marija Galeković, HAMAG-BICRO (PP10)

Ebonita Ćurković, HAMAG BICRO (PP10)

Tomislav Zoretić (External contractor)



CEUP 2030

Document Control

Document Summary	
Project Number	CE1662
Project Title	CEUP 2030
Work Package/Activity	A.T3.4 - Impact Controlling & Evaluation of RIS3 Round Tables & Policy Framework for CE/EU
Deliverable	D.T3.4.3 - Final Evaluation & Impact Assessment Report on RIS3 Round Table and Policy Framework
Deliverable Responsible (if applicable)	PP10 / HAMAG-BICRO
Deliverable Reviewer (If applicable)	All partners
Deliverable Due Date	February 2022

Dissemination Level		
PU	Public	PU
PP	Restricted to other programme participants	
RE	Restricted to a group specified by the consortium	
CO	Confidential, only for members of the consortium	

Document History			
Date	Version	Issuer	Description of Changes
29.04.2022	1.0	HAMAG	First draft
29.05.2022	2.0	HAMAG	Second draft



1. Executive Summary

1.1. Project Overview

CEUP 2030 aims to generate stable innovation networks which foster better understanding on Central Europe Advanced Manufacturing and Industry **4.0** (“**CAMI4.0**”) topics, to generate improved knowledge resource exchange on these technologies leading to an upgraded framework for policy-making and implementation.

Ultimately, CEUP 2030 creates and tests a common method to promote improved knowledge dissemination to policy-making stakeholders using a collaborative exchange framework based in physical and digital-methods. These methods and the technology show-cases disseminated within these method structures are harvested from existing, high-quality innovation know-how in the CE area.

The project focuses on:

- Identifying the highest-quality innovation know-how in the CE Area, on the CAMI4.0 Topics.
- Enhancing skills capabilities and knowledge of people in charge of local, regional, and (trans)national RTI Policies, associated to the CAMI4.0 Topics.
- Creating a sustainable structure for awareness-raising and shared-sustainable RTI knowledge resource use to enhance policy decision support.
- Anticipating and fast-tracking policy / strategy policy pilot actions to promote a joint RIS3 for CAMI4.0 Excellence in CE/EU.

1.2. Main Project Results

The main results of the projects are the 6 outputs contributing to the result indicator by setting up a stable network for trend monitoring on CAMI4.0 topics as well as the RIS3 Round Tables both fostering innovation in a regional and transnational context. For immediate cooperative innovation learning, the Policy Learning Labs & the Tech Radars/PID fit to the indicator. For a mid-term and long-term anchoring, the Strategy & Boost and the Policy Framework for 2021-2027 also contributes. The expected change at the territorial level will be noticeable by aligning structures & processes for a stable, future robust tech & innovation policy implementation scheme lasting far beyond project’s end & by integrating consequently stakeholders across Europe for strengthening CE. CEUP 2030 improves the situation of target groups through a deep-dive integration in both working group structure (TIN, RIS RT) & in the cooperative learning of the PLLs.

In general, the project assures sustainability of outputs/results during project duration by the number of involved top level stakeholders & proven quality of PPs and their ASPs. After project’s end there will be an agreed capitalization agenda & a long-term validity stated in the Policy Framework 2021-2027 (political) and the subsequent action plan (financial). PLLs, TINs & RIS3 RTs will stay as network organisations from the triple-helix



stakeholders (institutional). The outputs/results of CEUP 2030 can & will be transferred to additional target audiences/territories during project lifetime anyway (e.g., TIN/PID/PLL on 5 conferences, using 3 EU Presidencies, working groups from DGs, Vanguard, EFFRA, etc.). Also, beyond CEUP 2030 it is planned and will be agreed to foster a strong transfer scheme (Policy Framework 2021-2027).

1.3. Work Package and Activity Overview

The overall objective of WPT3 is to anticipate and to fast-track policy strategies focused on the CE/EU sustainable and continuous development necessary to promote an aligned joint regional strategy for Research and Innovation for Smart Specialisation - S3/RIS3 for CAMI4.0 topics.

Based on the synergy of the T1 and T2 outputs - Policy Learning Lab PLL learnt lessons /best practices and TTTDMs established structures and processes - the WPT3 aims to create the policy framework for excellence in policy making on CAMI4.0 for the EU term 2021-2027.

This is achieved by:

- 1) workshops / RIS3 Round table which represents a stakeholder's discussion that revolves around chosen Uses case /Policy pilot action delivered in the WPT2. The Round table should result with a clear guidance describing how the Use case creates competitive advantage in partners eco system as well as in CE/EU ecosystem
- 2) aligned cooperation among policy makers among 30 CE/EU regions.

Following this line of reasoning the WPT3 major objective is 1) to set up 10 regional round tables (one per each project partner) and 4 transnational RIS3 and 2) to start on 2021 with common Policy framework in 30 CE/EU regions.

Below are listed WPT3 activities that lead to the major objective:

- T3.1 harvests the best available & fit-for-purpose experiences on policy pilot actions and strategy building from the identified CE/H2020 projects to assure CEUP 2030 high impact inside project work and from a long-term view. An easy step in for new partners & target group is assured.
- T3.2 establishes the RIS3 Round Tables. For each of the 4 TIN/PID topics a policy pilot action is set in a regional and transnational context. This includes regional/national ministries, European Agencies (EFFRA, Vanguard) and working groups of the DGs (DIH, S3).
- T3.3 fosters a joint CAMI4.0 policy strategy for 2021-2027 with 30 regions in CE/EU. Some immediate policy actions get started & long-term capitalisation will be agreed among PP, ASPs & further stakeholders.
- T3.4 optimises the impact controlling with peer reviewers for the RIS3 Round Tables and the Policy Framework to upstream outstanding policy actions and strategies for CAMI4.0 excellence.

This document is related to the Activity T3.4, the development of the methodology for Impact Controlling & Evaluation of RIS3 Round Tables and the Policy Framework to upstream



outstanding policy actions and strategy for CAMI4.0 excellence. There are 3 deliverables in this activity which are described in the Table 1 - A. T3.4. Deliverables.

Table 1 A.T3.4 Deliverables

Outputs: WPT3 - A.T3.4 Impact Controlling & Evaluation of RIS3 Round tables & Policy Framework for CE/EU (07.2021-02.2022)	
1. Coaching guidance for involved CAMI4.0 stakeholders on RIS3 Round Table & Policy Framework (HAMAG) [07.2021]	Design of WPT3 impact controlling system, linked to global impact controlling scheme
	PPs to re-engage peer review group & extend review schedule (6/PP) and test/review process plus recommendations for inclusion in RIS3 Round Tables to ‘feel impact’ of PID / other tools on policy making
	1 guidance document to qualitative & quantitative impact controlling & evaluation to WPT3 RIS3 Round Tables and & Policy Framework
2. Interim Evaluation & Impact Assessment Report on RIS3 Round Table and Policy Framework (HAMAG) [09.2021]	Engagement of peer reviewers
	Strengthening of the RIS3 Round Table and Policy Framework outputs through collection of feedbacks from peer reviewers.
	1 interim report comprises peer review pre-interviews (6/PP) feedback incorporated for Round Table
3. Final Evaluation & Impact Assessment Report on RIS3 Round Table and Policy Framework (HAMAG) [02.2022]	Final peer review
	WPT3 final outputs collection and analysis
	1 final report, incorporates peer review pre-interviews (6/PP) and assesses closing impact of WP3 of outputs Round Tables and Framework on generated structures, networks and tools to upstream outstanding technological foresight into policy making excellence

1.4. Impact Controlling System Overview

Impact Controlling System is a cross cutting activity where partners work together to determine a methodology and associated tools to monitor and measure the impact that the project has made on meeting its objectives. The developed methodology is a



combination of qualitative and quantitative attributes which will be assessed across the lifecycle of the project.

Qualitative attributes are a series of questions that can be asked to a chosen group of Peer Reviewers, across the project's development; whilst **quantitative attributes** are based on project numerical indicators that are associated to connecting with Target Groups generally, and meeting content-relevant deliverables on a work package by work package basis.

The methodology is accompanied by an in IT based tool, in the form of a group-accessible Excel sheet, which can be used to track and update information from Partners and their peer reviewers about the impact of the project on reaching its desired goals.

1.5. Scope of Document & Deliverable Summary

This document (D.T2.4.3) aims at collecting and analysing the main outcomes after the S3 Round tables, in order to perform qualitative and quantitative impact controlling and evaluation of RIS3 Round Tables and assess their impact. The document is based on the methodology, steps and processes developed regarding identification of outputs and results, impact controlling and evaluation, as part of the common guidance to all project partners provided in the Coaching guidance document (D.T3.4.1). The report builds upon the Interim impact assessment report (D.T3.4.2.) and complements the analysis with the assessment of the Policy Framework.

1.6. Change Control Procedure & Structure

The Deliverable Responsible: HAMAG-BICRO Croatian Agency for SMEs, Innovation and Investments (HAMAG/PP10), created this impact assessment document which is hosted on the Project's common repository in the appropriately named deliverable folder ([D.T3.4.3 Final Evaluation & Impact Assessment Report on RIS3 Round Table and Policy Framework](#)).

The document is under project deliverable change control protocols whereby partners are requested to give feedback on the draft version according to the timing proposed in the final section of this document. Feedback will be incorporated and the final version will be issued by HAMAG-BICRO.

At any time, partners believe a project methodology should change, the request should be brought to the Deliverable Responsible and the Work Package Leader (PIA/PP3) to consolidate feedback from other partners, and then further integrate and disseminate the final agreed changes. A new version of the document should be created, and recorded in the document's "Document History" table.



Abbreviations

Abbreviation	Explanation
AF	Application Form
ASP	Associated Partner (i.e., Strategic Partner)
CAMI4.0	Central European Advance Manufacturing and Industry 4.0
CE	Central Europe
DIH	Digital Innovation Hub
eDIH	European Digital Innovation Hub
MoU	Memorandum of Understanding
PID	Policy Intelligence Dashboard
PLL	Policy Learning Lab
PP	Project Partner
RIS3	Regional Innovation Strategy for Smart Specialisation
RIS3 RT	RIS3 Round table
TIN	Trend and Innovation Network
TTTDM	TINs Trend & Technology dialogue meetings
S3	Smart Specialisation Strategy



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2. Introduction

The purpose of this report is to provide an analysis of feedback collected from a selected group of Peer Reviewers (6-8 interviews/PP), on validation and capitalization of use cases and flagship projects of the PPs, and more broadly the work that the PPs are doing to create strategic long-term support to promote the uptake and adoption of Industry 4.0 and Advanced Manufacturing. The report provides an overview of methodology, covers the regional and transnational RIS3 RTs organized by the PPs and draws common conclusions based on contributions of the PPs, in form of qualitative and quantitative data collected from the stakeholder interviews, RIS3 RT discussions and reports.

The Report provides a complete summary of the peer review interviews and the regional and transnational RIS3 RTs organized. This deliverable is part of activity A.T3.4 “Impact Controlling & Evaluation of RIS3 Round tables & Policy Framework for CE/EU” which ran from July 2021 to February 2022.

Finally, the report assesses the capitalization agenda introduced through the developed Policy Framework for the period 2021-2027, closing impact of WP3 of outputs Round Tables and Framework on generated structures, networks and tools to upstream outstanding technological foresight into policy making excellence.

2.1. Background and Aims

Impact controlling is an essential part of project development, because it provides a series of gateways (timely review periods), where PPs and the stakeholder network who were targets of the project, can assess whether the project has or is successfully meeting its intended goals. This means that the methodology is inherently tied to the overarching project’s aims, and the intended goals of the project’s core outputs.

2.2. Project Aim

CEUP 2030 aims to generate stable innovation networks which foster better understanding on Central Europe Advanced Manufacturing and Industry 4.0 (“CAMI4.0”) topics, to generate improved knowledge resource exchange on these technologies leading to an upgraded framework for policy-making and implementation.

Ultimately CEUP 2030 creates and tests a common method to promote improved knowledge dissemination to policy-making stakeholders using a collaborative exchange framework based in physical and digital-methods. These methods and the technology show-cases disseminated within these method structures are harvested from existing, high-quality innovation know-how in the CE area.



The project focuses on:

- Identifying the highest-quality innovation know-how in the CE Area, on the CAMI4.0 Topics.
- Enhancing skills capabilities and knowledge of people in charge of local, regional, and (trans)national RTI Policies, associated to the CAMI4.0 Topics.
- Creating a sustainable structure for awareness-raising and shared-sustainable RTI knowledge resource use to enhance policy decision support.
- Anticipating and fast-tracking policy / strategy policy pilot actions to promote a joint RIS3 for CAMI4.0 Excellence in CE/EU.

2.3. Impact Controlling System Overview

Impact Controlling System is a cross cutting activity where partners work together to determine a methodology and associated tools to monitor and measure the impact that the project has made on meeting its objectives. The developed methodology is a combination of qualitative and quantitative attributes which will be assessed across the lifecycle of the project.

Qualitative attributes are a series of questions that can be asked to a chosen group of Peer Reviewers, across the project's development; whilst **quantitative attributes** are based on project numerical indicators that are associated to connecting with Target Groups generally and meeting content-relevant deliverables on a work package by work package basis.

The methodology is accompanied by an in IT based tool, in the form of a group-accessible Excel sheet, which can be used to track and update information from Partners and their Peer Reviewers about the impact of the project on reaching its desired goals.

2.4. Definitions

2.4.1. What is impact controlling?

Impact controlling, or more commonly known as impact monitoring, is a system and or a set of procedures which can be used to measure whether a project or task has reached its intended goal, or is on track to reaching its goal. It can be succinctly defined as a continuous process of collecting data on specified indicators.¹

¹ "What is Impact?" in the Danish Demining Group's "An introduction to Impact Monitoring" available at: http://danishdemininggroup.dk/media/1220258/im_manual_2012_web.pdf



2.4.2. What is a Peer Reviewer?

Peer Review is defined as “a process of subjecting an author’s scholarly work, research or ideas to the scrutiny of others who are experts in the same field”²

A Peer Reviewer is a term which has emerged from academic/scientific writing, which refers to an individual or organisation whose goal is to assess the validity, quality and often the originality of an article (or a concept in an article). This term can be similarly assessed in the project world, where an individual or organisation will be assessing the validity and quality of the project’s goals and provide qualitative feedback on the group’s ability to achieve the goals with the project’s outputs.

2.4.3. What is a RIS3 RT

The RIS3 RTs are series of workshops targeting the four main CAMI4.0 topics. The purpose of the RIS3 RTs is to gather stakeholders who are relevant for the implementation of the consortium’s Regional RIS3 Alignment Instrument Pilot Project Flagships (“Flagships”) / Use Cases. In this way, regional and transnational dialog is ensured, which should bring up better implementation and capitalisation of support mechanisms for CAMI4.0. Consequently, it leads to the enhancement of the competitive advantage in the CE manufacturing eco-system and supports the uptake of technologies.

