

TRANSNATIONAL POLICY & TECHNOLOGY BLUEPRINT FOR CERIS3 EXCELLENCE

D.T3.3.2 Blueprint Report for A.T3.3

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1. Executive Summary

1.1. Project Overview

S3HubsinCE aims to utilise the model of the digital innovation hub, and linkages between these hubs created through collaborative exchange on smart specialisation thematic priority areas, to create a common transnational support structure. This structure has a goal to generate stronger connections between RIS3 stakeholders to promote value creation and enhanced competitive advantage in Central Europe.

Ultimately it creates and tests a common method to help regional and national strategy-responsible institutions, understand how RIS3 value-creation can be fostered through a connected network of Digital Innovation Hubs (DIH). The project focuses on:

- Transnational innovation network to enhance collaborative RIS3 exchange and identify RIS3 Champions
- DIH alignment through a common pilot-program, to promote market-focused RIS3 Excellence and RIS3 Value-Creation
- Future-orientated policy learning with closer-to-market activities.

1.2. Scope of Document & Summary

This report provides the stakeholder eco-system of S3HubsinCE a Blueprint, containing evidence-based recommendations and insights on how to enhance the Digital Innovation Hubs network towards excellent operation which can promote market and strategic-oriented development, delivering close-to-market and Research & Innovation Smart Specialisation Strategy benefits. This document showcases and analyses the results provided by the partners regarding the implementation of the Central Europe RIS3 Digital Innovation Hub pilot programme. During the last 1-year period (sept 2020-sept 2021), every partner completed a detailed, multi-stakeholder analysis of the pilot projects completed as part of the programme, generating key results and key lessons learned. Every partner created a 360° perspective on the common model tested through the last year.

This document provides a summary on the model: projects, activities and pilot actions, implemented by the partners. It includes their own and their stakeholders' feedbacks and lessons learned. The objective of this report lies in defining recommendations to promote a connected network of Digital Innovation Hubs.

This document is the results of efficient work and great involvement from Partners and thus counts strongly on the reliability of the information provided by the partners. It is crucial that Partners have exchange with well-chosen stakeholders to have objectives results.

Ultimately, the Blueprint is a complete summary of all project partner activity results; it creates a strong overview which connects the needs analysis completed by Partners at the start of S3HubsinCE, to the tangible, evidence-based Digital Innovation Hub Pilot programme developed in the project, to the development of future-oriented next steps to sustain the model to promote Central European RIS3 Excellence.

1.3. Audience

This document is first directed towards the Partner Consortium, who wants to learn how to promote an efficient connected network of Digital Innovation Hubs. This report is also aimed to be spread to the stakeholders involved indirectly in the project. This document serves as a foundation for further reflections on the success of the project's strategic vision and



navigation crew's specific objectives to bring value to the stakeholders critical to RIS3 implementation.

1.4. Change Control Procedure & Structure

The Deliverable Responsible, Fraunhofer IWU (IWU, partner 4) created this report, and it is under standard project change control, whereby Partners are requested to give feedback on the stated definition or tools in writing to the Deliverable Responsible in a timely manner (within one week of the document circulation).

As per normal procedure, at any time partners believe a deliverable should change, the request should be brought to the work package leader and Lead Partner (in this case IWU, Deliverable Responsible lead and TECOS, Work Package Leader), to consolidate feedback from other partners, and integrate and disseminate the final agreed changes.



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2. Introduction

The main objective of this document is to gather, analyse and showcase all the results and feedback from the partners and their key project stakeholders regarding the implementation of the Central European RIS3 Digital Innovation Hub pilot programme. As part of this pilot programme, two types of actions have been deployed: The Training & Mobility (T&M) Actions are workshops and study visits organised to foster awareness on and between DIHs while the Transfer & Cooperation (T&C) Actions are long-term projects to foster regional and transnational cooperation. This report provides the stakeholder eco-system of S3HubsinCE a Blueprint, containing evidence-based recommendations and insights on how to enhance the Digital Innovation Hubs network towards excellent operation which can promote market and strategic-oriented development, delivering close-to-market and Research & Innovation Smart Specialisation Strategy benefits. This output is delivered through activity A.T3.3 and is aimed at sharing results to create recommendations towards the new Period 2021-2027.

2.1. Background

S3HubsinCE is a project where models and methods have been created then tested to help regional and national strategy-responsible institutions, understand how RIS3 value-creation can be fostered through a connected network of Digital Innovation Hubs. The S3HubsinCE Partners have been testing these models and methods, and disseminating the results to strategy-responsible institutions who will benefit from this evidence to support the development of 2021 to 2027 subsidy programmes.

The model has been built on the principle that RIS3 value-creation emerges from close-to-market research & innovation activity, which promotes competitive advantage. **Fehler! Verweisquelle konnte nicht gefunden werden.** provides an overview of the specific objectives of the project, and a summary statement of the project's key goal. Ultimately, the model developed, tested and disseminated by the partner's work generate long term partnerships and value-adding chains of organisations who work to enhance the region's innovation eco-system.

Work Package 3, especially, has a dissemination focus, with the specific objective of unleashing the potential of RIS3 Excellence to create future-oriented, policy learning with closer-to-market activities. The policy learning is delivered via detailed, strategic feedback on the model and structure which each PP implemented during the project to meet the needs of their key stakeholders. Partners were expected to be self-reflective within their own organisation, between each other within the Navigation Crews, and external to the partnership to create a well-rounded perspective on the implemented model. All these reviews have enabled the creation of the Blueprint report.



Figure 1 - Overview of the Specific Objectives of the Project (Source: Guidance for Transnational Policy & Technology Blueprint, DT.3.3.1, S3HubsinCE, 11/2020)

Output 3 - “Transnational Policy & Technology Blueprint for CERIS3 Excellence” is the official output which codifies or records this multi-level-reflection. The Blueprint (shorthand, for the output) extends PPs work on generating a strategy and action plan for the thematic-oriented navigation crew and is built on through the results of PP pilot actions.

Ultimately, the Blueprint represents a series of recommendations which are needed to help overcome gaps which have been identified through the implementation of the market-focused initiatives which link RIS3 implementation between regions associated to “Navigation Crew”-oriented thematic topics. Pilot actions, implemented by all PPs, bring lessons learnt and enhanced understanding on the model of utilizing Digital Innovation Hubs, as a means for improving support to Central Europe’s RIS3 Champions. Therefore, the Partners become experts in pan-territorial area coordination of Digital Innovation Hubs. Recommendations on the strengths of the model and improvement mechanisms to better promote engagement is highly valuable, during a time when all European regions are developing their response to the Digital Europe Program and the European Digital Innovation Hub initiative.

The purpose of this document is therefore to provide the S3HubsinCE Consortium with starting information on which actions could be taken in the next period 2021-2027. In this objective, the insights gathered during Reflection Workshops are crucial and critical. The Reflection Workshops were a virtual workshop series used to present the results of implemented actions and deployed models, and gain insight from stakeholders of the Actions and especially Partners and Associated Partners. This document synthesizes the responses gathered during these Workshop activities.

2.2. Objective of the document

The partners worked together and separately to create and present the Transnational Policy & Technology Blueprint for CERIS3 Excellence, showcasing a series of strategic recommendations, built on lessons learnt, stakeholder dialogue and future foresight on how to strengthen the connections between Digital Innovation Hubs, in order to enhance RIS3 implementation. The Blueprint report answers the following question:

“How can policy-makers and best-in-class organisations work together to evidence RIS3 implementation at the local, regional and national level”

Each Partner provides an answer to this question, through reflections on the model they are promoting via their S3HubsinCE pilot action. The Blueprint report provides a description of



the models, the value-creation it intended to bring, and the lessons which the Partner learnt through their own critical analysis & 360° stakeholder feedback. Each Partner reflected on what they have achieved, and created a list of recommendations on how to improve the system of a connected network of digital innovation hubs. The report includes:

- Regional/national stakeholder reflections on how DIH networks can be strengthened;
- Regional/national stakeholder reflections on how the specific T&C action models could be improved through further development
- PP recommendations on lessons learnt from T&C actions
- PP recommendations on next steps, and development areas which could target lesson learnt gaps, or strengthen lesson learnt opportunities.

The WPT3 activities are connected, so especially these highlighted events, and those from the completion of WPT2 Pilot & support Actions, should be used to promote dissemination and discussion about effective use of Digital Innovation Hubs & thematic networks to build value for important stakeholders. For example, as highlighted in the WPT3 guidance document, during the Foundation for Future Foresight Forums which each PP must deliver in the next two periods. Finally, the Partners present the outcomes of this strategy work at the RIS3 Investment Forum, and at the final regional communication events which each partner delivers to complete the S3HubsinCE WP Communication Requirements.

2.3. Definitions and Concept

Blueprint is a term used to describe an image reproduction of a technical drawing, often delivered by architects or engineers when designing buildings or structures. The process is one such that rapid and accurate copies can be produced or replicated. This is a metaphor within the S3HubsinCE project structure, whereby the Blueprint is a strategy and reference document which provides a one-stop-shop for each Partner to describe the model they implemented, the stakeholders and needs they were targeting and the ultimate results of this exercise, with a specific focus on future-oriented growth. With this initiative, the partners get 360° feedback on the potential to “replicate” their model into the future.

Mobility and Training (T&M) Actions refers to the actions deployed by the partners under “Support Action 1”. Every partner had to create one event (T&M Regional Action) and to attend to at least 1 event from another partner (T&M Transnational Action). These events had a goal to improve linkages between digital innovation hubs, and enhance the focused discussion on thematic topics important for digital transformation. They primarily covered different thematics in Industry 4.0 such as digitalization, process automation, smart materials, etc. A list of all thematic areas can be found in the next section.

Transfer and Cooperation (T&C) Actions refers to long-term projects deployed to foster cooperation towards RIS3 implementation. These actions are activities that:

- Create evidence of close to market initiatives,
- Showcase how a connected network of digital innovation hubs can be used to promote this close-to-market activities and enhance RIS3 implementation,
- implement exchanges of good practices, models, services and experiences
- Test methodologies of promoting cooperation, engagement and common development through the capitalisation of proven success stories and use cases.



RIS3 are national or regional research and innovation strategies which set priorities in order to build competitive advantage by developing and matching research and innovation strength to business and market needs. This term is synonymous with Smart Specialisation Strategies (S3)

RIS3 Champions are the organizations that have been chosen to be supported through actions to participate in the implementation of RIS3. They are best-in-class organisations (enterprises, RTOs, BSOs) which are critical for the successful implementation of the territorial smart specialisation strategy.

Digital Innovation Hubs (DIHs) are ecosystems that consist of SMEs, large industries, start-ups, researchers, accelerators, and investors. They aim to create the best conditions for long-term business success for all involved stakeholders and aim to accelerate the digital transformation of European organisations (enterprises and public authorities).

2.4. Overview of the Actions

2.4.1. Support Action 1: RIS3 policy-maker mobility actions (Training) and Transnational mobilities

The RIS3 policy-maker actions also called training refer to the T&M Regional Actions whereas the Transnational mobilities refer to the T&M Transnational Actions.

Each partner had to implement one T&M Regional Action and attend at least one T&M Transnational Action.

Please refer to deliverable DT2.3.3 and DT2.3.4 for more info on the projects. Also the website of the project could provide valuable insights to fully understand this report ([Link to the official website](#))

Regarding the T&M Regional Actions:

Partner	Action	Date	Category	Number of participants	Description and Relevance for S3HubsinCE	Feedback from attendees
CUAS	Digital Assessment tools for Manufacturing Industry	15.07.2020	Factory and process automation Machinery	9	Presented the assessment tool developed to determine the maturity for digital transformation	Increased DIH Visibility Increased knowledge on DIH operational models Trained staff Plan follow ups
FB	e-Nova	26-27.11.2020	Data Analytics, Complex Situation and Modelling Advanced and smart materials and nanotechnology Industrial Internet of Things Digital Marketing Innovation in Circular Economy Design and Engineering for	19	Aimed at the scientific community and experts. Offered Three parallel, topic-specific lecture blocks (Energy, Buildings and Environment). Presented the Navigation Crew technology focus. Shared experiences towards the success factors of different regional DIH networks	Launch bilateral cooperation and plan for joint actions Expand DIH network Increase knowledge on DIH operational & marketing models Plan for future Plan follow up actions & create a roadmap Increase DIH management skills



			additive Manufacturing			Provide effective policy actions to increase regional readiness Increase DIH visibility
BWCON	High-Tech Summit	01.10.2020	Data Analytics, Complex Situation and Modelling	44 Physical and 1463 registered online	Foster knowledge exchange in digitalization topics (AI for SMEs, for optimization of production, for cost-efficiency)	Increase knowledge on technologies to use data and AI Plan follow up
IWU	Digitalization Potential Analysis and Pilot experiences	18.05.2020	Advanced and smart materials and nanotechnology Industrial Internet of Things	49	Spread knowledge towards the T.O.P Model and a methodology for digitalization	Expand DIH Network Increase knowledge on DIH technologies, operational & marketing models Set up competence network on Industrial IoT Increase policy makers awareness Train DIH staff Plan follow ups
IMECH	ATC Technology Center/ Additive Manufacturing priorities and strategies in	10.07.2020	Design and Engineering for additive Manufacturing	16	Learn on Advanced Manufacturing Best Practices	Increase knowledge on Additive Manufacturing (AM)



	manufacturing in Lombardy				Show a new business model for innovation	Connect with AM service & technology providers Plan follow up Increase knowledge transfer actions Raise policy-maker awareness
ECIPA	IoT, Data Analytics, Predictive maintenance for smart services	23.07.2020	Data Analytics, Complex Situation and Modelling Machine Vision Industrial Internet of Things	28	Foster integrated ecosystem in digital transformation processes Develop Cooperation in IoT, Data Analytics and Predictive Maintenance	Expand DIH Network Increase knowledge on DIH technologies and operational models Set up competences network on Industrial IoT Plan follow ups
KPT	Factory 4.0: Factory & Process Automation	08.06.2020	Data Analytics, Complex Situation and Modelling Factory and Process Automation	42	Showcase Best Practices on the implementation of Industry 4.0 in Polish companies, on benefits of digital transformation	Expand DIH Network Increase knowledge on DIH technologies and operational models Set up competences network on Industrial IoT