The primary aim of the RTs is to exchange and share knowledge over chosen use cases in order to provide clear recommendations on how the Use case can deliver value added benefits and create a competitive advantage in its ecosystem as well as in the CE ecosystem. Those recommendations are round table outputs and should define a roadmap for implementing new financial instruments with direct/support recommendations on CAMI4.0 topics.

Participants at the Round tables are stakeholders who are important for the capitalisation of the Use case (supplier/facilitator/receiver/enabler) and stakeholders who will promote the exchange of insight which could help capitalise the Use case and its key stakeholders. This includes Triple helix stakeholders, among which are Associated partners and selected EU/CE stakeholders of critical importance to the Use case implementation.

RIS3 RTs are organized either as regional or transnational round tables. The key purpose of the transnational round table is to promote the alignment of research and innovation strategies among different transnational stakeholder’s perspectives. In terms of methodology, the partners should build consensus on the type of methods that can be used to create joint opportunities in the area of enhancing the uptake of advanced manufacturing industry 4.0.

² What Is Peer Review?” (2014). Int J Comput Appl. Web. Retrieved July 02, 2014, from <http://www.iicaon-line.org/peer-review> [Google Scholar] [Ref list]



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2.5. CEUP 2030 Requirements related to Target Group

The selected institutions, organisations, companies should contribute with a high impact to the project implementation and their capitalization, strategic anchoring as well as to a high-quality communication of gained project results. At the same time these indicators are to be kept in mind for impact monitoring of quantitative indicators.

Figure 1 Target Groups of CEUP 2030

<u>Target groups</u>	<i>Please further specify the target groups - see examples in annex 4 of the application manual (classification of target groups)</i>	<i>Target value Please indicate the size of the target group the project aims to actively involve.</i>
Local public authority	Local & municipal authorities associated to innovation & technology support initiatives will be engaged in the project 10 from PPs area and a further 10 from complementary areas (e.g. Graz, Salzburg, Bratislava, Brno, Jena)	20,00
Regional public authority	Regional ministries of economy, technology, innovation & industry will be engaged from 10 PP regions + 10 further regions which provide critical synergy to promote the CEUP 2030 Framework of Excellence vision (e.g. Styria, Thuringia, South Tyrol, etc.)	20,00
National public authority	National ministries or delegated & policy-relevant agencies will be involved from PPs associated country. Focus will be on incorporating National 53 coordinating ministries, leveraging off of engaged Associated Partners.	7,00
Interest groups including NGOs	Via Members, Owners & founders of PPs Interest Groups will be brought into the partners (approximately 1/PP). Interest groups engagement deepen understanding about impact on industry/labour/technology innovation generally.	10,00
Higher education and research	Through HE&R, innovation to promote the PID & TINs become more future foresight orientated. Critical connections with this Target Group is key, therefore each PP engages 3 from their networks to enhance thematic discussions within project life cycle.	30,00
Education/training centre and school	Each PP will identify one E/TC&S to support transferability & sustainability of PID tool use, focusing on an integrative approach which connects to training centres to promote interdisciplinary teaching methods for the four topics.	10,00
Large enterprises	LEs will be involved, especially through use-case development & to showcase practical relevancy industrial impact from these target technologies (Each PP engages 2 LEs, gaining a collaboration pool in Robotics, Materials, Big Data/Sensors & AI).	20,00
SME	SMEs, especially those within PP networks, will be included to showcase practical relevancy of targeted growth support mechanisms associated to the technology areas (Each PP engages 8, approx. 2 with a business model/ tech area.)	80,00
Business support organisation	PPs & networks engage regularly with BSOs (technology parks, clusters), these multiplying organisations will be involved in TIN discussion & further in RIS3 Roundtables. PPs each bring 2 BSOs into the CEUP 2030 activities.	20,00

While implementing WPT3, Partners should carefully consider how to identify and involve them to add value to each project activity.

Target Groups can and should be included in project content work (such as attendees at RIS3 Round tables), as peer Reviewers, and as general attendees at workshops and strategic alignment activities.



2.6. CEUP 2030 Requirements related to Thematic Result Indicators

Thematic Result Indicators are relevant for the whole project. However, there are contributions to these indicators through the thematic work in the project’s work packages.

The following thematic result indicator should be monitored whilst implementation.

Figure 2 Specific Indicators for WPT3

Number of trained persons	Persons	100,00	Through the Policy Learning Labs (WPT1), collaborative learning techniques will be used to upgrade and upstream technology focused results to policy-relevant users (10/PP - 100 total); these users will be engaged again once tools are further developed & upgraded (WPT2), and policy-relevant stakeholders are brought into the RIS3 Round tables to determine implementation alignment steps for the Framework for CAMI4.0 Policy Excellence.
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These stakeholders will be policy-relevant individuals working for triple helix organisations which have influence on the regional, national and transnational development of CAMI4.0 topics (from public authorities to interest groups/NGOs with key influence over advanced manufacturing / industrial digitization or Industry 4.0).



3. Methodology

The purpose of this section is to describe the methodology utilized for WPT3 Impact Controlling. For purposes of impact controlling, following data was collected:

Quantitative information expressed in numerical terms as numbers and ratios for example. This information will be used to answer ‘what’, ‘how many’ and ‘when’ questions.

Qualitative information is expressed through descriptive prose and can address questions about ‘why’ and ‘how’, as well as perceptions, attitudes and beliefs.

3.1. Flagship projects

Each PP’s Use Case Portfolio and CAMI4.0 Topic Strategy sets the thematic basis of discussions in the RIS3 Round Table. The goal is that the Partners will refine their 4 Use Cases within their Portfolio to foster two ideas further into regional Flagship Projects.

For minimum 2 Use Cases, the PPs are asked to build further insight and further activity to move it from paper into action. Each Use Case is different, regarding the steps which need to be taken to activate the idea.

3.2. RIS3 RTs

A Regional RIS3 RT is a facilitated panel event organised with purpose of promoting knowledge exchange and sharing information regarding one or more use cases / flagship projects identified by a PP. Transnational RIS3 RTs are events organised to promote the alignment of research & innovation strategies and exchange of perspectives among different transnational stakeholders.

The goals of the RIS3 Round Table Workshops are threefold:

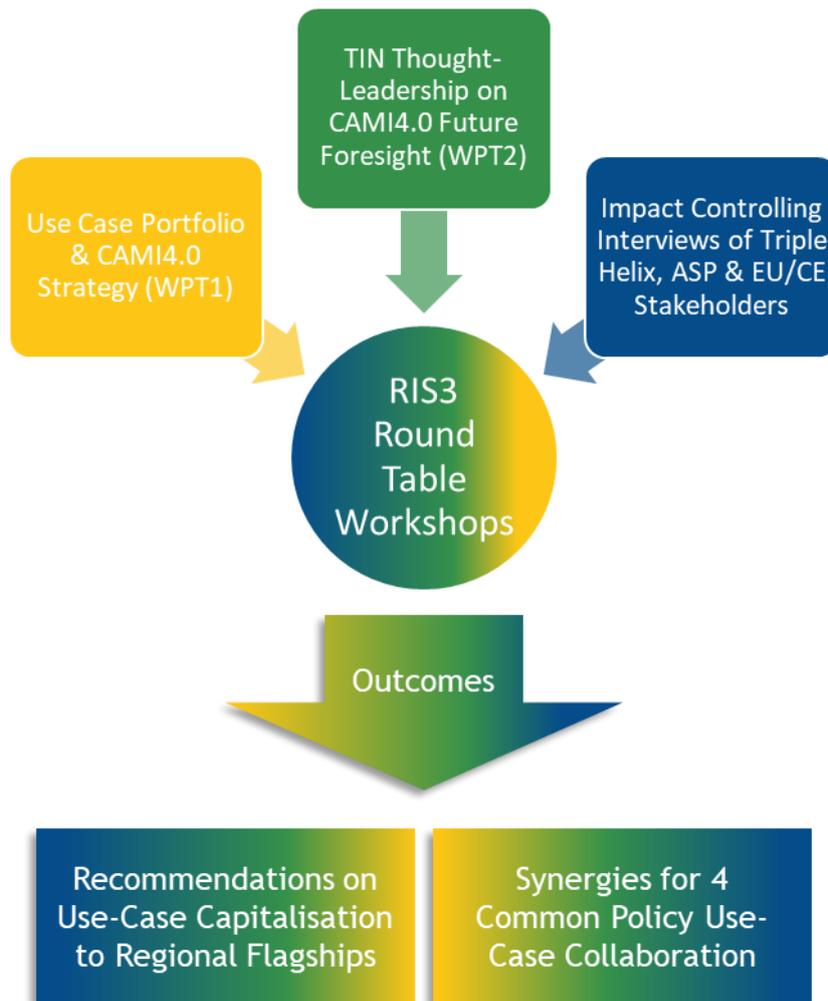
1. Use Cases Dissemination, informing key stakeholders about the CAMI4.0 Strategy, and accompanying Use Cases (specifically, those Use Cases which are chosen to become Flagships) which was chosen by your PP organisation.
2. Use Cases Validation, gaining feedback and recommendations from key stakeholders about the context of your Use Cases, the conclusions you made to choose the specific challenge-solution-instrument, and how to bolster the implementation of your Use Case (or bolster support for the challenge you have chosen to tackle).
3. Use Cases Capitalisation, gaining recommendations on which elements of the use case can be used as a base for further regional or transnational capitalisation and cooperation. What is specifically important in the context of CEUP 2030, is that capitalisation efforts should be used to answer the questions:
 - a. “How can we make strategic influence on policies in Central Europe, through the utilization of Use Case actions?”



b. “How can we further expand the benefits of this specific Use Case, with tangible actions and enhance Central European competitive advantage (RIS3)?”

Figure 3 provides a visual representation of the inputs and expected outputs of the RIS3 Round Table. The remainder of the session details the process that PPs should follow to build up the appropriate building blocks for the RIS3 Round Table Workshops, mainly - the Use Case portfolio, expert insight on topic foresight, and Use Case impact controlling and validation discussions with triple-helix, ASP & select EU/CE stakeholders.

Figure 3 Inputs & Outputs of the RIS3 Round Tables



Source: D.T3.2.1 - RIS3 Round Table Guidance

The RT panel discussion was focusing on use cases / flagship projects chosen by the PPs. The use cases / flagship projects were analysed by panellists in terms of how they can deliver value-added benefits and competitive advantage. The primary aim of the discussion is to exchange and share knowledge over chosen use cases, which must result in clear recommendations on how the use case / flagship project can create a competitive advantage in its ecosystem as well as in the CE ecosystem.



At the end of RIS3 RTs, the PPs were required to collect quantitative data with a questionnaire presented in Annex 2.

3.3. Peer review

Peer review was conducted in form of interviews with the purpose to collect qualitative information regarding the use cases / flagship projects selected by the PPs.

The peer review process focused on a specific set of questions for collecting feedback in order to gain insight and validation of use cases and flagship projects suggested by the PPs, to facilitate formulating a capitalization agenda, and to collect other general feedback regarding the project objectives and the work the Partners are doing to create strategic long-term support to promote the uptake and adoption of Industry 4.0 and Advanced Manufacturing. More specifically, answers to following questions were collected from the reviewers:

- What are your perspectives and recommendations on the described Use Case(s)? (Challenge, solution, policy instrument used, stakeholders involved?)
- How can you see the Use Case(s) adding value to the Central European manufacturing eco-system?
- How could this activity, be aligned to other work you are doing / you know about?
- How could this activity be further expanded/enriched?
- In your view, what are the benefits of aligning and expanding action on this activity? How does this impact Central Europe's competitive edge?
- How could this activity be adapted to promote strategic, policy-level support for Central Europe's manufacturing sector?
- Beyond the described Use Case, what are critical areas you'd recommend assessing in order to create specific, strategic support for advanced manufacturing and industry 4.0?
- What other comments or recommendations do you have about (a) the results of CEUP 2030 so far and (b) the next steps to develop the Use Case.

The template utilised to collect information through peer reviews is available in Annex 1 of this document.



3.4. Policy Framework

Based on the synergy of the T1 and T2 outputs - Policy Learning Lab PLL learnt lessons /best practices and TTTDMs established structures and processes - the WPT3 aims to create the policy framework for excellence in policy making on CAMI4.0 for the EU term 2021-2027.

Activity T3.3 fosters a joint CAMI4.0 policy strategy for 2021-2027 with 30 regions in CE/EU, in order to kick-start some immediate policy actions and agree the long-term capitalisation among the PP, ASPs & further stakeholders.

Activity T3.4, and this deliverable in particular, optimises the impact controlling with peer reviewers for the RIS3 Round Tables and the Policy Framework to upstream outstanding policy actions and strategies for CAMI4.0 excellence. The final aim is to assess the closing impact of WP3 of outputs Round Tables and Framework on generated structures, networks and tools to upstream outstanding technological foresight into policy making excellence.

The PPs pursued joint work on developing one Policy Use Case / Common Flagship per each CAMI4.0 topic, based on use cases / flagship projects proposed by the PP. The topics covered by the common projects will feed into a joint transnational CAMI4.0 strategy for 2021-2027.

Through series of meetings and other forms of discussion, the PPs analysed the proposed flagships, exchanged details on the projects, and engaged in formulation of a proposal of a common flagship. The discussion also covered potential MoUs between PPs on particular CAMI4.0 topics, and activities to be pursued in order to reach potential additional partners and expand the collaboration based on the triple helix model.

As a starting point, the discussion focused on the flagships of the PPs, describing them to other PPs and finding commonalities and differences among them. Flagships have been described through elaboration of challenges to be addressed and the solutions proposed, topic areas covered and objectives pursued, target groups to be involved, and potential funding sources for the projects proposed.

Based on the identified flagships, the PPs discussed their commonalities, in terms of addressed challenges, stakeholders and sectors, methodology used and possible solutions proposed through the projects. For the elaboration of a common Joint strategy, the analysis of commonalities within the individual flagships is significant to understand the regional interests and priorities. The same elements have then been discussed through the lens of differences present between the selected flagships. Finally, the key element of the discussion is how the projects can fit into development of a common policy implementation framework among complementary policies & strategies, i.e., elaboration of a common joint strategy. In this perspective, self-assessment exercise was done by each partner involved in a particular Common Flagship. The self-assessment collected inputs from the PPs regarding the following topics:

- What did you find interesting regarding other Flagship projects?
- What are the difficulties you met inside your working group?
- How did these meetings help you improve your own flagship project(s)?
- Why is it interesting for your organisation to be involved in the Common Policy Use Case? What are the benefits for your organisation?