						Plan follow ups
TECOS	ADMA - LASIM Laboratory Slovenia	26.10.2020	Data Analytics, Complex Situation and Modelling Machine Vision Predictive Maintenance Factory and Process Automation Machinery Industrial Internet of Things	24	Introduce a tool for factory and process automation based on LASIM laboratory developed technologies of digital twin.	
PBN	Advanced Manufacturing Laboratory (am-LAB)	27.10.2020	Data Analytics, Complex Situation and Modelling Machine Vision Machinery Industrial Internet of Things Digital Marketing Design and Engineering for additive Manufacturing	44	Experience am-LAB DIH operation on different fields: High Growth Company Programme for Hungarian SMEs, Tech trends, Knowledge transfer and Best Practices Learn how to approach and provide 4.0 services to manufacturing SMEs	Increase knowledge on DIH technologies, operational & marketing models Plan follow ups Identify opportunities for regional SMEs Increase policy- makers awareness



HGK VZ	Automation production	in	24.11.2020	Data Analytics, Complex Situation and Modelling Factory and Process automation Machinery Industrial Internet of Things	25	Identify the Regional Best Practices of industrial application of the digital technologies/ transformation	
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Table 1 - T&M Actions Overview (Source: Author generated, 2021)

Regarding the T&M Transnational Actions the different partners attended:

Partner	Action
CUAS	e-Nova (FB)
FB	Potential Analysis and Ilot experiences (IWU) Factory 4.0: Factory & Process Automation (KPT) IoT, Data Analytics, Predictive maintenance for smart services (ECIPA) Advanced Manufacturing Laboratory (am-LAB) (PBN)
BWCON	e-Nova (FB) Factory 4.0: Factory & Process Automation (KPT)
IWU	e-Nova (FB)
IMECH	e-Nova (FB) Advanced Manufacturing Laboratory (am-LAB) (PBN) Digitalization Potential Analysis and Ilot experiences (IWU)



ECIPA	Advanced Manufacturing Laboratory (am-LAB) (PBN)
KPT	Digitalization Potential Analysis and Ilot experiences (IWU) Digital Assessment tools for Manufacturing Industry (CUAS) e-Nova (FB)
TECOS	Digitalization Potential Analysis and Ilot experiences (IWU) Digital Assessment tools for Manufacturing Industry (CUAS)
PBN	Digitalization Potential Analysis and Ilot experiences (IWU) High-Tech Summit (BWCON) IoT, Data Analytics, Predictive maintenance for smart services (ECIPA) e-Nova (FB) ATC Technology Center/ Additive Manufacturing priorities and strategies in manufacturing in Lombardy (IMECH)
HGK VZ	Advanced Manufacturing Laboratory (am-LAB) (PBN) Digitalization Potential Analysis and Ilot experiences (IWU) e-Nova (FB)

Table 2 - Participation and attendance on T&M Transnational Actions (Source: Author Generated, 2021)



2.4.2. Support Action 2: Excellence Transfer and Cooperation Actions

Partner	Name of the Action	Description
CUAS	DIH-Sud	Objective: Aimed at starting the implementation of the DIH-Sud (South-East of Austria) on different thematic working areas: Production & Manufacturing Technologies, Safety, Data Science, Digital Business Models & Processes, Logistics, Human resources Actions: Create activities on Project Management, Information, Trainings, Digital Innovation
	CISMAT & Smart3	Objective: Create an action plan between CISMAT (Carinthia Institute for Smart Materials and Manufacturing Technologies) and the Innovation Network Smart3 where IWU Fraunhofer-Institut für Werkzeugmaschinen und Umformtechnik (IWU) is one network member. Actions: Formalize cooperation, Implement workshops, Identify specific specialist cooperation potentials in Technical acoustics & Medical Technology, Formulate joint R&D project proposals
	3dPan EU Call	Objective: Cooperate between TECOS, K-Uni & CUAS to generate one general simulation model to predict the flow of multi-material PVC within and immediately after exiting the extrusion tool & two representative case studies to compare to the simulation. Actions: Set up and perform simulation models on appropriate tools, Document on all results
FB	DIH-Sud	Objective: Aimed at starting the implementation of the DIH-Sud (South-East of Austria) on different thematic working areas: Production & Manufacturing Technologies, Safety, Data Science, Digital Business Models & Processes, Logistics, Human resources Actions: Create activities on Project Management, Information, Trainings, Digital Innovation
	EMBED-Improve Extension	Objective: Setting up a production unit with remote access to enable cross-border services for the IMPROVE! Digitization competencies. Actions: Establish a network of complementary offers, implement pilot projects, expand the partner group
	Share 4.0	Objective: Establish a strategically sustainable and result-oriented cooperation of the key players for a Smart Industry Network SK-AT.



		Action: Connect decision-makers, research & innovation, and businesses
BWCON	BE-READI ALPS	Objective: Develop and test initiatives to develop a living lab to foster traditional SMEs for a second life by creating value chains that are broadened at alpine level and linked to value-added partnerships: digital innovation, private finance and research Actions: Professionalize the network of support agencies, Test innovative methods and transnational matching solutions for SMEs, mobilize key stakeholders
	Circular4.0	Objective: Strengthen digitalization processes by SMEs to foster innovation processes and accelerate the transition to the Circular Economy (CE) in Alpine Space. Actions: Preliminary research, scouting and initial first Events have taken place to involve the SMEs. Events with Best Practice SME cases took place in 2020 & 2021. Trainings for Intermediaries have taken place in 2021 and an online learning platform has been created
	MINDMACHINES	Objective: Facilitate cross-border and cross-sectoral collaboration and provide direct support for entrepreneurship and innovation in “smart ICT technologies for manufacturing industry” Actions: Provide trainings on innovation processes, business models and investments needs, Create transnational Working groups and Feasibility Studies, Local Pilot Actions and Trainings, implement workshops
IWU	PieMontE	Objective: Increase productivity and flexibility of manufacturing companies while optimizing costs of production processes Actions: Identify application scenarios, improve technology readiness level, expand the application areas
	Smart3 Services for CEE	Objective: Provide specialized training on smart materials and its application and wider extension to Central and Eastern European Action: Implement workshop & bilateral meetings
	DuraPro@HM	Objective: Improve predictive maintenance for heavy machines (using machine learning based methods) Actions: Create simulation models, test and disseminate the results



IMECH	H2020 Radar Exploitation	Objective: Develop a Cascade Funding Exploitation roadmap targeted to the stakeholders (and partners) of S3Hubs Navigation Crews Actions: Identify common topics, prepare for at least 1 joint project under 3 running 2020 initiatives: Qu4lity (Zero Defect Manufacturing), DIH4CPS (Cyber Physical Systems), AIREGIO (Artificial Intelligence)
	Activating PPPs support	Objective: Foster the launch of a Joint Lab focused on developing a humanoid robotic platform and extend the Public Private Partnership model to other areas. Actions: Replicate the model, connect it to existing ones, support digitalization processes, attract new funds
	DITA: Digital Industry Transformation Atlas	Objective: Map European training providers in almost all relevant Industry 4.0 domains and connect them with a view to strengthen the opportunities offered to European citizens and professionals. Actions: Identify training providers and analyse the connections, design an online atlas.
ECIPA	Talent Journey	Objective: Reduce the skills gap in the manufacturing sector Actions: Bring collaboration, gather an international talent pool of future employees.
	S.LI.DES.	Objective: Foster cross border cooperation among cultural destinations in the Programme area and the joint planning of smart strategies Actions: Provide the local authorities with an innovative dynamic knowledge system to enhance decision-making process
	TRAINEE	Objective: Improve the competitiveness of SMEs through the improvement of digital skills as part of their digital transformation Actions: Train on continuous learning focusing on people while implementing digital transformation in companies.
	DIVA	Objective: Foster SMEs integration



		<p>Actions: Establish regional innovation hubs to connect SMEs, cultural operators and creative businesses, implement at least 20 cross-border pilot projects to experiment cooperation, raise awareness on digitalization</p>
	Resilient Project	<p>Objective: Kickstart a process of policy change at regional level in the involved areas resulting in the integration of successful elements into the new Cohesion policy (EU2020+).</p> <p>Actions: Increase awareness of the potential of digital technologies for social innovation of SMEs, improve cooperation among the 4 helix stakeholders thanks to the potential of data.</p>
KTP	CEUP2030 Upstreaming	<p>Objective: Foster a better understanding on the impact of new technologies in the target regions</p> <p>Actions: Improve the competences and know-how of people responsible for regional and supraregional policies regarding research, technologies and innovation. Forecast trends and potential technology risks to deploy support mechanism. Set long-term strategies.</p>
	Study Visit Stuttgart	<p>Objective: Connect the digital innovation landscapes of the Małopolska and Stuttgart region through the acquisition of knowledge from functioning DIH and leaders in the field of Industry 4.0 in Germany</p> <p>Actions: Increase awareness on digital transformation benefits, transfer and implement solutions in SMEs, showcase opportunities to receive seed funds via acceleration programmes, deepen the B2B cooperation by organizing visits, identify joint initiatives and projects and build a portfolio</p>
	BOWI	<p>Objective: Aim at supporting European companies in discovering advanced digitalisation solutions.</p> <p>Actions: Support specifically 4 companies from Malopolska region</p>
TECOS	EDIH	<p>Objective: Facilitate the last step and move from being a national recognized DIH into a European DIH</p> <p>Actions: Prepare the application at national level and be ready for the European Call</p>
	ADMA Innosup	<p>Objective: Establish European Advanced Manufacturing Support Center helping SMEs become factories of the future</p> <p>Actions: Develop a uniform SME digital transformation methodology, train advisors, validate the ADMA transformation methodology across Europe, implement a peer-to-peer learning networks for champions, create a Factory of the Future showcase event</p>



	Greening Cluster Collaboration	Objective: develop, implement and test a Joint Internationalization Strategy (JIS) for the European Strategic Cluster Partnership Going International (ESCP-4i) within the context of fostering circular economic activities. Actions: Enhance internationalization of TECOS members and Slovenian companies: develop a proposal, define a budget, focus on 5 promising countries: USA, Canada, China, Japan, India.
	Better Factory	Objective: Help manufacturers to enter new markets with customizable, personalized product or service portfolio Actions: Analyse the current product / service portfolio with the core knowledge from manufacturers, redesign customizable products and service portfolios using new digital technologies.
	3dPan EU Call	Objective: Cooperate between TECOS, K-Uni & CUAS to generate one general simulation model to predict the flow of multi-material PVC within and immediately after exiting the extrusion tool & two representative case studies to compare to the simulation. Actions: Set up and perform simulation models on appropriate tools, Document on all results
PBN	SMARTEN	Objective: Contribute to the structural re-design of the healthcare sector due to new digital technologies Actions: Develop a proposal aligned with overarching AI policy of the EU
	IMPROVE	Objective: Establish a cross-border (Austria-Hungary) cooperation of digital innovation hubs for joint service portfolio and specialization. Actions: Develop a joint service portfolio of digitization competencies to support SMEs, develop a common methodology to measure technological maturity and digital potential of firms, implement pilot projects, expand and internationalize established digitization network
	ConFacts	Objective: Widespread the concept of Teaching and Learning Factories (TLF), especially in RIS countries. Actions: Provide technical training which corresponds with the reality in production, assembly, logistics and management processes in Industry 4.0.



	EIT HUB	<p>Objective: Become the interface between EIT Manufacturing and Hungarian stakeholders of the entire ecosystem, meanwhile also acting as a catalysator for manufacturing excellence, strengthening the capacity of innovation enablers and added value growth to achieve boost of innovation in manufacturing.</p> <p>Actions: Find and encourage best talents, entrepreneurs and form a vibrant manufacturing national and regional ecosystem with universities, research institutions mirroring EIT Manufacturing's values and reflecting the national technological priorities allowing cross fertilisation across them.</p>
	EIT HEI	<p>Objective: Apply an entrepreneurial university approach among various institutions in Europe, meanwhile also support the technology transfer procedure.</p> <p>Actions: Build a second proposal for autumn 2021</p>
HGK	DiH Connect Varazdin	<p>Objective: Operate in frame of the Croatian Chamber of Economy-Varaždin bringing together regional stakeholders and connect them with transnationally relevant partners, thus contributing to the digital transformation of regional eco-system</p> <p>Actions: Operates on a web platform developed within S3HubsinCE project.</p>
	INNOVA MARE	<p>Objective: Develop and establish an innovation ecosystem model in underwater robotics and sensors.</p> <p>Actions: Implement workshops and meetings</p>
	Better Factory	<p>Objective: Introduce digital manufacturing process in production in consortium with artist/designer and technology supplier to support SMEs</p> <p>Actions: Brings artists, Manufacturing SMEs and technology provider together and supports SME in diversifying their product portfolio to meet new market demands providing state-of-the-art technology for SMEs to maximize their production capacity.</p>

Table 3 - T&C Actions Overview (Source: Author generated, 2021)



3. Methodology

This section provides insight on how the Blueprint has been created. The purpose of this section is to provide evidence of a clear methodological approach to collect the data in order to be able to deliver a precise analysis.