- How does this Policy Use Case benefit your stakeholder involved and particularly the one who signed the letters of commitment?
- What could be the challenges met by your organisation to implement this Common Policy Use Case?
- How does the Common Policy Use Case enhance the competitive advantage of your territorial area's manufacturing eco-system?
- What aspects of your territorial area's enabling eco-system can complement the development of the Common Policy Use Case?
- What are the territorial changes that need to be implemented to be able to enable the common Policy Use Case?
- What focus area would you like to work on to implement a common Roadmap around your Common Policy Use-Case?
- In order to build a common roadmap for delivering your Common Policy Use Case, Identify at least 5 next steps you would like to work on with your organisation to implement the common Policy Use Case?

The final step is translating the collected inputs into development of a Common Flagship project, one per each CAMI4.0 topic. Definition of the Common Flagship elaborates further the common challenge and the proposed solution, the involved stakeholders, and other elements, such as potential funding sources for the projects proposed. The PPs focused on developing details of the common flagships, in terms of expected impact at CE level, targeted policy tools, etc. The Common Flagships are elaborated based on the template which covered the elaboration of the following topics:

A: Flagship Analysis Section of the Common Policy Use Case

- What are the 5 Flagship projects included in your TIN working group?
- What are the commonalities among the Flagship projects?
- What is the significance of the commonalities in elaborating a common Joint Strategy?
- What are the major differences between the Flagships projects?
- How could these differences hinder the process to elaborate a common Joint Strategy?
- Which stakeholders should be engaged in the Letter of Commitment phase to build this idea?

B: Concept Development Section of the Common Policy Use Case

- What is the name (Acronym) of the Policy Use Case?
- Describe the Policy Use Case elaborated during the brainstorming sessions
- What is the challenge addressed by the Common Policy Use Case?
- What is the solution envisaged by the Partnership to overcome this challenge?



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- Who are the target groups of this Common Policy Use Case?
- How does this Common Policy Use Case promote Central European manufacturing competitive advantage?
- Elaborate on the relevance and significance of the Policy Use Case for Central Europe.
- How does the Policy Use Case meet the goals of the European Union on the new period 2021-2027?
- How do you plan to finance the Use Case? What are the programs/ initiatives and instruments raised during the brainstorming meetings which could be utilised to bring success of this Common Policy Use-Case?
- What gaps or challenges do you foresee to complete this Use-Case based on the current policy instrument(s) you are targeting?
- What recommendations do you have to promote better policy instrument alignment to achieve Central Europe or European Union goals to promote the uptake of your CAMI4.0 Topic.
- What are the lessons learned from this cooperative teamwork, which could be utilised to promote future strategy and policy alignment?



4. Results

4.1. Flagship projects

Table 2 shows the number of use cases and flagships identified by each PP. Distribution of Use cases / flagship projects according to the primary CAMI4.0 topic they are targeting is shown in Table 3. Additional information regarding the flagship projects and the CAMI4.0 topics they are addressing is presented in Annex 3.

Table 2 Use cases and flagship projects identified by the PPs

ID of PP	Number of use cases	Number of flagships
PP1_KPT	7	2
PP2_PRO	9	2
PP3_PIA	5	2
PP4_IWU	7	2
PP5_KIT	2	2
PP6_AFIL	4	2
PP7_SIIT	5	2
PP8_PTP	7	2
PP9_PBN	6	2
PP10_HAMAG	4	2
TOTAL	56	20

Table 3 Distribution of Use cases and flagship projects according to their primary CAMI4.0 topic

CAMI4.0 topic (primary)	Number of use cases	Number of flagships
Intelligent Production Systems	18	6
Automation & Robotics	15	5
Smart & Advanced Materials	12	5
Artificial Intelligence	11	4
TOTAL	56	20



4.2. RIS3 RTs

As presented in Table 4, each PP organised one regional RIS3 RT event in the period from September 2021 to February 2022. Additionally, three transnational RIS3 RTs were held.

Table 4 Regional and transnational round tables organized by the PPs

ID of PP	Event type	Date	Location ³	Use cases / flagships	CAMI4.0 topics
PP1_ KPT	Regional	20.12. 2021.	KPT, Podole 60, Krakow Poland	(1) SmartCircuit (2) eDIH (3) Poland Prize	(1) Intelligent Production Systems (2) Automation & Robotics (3) Intelligent Production Systems
PP2_ PRO	Regional	21.2. 2022.	Online (MS Teams)	(1) CoRTEAM (2) Share 4.0 (3) BIOSAM (4) Hub4Industry	(1) Automation & Robotics (2) Automation & Robotics (3) Automation & Robotics (4) Automation & Robotics
PP3_ PIA	Regional	14.1. 2022.	Online (Zoom)	(1) Testbed Exchange (2) SHARE 4.0	(1) Automation & Robotics (2) Intelligent Production Systems
PP4_ IWU	Regional	2.11. 2021.	RUTHs Berlin	(1) STEP UP smart3 (2) Smart Circuit	(1) Smart & Advanced Materials (2) Intelligent Production Systems
PP5_ KIT	Regional	26.1. 2022.	Online (MS Teams)	(1) NEXT4FUN (2) BIOSAMS	(1) Intelligent Production Systems (2) Automation & Robotics
PP6_ AFIL	Regional	9.11. 2021.	Online (MS Teams)	(1) “Advanced Polymers” Strategic Community development (2) AI Roadmap	(1) Smart & Advanced Materials (2) Artificial Intelligence

³ Address/location if the event was on site, hosting platform if the event was online.



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PP7_ SIIT	Regional	11.11. 2021.	Online (GoToMee ting)	(1) EU-ALLIANCE (2) FORGING	(1) Smart & Advanced Materials (2) Artificial Intelligence
PP8_ PTP	Regional	23.11. 2021.	Pomurje Tehnology Park	(1) DIH2 project Technology Transfer Experiment (concrete story of Flexido /TECOS / Polycom)	(1) Automation & Robotics (2) Intelligent Production Systems
PP9_ PBN	Regional	14.9. 2021.	Townhall of Szombath ely (+ some participan ts online)	(1) Purchase of autonomous production line (Teaching and Learning Factory) and smart material board and further developments (2) Establishment and development of a smart senior room	(1) Intelligent Production Systems (2) Artificial Intelligence
PP10 _HA MAG	Regional	17.2. 2022.	Hotel Academia, Zagreb, Tkalčičeva 88	(1) Adriatic multifunctional smart buoys INTERREG Italy - Croatia (2) EDIH - CROHUB++	(1) Automation & Robotics (2) Artificial Intelligence
PP1_ KPT	Transnational (Contributing PPs: PP4_IWU, PP8_PTP, PP9_PBN)	15.11. 2021.	Online (https://ris3forum.kpt.krakow.pl/)	(1) eDIH	(1) Intelligent Production Systems
PP6_ AFIL	Transnational (Contributing PPs: PP1_KPT, PP3_PIA, PP5_KIT, PP9_PBN)	10.3. 2022.	Online (GoToMee ting)	The event focuses on AI needs, barriers and challenges to be addressed in the common flagship. PBN and AFIL individual flagships.	(1) Artificial Intelligence
PP8_ PTP	Transnational (Contributing PPs: PP2_PRO, PP5_KIT)	20.12. 2021.	Šmartinsk a c.152 Hala 1, 1000	(1) DIH2 project Technology Transfer Experiment (concrete story of Flexido /TECOS / Polycom)	(1) Intelligent Production Systems



			Ljubljana, Slovenia		
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Table 5 breaks down the numbers of participants that have participated in the organized RTs, based on the type of organisation they were representing. Out of the 369 participants in total, the majority of participants came from Business Support Organisations, Higher Education and Research, and SMEs.

Table 5 Participants of regional and transnational round tables organized by the PPs

ID of PP	Event type	Date	Participants									Total
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
PP1_KPT	Regional	20.12.2021.	0	4	0	0	0	0	0	5	0	9
PP2_PRO	Regional	21.2.2022.	0	1	0	8	0	2	18	3	0	32
PP3_PIA	Regional	14.1.2022.	0	4	10	10	1	22	7	8	2	64
PP4_IWU	Regional	2.11.2021.	0	0	3	3	0	0	3	3	0	12
PP5_KIT	Regional	26.1.2022.	0	0	0	5	0	3	3	3	0	14
PP6_AFIL	Regional	9.11.2021.	0	0	0	13	0	4	3	2	0	22
PP7_SIIT	Regional	11.11.2021.	2	2	1	5	0	3	11	3	0	27
PP8_PTP	Regional	23.11.2021.	0	0	2	0	0	0	2	4	0	8
PP9_PBN	Regional	14.9.2021.	4	0	0	4	0	1	0	1	0	10
PP10_HA_MAG	Regional	17.2.2022.	0	0	9	5	0	0	1	2	0	17
PP1_KPT	Transnational	15.11.2021.	6	0	0	8	0	0	9	30	10	63
PP6_AFIL	Transnational	10.3.2022.	0	0	0	5	0	0	6	10	0	21
PP8_PTP	Transnational	20.12.2021.	1	0	6	4	1	1	5	11	41	70



Total number of participants:	13	11	31	70	2	36	68	85	53	369
Indicator / reference value:	20	20	7	30	10	20	80	20	<i>n/a</i>	207

Legend:

- (1) Local public authority
- (2) Regional public authority
- (3) National public authority
- (4) Higher education and research
- (5) Education / Training Centre & Schools
- (6) Large Enterprises
- (7) SMEs
- (8) Business Support Organisations
- (9) Unknown / anonymous / other

When comparing the participant structure to the reference targets (see section 2.5.), it can be observed that for half of the categories, the number of RT participants significantly exceeded the reference values set for that category. For example, more than double of the number of participants from Higher education and research attended the RTs. Further, three times more Business Support Organisations participated than the indicator target value. For some categories, however, the actual numbers of participants involved are slightly lower than the reference values, for example when it comes to training centres and schools. In any case, the total number of participants involved significantly exceeds the target value, with 369 participants involved, compared to the reference value of 207. Available questionnaires from the survey show high levels of satisfaction regarding different elements of the organised RIS3 RTs (Table 6).

Table 6 Average grades per satisfaction survey question⁴

Satisfaction survey questions	Average grade
1. How satisfied are you with the activity of the hosting institution in organizing the event?	9,42
2. How satisfied are you with the infrastructure provided by the organizer institution? (equipment for educational technology, material conditions for the workshop, heating, lighting, hygiene, etc.)	9,46
3. How satisfied are you with the communication of the hosting institution?	9,38
4. To what extent did the event / workshop meet your expectations?	9,38
5. How satisfied are you with the information provided on the event?	9,54

⁴ Based on available questionnaires in a sample of three RTs, organised by PP5_KIT, PP7_SIIT and PP10_HAMAG.



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6. How satisfied are you with the structure and content of the event?	9,42
7. How satisfied are you with the presenters of today’s event?	9,50
8. How satisfied are you with the quality of the event/workshop materials provided? You only have to answer if the workshop material has been provided.	9,64

4.3. Peer review

Table 7 breaks down the number of peer reviews per each PP that conducted them. A total of 51 peer reviews were conducted, covering the use cases / flagship projects selected by the PPs.

Table 7 Number of peer reviews conducted by the PPs

ID of PP	Number of peer reviews conducted
PP1_KPT	2
PP2_PRO	3
PP3_PIA	6
PP4_IWU	6
PP5_KIT	7
PP6_AFIL	3
PP7_SIIT	6
PP8_PTP	6
PP9_PBN	8
PP10_HAMAG	8
TOTAL	55

Additional information regarding the peer reviews and interviewees is provided in Table 8. Annex 4 complements the overview with information regarding use cases / flagship projects reviewed, and CAMI4.0 topics they are connected with.



Table 8 List of interviewees and organisations involved in the peer review process

ID of PP	Date of interview	Name of interviewee	Name of organisation	Type of organisation
PP1_KPT	16.2.2022.	Agnieszka Bachórz	Marshall Office	Regional Public Authority
PP1_KPT	4.11.2021.	Maurits Butter	TNO	Business Support Organisation
PP2_PRO	7.3.2022.	Elmar Paireder	Business Upper Austria	Business Support Organisation
PP2_PRO	2.3.2022.	Alexander Numrich	GMAR Robotics	SME
PP2_PRO	23.3.2022.	Manfred Tscheligi	AIT	Higher Education & Research
PP3_PIA	15.10.2021.	Andrea SCHWECHERL	City of Vienna	Regional Public Authority
PP3_PIA	27.10.2021.	Claudia SCHICKLING	Pilotfabrik TU Wien	Higher Education & Research
PP3_PIA	20.10.2021.	Jan JIRSA	Vysoká škola polytechnická Jihlava	Education / Training Centre and School
PP3_PIA	20.10.2021.	Ingo HEGNY	Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology	National Public Authority
PP3_PIA	20.10.2021.	Martin HURA	Interreg Office SK-AT	International Organisation
PP3_PIA	28.10.2021.	Christian Wögerer	Profactor	Higher Education & Research
PP4_IWU	1.11.2021.	Nancy Windisch-Samusik	Saxon State Ministry for Economic Affairs, Labour and Transport	Regional Public Authority
PP4_IWU	2.11.2021.	Lukas Nögel	VDI/VDE	National Public Authority
PP4_IWU	6.10.2021.	Holger Kunze	Fraunhofer IWU	Higher Education & Research
PP4_IWU	26.11.2021.	Anton Mauersberger	DIH innosax	Infrastructure and (Public) Service Provider
PP4_IWU	7.10.2021.	Jochen Barth	Smart ³ materials, solution, growth	Business Support Organisation
PP4_IWU	7.10.2021.	Björn Senf	FiberCheck GmbH	SME
PP5_KIT	12.11.2021.	Joško Valentinčič	University of Ljubljana	Higher Education & Research
PP5_KIT	15.11.2021.	Jens Korell	Projektträger Karlsruhe (PTKA)	Funding Agency
PP5_KIT	16.11.2021.	Lars Beex	University of Luxembourg	Higher Education & Research
PP5_KIT	17.11.2021.	Marcel Strobel	Quantica3D	SME