3.1. Stakeholders

3.1.1. Partners

N°	Partner's Name	Abbreviation
1	Fachhochschule Kärnten	CUAS
2	Forschung Burgenland	FB
3	Bwcon GmbH	Bwcon
4	Fraunhofer IWU	IWU
5	Consorzio Intellimech	IMECH
6	ECIPA	ECIPA
7	Krakowski Park Technologiczny sp. z.o.o	KPT
8	Razvojni center	TECOS
9	Pannon	PBN
10	Hrvatska gospodarska komora	HGK VZ

Table 4 - Names and Abbreviations of Partners (Source: Author generated, 2021)

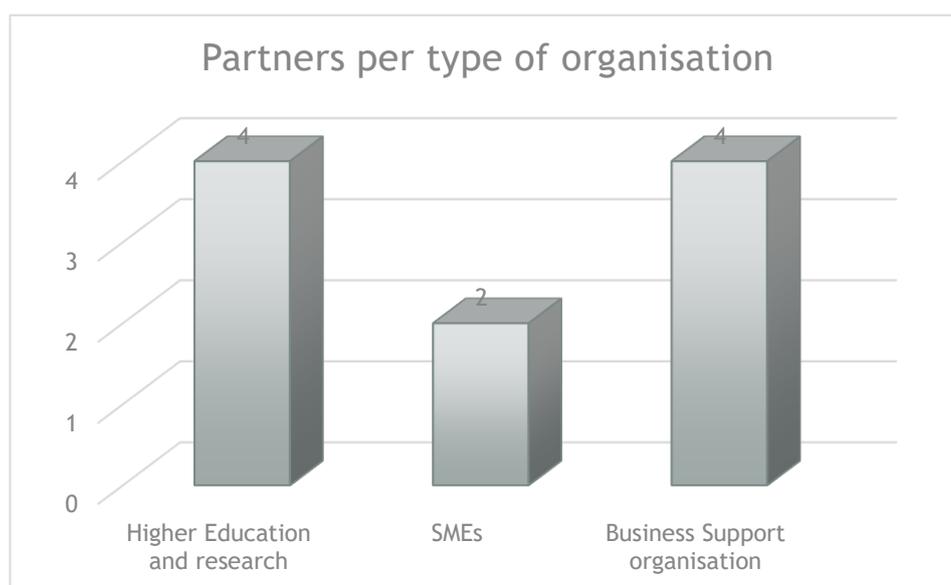


Figure 2 - Partners per type of organisation (Source: Author generated, 2021)



Figure 3 - Partners sorted by countries (Source: Author generated, 2021)

3.1.2. Other stakeholders

Here is a quick overview of the stakeholders who participated in the Foundation For Future Foresight (F3) Forum Workshops, the multi-stakeholder dialogue meetings to build actions and reflections around the S3HubsinCE DIH Pilot programme. The second F3 Forum, in specific was a Reflections Workshop dedicated to the 360 Degree Review of the tested actions.

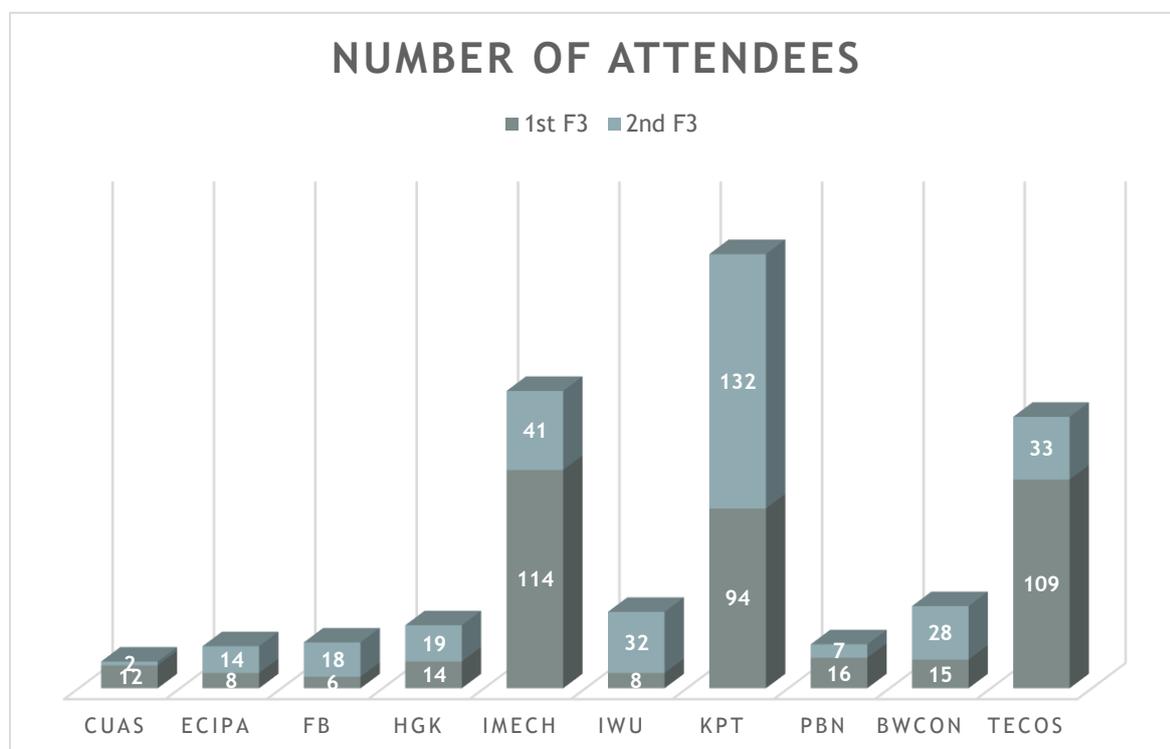


Figure 4 - Number of attendees to the F3 Forum (Source: Author generated, 2021)

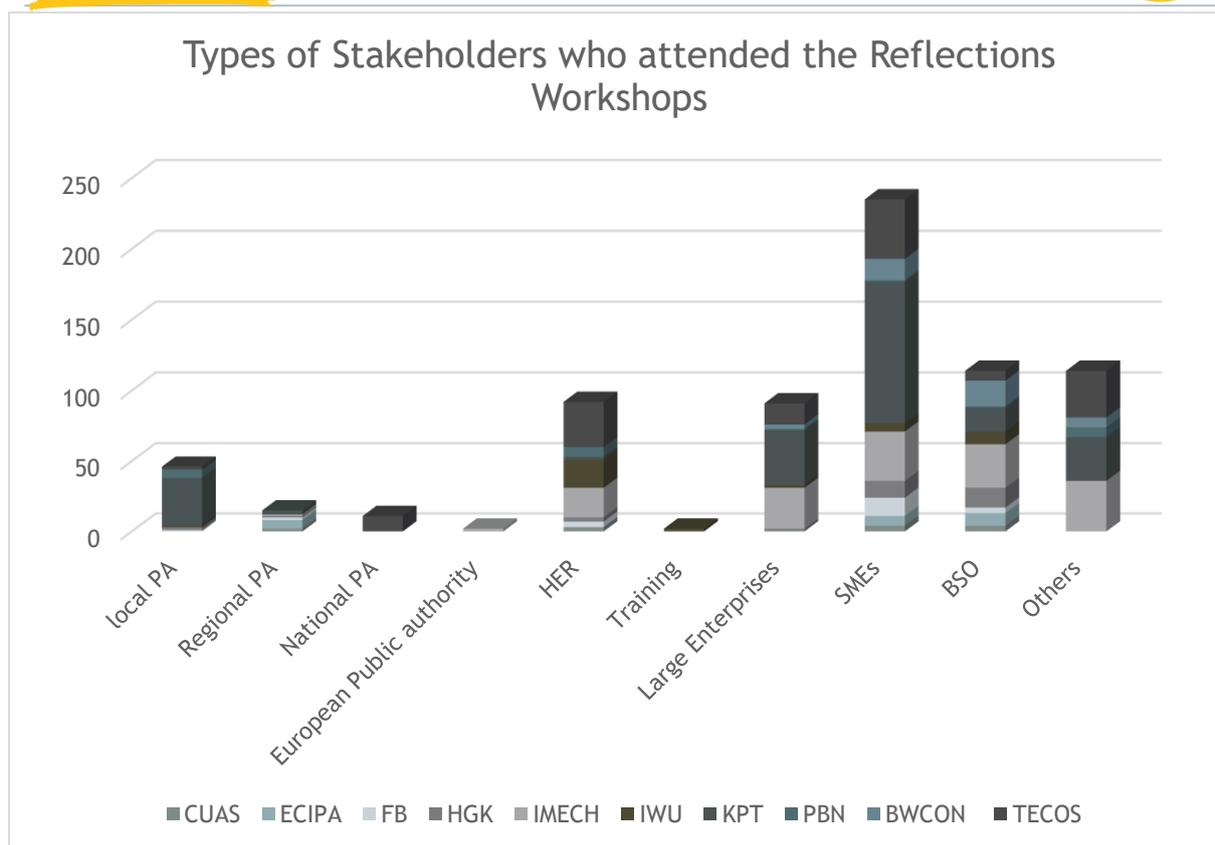


Figure 5 - Types of stakeholders who attended the Reflection Workshops (Source: Author generated, 2021)

Local PA	Regional PA	National PA	European Public Authority	HER	Training	Large Enterprise	SME	BSO	Other	Total
46	15	11	2	92	2	91	235	114	114	722

Table 5 - Number of attendees per type of organisation (Source: Author generated, 2021)

3.1.3. Overall overview of the stakeholders

As an overview of the stakeholders, we can notice that most of the attendance to the Reflection Workshops were SMEs which is positive since the implemented actions a main objective to identify and support SMEs needs. Then BSO are also well represented.



3.2. Collection of the data

The following section lays out the methodology which partners should have followed to complete the activity of bringing together the full Blueprint Report. (Please refer to the guidance document for further information on the collection of the data: DT.3.3.1).



Figure 6 Methodology for Developing and Delivering the Blueprint

(Source: Guidance for Transnational Policy & Technology Blueprint, DT.3.3.1, S3HubsinCE, 11/2020)

3.2.1. Complete Action

All actions had to be completed by 30 June 2021 and reported in WPT2 (AT2.3, DT2.3.3 & DT2.3.4)

3.2.2. Preparation for Reflection Workshops

Partners had to effectively plan their reflection engagement activities and lessons-learnt gathering.



Figure 7 Visualization of 360-Reflection Round (Source: Guidance for Transnational Policy & Technology Blueprint, DT.3.3.1, S3HubsinCE, 11/2020)

The exercise is called a 360° Reflection, because every partner needed to have a rounded-view of perspectives and reflections on the actions they implemented from:

- **The RIS3 Champions** (those partners are intended to support through value-creation)
 - **Participants:** the organisations who are the target of partners' actions.
- **The Partnership** (Partners' Navigation Crew-fellow members)



- **Participants:** The Navigation crew members with whom Partners implemented their actions & also other members (like the Leader) who may have views as to the Partners ability to achieve the Navigation Crew's expected goals.
- **DIH Network**
 - **Participants:** the DIH network partner (or responsible manager), plus the regional policy-influencing stakeholders who were invited to the DIH Inauguration Event that every partner had to organize (WPT2, essentially followed up in the Foundation for Future Foresight!!!) and the regional policy-influencing stakeholders who Partners interviewed in WPT1, who support the DIH Network strategically and/or financially
- **Partners' own organisation's self-reflections**
 - **Participants:** project team from PP and the senior manager who has been involved in Impact Controlling.

3.2.3. 360° Reflection Workshops

Every partner had to organize at least 3 reflection workshops:

- **The self-reflection workshop** to gather insights from partners' own organisations
- **The navigation crew reflection workshop:** Based on the total number of actions for each Navigation Crew, it was recommended that multiple virtual gathering took place to complete a review procedure. Not all navigation crew members were needed to be in attendance to complete the review.
- **The DIH network and RIS3 Champion workshop** can be arranged together, within the wider framework of the Foundation for Future Foresight Forum workshops which each Partner must deliver in their region. These stakeholders can be engaged separately. Regardless, all PPs must document exactly which stakeholders have provided reflections, and recommendations to improve value-adding actions to critical RIS3 stakeholders.