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PP5_KIT	16.11.2021	Carlos Bermudez	Sensofar	SME
PP5_KIT	7.12.2021	Alexandra Fezer	Steinbeis Europa Zentrum / Vanguard Initiative	Business Support Organisation
PP5_KIT	7.1.2022	Christine Neuy	Microtec Südwest	Cluster organisation
PP6_AFIL	12.11.2021	Mirko Mazzoleni	Università di Bergamo	Higher Education & Research
PP6_AFIL	18.1.2022	Annabelle Sion	Polymeris - Vanguard demo-case coordinator	Higher Education & Research
PP6_AFIL	20.10.2021	Andrea Mazzoleni	CFI - Cluster Fabbrica Intelligente	Cluster organisation
PP7_SIIT	10.11.2021	Mariella Ferraro	DIH Liguria	Infrastructure and (Public) Service Provider
PP7_SIIT	10.12.2021	Anastasia Roufou	European Commission	International Organisation
PP7_SIIT	14.12.2021	Paola Fontana	POINTEX - Polo Innovazione Tessile	Business Support Organisation
PP7_SIIT	12.11.2021	Elice Bacci	Regione Liguria	Infrastructure and (Public) Service Provider
PP7_SIIT	12.11.2021	Marcin Bukat	SKA polska	SME
PP7_SIIT	14.12.2021	Davide Ottonello	STAM	SME
PP8_PTP	12.1.2021	Tanja Renner	Government Office for Development and European Cohesion Policy	National Public Authority
PP8_PTP	23.11.2021	Uroš Žižek	Castoola	SME
PP8_PTP	18.11.2021	Dr. Domen Mongus	Inova Fusion d.o.o.	SME
PP8_PTP	17.11.2021	Robert Grah	Pomurje Chamber of Commerce and Industry	Business Support Organisation
PP8_PTP	26.11.2021	Robert Kološa	PRO-ING, Robert Kološa s.p	SME
PP8_PTP	23.11.2021	Dr. Dragan Kusić	TECOS	SME
PP9_PBN	15.9.2021	Ádám Sebestyén	EIT Manufacturing	International Organisation
PP9_PBN	14.9.2021	Adrienn Bokányi	Municipality of Szombathely	Local Public Authority
PP9_PBN	10.9.2021	Lászlóné Kulcsár	Károly Pálos Social Service Center and Child Welfare Service” - Social Care Service Provider Company	Infrastructure and (Public) Service Provider
PP9_PBN	14.9.2021	László Pungor	MAM Hungária LTD.	Large enterprise
PP9_PBN	13.9.2021	Győző Kóbori	Meddevice Ltd	SME



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PP9_PBN	8.9.2021	György Eigner	Óbuda University	Higher Education & Research
PP9_PBN	14.9.2021	Krisztina Bárdos	Scientific Association for Mechanical Engineering	Business Support Organisation
PP9_PBN	9.9.2021	András Haklits	University of Pécs (Medical University Local Institute)	Higher Education & Research
PP10_HA_MAG	24.11.2021.	Mateo Ivanac	Croatian Chamber of Economy	Public body
PP10_HA_MAG	1.2.2022.	Mislav Jurišić	GDi Group LLC	SME
PP10_HA_MAG	14.1.2022.	Robert Cupec	J. J. Strossmayer University of Osijek, Faculty of Electrical Engineering, Computer Science and Information Technology Osijek	Higher Education & Research
PP10_HA_MAG	24.1.2022.	Ivana Palunko	University of Dubrovnik, Department of electrical engineering and computing, Laboratory for intelligent autonomous systems	Higher Education & Research
PP10_HA_MAG	27.1.2022.	Zoran Belak	Razvojno inovacijski centar Alutech Šibenik	Regional Public Authority
PP10_HA_MAG	13.4.2022.	Mirela Čokešić	Ministry of Economy and Sustainable Development	National Public Authority
PP10_HA_MAG	21.4.2022.	Marina Skelin	Ministry of Economy and Sustainable Development	National Public Authority
PP10_HA_MAG	21.4.2022.	Miro Hegedić	University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture	Higher Education & Research

The majority of peer reviewers represented Higher Education & Research institutions, SMEs, and Business Support Organisations. Structure of peer reviewers per type of organisation they are representing is shown in Table 9.

Table 9 Structure of peer reviewers per organisation type

Type of organisation	Number of peer reviews conducted
Business Support Organisation	7



Cluster organisation	2
Education / Training Centre and School	1
Funding agency	1
Higher Education & Research	13
Infrastructure and (Public) Service Provider	4
International Organisation	3
Large enterprise	1
Local Public Authority	1
National Public Authority	5
Public Body	1
Regional Public Authority	4
SME	12
TOTAL	55

The following section provides word-cloud analysis and summary of answers collected from peer reviews (as per template in Annex 1).

A. USE CASE VALIDATION AND FEEDBACK

Peer reviewers were engaged to provide inputs in order to help the PPs gain insight and feedback for purposes of validation of the selected Use Cases.

QUESTION #1: What are your perspectives and recommendations on the described Use Case(s)? (Challenge, solution, policy instrument used, stakeholders involved?)

Most peer reviewers emphasised the **strength and relevancy of the presented use cases /** flagship projects and indicated that they touch upon topics that are very relevant for the future development of their particular segments. In particular, the ecological dimension of economic transformation is critical to address, especially in manufacturing & production sectors. Other reviewers also mention the importance of supporting circular economy, sustainability, and application of smart materials. Other specific examples mentioned are related to functional printing, biologicalisation in manufacturing, data science, and autonomous robotics.

Several reviewers, coming from public authorities, noted that the reviewed projects are **in line with strategic goals** defined in their strategic documents, and thus in line with the



needs of the regions covered. For some projects it was also noted that they corresponded with relevant EU strategies/documents (European Green Deal Agenda, Digital Compass, European Sustainability Goals, etc.).

Involving adequate partners was deemed crucial for the collaboration to be effective. Moreover, discussion regarding Use cases presented within this project may contribute to finding them. It needs to be ensured that the consortium is strong and involved from the beginning of the project. For some reviewers, good set-up of the consortium partners to achieve outlined ideas is noted as a strength of the proposed projects. Others recommend ensuring an extensive network of players, both on regional and transnational level. One reviewer emphasised to take MoUs seriously and use the project not only to deliver papers but as a process for collaboration. In that perspective, the reviewers suggest building upon existing collaboration and using it as an opportunity for deepening the cooperation to expand into new topics and areas. Deepen the exchange information and knowledge on the content of Industry 4.0 and experience in implementation of common instruments, such as testbeds or DIHs, is suggested to be realised through exchange formats like workshops, trade fairs and the like. Some reviewers noted a learning exercise within this project regarding the CAMI4.0 topics and variety in their understanding within several different countries.

In a significant number of use cases there is already **triple helix cooperation** including collaborating closely with regional authorities in order to align the activities and strategies. Some best practices noted by the peer reviewers include: building upon previous involvement of consortia members in the topics addressed by the Use projects and previous collaborations with positive experience and results, and ensuring a well-balanced composition of the consortia, in order to bring together partners from different groups, such as those from academia, innovation centres, i.e., Business Support Organisations and SMEs.

Figure 4 Word-cloud analysis for Question 1





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Some peer reviewers emphasised the importance of **private-sector orientation** of the projects and importance of collaboration of SMEs with other stakeholders. It is important that the SME target group is reached by the project. Cooperation is key for supporting the digital transformation of the economy, so projects such as eDIHs are needed to provide expert services supporting the digitization of industry and tailored to the industry needs. They should also be open for transnational services provision. Networking aspects are important for the companies' R&D activities to strategically expand collaborative R&D efforts - via national/EU projects, direct collaborations with customers or via joint publications. Digitalisation and innovation are key competitive advantages of the modern SME.

Involvement of researchers supports further the efforts to create strong network links across the projects partnership and bridge the gap between academic research and industrial ecosystems. According to one reviewer, one desired outcome could be potential future job opportunities for the highly skilled and trained PhD students. Using the educational PhD approach for technology transfer towards industry is a promising approach and fills an existing gap/need to intensify technology transfer.

As for future perspective of the Use Cases, **potential for further development** was clearly identified, as most of the projects, according to the reviewers, are in line with strategic documents of the policy makers. The relevant authorities should, however, ensure that instruments are in place with sufficient funding available to provide funding to these operations. In any case, different levels of funding sources should be explored, e.g., regional and national, and EU level.

QUESTION 2: How can you see the Use Case(s) adding value to the Central European manufacturing eco-system?

A general expected benefit on the ecosystem which is recognized by several peer reviewers is the enhanced **uptake of new technologies**, allowing for a paradigm shift in established/classical production systems and pushing the state-of-art in the investigated technology areas. For successful industrial applicability, this will open new opportunities for the industry in terms of, e.g., design & restructuring of classical production pathways, new opportunities for material developers and new application areas.

Figure 5 Word-cloud analysis for Question 2



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Some of the peer reviewers expressed desire to be **more directly involved** in project preparation/implementation. Some see direct application (as potential users or providers of services, e.g., from, or as part of DIHs) and by creating synergies from similar strategic orientation and activities pursued by the organisations that the peer reviewers are representing with ones covered by Use cases.

QUESTION 4: How could this activity be further expanded/enriched?

Some reviewers suggest ensuring additional expert support in the field of policies related to innovation, entrepreneurship and digitization, and **involving more technological advisors**. One activity to potentially pursue could be cooperation in the organization of events and webinars related to the substantive scope of the project in the field of expert knowledge support.

In that perspective, strong dissemination and **awareness raising activities** are important. Creating strong communication plan for the project which will help to reach out project objectives to various stakeholders and in endgame - help in better commercialization of the project. There are lots of initiatives that can help in accomplishing this.

Figure 7 Word-cloud analysis for Question 4



Some peer reviewers suggested importance of **fine tuning the project** in accordance with specific needs. Because technology develops so quickly, students can get knowledge and skills in some areas only in industry because universities cannot upgrade curriculums due to legislative procedures.



Flexibility and adaptability in project design and implementation was emphasised to be important by several reviewers. The CAMI4.0 topics are in continuous evolution and so are the related challenges. It is important to implement soon the identified actions. If needed, project should be updated and should represent the latest achievements in the field.

Direct engagement of policy makers is deemed important by a significant number of peer reviewers. In the context of securing funding, a continuous two-side interaction with policy makers should be pursued. Proposing project to local (regional) and governmental organisations can provide policy support and help in finding out potential financial schemes to fund it. Policy makers could also contribute by adapting the regulatory framework relevant to particular technologies or sectors and this process could be facilitated by direct approach through organisations such as clusters.

For some projects, reviewers suggested **involving global partners**, from competing countries outside the EU (USA, Asia, etc.) on board in future activities to learn from their approaches. One reviewer noted that Europe is still not competitive to USA and Asia in many industry 4.0 segments, such as Artificial Intelligence, Automation & Robotics.

QUESTION 5: In your view, what are the **benefits of aligning and expanding action** on this activity? How does this impact Central Europe's competitive edge?

In many sectors, development of innovative, R&D-based solutions is crucial for enhancing competitiveness. In that perspective, interventions aiming to reduce initial costs of investments, leading to the topic of "Test before invest", are noted to be important by several reviewers. The benefits from taking up emerging technologies, first proof of concepts, applied research to **transferring emerging technologies into specific applications** up to demonstrators and prototyping.

Figure 8 Word-cloud analysis for Question 5



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A significant number of reviewers noted they are looking forward to receiving more information on the use cases / flagship projects as they further evolve. Some reviewers expressed interest in possible cooperation opportunities to develop the flagships. There will probably be some topics where it could make sense to deepen collaboration, involve additional partners etc.

Finally, the reviewers are looking forward to the expected future benefits of having physical meetings and workshops upon the end of the COVID-19 pandemic. The pandemic has made its impact on limitations to physical presence at the events and inability to meet with foreign partners. Through active moderation commonalities can be discovered and the benefits of collaboration and networking can be used.

Figure 11 Word-cloud analysis for Question 8





4.4. Policy Framework

The work on Common Flagship projects, following the steps described in section 3.4., resulted in formulation of one Policy Use Case / Common Flagship pursuing a particular CAMI4.0 topic. The topics covered by the projects will feed into setting up a joint transnational CAMI4.0 strategy for 2021-2027. In that perspective, the projects ensure triple-helix representation of involved stakeholders and coverage of different sectors in line with CAMI4.0 topics. Intersectoral, as well as the interregional approach, is envisaged to enable create synergies and alignment of technologies/solutions across sectors/regions. The following sections provide details on the Common Flagships developed for a particular CAMI4.0 topic, the PPs involved and the main insights from their self-assessment exercise, and an outline of projects and solutions pursued.

4.4.1. Artificial intelligence

The five PPs involved in the topic of Artificial intelligence proposed a common policy project which refers to collaborative training among the interregional stakeholders, that would touch upon social, industrial and political components of awareness regarding the benefits of Artificial Intelligence and its application in Advanced Manufacturing.

The involved PPs expressed interest in pursuing the work on the common identified project. Some of the strengths mentioned in the self-assessment exercise include direct involvement of policy makers and institutions in the definition of supporting tools through the co-creation. Further, demonstration activities envisaged through concrete pilot cases should enable strengthening of the connections and the involvement of industrial stakeholders in the different initiatives. The PPs agree on the existence of numerous possibilities when it comes to AI application on one hand, and the uncertainty in the pre-commercial phase when it comes to developing such solutions. It is thus important to involve relevant authorities and enable targeted funds disbursement that would mitigate such risks, bridge the innovation value chains and boost commercialization of R&D-based solutions related to this CAMI4.0 topic. In that context, to capitalize on the vast opportunities that AI offers, the proposed common project aims to facilitate collaboration and awareness raising, as the necessary pre-conditions.

The process made the PPs aware, however, that their individual projects have very different aims and stages of actuation. This is very logical and not surprising, considering all the different areas and ways that Artificial Intelligence can be applied in the industry. The main noted difference might be the perspective, or approach regarding the topics, with some individual flagships being more policy-driven and other ones more technology oriented. Nonetheless, the discussion was assessed as fruitful and the PPs recognized the value in the exchange of opinions and experiences. Moreover, as one PP noted, the solution is actually building on synergies of the different approaches and the cooperation of policy makers and the business sector. Details regarding the proposed project and PPs involved are presented in Table 10.