Every workshop had to be structured roughly as follow:

- (1) **Set the Stage:** Introduce the purpose of the workshop and the "action in focus", which actions are going to be reviewed, with some short information about the action (obviously the depth of this introduction depends on the amount of engagement the participants had with the action).
- (2) **Gather & Analyse Data:** Introduce data gathering method (FLAP Method, 4L Method, refer to the guidance document DT3.3.1 for more insights on these methods), and allow questions on the method. Then complete brainstorming session based on the method. Repeat for all Transfer & Cooperation Actions (individually), and the Training & Mobility Actions (all together, as a concept).
- (3) **Generate Insights:** Actively review the inputs which were gathered - generate themes, ask clarifying questions, dig a little deeper.
- (4) **Decide What to Do:** Brainstorm solutions to the biggest "issue areas", what issues still exist and how can they be overcome? This is where good recommendations



emerge. Use different stakeholder experiences to generate recommendations and gather feedback.

- (5) **Close the Session;** Determine the next steps, communication methods and responsibilities for action. Keep the actions in line with your organisation’s responsibility, but don’t be shy to offer to help in new areas or take further responsibility to deliver solutions where there is no “clear owner”.

360° Reflection Workshops

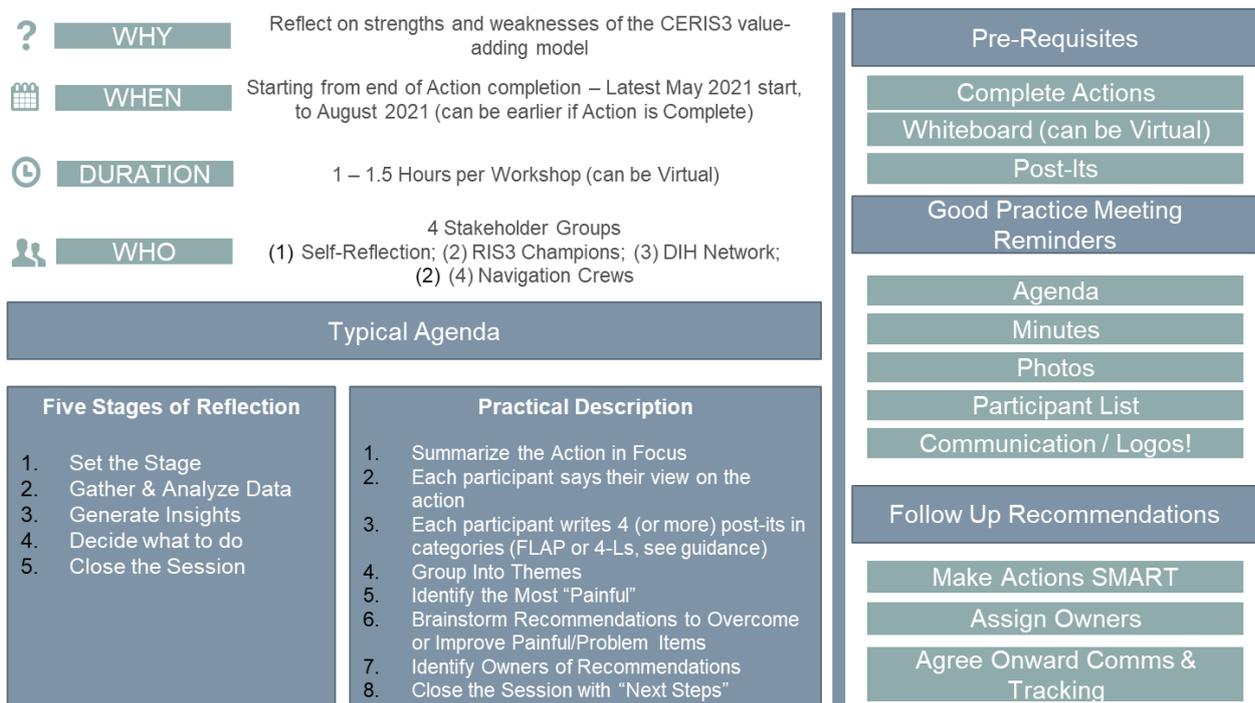


Figure 8 - 360° Reflection Workshops explanation (Guidance for Transnational Policy & Technology Blueprint, DT.3.3.1, S3HubsinCE, 11/2020)

3.2.4. Reporting Contribution

As per the standard protocol of this project, each activity is completed through the creation of a report. In addition to standard meeting reporting protocols (participant list, minutes photos, etc.), Partners were asked to complete a reporting template, which summarizes the information gathered from the reflection workshops and ultimately generates the inputs to the final report.

The template answers are summarized into both specific and general recommendations based on the model of action each PP enabled. The Templates can be found in the Section 8, the Appendix, of this document.

The Reflection Template is the same for all actions. Each PP had to complete:

- 3 Reflection Templates for the Transfer & Cooperation Actions (reported separately)



- 1 Reflection Template for all the Training & Mobility Actions (reported combined)

The Template is broken into four parts:

- **Administrative Information** - which are the definition of the Actions and their stakeholders
- **Strategy & Action Plan Reflections** - which asks PPs to engage in reflection on their ability to achieve key strategic parameters associated to the delivered actions. For example:
 - Did the T&C create value-added benefits to your RIS3 Champions?
 - Did the T&C create wider benefits for Central Europe?
 - Did the T&C achieve your Navigation Crew's objective?
 - Did the T&C support policymaker needs?
- **Stakeholder 360° Reflections** - which asks PPs to reflect and summarize the feedback gained from the various stakeholder groups involved in the action's broad implementation.
- **Final Recommendations & Future Actions Summary** - which asks PPs to summarise their own and their key stakeholder's final recommended steps which are needed to capitalise on the successes from the action and to improve the problems identified with the action. Partners should prioritize connecting their action to other networks and initiatives, which deliver long-term sustainability. This is needed to promote capitalisation of project results, and link to the development of the new programming period.

3.2.5. Report Presentation

Once the report is completed, the next and final phase of methodological implementation is the presentation of this report to key stakeholders. The fulfilment of this deliverable is enabled through other activities and deliverables in S3HubsinCE; however, it is included in this document to promote cross-activity/deliverable fertilization.

The two main presentation “venues” are at:

- The RIS3 Investment Forum (A.T3.4)
- Regional Capitalization Workshops (D.C.6.3)

The first event, is held in Krakow in November 2021. The presentation is the responsibility of Carinthia University of Applied Sciences to present during the closing final conference of S3HubsinCE.

The second set of events, are called the “Regional Capitalization Workshops”, which are held in each participating PP region between November 2021 and February 2022. It is each PP's responsibility to summarise the key results of the project to their stakeholder group, and in this purpose the Blueprint and its key recommendations should be presented.

3.3. Data analysis & Creation of the Blueprint

To build this report, 10 Mobility Actions were studied (1 per partners) and 34 T&C Actions (minimum 3 per partners). First, information was collected in the templates explained above. Then all the data was gathered in one excel sheet to be able to compare and codify all the results. A first analysis of the answers towards the Mobility Actions was elaborated.



Every question has been treated independently and an overall conclusion has been made at the end. The same process of analysis has been deployed regarding the T&C actions. Mobility Actions and T&C Actions have been analysed separately as they have different format and objectives as explained in the section Definition.

Indeed, T&M Actions were events or study visits aimed at fostering DIHs linkages and foster cooperation around DIHs while the T&C Actions are long-term projects to foster cooperation towards the implementation for the RIS3. Therefore, we were able to pull out categories which are reflected in the different sections in the section 4. Results. First, we address the different needs addressed by the actions. Then, we mention the objectives and involvement of certain type of actors (Navigation Crews and DIH Network) inside these actions to answer these needs. In these two sections, the context has been explained and therefore the next sections can focus on feedback on the actions themselves. Thus, lessons learned have been developed in three parts: successes, challenges and key lessons learned pulled out. After general lessons learned, we are able to think about future actions. In this objective, every type of stakeholder (DIH Network, Policymakers or Influencing, RIS3 Champions, Navigation Crews have expressed their recommendations towards future actions which enable then a conclusion on the key recommendations. Finally, as these T&M Actions and T&C Actions were experimental actions and projects to foster cooperation among DIHs or among DIHs Network towards RIS3 implementation, future actions have already been identified or planned to ensure a continuity after the implementation of the T&M or T&C Actions.

After, the codification and common ideas were assembled regarding both the T&M Actions and the T&C Actions, the report has been written in order of relevance of the arguments. It means that the first arguments of each paragraph are the most relevant ones regarding the templates filled in by the partners. Finally, figures have been elaborated to gather main inputs and for partners and other stakeholders to be able to easily re-use these results. The figures gather the main results and ideas mentioned in the templates.



4. Results

This section provides a summary of the results gathered in the templates regarding the implementation of the Mobility Actions and the T&C Actions. First, you will find elements of context explaining the needs, objectives and involvement of stakeholders in the Actions implemented. It will be followed by an analysis of the lessons learned from these actions and recommendations from stakeholders regarding how to build upon these actions. Finally, future actions have been identified to pursue the actions. This section analyses every action that Partners reported on, which means 10 Mobility Actions and 34 T&C Actions. These results will be used in the section 5 to pull out discussion and recommendation towards future actions.

4.1. Support Action 1: T&M Actions - Mobility Actions

In this section we will analyse the feedback and the lessons learned following the implementation of the T&M Actions. The objective is to define how should DIHs be exploited to fully support S3 aligned digital Innovation.

4.1.1. Needs addressed through Actions

4.1.1.1. RIS3 critical organisations' Needs

First, RIS3 Champions especially SMEs were lacking knowledge and practice on how to engage their digital transformation. The Mobility actions enhanced cooperation through knowledge of other DIH initiatives in order to develop a common vision. The objective was to learn from other regions fostering best practices transfer. A global understanding on how to better support SMEs in their digital transformation was addressed.



Figure 9 - RIS3 Needs addressed (Source: Author generated, S3HubsinCE, 2021)



4.1.1.2. Policy Needs

Second, the Mobility Actions answered policy needs, such as fostering and influencing Smart Specialisation Strategies. The objective is to support SMEs with appropriate policies and raise awareness regarding digitalization. Policies should enhance connections between different type of stakeholders and especially between Research Institutions and SMEs. These Actions also enable all the participants to widen their network and widen the scope of the Navigation Crews which should lead to common understanding in needs and create common Future Actions. Through these Mobility Actions, DIH should have raised awareness of their usefulness and their offers to strengthen the economic environment.



Figure 10 - Policy Needs addressed (Source: Author generated, S3HubsinCE, 2021)

4.1.2. Involvement of the Navigation Crew and DIH in the Actions

4.1.2.1. Navigation Crews

In order to answer the different needs identified, most of the Navigation Crews were involved in the Mobility Actions (9/10 Mobility Actions). For some of them, they presented their needs and state of progress during the Mobility Actions. For others, they helped preparing the workshop and create follow up cooperation between the participants. For instance, they provided resources to reach potential participants and create connections even with other Navigation Crews. They helped follow-up action to be engaged by organizing further meetings especially between S3HubsinCE Partners or helping to submit a proposal. Globally, they supported the transfer of technological knowledge and Best Practices towards all type of CE stakeholders through their existing Network. Also, they monitored trainings initiatives and supported their expansions.



Figure 11 - Navigation Crews Involvement (Source: Author generated, S3HubsinCE, 2021)

Thus, the Mobility Actions provided insights on Navigation Crews' Needs and objective expected from these actions. Indeed, Navigation crews required mainly to support stakeholders to identify their needs in different sectors such as digitalization, IoT, AI. They also noticed a lack of independent knowledge. Therefore, these Actions were aimed at disseminated best practices across regions and identifying gaps in existing offers. The main objective of these actions regarding Navigation Crews' expectations was to increase digital skills and foster connections between all types of stakeholders including DIH and EU initiatives. It should lead to more connections, more knowledge about DIH offers and increase network infrastructures.



Figure 12 - Navigation Crews expectations & objectives (Source: Author generated, S3HubsinCE, 2021)

4.1.2.2. DIHs Network

During these Mobility Action, DIHs were also represented. Some DIHs participated directly to the workshops by sharing their own experience in the aim of influencing other DIH and enhance cooperation between them. Other DIHs helped to organize the workshop by inviting the attendance, defining the thematic or identifying experts on the subject. Most of the DIH continued momentum after the Action was implemented by helping the diffusion of the best practices identified, by raising awareness on the potential of digitalization for SMEs, by enhancing connections to the European Networks such as with ADMA, DIHNET.EU, I4MS. Some of them even identified joint strategies and future actions and even helped in the submission of a common project.



Figure 13 - DIHs' Involvement (Source: Author generated, S3HubsinCE, 2021)

Through these Mobility Actions, DIH searched to enhance exchanges of experience especially between DIH staff and DIH experts to foster their expansion and increase their connectivity to other DIH and to CE Stakeholders. The main objective for them was to identify synergies by sharing Individual Best Practices. The term “individual” is very crucial as DIH needed to have a full overview of the ecosystem to design their own offers. Indeed, it appeared several times that DIHs need to know what are existing services, to be able to design appropriate additional services towards digital transformation. These services must be innovative while potentially applying to a multiple group of stakeholders. Therefore, these workshops were mainly aimed at promoting DIH offers while linking regional stakeholders to the appropriate DIH. During these Mobility Actions, every participant, including the DIH, developed a better understanding of the economic environment and of the successful models already implemented. DIH were then able to design their services, especially to respond to trainings needs expressed during the Actions. The Mobility actions fostered relationships between players not only on regional levels but also on international levels. At least 3 partners highlighted the objective of technological and knowledge transfer at international level through their Mobility Action.