Table 10 Common Flagship proposed for the topic of Artificial Intelligence

CAMI4.0 topic	Artificial Intelligence	Common Flagship	TrAIIn2adma: Interregional collaborative training for social, industrial and political awareness of AI-related benefits within Advanced Manufacturing
Lead PP	PP6_AFIL	Flagship projects of PPs ⁵	AI Roadmap
Other PPs involved	PP7_SIIT		FORGING
	PP8_PTP		National Demo Center initiative for advanced technologies in Agrofood processing industry
	PP9_PBN		Establishment and development of a smart senior room
	PP10_HAMAG		CROBOHUB++: CROatian Industry and Society Boosting - European Digital Innovation HUB
Short Description of the Common Flagship	<p>PPs involved in brainstorming identified as Common Policy Use Case the proposal of a project focused on the increase of awareness related to the benefits of AI in Advanced Manufacturing. Of course, the project proposal could also address other significant topics linked to advanced manufacturing, such as digitalization and green transition.</p> <p>The idea is to promote interregional collaborations towards the acceptance and the sharing of knowledge of innovative and AI-based technologies with a cross-sectorial approach, promoting cross-fertilization among different manufacturing sectors.</p> <p>The awareness will be stimulated and increase at different levels: i) social and cultural in terms of acceptance and education to advanced manufacturing, ii) industrial in terms of operators' development of skills and SME approaching to research and innovation mind-set, and iii) political in order to fill the mismatch among industrial needs and supporting policy tools.</p>		
Solutions envisaged by the Common Flagship	<p>The solution to promote awareness at different levels is the development of interregional collaborations in order to show best practices and to foster synergies among interested stakeholders. This allows to show the impact of AI-driven solutions in Advanced Manufacturing, pushing managers and industrial actors to consider implementation within their own businesses. This awareness is promoted through i) the organization of exchange visits where stakeholders show regional capabilities and expertise (e.g., Competence Centre, DIH, etc.), ii) the set-up of collaborative events and workshops on available open calls and opportunities able to support investments on the topics, and iii) the reduction of fragmentation promoting the exploitation of synergies (e.g., connection of EDIH and ongoing initiatives). The awareness among workers, instead, could be promoted through specific communications (e.g., microlearning) and the diffusion of a proper culture in schools and universities to overcome gender gaps and remove the negative connotation related to employees in manufacturing.</p> <p>The awareness and development of skills connected to policies, finally, could be based on the concept of co-creation and anticipation. It means the collaborative definition, experimentation, and validation of innovative</p>		

⁵ Short info regarding all the proposed flagship projects is available in Annex 3.



policy tools and the analysis of current and future trends and challenges to foresee possible supporting tools.

During the preparation of the common flagship, different points of view on current regional needs have also been collected and discussed. The discussion has thus also provided inputs to facilitate the implementation of the individual flagships as well as the common flagships. As assessed by one PP, involvement in the Common Policy Use case represents the opportunity to exchange regional best practices at EU level, to monitor other initiatives and to promote collaborations and synergies. In any case, the common use case could strengthen collaboration across the CE area and promote submission of joint proposals. Furthermore, the sharing of best practices and of innovative AI solutions applied in different manufacturing sectors promote cross-fertilization and awareness of AI benefits in industrial environments. Sharing of policy best practices will stimulate the introduction of new policy tools supporting regional stakeholders to face current challenges on the topic.

The common flagship expects to bring new connections in the Artificial Intelligence between regions and on an international level. In that perspective, however, the PPs note integrating expertise and capabilities of particular PPs as a major challenge. Additional efforts will thus be needed in order to involve the most relevant actors and to share the results with all the actors potentially interested by the topic. Some specific examples of challenges that the PPs seek to tackle are related to knowledge transfer from universities to companies. Several PPs identify the use case as in line with their strategic orientation and see no difficulties for the project to potentially be implemented in their regions. Arguments for such views include, for example, existence of strong SME networks in their regions, that could be involved and support developing further and implementing the technical aspects of the use case. Expected benefits on regional level, according to some PPs, are increased competitiveness and based on collaboration of all the relevant stakeholders and promotion of the dialogue with citizens and policy makers to addressed priorities and future developments in the future strategic policies and programs.

Some noted focus areas that the PPs expect to work on to implement a common roadmap around the Common Policy Use-Case include new and cutting-edge technology and their impact, such as that of 5G, cybersecurity, predictive maintenance, zero-defect manufacturing, blockchain, augmented and virtual reality, etc. These mentioned topics also include examples of priorities identified in the strategic documents on regional level of the PPs involved. Other mentioned regional priorities of the PPs are agri-food and manufactory area, and the use implementation of AI solutions in this sector, implementation of artificial intelligence for the purpose of the circular economy, rising awareness in the education system and transfer and testing of pilots in the field of artificial intelligence, etc. Some PPs are focusing on supporting and facilitating the digital transformation of companies and public administration. Concerning the implementation of Artificial Intelligence solutions, health sector has also been noted as one of the potential areas that the PPs would like to focus on.

As for next steps in the dialogue and use case preparation for Artificial Intelligence, the PPs note that the dialogue with CEUP2030 PPs, and other regional stakeholders, should be continued, following the launch of potential funding sources (e.g., Interreg CE second call). The continued dialogue should focus on two aspects: (1) better defining the topic that the project will cover, and to finalize and agree on concrete objectives. In that perspective, the interaction should enable to better formulate the individual needs of stakeholders involved,



including training needs, and matching of topics with the ones that are set as priority/specialization at regional level. The second aspect is (2) defining further the roles of particular partners, aligning with other partners' expertise and capabilities. One PP suggests including a mapping exercise in order to provide an overview of the current situation in the field of artificial intelligence in the field of circular economy with stakeholders. Finally, the PPs agree that the project proposal could be finalized and submitted until early 2023.

4.4.2. Smart & Advanced Materials

The PPs engaged in the topic of Smart & Advanced Materials formulated a common concept for circular capitalisation of researching smart materials in the area of polymers and textiles. The concept is based on a community approach, aiming to facilitate knowledge and technology transfer between academia and industry. The proposed common flagship seeks to improve regional ecosystems innovation capacities for supporting transition to sustainable business models in CE manufacturing sector, by piloting customized innovation models which create new regional and transnational value chains, link manufacturing companies with solution providers and private equity, increase knowledge and user acceptance regarding smart manufacturing (green industry, digitalization) and transfer piloted programs and tools to RIS3 authorities.

The PPs recognized the work on the common use case as opportunity to share and know other regional capabilities and expertise, taking into consideration that some PPs are already extensively involved in the smart materials area, have a notable track record in the area, and possess stronger capacities compared to some of the others, that have so far been more focused on other CAMI4.0 topics. In that context, one PP notes the need to exchange between more experienced organisations and learners is crucial for the future development of smart materials technologies [in the regions involved]. Sharing of best-practices and the creation of a network able to cover the whole value-chain have a strong added-value for regional actors and represent a significant opportunity to exploit synergies, promote collaborative initiatives and increase the awareness of the topic, particularly for SMEs, with a consequent increase of industrial innovation, technology transfer and regional competitiveness.

According to several PPs, the main challenge for the implementation of the common policy project is the involvement of SMEs and industrial stakeholders in the activities. Also, as previously noted, one of the problems is the transfer of knowledge between research institutions and companies, and companies themselves. It is therefore necessary to have a very good and trustworthy network of stakeholders. There is a strong interest in smart and circular materials at academia and research level, but the industrial technology transfer seems to be still limited. The idea to share knowledge and best practices among participating countries is fundamental to show the practical benefits of the development and implementation of smart and sustainable polymers and textiles in industrial environments. Some PPs indicated proposed the identification of proper SMEs and actors able to join the Common Policy Use-Case as one of the key activities to be done carefully in the next months, deeply discussing their needs, their challenges, and the existing current barriers at technological and policy level.



In the process of discussion among the PPs, a challenge also rose in finding a common focus regarding smart materials among the PPs and their flagships. To some extent, this also refers to finding a common and shared definition of “new” materials, which has been one of the key subjects of the discussion among PPs. New materials play an important role in improving the quality of life. They enable technological progress in all areas of society, in industry and the domestic living environment, in transport, food, healthcare and information processing. The development of new materials also enables the use and exploitation of harmless, ecological and renewable resources and thus represents the basis for the sustainable development of the entire society. These numerous application areas of Smart & Advanced Materials also reflect in different perspectives and experiences among the PPs. Such differences, however, have been recognized as an opportunity instead of a weakness, and have thus been utilized by the PPs to build-upon both in further development and implementation of individual projects of the PPs, as well as their proposed common flagship project. Details regarding the proposed common project, references to involved PPs involved, and their individual flagships in Smart & Advanced Materials area, are available in Table 11.

Table 11 Common Flagship proposed for the topic of Smart & Advanced Materials

CAMI4.0 topic	Smart & Advanced Materials	Common Flagship	3C4MaterialsResearch: Circular Capitalisation Concept for Smart Material Research of Polymers and Textiles
Lead PP	PP4_IWU	Flagship projects of PPs⁶	STEPUP smart ³
Other PPs involved	PP1_KPT		3DoP
	PP6_AFIL		Strategic Community on Advanced Materials
	PP7_SIIT		EU-ALLIANCE
	PP8_PTP		GREEN 4.0 Smart and green innovation approaches for scaling up digital transformation opportunities in CE
Short Description of the Common Flagship	The basic idea of the concept is to enhance the access to knowledge in the wide area of new materials research and achieve research capitalisation for SMEs in the different CE countries participating in the planned endeavour. The majority of partners focus on smart textiles, polymers and circular & sustainable materials. To achieve this knowledge boost, the partners want to create a Central European community and facilitate triple or quadruple helix exchange.		
Solutions envisaged by the Common Flagship	The concept should be based on a community approach with the active ecosystem involvement combined with formats that foster the knowledge and technology transfer between academia and industry. In Germany, the Ministry of Education and Research just published a paper about the future and outlook of materials research and funding. In the document the outstanding importance of hubs and their bundling of competencies was underlined. With this being said, the planned ‘international community for new and circular materials in plastics, textiles and other industries’ is paying into achieving this goal and is setting a focus on circularity and sustainability. The idea is to establish 3 lines to develop the project		

⁶ Short info regarding all the proposed flagship projects is available in Annex 3.



results. One action line is focused on coming together and exchanging best practices. In the second step we could elaborate concepts and formats to involve quadruple helix stakeholders effectively for sustainable long-term knowledge & technology transfer between academia, industry & society. In the third step we want to try to bring these concepts into reality and facilitate the creation of pilots.

Some parts of the discussion among the PPs have been oriented on possible funding opportunities for the common flagship, which is expected to continue in the upcoming period as well. As rightfully noted by one PP, the industrial transformation and further economic and social development in the field of new materials require improvements in the research, development and innovation ecosystem and the provision of coordinated, stable and integrated investments in research, development and innovation, digital transformation, competitiveness of small and medium enterprises and smart specialization skills. In that perspective, more focus on the area of smart materials in the strategic documents would be beneficial, providing a more dedicated policy support approach and enabling finding an appropriate financial instrument to fund the proposed common use case.

When it comes to the common definition and focus among the PPs regarding the new materials, some specific examples of what the common use case could focus on include textile recycling in terms of eco-design, new business models, certifications and legislation, recycling and sorting technologies, sustainable products and processes, and digital solutions; advanced polymers in terms of polymeric materials and bio-based composites, smart materials for reusable, re-processable and recyclable products, production technologies and components with integrated electronics.

Regarding potential upcoming activities regarding the further development of common flagship, some of the proposed further steps to potentially be pursued by the PPs include screening of trends in Europe and the research landscape, as well as identification of sustainable development options for functional materials. Analysis could be further expanded to understand if (and to what extent) have the identified topics related to Smart & Advanced Materials recognized as priorities/specialization at regional level. Further screening for funding opportunities has also been proposed; to have a selection of possible open calls to fund the project. According to the PPs, such activities could be done in the last months of 2022, preceding the submission of a project proposal in (early) 2023.

4.4.3. Intelligent Production Systems

The common use case resulting from the dialogue among the PPs refers to a creation of a cross-border core network with a specific thematic focus within the topic of Intelligent Production Systems. Such network would include members of the CEUP partnership as well as external triple helix stakeholders, that will work closely with policy makers in order to solve the challenges through the creation of R&D projects, or through the creation of networks for promoting national and transnational SME uptake of CAMI 4.0 topics. The outline of the proposed common project, and other relevant information on PPs involved, is provided in Table 12.



Table 12 Common Flagship proposed for the topic of Intelligent Production Systems

CAMI4.0 topic	Intelligent Production Systems	Common Flagship	Strategic network initiative centered around the topic of fostering R&D and innovation action projects
Lead PP	PP5_KIT	Flagship projects of PPs ⁷	NEXT4FUN (Next Generation InkJet-based Process Chain for 3D/4D Multi-material Functional Printing)
Other PPs involved	PP2_PRO		Human Centered AI Based Production Optimization (HAIPRO)
	PP3_PIA		Testbed Exchange
	PP4_IWU		Smart Circuit
	PP8_PTP		Rising competences in less developed regions focused on small scale food product & service providers through new transnational mentoring services
	PP9_PBN		Purchase of autonomous production line (Teaching and Learning Factory) and smart material board and further developments
Short Description of the Common Flagship	During the brainstorming session a number of topics were discussed and the commonalities in topics were identified. The policy use case therefore will be designed around common topics including 3D/4D Printing, Robotics and Automation, Industry 5.0, smart logistics as well as creating pathways for further SME uptake of CAMI 4.0 topics. In order to achieve this, the policy use case elaborated centres around the creation of a core network with a specific thematic focus in which different funding opportunities on national and transnational level are being explored and potentially coordinated to create long-term cross-border realisation of relevant R&D topics across different funding schemes accompanied by efficient knowledge and technology transfer actions, networking and application oriented transfer to relevant stakeholder groups. The envisioned network should also support technology foresight efforts, scouting for different collaboration and funding opportunities, strategic communication efforts towards the different national policy ecosystems to foster cross-border and may cross-topic infrastructure development, R&D efforts, up/reskilling of SMEs CAMI 4.0 topics.		
Solutions envisaged by the Common Flagship	The solution is creation of a cross-border core network with a specific thematic focus within the area of intelligent production systems including members of the CEUP partnership as well as external triple helix stakeholders that will work closely with policy makers in order to solve the challenges through the creation of R&D projects or through the creation of networks for promoting SME uptake of CAMI 4.0 topics via national and transnational frameworks such as Interreg. The projects will include industrial presence for solving real issues and will also look to transfer information on the latest trends and developments in R&D to policy makers.		

⁷ Short info regarding all the proposed flagship projects is available in Annex 3.



The flagships proposed by the PPs share a common interest towards application of solutions for optimisation of production within manufacturing sector, addressing both SMEs and large enterprises. On the other hand, some PPs note different kind of applications and usage which have been covered by their use cases as part of the common field of Intelligent Production Systems. Intelligent Production Systems are a very broad topic with diverse sub-topics, and this diversity is also reflected among the proposed flagship projects. The diverse topics included in the projects include, e.g., artificial intelligence, 3D technologies, testbeds, etc.

Most PPs emphasized their flagship projects were complementary to each other and the significance is that all of them are involved in the promotion of advanced manufacturing processes and aimed at furthering the reach and penetration of these new technologies amongst SMES as well as large enterprises. Some examples of complementary flagships that have been identified by PPs are those related to autonomous production lines and testbed facilities, novel 3D (and 4D) printing, and other novel technologies that are becoming more relevant due to the current events on regional and even global level, that create disruptive issues such as supply chain shortages.