Figure 14 - DIHs' expectations and objectives (Source: Author generated, S3HubsinCE, 2021)



4.1.3. Lessons Learnt

4.1.3.1. Successes

During the implementation of these actions, Partners from S3HubsinCE identified success and challenges they had to face.

Indeed, partners were mainly satisfied with the results of their Mobility Actions, having interesting contents and participants (including their RIS3 Champions). 4 of them highlighted the direct contact to DIH with the participants through a representative who could be reached after the Workshop. The Participation of DIH in the event was therefore a crucial criterion of success to highlight the importance and usefulness of the DIHs in the ecosystem of digital transformation. Moreover, it enabled all the participants to widen their knowledge on digitalisation good practices in Central Europe. Thanks to talks around practical experiences, the Mobility Actions were able to reach SMEs and diverse type of stakeholders to engage further cooperation. Therefore, regional experts provided insights on how to implement new digital technologies and engage digital transformation, especially for SMEs.



Figure 15 - Successes expressed (Source: Author generated, S3HubsinCE, 2021)

4.1.3.2. Challenges

However, challenges hindered the great success of the Mobility Actions. First, even though the online format of the events enabled the partners to reach more participants especially on the transnational level, the lack of direct Networking hindered the development of further cooperation. Most of the partners highlighted the lack of trust due to the online format. Also, some of the partners couldn't run their study visit because of technical capacities and the one who did it virtually noticed the lack of interactions and enthusiasm. Therefore, the COVID-19 situation was a big challenge identified by all the partners. Moreover, this situation led to a second challenge which was to maintain stakeholders' relationships. Indeed, because of the lack of trust and direct networking, stakeholders appeared to exchange less on further actions than expected. Third, language was identified



as an issue for some presenters during the implementation of the Actions. Indeed, some parts or even full Mobility Actions were held in local language which totally hindered transnational cooperation. Speaking in English seems to be a barrier for lots of potential presenters especially from the Industrial sector. Finally, some partners noticed other isolated difficulties such as:

- It seems hard to implement cross-border services especially for SMEs.
- The risk aversion of SMEs seems to be very high which hinders change.
- More continuity needs to be applied regarding the topics and the events. Indeed, one partner asked for more accumulation in the building of the knowledge especially in specific common topics such as Digitalization.
- The question of funding for follow up actions should have been more mentioned.
- More time for open discussion should have been planned during the event.
- More practical experiences should have been shared during the Workshop.



Figure 16 - Challenges met during implementation (Source: Author generated, S3HubsinCE, 2021)

4.1.3.3. Key Learnings

Finally, partners identified key learnings.

- Most of the partners agreed on the necessity to increase connectivity and cooperation between DIHs and CE Stakeholders. In this objective, communication should be fostered to create a strong and well-connected Network.
- The Mobility Actions enabled all the participants to widen their knowledge and discover new expertise. It enabled the DIH to have a full overview of the regional



offers and needs before building services from scratch. Indeed, DIHs must adapt to regional needs and therefore be aware of the regional and transnational ecosystem.

- There is still a lot of to be done in evangelisation of the SMEs in general understanding the digital transformation process, identifying the real status quo of SMEs in scope of their technology and productions needs and tailoring the services delivered by DIHs to local, regional requirements.
- The online format enabled the partners to acknowledge that future workshops should take place on different type of format: online and physical, B2B meetings, Webinars...
- Study visits should be fostered to increase trust and therefore enhance cooperation
- The Mobility Actions were very useful to reflect the offers and services of DIHs. It provided all the participants knowledge on potential interesting offers for them but also enabled the DIH to identify more precisely the needs and adjust their offers. Indeed, DIHs' services should apply for more than one company and should therefore be well planned.
- Each Mobility Actions delivered by project partners created added value in new B2B opportunities and new initiatives and from partners perspective, its requires additional funding and business continuity plan
- More discussion on funding should be planned
- DIH management team should have a precise constellation to meet business needs.
- Public institutions should be more supportive in the definition and implementation of cooperation actions.
- There is an important need for trainings on digital transformation and implementation of digital technologies especially in SMEs. However, partners should acknowledge the difficulties for creating mutual recognition mechanisms on trainings programs between countries due to different systems, cultures, economic situation.
- Language still hinder cooperation as not all stakeholders speak English properly.

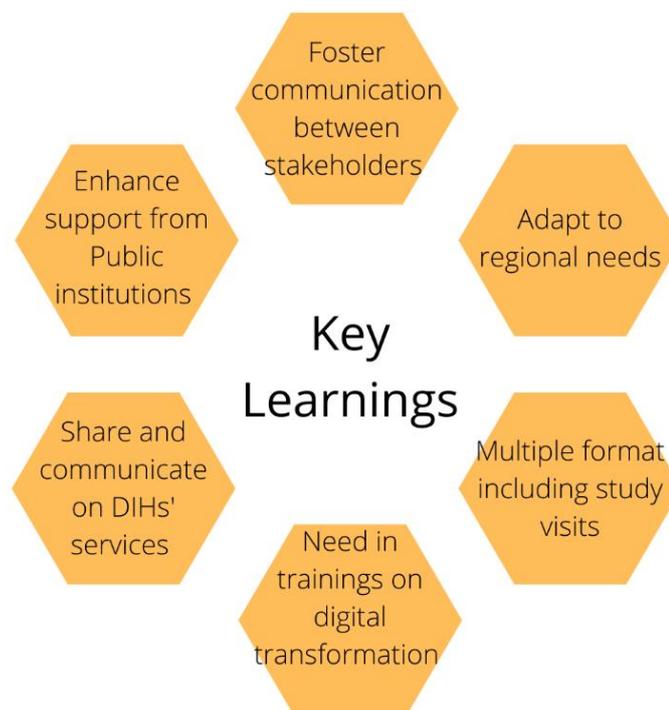


Figure 17 - Key Learnings (Source: Author generated, S3HubsinCE, 2021)



4.1.4. Recommendations from different types of stakeholders

4.1.4.1. DIHs Network

DIHs recommended mainly to have Mobility Actions on regular basis. Indeed, it seems very crucial to maintain the link between all the stakeholders to foster trust and therefore follow up actions. All DIHs interviewed were eager to establish and participate in future project cooperation. They emphasized the importance of having continuity on subjects that were discussed during the Mobility Actions. Moreover, 3 of the partners mentioned the creation of a database for good practices and ideas for the future. They also requested to establish formal connections with DIHs through, for instance, more pitching events among DIH to connect to companies in need. More internationally available event should be implemented which means in English and available online. Finally, communication is key to develop cooperation.



Figure 18 - Recommendations from DIHs Network (Source: Author generated, S3HubsinCE, 2021)



4.1.4.2. Policy-influencing Stakeholders

Policy Influencing Stakeholders also raised a few recommendations. As the DIH, they requested the creation of common database gathering good practices and ideas for the future. This database or common way to gather information should enable more communication especially between Business and Research in order for Research Institutions to meet business needs. They also noticed the great usefulness of having Mobility Actions and study visits on a regular basis to enhance knowledge transfer and awareness of offers' availability. Thanks to this type of Actions, Policy stakeholders will then be able to develop new and appropriate support policies. They also pointed out the necessity to identify and raise awareness on potential funding. To define future actions, Policy influencing stakeholders would like to create actions highlighting DIH Activities and Offers and from their Network too.



Figure 19 - Recommendations from Policy-Influencing Stakeholders (Source: Author generated, S3HubsinCE, 2021)

4.1.4.3. RIS3 Champions

RIS3 Champions first would like this type of action to be replicated and to occur more often. It should, according to their opinion, have several types of formats such as direct B2B meetings, online and physical workshops, physical study visits. They would like to be involved and be aware of other actions from other stakeholders to be able to generate and develop common projects. Indeed, most of the RIS3 Champions request to foster cooperation and define common needs and therefore create common projects, actions and initiatives. Therefore, they advocated the need to continue sharing Best Practices to foster CE Network. It should enable them to have more visibility and develop valuable initiatives and projects. However, they also stressed on the need for Policy Stakeholders to identify and provide funding while being very transparent in defining their strategies.



Figure 20 - Recommendations from RIS3 Champions (Source: Author generated, S3HubsinCE, 2021)

4.1.4.4. Navigation Crews

Finally, Navigation crews recommended this type of actions to be repeated at a regular frequency. These actions should foster knowledge transfer towards future actions and follow up projects. Navigation crews expressed their interest to be included in Future Actions as a facilitator towards RIS3 excellence. Navigation Crews, as DIH and Policy Influencing Stakeholders, requested the creation of a detailed service portfolio in which DIHs' skills and offers are summarized. It could even be extended to the full network. Navigation Crews seem interested to enhance the topic of Digitalization as a topic and would like to foster it with a specialization on Green Technology for one partner. However, they raised a reserve on how to sustain and ensure the consistency of the results of the Mobility Actions and follow up Actions. A reflection on this could be interesting to have in the next period.



Figure 21 - Recommendations from Navigation Crews (Source: Author generated, S3HubsinCE, 2021)

4.1.4.5. Key Recommendations

To conclude, all the type of stakeholders asked to reiterate Mobility Actions and continue exchanging on best practices. Moreover, DIH, Policy Influencing Stakeholders and Navigation Crews requested the creation of a platform gathering all the DIHs offers and Network’s initiatives to foster cooperation among different type of stakeholders and at a broader scale. It should strengthen and enhance DIH Role in Digital Transformation by raising awareness on their usefulness and their offers. Through a better knowledge of individuals DIHs, not only can other DIHs be able to differentiate their offers from other but also all type of stakeholders should have easily access to what they need and especially in terms of trainings. The future actions developed should therefore be built towards a better understanding of the regional and transnational networks and ecosystem. Indeed, the online format of the Mobility Actions enabled the stakeholders to reach more international stakeholders. Therefore, they should foster different format of exchange in their future actions such as physical and online workshops, physical study visits. Finally, all stakeholders need to acknowledge that Horizon Projects have a low rate of success in the submission process.



Figure 22 - Key Recommendations (Source: Author generated, S3HubsinCE, 2021)

4.1.5. Future Actions / Follow up actions

All the stakeholders interviewed earlier expressed their will to be included in future actions following these Mobility Actions. Therefore, the identification and definition of future actions is crucial for Partners. Future actions planned mainly answer expectations and recommendations expressed earlier as 3 partners talked about building a project gathering inputs and experience from DIHs and create a database to facilitate the access to the appropriate knowledge. These projects are planned to start in 2022. The other Future Actions identified are actions towards more cooperation on regional and international level, most of them are oriented to showcase the usefulness of DIHs and increase their influence through developing their offers and communicating on them. Finally, most of them consider submitting projects to enhance cooperation which is very promising.

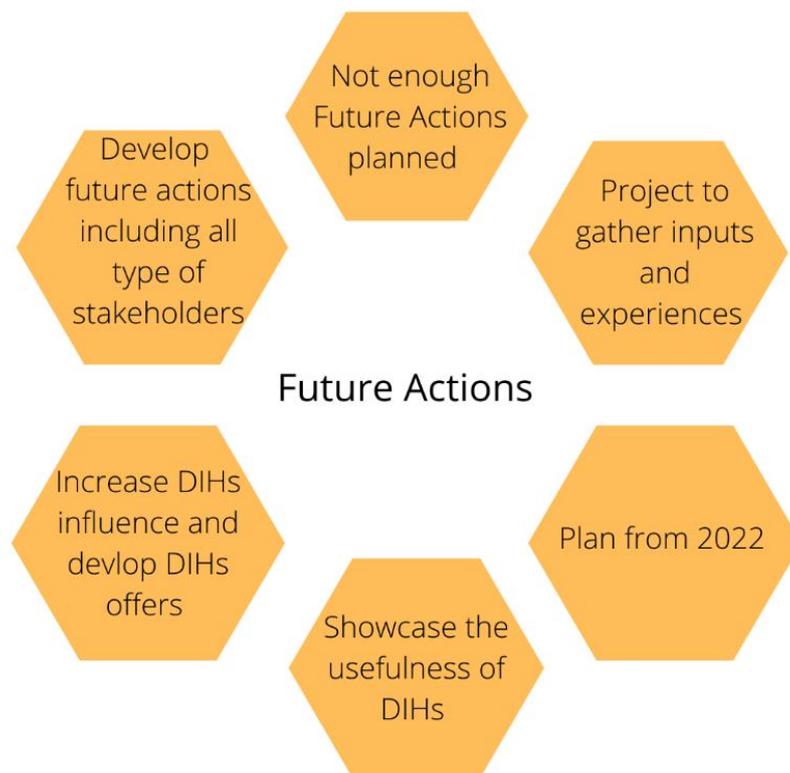


Figure 23 - Future Actions (Source: Author generated, S3HubsinCE, 2021)



4.2. Support Action 2: T&C Actions

In this section we will analyze the feedback and the lessons learned following the implementation of the 34 T&C Actions. The objective is to define how these actions foster the implementation of RIS3 and how to enhance this cooperation by defining recommendations and future cooperating actions.

4.2.1. Needs addressed through Actions

4.2.1.1. RIS3 Champion's Needs

The actions tried to meet with RIS3 Champion's Needs. Indeed, most of the actions targeted SMEs. DIHs' offers and services should be developed towards Market needs and therefore aimed at enhancing SMEs development. For instance, DIH Süd developed by CUAS and FB offers services targeting SMEs thanks to the implementation of surveys and previous support actions. Thanks to feedback and survey, needs can be estimated and well-determined.

Most of the actions tried to foster digital transformation thanks to a common vision built through exchanges of best practices. In this objective, DIHs are always more and more relevant and therefore, awareness on their offered services should be raised. As an overall objective, these actions were all aimed at fostering a regional innovation support system through the definition of a common long-term strategy. The Action "Activating PPPs to support digital innovation processes" aims to contribute to cooperate and foster regional development on technologic related topics according to the Lombardy Region S3 Action Plan 2021-2027.

Indeed, the actions emphasized the RIS3 Network of all type of stakeholders (public and private). Cross-border cooperation especially between Business and Research have been initiated and an internationally competitive research and training infrastructure and ecosystem to support digital innovation and prototyping has emerged. The objective of this type of infrastructure is to demonstrate not only the potential of new technologies and digitalisation especially for SMEs but also to provide SMEs with prototyping facilities to test before investing. For instance, the topics of data science, autonomous robotics and 3D printing are integrated and enable the "Improve! Partners" led by FB to provide an internationally competitive research and training infrastructure.

Finally, work directed towards assisting Policymakers has occurred. It can be seen as actions and DIHs tries to facilitate access to funding and to foster competences on know-how for Policymakers to influence decisions and the definition of the strategy especially for the next period 2021-2027. The Action "BE-READI ALPS" developed by BWCON is aimed at creating partnerships with relevant players such as financial investors, export managers, digital start-ups and R&D providers that could bring in investments or open up new possibilities for markets/products/processes.



Figure 24 - RIS3 Champions needs addressed (Source: Author generated, S3HubsinCE, 2021)

4.2.1.2. Policy Needs

Policy needs were also addressed by these actions. The objective of most of the actions were to build a knowledge-based economy in a sustainable environment. For example, the Action “IMPROVE” developed by PBN is aimed at establishing cross-border cooperation which is a planned measure in the Szombathely 2030 Strategy. It means that not only the actions provided a harmonization of different activities, and an alignment of services offers but also provided long-term benefits.

Most of the activities defined research areas to work on according to the Smart Specialisation Strategy from their region and worked on new policies definition and new policy instruments. For instance, the action “Talent Journey” from ECIPA fits into the specialization strategy for the Veneto Region as it is aimed at narrowing skills gap in the smart manufacturing sector.

A real demand is to support SMEs innovation and competitiveness thank to instruments and infrastructure. This is the case in the Action “IMPROVE-Extension-EMBED!” developed by FB as it was aimed at setting up a production unit with remote access to foster cross-border services.

Policymakers need to be guided towards the definition of appropriate services and support instruments to ensure connectivity between Research and Business. The implementation of DIHs such as the one developed by HGK under the name: “DIH Connect Varaždin” should enhance this cooperation between different type of stakeholders. Policymakers can play a huge role in enhancing cooperation especially between SMEs and DIHs.

As a result, Policymakers should shape the new financial perspective 2021-2027 according to SMEs needs, align regional and transnational policies, and foster policy involvement. Preparing new RIS3 policy and new regional technology specialization has been the priority



of KPT through the Action “Central Europe Upstreaming for Policy Excellence in Advanced Manufacturing & Industry 4.0 towards 2030”. Indeed, “CEUP2030” is aimed at defining cooperative projects around 4 common topics to improve the innovation landscape. Policymakers need to be involved in the process of enhancement of cooperation as they have great influence and power on the success.

Through the actions deployed, the understanding on how strategies and policies work was enhanced, the appearance of digitalization in local strategy was fostered, and best talents and entrepreneurs were encouraged to develop their SMEs including digital transformation potential. This argument can be showcased by the action led by PBN: “EIT_Manufacturing Hub Hungary project” which has for objective to encourage best talents and form a vibrant manufacturing national and regional ecosystem in Hungary.

The overall objective of Policymakers is to define a well-structured ecosystem supported by strong, differentiated service providers. Fostering Policymakers commitment has been developed by the action from IWU “Smart3 Services for CEE” where they enhance the understanding on the potential of smart materials in Central Europe.



Figure 25 - Policy needs addressed (Source: Author generated, S3HubsinCE, 2021)

4.2.2. Involvement of the Navigation Crew and DIH in the Actions

4.2.2.1. Navigation Crews

Navigation crews were built in the aim to foster cooperation around a same interest. For Navigation crews, these actions were aimed at connecting the full ecosystem together. The overall objective is to create an ecosystem where all the stakeholders feel concern and search for cooperation to enhance competitiveness on specific topics such as Additive Manufacturing, Automation and Robotics, Smart Materials, AI, Intelligent Production System, Circular Economy, Data Analytics & Data Science, Industrial Internet of Things, etc. For



instance, “Talent Journey” developed by ECIPA supported its stakeholders to identify the specific needs in the field of Industrial Internet of Things, provide independent knowledge, connect to regional partners and service providers and inform about future developments and innovative trends. In the long term they want to be an integrating partner, who connects actors from business, education and politics in order to conduct practice-oriented and interdisciplinary know-how transfer together with them.

The actions created formal cooperation between DIHs and European initiatives, link experts and SMEs by developing trainings and showing the potential of digital transformation, connect regional partners to services providers. The Action “H2020 Exploitation Radar” by IMECH establish formal cooperation between DIHs and EU initiatives in the fields covered by the Navigation Crews and develop training services targeting SMEs.

They also raised awareness on funding opportunities and helped collect and spread good practices on particular gaps. For instance, the Action “EIT_Manufacturing Hub Hungary project” from PBN provides support in set up of comprehensive approaches, integration of initiatives, lobbying activities to obtain funds and direct funds towards answering SMEs needs.

Navigation crews also wanted these actions to provide testing facilities before making investments through demonstrators. The action “BOWI” by KPT build a DIH network based on experience and practice sharing. This network should support companies in turning their most innovative projects to life, aid investors in discovering the leaders of digital revolution and help development agencies understand the needs of industry.



Figure 26 - Navigation Crews Objectives and Expectations (Source: Author generated, S3HubsinCE, 2021)

In the actions, Navigation Crews had different roles. Some of them helped with the planning and submission of the proposal and monitoring the H2020 opportunities. For instance, “Better factory” developed by TECOS had the support of navigation crew experts in the planning and submission phase of the project proposal.



Others presented during workshops or participated in joint meetings. In most of the actions, Navigation crews benefited from the action. Navigation crews created synergies by building strong potential groups on specific topics. These Navigation Crews provided a transnational network of experts and fostered the spreading and sharing of good practices and cooperation models. The Action “DIH Connect Varaždin establishment” developed by HGK enabled the Navigation Crew on Digital Marketing and IIoT to be directly involved by providing their best practices, materials along with their respective contacts and agreed that they use them for the DIH Connect Varaždin purposes.

They had a huge role to play to enhance cooperation and help defining partnerships to develop shared projects inside and outside of the Navigation Crew. IWU through “Smart3 Services for CEE” enabled the Navigation Crew member PBN and their stakeholder network to push forward smart material knowledge together with smart3 in Hungary. Furthermore, the cooperation with CUAS started as well as project proposals with other Austrian institutions in the medical sector.

They also identified available trainings scheme to create a sustainable competitive environment for all type of stakeholders, especially for SMEs. Through “Digital Industry Transformation Atlas” by IMECH, Navigation crews analysed the existing and available training schemes.



Figure 27 - Navigation Crews Involvement (Source: Author generated, S3HubsinCE, 2021)

4.2.2.2. DIHs Network

As Navigation crews enhanced the development of DIHs, DIHs themselves had objectives addressed through these actions. Indeed, DIHs’ Networks were looking for more cooperation within the DIHs Network including all types of stakeholders from Research and Public Entities to the Business Sector. The Action “Better Factory” by HGK helped company to become



aware of their potentials and how to articulate their need for upgrading the production process with compatible service offered by DIH stakeholders. Awareness raising and knowledge sharing within consortia was therefore a way toward digitalisation of company`s services.

The idea was to enhance cooperation by designing services especially for SMEs on the topic of digital transformation. To develop them, they had to define SMEs` needs. "MIND4MACHINES Project: manufacturing industry`s novel digitalization value chains for connecting machines with people, process, and technology" by BWCON through an investment readiness level assessment questionnaire allows SMEs/projects to identify their strengths and weaknesses and develop a tailor-made service programme that addresses the needs and challenges.

Understanding SMEs need can also be fostered through sharing individual best practices and innovative models implemented by SMEs. The main objective of the T&C Actions was to strengthen awareness on the potential of digital transformation for all type of stakeholders. Through "DIVA" by ECIPA, the DIH network associated got a deeper knowledge on type of successful models useful to provide appropriate digitalization services to the SMEs. Therefore, through these actions, the DIHs Network searched to connect not only all the stakeholders linked to one DIH but to connect the DIHs together and therefore promote appropriate DIH support services for SMEs.

The creation of an internationally competitive research and training infrastructure should lead to an increase in the readiness level of companies towards change especially in the topics covered by the DIHs. IMECH with the Action "H2020 Exploitation Radar" fosters the general readiness level of enterprises on several industry 4.0 domains.

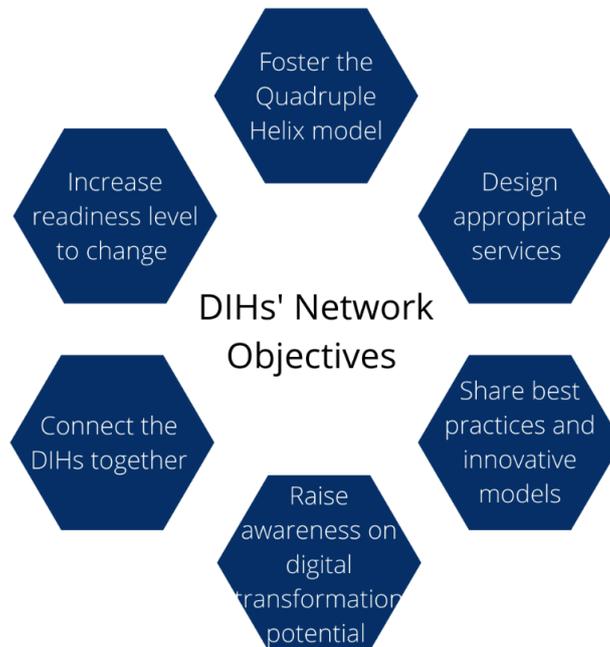


Figure 28 - DIHs Network Objectives and Expectations (Source: Author generated, S3HubsinCE, 2021)

The DIHs Networks helped develop the transfer and cooperation actions. For instance, some of them helped writing or structuring a proposal. For instance, in the implementation of the



Action “3DP Pan EU Call” reported by CUAS, DIH smartfab Carinthia and DIH Slovenia were involved in writing the proposal through CUAS and TECOS.

Others tested and monitored programme delivery. With the Action “BOWI” developed by KPT, DIH staff supported testing and mentoring programme delivering through the acquisition of knowledge about the regional ecosystem and the development of support measures for SMEs

Mainly, they helped designing the appropriate offers and shared services delivered by DIHs according to market needs. For example, ECIPA with “+Resilient” supported by the ECIPA Nordest Hub, provided support to stakeholders in the definition of a cooperation model and therefore increased awareness on the potential of digital technologies.

In this aim, they help spread good practices and methodologies. The idea is to develop a few offers that could apply to as many companies as possible and therefore to develop a few standardized offers and services. Therefore, they fostered DIHs development by differentiating themselves from others and optimizing their offers and services. In the Action “Activating PPPs to support digital innovation processes” reported by IMECH, they searched to standardized shared innovation models.

Moreover, they provided training sessions not only to raise awareness on the potential of digital transformation & technologies but also to enhance cooperation around DIHs. Thus, they enhanced cooperation between all types of stakeholders (Quadruple Helix) by being the centres of cooperation’s models. ECIPA through “DIVA” built connections between quadruple helix stakeholders with partners representing different regions.

Indeed, by their offers and services, DIH embody the role of facilitator for instance between Research and Business or between Policymakers and Business. With “Confacts” developed by PBN, the DIHs will serve as facilitators and enablers between stakeholders and management.

Finally, during the actions, DIHs Networks provided public stakeholders with useful tools aimed at increasing their commitment to market needs. The objective is to develop sustainable networking, in time and in high quality, to increase competitiveness on the long-term. Inside the Action “InnovaMare” by HGK, the national network will be consolidated and a long-term networking in the fields of robotics and sensors enabled.