Discussion provided PPs with an opportunity to learn about each other's capabilities and can use the knowledge for binding ties between our stakeholder ecosystem and the other (international) institutions. Several PPs emphasize the added value created by the exchange on flagships, assessing the discussion as contributing to common future projects and cooperation. In that perspective, one particular gap mentioned by the PPs refers to lacking international collaboration between business support organizations. The use case would create further opportunities for the PPs to put forward their priority topics to different policy making stakeholders and to find project partners to engage in joint projects within these topics, either as a direct PP or indirect beneficiary as, e.g., knowledge supplier, receiver, or facilitator. The proposed common project is expected to facilitate collaboration among stakeholders, as it was already facilitated through the flagships of particular PPs.

The flagships projects are all quite diverse and they are all using different policy programs and instruments. This made it more difficult to find common ground to elaborate one common topic area concept for the partners.

Given that the involved PPs include different types of organisations that focus on different project types, some PPs noted that it was challenging to find a common ground when talking about potential common flagship projects. Flagships were different in terms of perspective, which made it difficult to elaborate one topic that may interest all stakeholders involved.

In order to advance with the common project, it is crucial to find calls for which the project can be submitted. The dialogue among the stakeholders has already contributed to potential partnerships, considering that the PPs are now more aware of each other's competencies and strategic focus in the field of Intelligent Production Systems. During the discussions a wide range of programs and initiatives were raised such as Horizon Europe, bilateral calls, EIT as well as Interreg CE which can contribute to improve the own flagships and the common flagship as well.

In any case, establishment of the competent and experienced project consortium is also crucial in order for the project idea to be approved. Some examples of expertise that the PPs offer include expertise in different kinds of resource-efficient production technologies, 3D printing, smart and functional materials, and competencies in the field of robotics and automation concerning sensor technology and the network between the processes. Competences of other stakeholders, e.g., involved local SMEs from the production sector,



would further improve the putting into practice of the use case concept and fine-tuning it to their particular needs. For future work, some PPs suggest a focus on teaching and learning factories and developments and research in connection with them.

When it comes to next steps regarding the common use case development, PPs suggest to expand the work on identification of a clearer focus and further elaboration of sub-topics to be addressed by the project, i.e., by the envisaged collaboration network. This focus should be informed by trends in Europe and the research landscape, based on which sustainable development options for the topic should be identified. Deepening the dialogue with the regional stakeholders is also suggested as one of the priorities in building the common roadmap for delivering the common use case. This refers to interaction with regional stakeholders, finding the right partners (existing and additional) for the project and topic, and Identifying new stakeholders in the country and abroad and initiate bilateral exchange with interesting ones. Finally, appropriate funding source should be identified, with a perspective of submitting the use case in early 2023.

4.4.4. Automation & Robotics

When working on developing a common use case for the Automation & Robotics topic, some PPs found it particularly interesting to see all the different application areas and how big of a role can this topic play across various industries. Cross-sectoral application areas might refer to topics such as sensor technologies, artificial intelligence, etc. Some PPs noted the importance of promoting advanced automation and robotics processes aimed at furthering the reach and penetration of these new technologies amongst enterprises, as a common denominator of the individual flagships that the common project is building upon.

As in developing a common flagship for other topics, the main challenges identified in the process refer to different levels of experience of the PPs in the Automation & Robotics field, different organisation types and their foci on different project types. When it comes to practicalities, organizing meetings with several different partners in different countries was also a challenge, as noted by one PP.

On the other hand, involvement of local policy makers and SMEs from the enable eco-system will greatly complement the development and conduction of the common policy use case. Some PPs accentuate the existing high-tech capacities in the regions covered, with highly developed Automation & Robotics facilities and infrastructure in particular, that are expected to help develop and implement the use case. In line with that, the proposed common flagship is envisaged to focus on developing a Digital Innovation Hub to provide services to SMEs in the field of Automation & Robotics, and out of the existing competencies and infrastructure of the CEUP members. Details regarding the common flagship project are available in Table 13.



Table 13 Common Flagship proposed for the topic of Automation & Robotics

CAMI4.0 topic	Automation & Robotics	Common Flagship	“Digital innovation Hub” - Structure Coop DIH
Lead PP	PP2_PRO	Flagship projects of PPs ⁸	CoRTeam
Other PPs involved	PP1_KPT		Hub4Industry
	PP3_PIA		Share4.0 - SK-AT
	PP5_KIT		BIOSAM (Biologicalisation for Sustainable Advanced Manufacturing)
	PP10_HAMAG		Adriatic multifunctional smart buoys INTERREG Italy - Croatia
Short Description of the Common Flagship	<p>Provide services in the field of A&R to Industry (SMEs) out of the existing competencies and infrastructure of CEUP members:</p> <ul style="list-style-type: none"> • Hardware • Test applications and test facilities • Software access (Open source if someone is interested from the partners), simulation • Processes • Consulting • Access to new research projects and results <p>Service catalogue for SMEs in the field of SMEs - base concept design. First test application to show how it could work - interested companies - way how to use the services.</p>		
Solutions envisaged by the Common Flagship	<p>Provide services in the field of A&R to Industry (SMEs) out of the existing competencies and infrastructure of CEUP members. Creating a space where SMEs have the access to expertise in their fields. Given Infrastructure (Uni, Science) » Add. Software Components » How Hardware may work » Identifying Companies which already used » See before invest » by open source software. Digital Innovation Hub » to find the right Expert for Problem » High performance » AI & Security » Access Use cases Service catalogue for SMEs in the field of A&R - basic concept designs</p>		

The PPs note significant benefits achieved through the participation in the dialogue coating the process of common use case development - especially considering that the topic is, according to the PPs, in line with their designated institutional scope and activities. When it comes to individual organization level, benefits mentioned by the PPs include promotion of internationalisation of the organisation and to improving the reach and scope of the PPs with the different regions and being able to join other organisations in joint projects. On a broader level, the PPs note that digitalisation, including robotic and automatization is a key technology for the new paradigm of Industry 5.0 which is a strategic field of the European

⁸ Short info regarding all the proposed flagship projects is available in Annex 3.



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Commission. Industry 5.0 provides a vision of industry that aims beyond efficiency and productivity as the sole goals and reinforces the role and the contribution of industry to society. It places the wellbeing of the worker at the centre of the production process and uses new technologies to provide prosperity beyond jobs and growth while respecting the production limits of the planet. It complements the existing "Industry 4.0" approach by specifically putting research and innovation at the service of the transition to a sustainable, human-centric and resilient European industry. Some specific topics mentioned as potential focus of the common project include cyber physical systems and collaborative robotics, robotics and automation concerning sensor technology and the network between the processes.

The proposed next steps in the project development include pursuing further research on trends and landscape of topics related to Automation & Robotics in Europe and screening for further opportunities and calls. Establishing and enlarging the partner network, defining the partner roles, and deepening the bilateral discussions and exchanges, are examples of activities proposed to be completed in the second part of 2022, preceding submission of a project proposal for funding the common flagship.



5. Conclusions & Next Steps

Work Package Leader and PPs are asked to review this guide and clarify with the Deliverable Responsible Partner, any questions or comments on the procedure.

- Due Date: 28.04.2022.
- Responsibility: All PPs

Incorporation of Feedbacks

- Due Date: 30.04.2022.
- Responsibility: HAMAG-BICRO



6. Annexes

Annex 1. External Peer Review Template for WPT3 OUTPUTS

EXTERNAL PEER REVIEW TEMPLATE FOR WP3 OUTPUTS	
Administrative Information	
Name of Interviewee (Last name, First Name)	[Free Text]
Interviewee Organisation/Network Name	[Free Text]
Interviewee's E-mail	[Free Text]
Organisation Type	Choose an item.
If other, please specify	[Free Text]
Organisation's Territorial Representation	[Free Text]
Name of PP Interviewer (Last name, First Name)	[Free Text]
Partner Organisation	Choose an item.
Date of Interview	Click here to enter a date.
HOSTING LOCATION OF EVENT Location of Interview (if Physical Event)	<input type="checkbox"/> Online, please specify hosting platform: XX
	<input type="checkbox"/> On Site, please specify the location: XX
NAME OF USE CASE / CAMI4.0 FOCUS OF EVENT (Choose up to four)	<i>Use Case Name</i> <i>CAMI4.0 Topic</i>
	XX Choose an item.
	XX Choose an item.
	XX Choose an item.
Start of Semi-Structured Interview	



Please start the session with an overview of CEUP 2030 and its key objective and then proceed with a discussion on the background and context of your chosen Use Case(s)

The interview template is structured in such a way that each category of data gathering (A. Use Case(s) Validation & Feedback, B. Result Capitalisation, and C. Closing Remarks) carries one or two questions about each results aspect.

PPs should strictly stick to this template.

Category & Question	Answer
A. Use Case Validation & Feedback - In order to help the PPs gain insight on and validation for the Use Case:	
What are your perspectives and recommendations on the described Use Case(s)? <i>(Challenge, solution, policy instrument used, stakeholders involved?)</i>	<i>[Maximum 500 Characters, in English]</i>
How can you see the Use Case (s) adding value to the Central European manufacturing eco-system?	<i>[Maximum 500 Characters, in English]</i>
B. Use Case Capitalisation - In order to help CEUP 2030 in the final stage of the project (creation of a capitalization agenda), we'd like your views on:	
How could this activity, be aligned to other work you are doing / you know about?	<i>[Maximum 500 Characters, in English]</i>
How could this activity be further expanded/enriched?	<i>[Maximum 500 Characters, in English]</i>
In your view, what are the benefits of aligning and expanding action on this activity? How does this impact Central Europe's competitive-edge?	<i>[Maximum 500 Characters, in English]</i>
How could this activity be adapted to promote strategic, policy-level support for Central Europe's manufacturing sector?	<i>[Maximum 500 Characters, in English]</i>
C. Closing Remarks - based on the objective of the project, and the work the Partners are doing to create strategic long-term support to promote the uptake and adoption of Industry 4.0 and Advanced Manufacturing	



CEUP 2030

<p>Beyond the described Use Case, what are critical areas you'd recommend to assess in order to create specific, strategic support for advanced manufacturing and industry 4.0</p>	<p><i>[Maximum 500 Characters, in English]</i></p>
<p>What other comments or recommendations do you have about:</p> <ul style="list-style-type: none"> ➤ the results of CEUP 2030 so far; ➤ the next steps to develop the Use Case. 	<p><i>[Maximum 500 Characters, in English]</i></p>
<p>TEMPLATE END</p>	



Annex 2. Evaluation template for RIS3 Round Table

Dear Participant!

Please fill out this template and help us to improve the quality of our events and services. Please mark your opinion by circling the correct number where 1 is the worst ('Extremely dissatisfied') and 10 is the best option ('Extremely satisfied').

Thank you for your cooperation!

Insert your name

project manager

Basic data about the event:	
Place:	Date:
Event title:	
Type of the event:	
<input type="checkbox"/> TTTDM (TIN Technology Trend Dialogue Meeting)	<input checked="" type="checkbox"/> Policy Pilot Action Meeting (RIS3 round table)
<input type="checkbox"/> International conference	<input type="checkbox"/> Other:
<input type="checkbox"/> No information / it was not defined	
Central Europe Advanced Manufacturing and Industry 4.0 related topic(s) on the event:	
<input type="checkbox"/> Intelligent Production Systems	<input type="checkbox"/> Automation & Robotics
<input type="checkbox"/> Smart & New Materials	<input type="checkbox"/> Artificial Intelligence
Your country:	
Your type of organisation:	
<input type="checkbox"/> Local Public Authority	<input type="checkbox"/> Education/training centre and school
<input type="checkbox"/> Regional Public Authority	<input type="checkbox"/> Large enterprises
<input type="checkbox"/> National Public Authority	<input type="checkbox"/> SME
<input type="checkbox"/> Interest Groups including NGOs	<input type="checkbox"/> Business support organisation
<input type="checkbox"/> Higher Education & Research	



Host organisation:										
Satisfaction survey:										
1. How satisfied are you with the activity of the hosting institution in organizing the event?										
	1	2	3	4	5	6	7	8	9	10
2. How satisfied are you with the infrastructure provided by the organizer institution? (equipment for educational technology, material conditions for the workshop, heating, lighting, hygiene, etc.)										
	1	2	3	4	5	6	7	8	9	10
3. How satisfied are you with the communication of the hosting institution?										
	1	2	3	4	5	6	7	8	9	10
4. To what extent did the event / workshop meet your expectations?										
	1	2	3	4	5	6	7	8	9	10
5. How satisfied are you with the information provided on the event?										
	1	2	3	4	5	6	7	8	9	10
6. How satisfied are you with the structure and content of the event?										
	1	2	3	4	5	6	7	8	9	10
7. How satisfied are you with the presenters of today's event?										
	1	2	3	4	5	6	7	8	9	10
8. How satisfied are you with the quality of the event/workshop materials provided? You only have to answer if the workshop material has been provided.										
	1	2	3	4	5	6	7	8	9	10
9. Other comments, suggestions										

ADDITIONAL COMMENTS AND SUGGESTIONS:



Annex 3. Overview of flagship projects identified by PPs

ID of PP	Flagship project	CAMI4.0 topic (primary)	CAMI4.0 topics (secondary)			
			Intelligent Production Systems	Automation & Robotics	Smart & Advanced Materials	Artificial Intelligence
PP1_KPT	Hub4Industry	Automation & Robotics	X			X
Short Description of the Flagship project	<p>hub4industry (h4i) is focusing on manufacturing SMEs from southern Poland. It's built around Krakow Technology Park ecosystem of more than 230 manufacturing clients, about 120 IT tenants and 80+ graduates of Industry 4.0 acceleration program. It focuses on various technologies from "4.0" area with special competence in robotics and communication (including 5G). Thanks to broad network of partners h4i offers also support in implementing AR/VR, AI, IoT, cybersecurity solutions, and various software solutions to manufacturing. We offer Skills and trainings, Demonstration and Test Before Invest services. As a digital maturity assessment, we use ADMA methodology. In last 4 years we have supported 80+ pilot projects of innovative solutions to be tested in real life facilities of 15+ corporate industrial partners. We cooperate with state, regional and city authorities. H4i has a track record of Interreg and Horizon projects. Orchestrator of h4i has 25 years of experience.</p>					
PP1_KPT	3DoP	Smart & Advanced Materials	X			
Short Description of the Flagship project	<p>The project builds upon four ‘packages of investment projects’, aiming each to unlock large investments enabling the optimisation of production through AM and increase productivity. • Each package is driven by a ‘leading company’ and aims at addressing a pressing need or challenge related to optimizing manufacturing processes. • Each package of investment projects consists of several associated ‘SME-led investment subprojects’ that are essential either in unlocking the investment made by the leading company or in adapting the SME’s products/processes to this investment. • All projects within a package are contributing to an overarching ambition, which is related to lead company and SMEs’ needs in terms of smart, green and more competitive transitions. • The proposed packages will ensure impact maximization by bundling projects towards VC and leading companies’ needs.</p>					
PP2_PRO	CoRTeam	Automation & Robotics	X			X
Short Description of the Flagship project	<p>In the era of mass customization that demand manufacturing industries for small lot size production, Europe is also experiencing a demographic</p>					