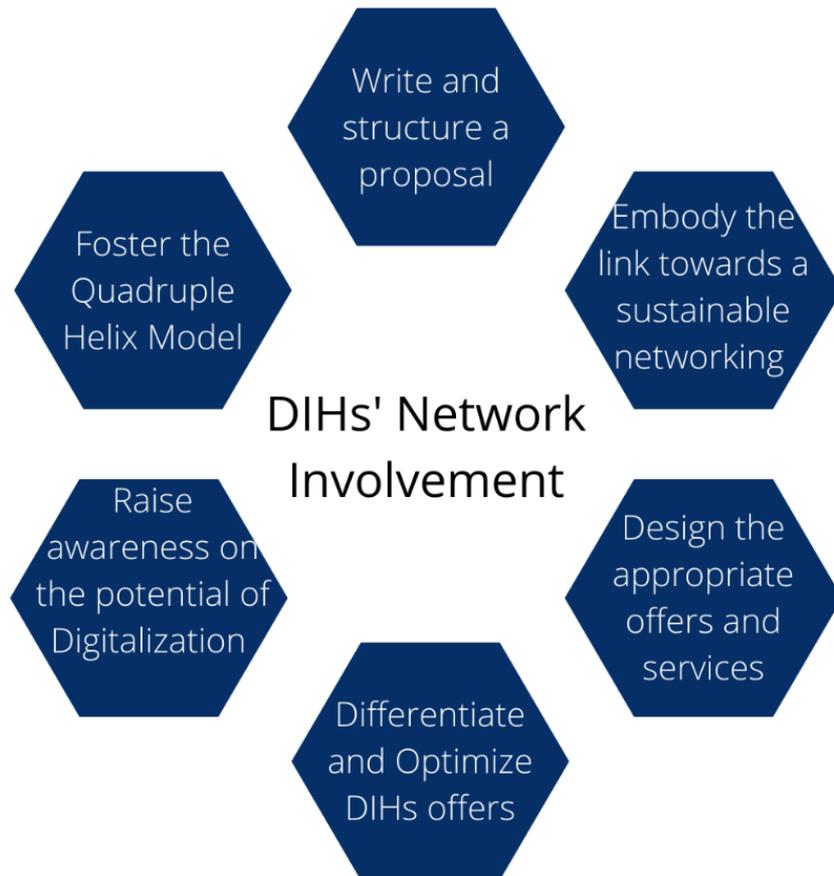


Figure 29 - DIHs Network Involvement (Source: Author generated, S3HubsinCE, 2021)



4.2.3. Lessons Learnt

Every action had to determine successes and challenges they had to overcome. The objective of this part is therefore to showcase not only the successes and challenges but also the lessons learned from the implementation of the pilot actions.

4.2.3.1. Successes

Most of the actions were able to be deployed and therefore had measurable positive outcomes. First, most of the partners agree on the enhancement of the Network stressing on the inclusion of all types of stakeholders. The definition of a cooperation model to include all type of stakeholders through the mapping of the ecosystem and the definition of tools to enhance constant exchanges was a great success for most of the projects. Through “DIVA”, ECIPA reported that the creation of a Creative Hub in each of the involved regions enabled the creation of an ecosystem mapping, which (through data collection, analysis and visualisation) makes it easier to understand the current situation of the ecosystem, the roles and location of their players, and could help developing collaboration patterns.

Through exchange of best practices and individual experiences, a great interest towards digital potential emerged leading to a few proposals submitted. “BE-READI ALPS” by BWCON was approved in October 2019 and therefore funded by Interreg Alpine Space. Therefore, partners who participated in proposal submission developed an understanding on how to prepare a common project proposal. For some of them, the proposal passed and therefore was funded which was a great success.

Stakeholders have now a better understanding of benefits they can developed through innovative technologies. This understanding led to a change in companies’ mindset which could be reluctant to change and risks and now acknowledge the opportunities they can reach thanks to new technologies. The Action “TRAINEE”, reported by ECIPA, succeeded in changing the company attitude to the change driving towards more competitiveness in the market. Aligned to this objective, IWU through “PieMontE” strengthen open mindsets for innovation in the regional SME community.

Moreover, most of the actions were aligned with RIS3 and therefore increased exchanges with public authorities and policymakers. Through the Action “IMPROVE” reported by PBN, policy makers and relevant platforms were informed about the lessons learnt from the pilot projects to highlight how the complex services portfolio provided by the involved DIHs could support the digital transition of the businesses.

They increased policymakers’ commitment, simplified access to funding and ensured that Policymakers create policies and instruments aiming at a long-term strategy regarding market needs. With “Activating PPPs to support digital innovation processes”, IMECH reported on the possibility to create synergies between the Public and Private sectors optimizing the allocation of innovation resources.

Some of the actions also enabled the testing of innovative environment and models to determine how to sustain such cooperation including all type of stakeholders on regional and transnational levels. Through “IMPROVE Extension - EMBED!” by FB, the partners are developing training and demonstration modules as a first step to provide an internationally competitive research and training infrastructure,

Finally new subjects appeared such as Circular Economy which shows some future topics to come. In this sense, future actions are already planned which showcase the sustainability of the network and cooperation. Through the Action “Circular 4.0”, BWCON reported that



adding the Sustainability and Circular component to the Digital and High-tech Network has been very good and interesting for all the Stakeholders.



Figure 30 - Successes identified (Source: Author generated, S3HubsinCE, 2021)

4.2.3.2. Challenges

However, Partners met challenges during the definition and implementation of their actions. First, some of the projects were not approved and therefore not funded which hinder the implementation of them. For instance, the proposal for the action “DuraPro@HM - Operational durability prognosis of heavy machinery” by IWU was not successful.

Most of the partners talked in general about the difficulties to be funded even though most of them finally were. Therefore, raising awareness on funding expectations and designing clear and transparent funding scheme by Policymakers should be a priority in the future. Regarding the action “DIH Connect Varaždin”, HGK expressed concern because as the action is not finished and DIH is not fully operational yet, the financing problem might occur and consequently the sustainability of the project might be jeopardized after the end of the project.

Added to this issue, time pressure that partners felt especially during the implementation of their action and emphasized by the context of Covid-19. Because of Covid-19, most of the events and meetings had to be organized online which led to a certain level of exasperation for this format. In the action “BOWI” from KPT, timing and Covid 19 restrictions created challenges for developing proof of concepts, then testing products in laboratories and real environment.

Time pressure was also emphasized by the resistance to change from companies. For most of the companies and especially SMEs targeted by the offers, it was hard to convince them of the benefits from digital transformation over their current situation. During the implementation of the Action “Circular 4.0”, BWCON mentioned difficulties to find not only



enough Policy Makers in the region to participate in their Knowledge Exchange Workshops but also to find enough SMEs with the willingness to test the digital tools for the Pilots.

Moreover, partners stressed on the fact that English is not recognized by all and therefore it hindered cooperation in the development of trainings or even on proposal submission. According to the reported Action “DITA” from IMECH, training language is still a barrier in Europe and even though the catalogue may include the best available training offer on Industry 4.0, it does not necessarily mean that employees will ask for such courses.

Some of the partners also wrote on the difficulties they had to identify stakeholders they could create a shared project with. It requires indeed a lot of knowledge on the ecosystem to be able to target the right stakeholders with common vision, needs and interests to build a common project. During the implementation of “Activating PPPs to support digital innovation processes” by IMECH, the biggest challenge mentioned was the identification of stakeholders willing to invest private resources in a shared project based on an innovative model considering the related risks.

Therefore, most of the partners acknowledge a difficulty to get the full picture on availabilities and services developed which led to some difficulties while defining DIHs offers. DIHs offers were aimed at covering as many needs as possible with as few offers as possible. The Action “DIH Süd” reported by CUAS expressed the difficulty to align offers of all stakeholders (digitalization centres or network partners) in order to achieve a few high-quality offers instead of many not aligned and overlapping offers.

Thus, it was hard to consolidate these two criteria to design DIHs ecosystem especially because of the important skills gap observed in the digital field. According to the Action “Confact” by PBN, not only the digitalization skills in partner countries may vary and it might slow down the implementation of the project, but also the skills gaps in the digital field can compromise the effectiveness of cooperation.

Additionally, support from Policymakers could have been more important. A few partners acknowledge the lack of strong and well-communicated strategy at a regional level. Regarding the Action “SHARE 4.0” by FB, the region was lacking an action-oriented strategy and action plan for the period 2021-2027 in the field of smart industry applications. The planning should combine high quality standards with practicality. This could only be achieved by involving a large number of actors from the target groups and European partners.

Finally, tracking and measuring progress was also hard as “Excellence” is a broad word with no measurable indicators attached to it. During the Action “Talent Journey”, ECIPA acknowledged that the definition of “excellence” is not completely clear. Therefore, precise indicators should be established to be able to measure “excellence”.

Also making the results sustainable in time and ensuring qualitative follow-up actions in the long run is a subject of concern for a lot of partners. During the implementation of the Action “Study Visits in Stuttgart region”, KPT acknowledged the limited possibility of tracking the follow-up activities especially due to COVID-19 and lockdown. Following, in 2021 hub4industry (KTP’s DIH) was invited to join EDIH Manufacturing Network. Invitation was sent by partner from Stuttgart.



Figure 31 - Challenges met (Source: Author generated, S3HubsinCE, 2021)

4.2.3.3. 5 Key Lessons Learned

1. Following the identification of successes and challenges, partners raised and developed lessons learned to be used in their following actions and projects. First, most of the partners talked about the importance of having a clear decision-making and strategy planning before implementing a project. Every project should, ahead the implementation, define the project including all the stakeholders and check the scope of the project. However, partners who are willing to implement a project, should know that planning is time and resource consuming. During the implementation of the Action “DIH Süd”, CUAS noticed the importance of a clear decision-making and strategy-planning organization and exchange of alignment and planning process on a regular basis.
2. Then, they all mentioned the relevance of sharing best practices and, innovative and effective models and spread them as much as possible to enhance competitiveness. During the implementation of the Action “InnovaMare”, HGK observed the importance of mapping already existing best practice to establish network of existing expertise.
3. Knowing about other initiatives should enable DIH to define differentiated and market-oriented offers that will provide what SMEs and targeted organisations need. The global overview of existing offers and the analysis of the ecosystem should not only be done at a regional level but also at a transnational level. During the implementation of the Action “IMPROVE Extension - EMBED!” by FB, they found out that knowledge of regional needs is crucial to develop functioning services and thus to increase regional innovation.
4. Moreover, the cooperation between all type of stakeholders is crucial to determine the success of a project. Therefore, following actions could focus on fostering institutional support for projects and cooperation between Public and Private organisation while defining strategies and funding. It is indeed very important that public institutions and Policymakers consider market needs while defining their strategies. Also, awareness should be raised on strategies and funding opportunities. TECOS during the implementation of the Action “Demo - facilities - Fast prototyping facilities in practice” learned that just setting up facilities without a proper policy mix will not be applicable.



5. Finally, another point lies in the context in which all the actions were implemented which was Covid-19. If Covid-19 was a challenge for most of the project as we saw earlier, it also fostered the understanding of digitalization potentials. Thanks to this situation hindering any travelling, all the stakeholders had to make efforts through digitalization to continue working and enhance cooperation. The Action “Talent Journey” by ECIPA showcases the importance of exposing learners to a mix of collaborative and independent learning through the use of technology enhanced learning provision tools (this has become even more evident during COVID emergency). Moreover, in “DIVA”, they noticed that if it is true that the COVID pandemic posed a challenge while managing the project only through digital tools; however, this allowed the community to understand that digitalisation can facilitate the cooperation and the project management in hostile contexts, thus reducing risks.



Figure 32 - Key Lessons learned (Source: Author generated, S3HubsinCE, 2021)

Other less mentioned lessons learned but interesting were identified:

- Ensure English as presentation language. Action “Action Concept CISMAT & Smart3” reported by CUAS and “DITA” by IMECH both acknowledged the fact that languages play a relevant role in the implementation of actions and in cooperation success (and is still an issue in Europe).
- Ensure exchanges on a regular basis to build shared projects and align objectives. During the implementation of “DIH Süd”, CUAS learned that Exchange of alignment and planning process on a regular basis greatly facilitate cooperation.
- Acknowledge that Digitalization is a transversal topic that should be treated in every sector of activity. During “+Resilient”, ECIPA noticed that there is a complementarity between digital transformation and social innovation, the digitalisation is anyway transversal.
- Need to implement continuous trainings to ensure that skills answer market needs. This is showcased by ECIPA in the Action “TRAINEE” as they reported that the



continuous upskilling for the whole staff of a company is crucial for its innovation (and competitiveness).

- Foster a Long-term strategy connecting a large network of stakeholders. During the implementation of the “DIH Süd”, FB raised the fact that regional innovation must be embedded in a long-term and regionally coordinated strategy. RIS3 strategies must also take into account regional objectives and strategies in individual disciplines (e.g. environment, energy, spatial planning, etc.)
- Develop an impact monitoring system for every project to make sure that the project is always aligned to market needs and is always achievable. During the implementation of “SHARE 4.0”, FB highlighted the need for an impact monitoring or feedback system to be able to evaluate if and to what extent actions or activities were successful or not.
- Acknowledge that it is not easy to create mutual recognition mechanisms especially for trainings programs. And therefore, it is crucial to build trust between all the stakeholders. IMECH acknowledged this during “DITA”. It is not easy to create mutual recognition mechanisms on training programs especially between one country and another. The result is that there are many initiatives out there responding to the Industry 4.0 digital skill gap and they are still not connected or harmonized
- Communication is key in the development of a project. IWU with “DuraPro@HM - Operational durability prognosis of heavy machinery” noticed the important to have a key view on what to target in a project proposal but also to stay notably open for the country’s specific needs and competencies. Therefore, talking and exchanging is a crucial step in the definition of a common and shared project.
- Meetings should have different format: Webinars, B2B meetings, Workshops, Study Visits, etc. During the implementation of “Factory 4.0: Factory & Process Automation”, KPT noticed that using various method of meetings (panel discussion, B2B meetings, presentations, workshops, etc.) is very beneficial to reach different stakeholders.
- Test before investing. During the Action “Demo - facilities - Fast prototyping facilities in practice”, TECOS mentioned the needs for prototyping. However, it requires time and resources (human and funding).
- Raise awareness on new subject such as circular economy. “Circular 4.0” by BWCON emphasises the importance of acquiring new knowledge, sharing experience and information.