ID of PP	Flagship project	CAMI4.0 topic (primary)	CAMI4.0 topics (secondary)			
			Intelligent Production Systems	Automation & Robotics	Smart & Advanced Materials	Artificial Intelligence
	<p>change with growing concern of the retiring workforce and a subsequent skill drain. To keep up the high quality of produced goods and the need of optimized assistance for the worker/s in the factory, flexible assistance systems are being developed.</p> <p>The goal is to assist users at the factory floor both physically (e.g., using robots) and cognitively (e.g., intelligent guidance system). However, dealing with the factory floors involves multiple working stations and users.</p> <p>Therefore, such solutions should tackle multiple users and varying production workflows (mass customization) which could involve multiple robots. Such assistance systems should also be re-configurable (to accommodate production changes) according to the situation in the factory floor and cater to users accordingly.</p> <p>The project CoRTeam aims at implementing a reconfigurable framework to deploy and configure multiple collaborative teams of workers, robots and machines in manufacturing processes. This is achieved by a human-centred approach, studying behaviours and practices at work, informing a digital simulation environment that can optimally and dynamically allocate roles of agents (humans, robots) and initiate the required collaboration to improve the overall productivity at factory floor level. CoRTeam promotes a humanistic perspective to robotization (introduction of robots to carry out industrial tasks): it engages the gendered worker (their values, beliefs and abilities) in participatory design of their future working contexts.</p> <p>This approach will improve equality, diversity and inclusion by design, thus opening the possibility to reducing the gender gap in manufacturing industries.</p> <p>The project tackles safety holistically, as a key quality metric of robot adoption at work, and ensures safety at the factory floor level and at the local workstation level.</p>					
PP2_PRO	Human Centered AI Based Production Optimization (HAIPrO)	Intelligent Production Systems		X		X
Short Description of the Flagship project	<p>The project addresses the topic of vertical process optimization to increase productivity and sustainability, taking production data and human-centered assistance into account.</p> <p>The main challenges are: a) increasing personalization in production with small batch sizes, b) increasing conversion costs for new production lines,</p>					



ID of PP	Flagship project	CAMI4.0 topic (primary)	CAMI4.0 topics (secondary)			
			Intelligent Production Systems	Automation & Robotics	Smart & Advanced Materials	Artificial Intelligence
	<p>c) great variability in processes involving human actors, d) lack of sustainability of modern production processes as well as d) ethical, especially privacy-critical aspects like GDPR.</p> <p>The use of assistance systems is intended to make production more flexible (e.g. by supporting low volume, high mix production, greater transparency of both machine operation and process management). An inter-company quality data exchange or inter-company available evaluation and visualization services enable a cross-company increase in product quality (e.g. by integrating the Gaia-X platform). Tools are created to guarantee high interoperability of the quality data to be exchanged.</p> <p>Furthermore, the project aims to increase worker satisfaction, productivity and the sustainability of human-centered manufacturing processes through an improvement in the safety and stability of manufacturing processes and through optimized, employee-centered production planning.</p> <p>This is made possible by processes such as transfer learning, data augmentation and data fabrication. This data is to be enriched by individual operating and handling data at operator and team level. An innovative platform for privacy-preserving-transform-learning and the integration of the open platform Gaia-X guarantee a high level of data security and data sovereignty even when using data sources with differing statistical characteristics.</p>					
PP3_PIA	Testbed Exchange	Automation & Robotics	X			
Short Description of the Flagship project	<p>Even today, we often encounter a situation where the concepts of Industry 4.0 are still only vaguely understood, and each company may understand something different by it. We therefore believe it is necessary to create a solid framework that standardizes the view of Industry 4.0 and thus leads to a more concrete understanding of Industry 4.0 among the general public. The leading players in Industry 4.0 are currently in many cases universities and specialized departments of top companies. At academic institutions, so-called testbeds (in Austria called pilot factories) have emerged in recent years, which have both in-depth expertise and modern infrastructures. The aim of this project is to survey these testbeds and to create a sustainable network in which intensive communication, mutual learning and exchange of experience takes place.</p>					
PP3_PIA	Share4.0 - SK-AT	Intelligent Production Systems		X	X	



ID of PP	Flagship project	CAMI4.0 topic (primary)	CAMI4.0 topics (secondary)			
			Intelligent Production Systems	Automation & Robotics	Smart & Advanced Materials	Artificial Intelligence
Short Description of the Flagship project	There is a solid knowledge base for research and innovation in the cooperation area. However, there is a lack of constant cooperation between the key players. The institutions involved only build regional, national, and cross-border relationships on an ad-hoc basis, but strategic cooperation and networking is not significantly evident. Awareness of permanent strategic cooperation is latent, but has yet to be developed, established and anchored through workable structures and processes. Other challenges relate to insufficiently finding qualified staff, exploiting research results, and incorporating EU excellence into research and innovation activities. Share 4.0 implements current needs of the target groups as well as strategic documents in a practicable way and forces cooperation potentials through a distinctive transfer for high-quality implementations and new forms of cooperation.					
PP4_IWU	STEPUP smart ³	Smart & Advanced Materials				
Short Description of the Flagship project	It is the purpose of the project to further develop the services and USPs for companies in the region. The overall goal should be to increase the number of the memberships in smart ³ network and of cooperations/cooperation projects to boost the impact of the smart materials community. The project aims at identifying and developing new cooperation partners in Germany and internationally, establishing new offers in English, generally new services to provide incentives and stimulate innovation and participate in roadshows and events.					
PP4_IWU	Smart Circuit	Intelligent Production Systems		X	X	
Short Description of the Flagship project	There is an increasing need to become resilient. We face globally impacting trends like climate change and overconsumption. That is why many countries have national funding programs and project opportunities in place to support sustainable ideas and innovation. Those sustainable ideas need to be embedded in many different technological areas for production of the future. The project tries to establish service corridors to promote sustainable transition in industrial production facilitated through digitally enabled technologies. The project tries to reduce implementation barriers and upgrade the production of sustainable products.					
PP5_KIT	NEXT4FUN (Next Generation InkJet-based	Intelligent Production Systems		X	X	



ID of PP	Flagship project	CAMI4.0 topic (primary)	CAMI4.0 topics (secondary)			
			Intelligent Production Systems	Automation & Robotics	Smart & Advanced Materials	Artificial Intelligence
	Process Chain for 3D/4D Multi-material Functional Printing)					
Short Description of the Flagship project	<p>NEXT4FUN is a project that combines both scientific development as well as training the next generation of researchers in the field. The scientific training is combined with complementary skills and hands-on training exercises, creating highly trained personnel. Therefore, Next4Fun will:</p> <p>(1) Ensure the availability of highly trained professionals to facilitate the rapid growth of the AM industry, and enrich their future career opportunities while promoting the innovation capabilities of European industry; (2) Launch the next generation of 3D/4D functional inkjet printing technologies and hence increase the range of applications of AM technologies; (3) Facilitate the integration of AM processes within Industry 4.0 smart manufacturing, thereby making it more attractive for large-scale adoption by European industry and thus increasing the market acceptance and penetration of AM.</p>					
PP5_KIT	BIOSAM (Biologicalisation for Sustainable Advanced Manufacturing)	Automation & Robotics	X		X	
Short Description of the Flagship project	<p>This project aims to develop the biologicalisation in design for manufacturing. The network is composed of 4 Universities, 2 Research and Technology Development organisations and 1 industrial partner from 4 different countries. This network will enrol 10 doctoral candidates (DCs), developing individual research projects within the doctoral network programme. One of the many challenges being addressed by this project include the unavailability of trained R&D personnel in this field within Europe. By training DCs this project achieves this along with all the technological developments outlined.</p>					
PP6_AFIL	Strategic Community on Advanced Materials	Smart & Advanced Materials	X			X
Short Description of the Flagship project	<p>Plastic sector is one of the most relevant area for Lombardy economy and AFIL constituency involves a good number of stakeholders operating in this field. However, the activities in this context were mainly associated to sustainability and Circular Economy rather than on innovative</p>					



ID of PP	Flagship project	CAMI4.0 topic (primary)	CAMI4.0 topics (secondary)			
			Intelligent Production Systems	Automation & Robotics	Smart & Advanced Materials	Artificial Intelligence
	<p>materials. Since this is a key aspect for the future development of this sector, AFIL wants to foster the creation of a new Strategic Community focused on functional plastics.</p> <p>The “Advanced Polymers” Strategic Community should represent the regional capabilities and expertise in the field along the whole value-chain and identify research challenges and industrial needs to foster the innovation. Once set up the working group, the Strategic Community should plan activities aimed at increasing the regional competitiveness and constitute new synergies and collaborations at inter-regional and European level, for example within Vanguard Initiative.</p>					
PP6_AFIL	AI Roadmap	Artificial Intelligence	X	X		
Short Description of the Flagship project	<p>AFIL promotes the identification and collection of industrial needs within its AI Strategic Community, where academic and research actors, SME, LE, start-ups and associations periodically meet and discuss on AI topics. Through the organisation of Innovation Labs, webinar and workshops, the AI Strategic Community increases the awareness on the potential applications and benefits of AI-driven solutions and fosters the collaborations among the relevant stakeholders, particularly between industrial users and technology providers. The Community also works to transform the innovation interests and topics in concrete actions, through the submission of projects and the collaborations with different regional, national and European initiative (e.g., Vanguard Initiative).</p> <p>Although lots of actions are running and regional stakeholders are involved and commit in these, additional supporting tools and mechanisms could be activated in next years to favor the implementation of AI-driven solution at industrial scale. To do that, AFIL wants to develop a structured AI Roadmap to highlight the current barriers and priorities to be shared at regional level with Lombardy Region.</p>					
PP7_SIIT	EU-ALLIANCE	Smart & Advanced Materials	X			
Short Description of the Flagship project	European ALLiance for International business development on Advanced materials and coNnectivity for defenCe and sEcurity markets					
PP7_SIIT	FORGING	Artificial Intelligence				
Short Description of the Flagship project	Forum for Emerging Enabling Technologies in Support to the Digital and Green Transitions through Value Sensitive Innovations					



ID of PP	Flagship project	CAMI4.0 topic (primary)	CAMI4.0 topics (secondary)			
			Intelligent Production Systems	Automation & Robotics	Smart & Advanced Materials	Artificial Intelligence
PP8_PTP	Rising competences in less developed regions focused on small scale food product & service providers through new transnational mentoring services	Intelligent Production Systems		X	X	X
Short Description of the Flagship project	The overall Flagship objective is improving competences and skills in LESS DEVELOPED RURAL REGIONS which are characterized by lack of development capacities, high unemployment, brain drain and emigration. The Flagship is therefore focused on improving regional support ecosystems and their involvement into developed joint transnational mentoring services to transform small scale rural Food & drink products & services into digital and circular attractive. Innovativeness is shown by DEVELOPED TRANSNATIONAL MENTOR SERVICES jointly offered to small scale food product & service providers, where regional support ecosystem and their mentors will have access to wide range of specialized digital & circular toolkits and access to pool of international experts to support digital & circular transition.					
PP8_PTP	GREEN 4.0 Smart and green innovation approaches for scaling up digital transformation opportunities in CE	Smart & Advanced Materials	X	X		X
Short Description of the Flagship project	Flagship scope is to improve regional ecosystems innovation capacities for supporting transition to sustainable business models in CE manufacturing sector, by piloting customized innovation models which create new regional and transnational value chains, links manufacturing companies with solution providers and private equity, increase knowledge and user acceptance regarding smart manufacturing (green industry, digitalization) and transfer piloted programs and tools to RIS3 authorities.					



ID of PP	Flagship project	CAMI4.0 topic (primary)	CAMI4.0 topics (secondary)			
			Intelligent Production Systems	Automation & Robotics	Smart & Advanced Materials	Artificial Intelligence
PP9_PBN	Purchase of autonomous production line (Teaching and Learning Factory) and smart material board and further developments	Intelligent Production Systems		X	X	X
Short Description of the Flagship project	<p>The Teaching and Learning Factory “TLF” (aka: cyberphysical factory) is a manufacturing unit with online, remote access to broaden cross-border services directly related to digitization competencies of the partners. The topics data science, autonomous robotics and 3Dprinting are integrated, enabling stakeholders to provide internationally competitive research and training infrastructure. With further future actions, connectivity will be ensured, contributing to its sustainability for the 2021-2027 period.</p> <p>This TLF has been purchased by PBN, and it will arrive to our premises in the beginning of December. Firstly, cyberphysical features will be installed, and it is followed by the development and application of experimentation and research modules enabling concrete services towards the relevant ecosystem members. Moreover, the TLF is concentrating on additional exploitation modules, to extend the cyberphysical facility into a strategic, cross-border opportunity as well. In parallel with the TLF purchase and development, PBN has also purchased a smart material board, which can be considered as a complementary element of the TLF.</p>					
PP9_PBN	Establishment and development of a smart senior room	Artificial Intelligence		X		
Short Description of the Flagship project	<p>Szombathely City - and Western Hungary - are dominantly oriented on automotive industry. It results in a one-legged, labour-intensive positioning, that makes the region vulnerable. With the lead of PBN efforts were made to exploit the potential of digitalization to a achieve paradigm shift. These actions were supported by universities, companies and the municipality, and after a 6-months preparation the work was culminated in a strategic program, called Szombathely2030.</p> <p>As first step, analysis was provided by PBN to care organisations, including seniors, formal and informal caregivers. It was concluded that complex and integrated solutions are needed. As a result, PBN elaborated</p>					



ID of PP	Flagship project	CAMI4.0 topic (primary)	CAMI4.0 topics (secondary)			
			Intelligent Production Systems	Automation & Robotics	Smart & Advanced Materials	Artificial Intelligence
	and communicated a concept of smart senior room. Social care educational institutes - secondary and university level, as well -, social care organisation also expressed their motivation to utilize the infrastructure for demonstration and training use, and questionnaires also confirmed the societal need for such a possibility to learn. The physical smart senior room being established, can serve as a potential vision for the citizens and inspiration for companies. It includes elements based on preliminary research. The key areas will be senior safety, socializing, self-monitoring and communication.					
PP10_HAMAG	Adriatic multifunctional smart buoys INTERREG Italy - Croatia	Automation & Robotics				X
Short Description of the Flagship project	<p>North Adriatic coast is frequently polluted by jelly fish. The pollution causes problems, in Istra region which derives most of its income from tourism and fishery. Apart from the jelly fish pollution in Istria, fifty miles towards south, on the island of Krk there is pipe gas plant and port of Rijeka, the biggest port in the Adriatic. In the central Adriatic, in Šibenik area, used to be heavy industry which polluted the soil by heavy metals, still present in the soil and affecting the local ecosystem. Industrial pollution undermines the prospects of eco agriculture, tourism and fishery. That also affects the whole eco chain in the Adriatic region. One of the ways to tackle that issue is deployment of the underwater robots which will clean the seafloor and monitor the level of pollution. The robots can also measure all relevant parameters important for the numerous marine research which is conducted in the research stations on the both side of the Adriatic.</p> <p>One approach to the issue of pollution includes the deployment of multifunctional smart buoys - innovative technology being developed for long-term operation and persistent deployment in marine environments. This use-case features a static buoy gathering, analysing, and storing measurements of various environmental values (for both water and air) using built-in sensors while ensuring long-term autonomy of up to several months by employing energy consumption optimisation algorithms as well as renewable energy sources.</p> <p>Communication-wise, the buoy represents a node in a smart city network with real-time remote access, suggesting application in tourism-heavy areas, providing continuous remote access to water quality, sea state, beach, harbor, and waterway data.</p>					



ID of PP	Flagship project	CAMI4.0 topic (primary)	CAMI4.0 topics (secondary)			
			Intelligent Production Systems	Automation & Robotics	Smart & Advanced Materials	Artificial Intelligence
PP10_HAMAG	CROBOHUB++: CROatian Industry and Society Boosting - European Digital Innovation HUB	Artificial Intelligence		X		
Short Description of the Flagship project	<p>In align to the Digital Europe Program, Croatian Ministry of Economy released the call in November 2020 to elect the best consortium which will be established as a digital hub for the North Croatia region. CROBOHUB++ vision is to act as a major digital innovation centre in the North Croatia. It will offer a mix of business, technology services, access to funding, skills and training to its users, provided by the different partners in the CROBOHUB++ consortium. Services are based on detected needs thru already established DIH CROBOHUB and survey of the Croatian Digital Index (HDI) that had 300 companies in their questionnaire. Based on this we have defined main needs for services as improvement of organisation and business model for implementation of digital transformation, improving operational efficiency and reducing cost, ensuring the quality of manufactured products, responding faster to the changing market requirements and customer demands, sustainable use of resources, data driven public administration, sustainable and clean energy, networking for exchange of digital technologies, opening markets, precision farming, transforming services, engaging stakeholders, enabling employees.</p> <p>The CROBOHUB++ consortium gathers all key triple helix eco innovation system stakeholders. Namely they are: University of Zagreb, Faculty of Electrical Engineering and Computing (FER) which is a leading partner; Innovation center Nikola Tesla; SRCE (University Computing Centre); HAMAG-BICRO (Croatian Agency for SMEs, Innovations and Investments); Croatian Chamber of Economy (HGK) and University College ALGEBRA, specialized in IT programmes. It is specialized in three key areas: 1) Artificial intelligence, 2) High Performance Computing, 3) Cyber security and robotics, and their application in the fields of agriculture, manufacturing and green energy.</p>					



Annex 4. Overview of conducted peer reviews

ID of PP	Date of interview	Name of interviewee	Name of organisation	Type of organisation	Use case / flagship	CAMI4.0 topic
PP1_KPT	16.2.2022	Agnieszka Bachórz	Marshall Office	Regional Public Authority	(1) Smart Circuit (2) eDIH	(1) Intelligent Production Systems (2) Automation & Robotics
PP1_KPT	4.11.2021	Maurits Butter	TNO	Business Support Organisation	eDIH	Automation & Robotics
PP2_PRO	7.3.2022	Elmar Paireder	Business Upper Austria	Business Support Organisation	(1) CoRTEAM (2) Share 4.0 (3) BIOSAM (4) Hub4Industry	(1) Automation & Robotics (2) Automation & Robotics (3) Automation & Robotics (4) Automation & Robotics
PP2_PRO	2.3.2022	Alexander Numrich	GMAR Robotics	SME	(1) CoRTEAM (2) Share 4.0 (3) BIOSAM (4) Hub4Industry	(1) Automation & Robotics (2) Automation & Robotics (3) Automation & Robotics (4) Automation & Robotics
PP2_PRO	23.3.2022	Manfred Tscheligi	AIT	Higher Education & Research	(1) CoRTEAM (2) Share 4.0 (3) BIOSAM (4) Hub4Industry	(1) Automation & Robotics (2) Automation & Robotics (3) Automation & Robotics (4) Automation & Robotics
PP3_PIA	15.10.2021	Andrea SCHWECHERL	City of Vienna	Regional Public Authority	Testbed Exchange	Intelligent Production Systems
PP3_PIA	27.10.2021	Claudia SCHICKLING	Pilotfabrik TU Wien	Higher Education & Research	Testbed Exchange	Intelligent Production Systems
PP3_PIA	20.10.2021	Jan JIRSA	Vysoká škola polytechnická Jihlava	Education / Training	Testbed Exchange	Intelligent Production Systems



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				Centre and School		
PP3_PIA	20.10.2021	Ingo HEGNY	Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology	National Public Authority	SHARE 4.0	Automation & Robotics
PP3_PIA	20.10.2021	Martin HURA	Interreg Office SK-AT	International Organisation	SHARE 4.0	Automation & Robotics
PP3_PIA	28.10.2021	Christian Wögerer	Profactor	Higher Education & Research	SHARE 4.0	Automation & Robotics
PP4_IWU	1.11.2021	Nancy Windisch-Samusik	Saxon State Ministry for Economic Affairs, Labour and Transport	Regional Public Authority	(1) Project Proposal in the new Interreg call starting from Nov 2021 (2) STEP UP smart3	(1) Intelligent Production Systems (2) Smart & Advanced Materials
PP4_IWU	2.11.2021	Lukas Nögel	VDI/VDE	National Public Authority	(1) Project Proposal in the new Interreg call starting from Nov 2021 (2) STEP UP smart3	(1) Intelligent Production Systems (2) Smart & Advanced Materials
PP4_IWU	6.10.2021	Holger Kunze	Fraunhofer IWU	Higher Education & Research	Project Proposal in the new Interreg call starting from Nov 2021	Intelligent Production Systems
PP4_IWU	26.11.2021	Anton Mauersberger	DIH innosax	Infrastructure and (Public) Service Provider	Project Proposal in the new Interreg	Intelligent Production Systems



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					call starting from Nov 2021	
PP4_IWU	7.10.2021	Jochen Barth	Smart ³ materials, solution, growth	Business Support Organisation	STEP UP smart3	Smart & Advanced Materials
PP4_IWU	7.10.2021	Björn Senf	FiberCheck GmbH	SME	STEP UP smart3	Smart & Advanced Materials
PP5_KIT	12.11.2021	Joško Valentinčič	University of Ljubljana	Higher Education & Research	BioSAMs	Intelligent Production Systems
PP5_KIT	15.11.2021	Jens Korell	Projektträger Karlsruhe (PTKA)	Funding Agency	(1) BIOSAMS (2) NEXT4FUN	(1) Intelligent Production Systems (2) Automation & Robotics
PP5_KIT	16.11.2021	Lars Beex	University of Luxembourg	Higher Education & Research	NEXT4FUN	Automation & Robotics
PP5_KIT	17.11.2021	Marcel Strobel	Quantica3D	SME	(1) BIOSAMS (2) NEXT4FUN	(1) Intelligent Production Systems (2) Automation & Robotics
PP5_KIT	16.11.2021	Carlos Bermudez	Sensofar	SME	NEXT4FUN	Automation & Robotics
PP5_KIT	7.12.2021	Alexandra Fezer	Steinbeis Europa Zentrum / Vanguard Initiative	Business Support Organisation	BioSAMs	Intelligent Production Systems
PP5_KIT	7.1.2022	Christine Neuy	Microtec Südwest	Cluster organisation	NEXT4FUN	Automation & Robotics
PP6_AFIL	12.11.2021	Mirko Mazzoleni	Università di Bergamo	Higher Education & Research	Roadmap AI	Artificial Intelligence
PP6_AFIL	18.1.2022	Annabelle Sion	Polymeris - Vanguard demo-case coordinator	Higher Education & Research	Advanced Polymers Strategic Community	Smart & Advanced Materials
PP6_AFIL	20.10.2021	Andrea Mazzoleni	CFI - Cluster Fabbrica Intelligente	Cluster organisation	(1) Roadmap AI (2) Advanced Polymers Strategic Community	(1) Artificial Intelligence (2) Smart & Advanced Materials



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PP7_SIIT	10.11.2021	Mariella Ferraro	DIH Liguria	Infrastructure and (Public) Service Provider	EU-ALLIANCE	Smart & Advanced Materials
PP7_SIIT	10.12.2021	Anastasia Roufou	European Commission	International Organisation	FORGING	Artificial Intelligence
PP7_SIIT	14.12.2021	Paola Fontana	POINTEX - Polo Innovazione Tessile	Business Support Organisation	EU-ALLIANCE	Smart & Advanced Materials
PP7_SIIT	12.11.2021	Elice Bacci	Regione Liguria	Infrastructure and (Public) Service Provider	FORGING	Artificial Intelligence
PP7_SIIT	12.11.2021	Marcin Bukat	SKA polska	SME	FORGING	Artificial Intelligence
PP7_SIIT	14.12.2021	Davide Ottonello	STAM	SME	EU-ALLIANCE	Smart & Advanced Materials
PP8_PTP	12.1.2022	Tanja Renner	Government Office for Development and European Cohesion Policy	National Public Authority	DIH2 project Technology Transfer Experiment (concrete story of Flexido /TECOS / Polycom)	Intelligent Production Systems
PP8_PTP	23.11.2021	Uroš Žižek	Castoola	SME	DIH2 project Technology Transfer Experiment (concrete story of Flexido /TECOS / Polycom)	Intelligent Production Systems
PP8_PTP	18.11.2021	Dr. Domen Mongus	Inova Fusion d.o.o.	SME	DIH2 project Technology Transfer Experiment (concrete story of Flexido /TECOS / Polycom)	Intelligent Production Systems



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PP8_PTP	17.11.2021	Robert Grah	Pomurje Chamber of Commerce and Industry	Business Support Organisation	DIH2 project Technology Transfer Experiment (concrete story of Flexido /TECOS / Polycom)	Intelligent Production Systems
PP8_PTP	26.11.2021	Robert Kološa	PRO-ING, Robert Kološa s.p	SME	DIH2 project Technology Transfer Experiment (concrete story of Flexido /TECOS / Polycom)	Intelligent Production Systems
PP8_PTP	23.11.2021	Dr. Dragan Kusić	TECOS	SME	DIH2 project Technology Transfer Experiment (concrete story of Flexido /TECOS / Polycom)	Intelligent Production Systems
PP9_PBN	15.9.2021	Ádám Sebestyén	EIT Manufacturing	International Organisation	Purchase of autonomous production line (Teaching and Learning Factory) and smart material board and further developments	Intelligent Production Systems
PP9_PBN	14.9.2021	Adrienn Bokányi	Municipality of Szombathely	Local Public Authority	(1) Establishment and development of a smart	(1) Artificial Intelligence (2) Intelligent Production Systems



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					senior room (2) Purchase of autonomous production line (Teaching and Learning Factory) and smart material board and further developments	
PP9_PBN	10.9.2021	Lászlóné Kulcsár	Károly Pálos Social Service Center and Child Welfare Service” - Social Care Service Provider Company	Infrastructure and (Public) Service Provider	Establishment of a smart senior room	Artificial Intelligence
PP9_PBN	14.9.2021	László Pungor	MAM Hungária LTD.	Large enterprise	Purchase of autonomous production line (Teaching and Learning Factory) and smart material board and further developments	Intelligent Production Systems
PP9_PBN	13.9.2021	Győző Kóbori	Meddevice Ltd	SME	Establishment of a smart senior room	Artificial Intelligence
PP9_PBN	8.9.2021	György Eigner	Óbuda University	Higher Education & Research	(1) Establishment and developm	(1) Artificial Intelligence (2) Intelligent



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					ent of a smart senior room (2) Purchase of autonomous production line (Teaching and Learning Factory) and smart material board and further developments	Production Systems
PP9_PBN	14.9.2021	Krisztina Bárdos	Scientific Association for Mechanical Engineering	Business Support Organisation	Purchase of autonomous production line (Teaching and Learning Factory) and smart material board and further developments	Intelligent Production Systems
PP9_PBN	9.9.2021	András Haklits	University of Pécs (Medical University Local Institute)	Higher Education & Research	Establishment of a smart senior room	Artificial Intelligence
PP10_HA MAG	24.11.2021	Mateo Ivanac	Croatian Chamber of Economy	Public body	CROBOHU B++: CROatian Industry and Society Boosting - European Digital Innovation HUB	Artificial Intelligence



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PP10 _HA MAG	1.2.2022	Mislav Jurišić	GDi Group LLC	SME	CROBOHU B++: CROatian Industry and Society Boosting - European Digital Innovatio n HUB	Artificial Intelligence
PP10 _HA MAG	14.1.2022	Robert Cupec	J. J. Strossmayer University of Osijek, Faculty of Electrical Engineering, Computer Science and Information Technology Osijek	Higher Education & Research	CROBOHU B++: CROatian Industry and Society Boosting - European Digital Innovatio n HUB	Artificial Intelligence
PP10 _HA MAG	24.1.2022	Ivana Palunko	University of Dubrovnik, Department of electrical engineering and computing, Laboratory for intelligent autonomous systems	Higher Education & Research	Adriatic multifunc tional smart buoys INTERREG Italy - Croatia	Automation & Robotics
PP10 _HA MAG	27.1.2022	Zoran Belak	Razvojno inovacijski centar Alutech Šibenik	Regional Public Authority	Adriatic multifunc tional smart buoys INTERREG Italy - Croatia	Automation & Robotics
PP10 _HA MAG	13.4.2022	Mirela Čokešić	Ministry of Economy and Sustainable Development	National Public Authority	CROBOHU B++: CROatian Industry and Society Boosting - European Digital	Artificial Intelligence



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					Innovation HUB	
PP10_HA_MAG	21.4.2022	Marina Skelin	Ministry of Economy and Sustainable Development	National Public Authority	Adriatic multifunctional smart buoys INTERREG Italy - Croatia	Automation & Robotics
PP10_HA_MAG	21.4.2022	Miro Hegedić	University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture	Higher Education & Research	CROBOHU B++: CROatian Industry and Society Boosting - European Digital Innovation HUB	Artificial Intelligence