4.2.4. Recommendations from different types of stakeholders

4.2.4.1. DIHs Network

DIHs Network raised recommendations following the implementation of the T&C Actions. First, they requested that transnational events for DIHs to share their innovation strategies and services are organised on a regular basis and in English to be accessible by all stakeholders and especially SMEs. BWCON reported it following the “Hightech Summit 2020” as it could be made more internationally accessible through additional English opportunities on the agenda or translation services.

Added to this, meetings between DIHs could also be implemented on a regular basis to ensure differentiation and effectiveness in the services provided. In this objective, DIH service portfolios should continue being developed including demonstration and testing facilities. It was expressed following the Action “BOWI” from KPT as they request to be able to develop and test before invest tailored to individual company needs transformation plan. With the “Study Visits in Stuttgart region”, DIH Network highlighted the need for Demonstration facilities as a critical point of development for DIHs.

These services and offers should be communicated especially to the target groups: SMEs to foster their digital transformation and upskill the ecosystem in this field, Research Centres to be connected to other stakeholders and develop business-oriented research, and Public Administration to be influenced and oriented in their decision-making processes and strategy definition. Following “Smart3 Services for CEE” reported by IWU, the associated DIH Network recommended that in the course of action development it should not be forgotten to actively promote the Innosax services through smart3 channels, too.

They also emphasized the relevancy of defining a clear structure for planning and structuring the project. For instance, following the Implementation of “DIH Süd” reported by CUAS, the DIH Network expressed the willingness to foster a clear structure of thematic areas addressing the needs of target groups (RIS3), a clear assignment of coordinators for thematic areas based on their existing track record, periodical alignment of planning process and the implementation of a common steering committee for joint strategy development.

Moreover, enhancing the global network should be a priority in follow-ups. They ask for more experts and enhance regional and transnational organisations to join networking activities. ECIPA DIH Network developed this argument following the Action “Talent Journey”.

The objective is to use the lessons learned from these implemented Actions (T&C Action) to create follow-ups. Follow up actions could develop tools and platforms to support cooperation. In this objective, it would be interesting to develop a roadmap of digital transformation processes according to the Action “BOWI” from KPT.

The main objective is to establish formal connections among initiatives and stakeholders to make the connections and the Network sustainable in time. Therefore, following the Action “Activating PPPs to support digital innovation processes” by IMECH, DIH Network recommended to organize transnational events in which DIHs from different countries can share innovation strategies and to organize local workshops to disseminate models.

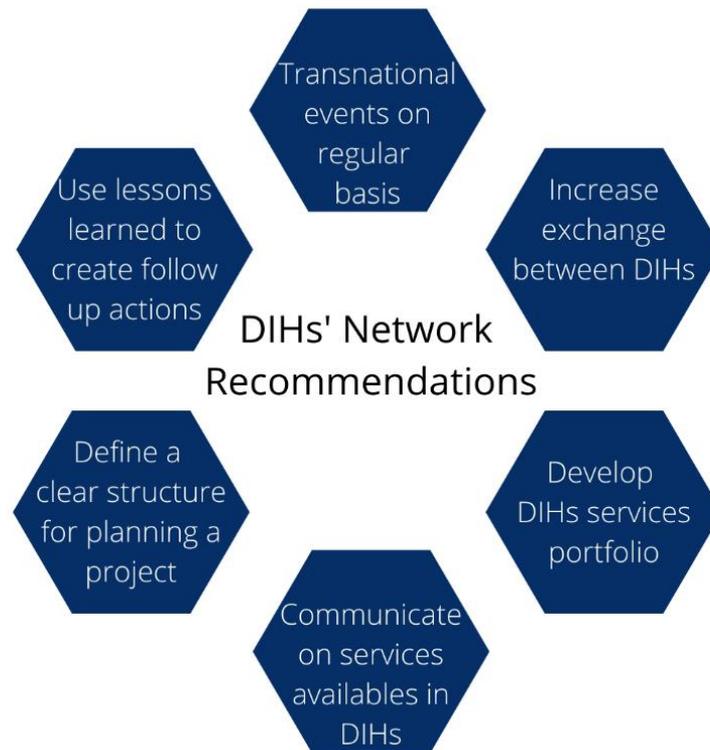


Figure 33 - Recommendations from DIHs Network (Source: Author generated, S3HubsinCE, 2021)

4.2.4.2. Policy-Influencing Stakeholders

Policy-Influencing stakeholders also mentioned recommendation towards future actions. First, they are willing to exchange good practices and integrate shared projects. The aim is to harmonize all the initiatives between European countries and initiatives. This recommendation was raised by Policy-Influencing following the Action “H2020 Exploitation Radar” from IMECH.

Answering funding challenges, they expressed their willingness to raise awareness on funding schemes and increase the impact of public funding and cascade funding. KPT Policy Influencing Stakeholders following the “Study Visits in Stuttgart region” developed the argument of increasing the impact of public funding, avoiding unnecessary duplication infrastructures/investments and accessing EU funds.

Moreover, they want to foster trust especially among local players and cooperate with DIHs as a centre to cooperation. Through “+Resilient” by ECIPA, Policy-Influencing Stakeholders acknowledged the potentiality of open data which can represent the heart of a strategy that encourages comparison and the creation of relationships of trust among local (private and public) players to develop innovation strategies.

Cooperating with DIH should enable them to develop appropriate next steps in S3, therefore, some of them would like DIHs services to be more known and spread. In this objective, some of them want to focus on introducing tools and platform to foster exchanges such as workshops, study visits or even an open platform for dialogue on RIS3. Policy-Influencing stakeholders of “CEUP2030” by KPT reported on the necessity to set up an open platform for dialogue on RIS and future financial instruments to support business. To bring digital transformation closer to SMEs and Policy influencing Stakeholders, KPT has also created the



Academy of Industry 4.0 and is organising systematic visit to its automation and robotics showroom (hub4industry showroom) where not only study visits but also workshops are organised.

By this type of actions, public and private sectors should understand their mutual needs and interest more and therefore bring more cooperation. To optimize cooperation, policymakers should however be aware of market needs and potential threats. This argument has been evidenced following the Action “SHARE 4.0” by FB where the project group in the SK-AT program area establishes close cooperation with a large number of decision-makers from administration & politics (e.g. ministries in Austria and Slovakia), research & innovation, business for intensive cooperation beyond the project duration. This is provided with a practicable governance model including work structures and work processes during project processing so that the network is prepared for future collaboration tasks.



Figure 34 - Recommendations from Policy-Influencing Stakeholders (Source: Author generated, S3HubsinCE, 2021)

4.2.4.3. RIS3 Champions

RIS3 champions also expressed their interest towards follow-up actions and therefore provided recommendations regarding the T&C Actions they participated in. First, they requested that Policy support be more focused on market needs and be more transparent especially while defining their strategies. Through the implementation of “DIH Connect Varaždin”, RIS3 Champions expressed that DIH support services are needed and should be aligned with regional stakeholders` needs but more important, that the policy level support should adapt faster to these new market changes especially in this fast-growing and fast-changing market.

In this objective, projects should use lessons learned to build future cooperation and new actions. Sharing experiences and good practices will enable project to be aligned to market needs and to ensure differentiated added value from others. Therefore, DIHs should also align their services on regional stakeholders needs and especially focus on supporting SMEs. Following “DIVA” by ECIPA, RIS3 Champions want to take part in an open call involving



different types of SMEs and suggested to foresee this kind of action in future projects in order to ensure active involvement of the entrepreneurial world (positioning the project close to the market needs).

Most of them stressed their willingness to participate in follow-up actions and future cooperation. To be aware of these potential shared projects, they recommend regular discussion in different format: workshops, webinars, study visits and B2B meetings. Following the implementation of “DIH Süd” reported by CUAS, RIS3 Champions recommend the use of webinars for effective and efficient information sharing for enterprises (instead of time-consuming physical meetings with unclear success for participants).

The overall recommendation lies in increasing all type of stakeholder’s commitment to enhance cooperation around business needs. In this aim, other countries should be analysed and could be associated to projects. Following “PietMontE” from IWU, the need to establish follow-up meetings to discuss future possible project applications and leverage cooperation potentials among the project partners was identified by RIS3 Champions.



Figure 35 - Recommendations from RIS3 Organisations (Source: Author generated, S3HubsinCE, 2021)

4.2.4.4. Navigation Crews

Finally, Navigation Crews also expressed recommendations on how to build upon the T&C Actions. First, most of them agreed on the need to foster connection between regional stakeholders with open discussions and sharing best practices talks. These discussions to foster cooperation should create trust which seems essential to build shared project. They could be in different formats such as study visits or open days to present the results of actions, interests, and potential of digitalization. Navigation crews associated to the Action “Study Visits in Stuttgart region” by KPT recommend that Study visits be included as an important practical part of the Navigation Crews strategy plan.

Moreover, they recommend some future actions to focus on B2B benchmarking to ensure that actions are developed and implemented according to market’s needs. Thus, before



implementing a new project or actions, not only should potential partners exchange on how to answer market needs and thus understand the ecosystem but also use the lessons learned from previous actions such as the T&C Actions. According to “HIA- HIGH IMPACT ACTION FOR INDUSTRIAL Transition” by TECOS, follow up actions should consider that different regions have different needs. Therefore, cross regional cooperation can only be useful when taking into account the needs of the regions and their SMEs.

Regarding Policies, they want to work with policymakers to shape an innovation ecosystem and develop their strategies towards market needs and network interests. Following the implementation of “CEUP2030” by KPT, the Navigation Crew associated wants to support policy makers including regional authorities in shaping innovation strategies.

Navigation Crews also highlighted the need to foster identification of potential partners towards common projects. Indeed, it can be hard to find appropriate stakeholders to build a project with. Therefore, developing understanding of the full ecosystem should enable them to find more easily potential partners to share a project with. Following the Action “H2020 Exploitation Radar” from IMECH, Navigation Crews associated expressed the necessity to establish a sustainable Navigation Crews’ network as a channel to disseminate opportunities and project outcomes.

Finally, DIHs should be more integrated in the ecosystem. Navigation Crews recommend creating and foster DIH specialization corridors to make better use of existing knowledge in DIHs and Navigation Crews Network. In this objective, a catalogue of service’ offers could be developed to foster general awareness and understanding of the ecosystem. The integration of DIHs and Navigation Crews is essential as they gather lots of stakeholders, being a link in cooperation between stakeholders. In the action “Study Visits in Stuttgart region” by KPT, NC asked to make better use of the existing knowledge in the DIH/NC network. This need to could be embodied by the creation of DIHs specialization corridors. In the same objective, FB Navigation Crews associated to “IMPROVE Extension-EMBED!” talked about the development of Navigation Crew service catalogues that can be updated regularly.

Therefore, Navigation Crews expressed their willingness to be more involved in follow up actions as they were not always included as a major asset in T&C Actions. For instance, following the Action “DITA” by IMECH, the ATLAS should be part of future initiatives (linked as an asset to be exploited).



Figure 36 - Recommendations from Navigation Crews (Source: Author generated, S3HubsinCE, 2021)

4.2.4.5. Key Recommendations

Finally, partners pulled out general recommendations on how to build upon these T&C Actions. Most of them would like the follow up actions to raise awareness and visibility on the potential of digital transformation. With “TRAINEE” from ECIPA, stakeholders want to strengthen awareness and visibility both about the role of digital transformation service providers and about the opportunities that can emerge from cooperation with companies in future actions.

This should be done through efficient communication on the benefits of digitalization to the targets groups which are mainly SMEs. Therefore, follow up actions should continue to identify, and answer SMEs needs. The objective of “TRAINEE” from ECIPA was to identify good and efficient practices to answer the SMEs needs. It should therefore be fostered in future actions.

The main outputs of these following actions should be to develop skills regarding digital transformation and raise awareness on what is available. Following the implementation of “DITA” reported by IMECH, they noticed that there are several (sometimes too many) training initiatives out there and not enough awareness about their quality.

It could be done by ensuring knowledge transfer and exchanges of good practices and demo cases through DIHs services. Indeed, DIHs should develop their offers according to regional needs, aligning service providers and involving experts. DIHs offers should also be developed according to what is already existing. Indeed, DIHs services should be differentiated and innovative and therefore should build their offers on existing services. Following “Confacts”, by PBN, they recommended to strengthen awareness and visibility both about the role of digital transformation service providers and about the opportunities that can emerge from networking and cooperation with regional stakeholders. Moreover, they ask to improve the DIH service portfolio with the Blueprint developed within this action.



Future actions should also have a clear plan from the beginning clearly defining the objectives. Collaborative definitions of projects can be implemented through tools such as Mural. This argument was found by CUAS regarding the Action “Assessment Tool for Manufacturing Industry & Additive Manufacturing and Circular Economy - How it fits together”

Testing and monitoring schemes should be developed before the implementation of the action. Through “CEUP2030”, KPT want to address the need to identify possibilities of implementing joint concepts and tests and therefore anticipate trends and potential technological risks in order to develop effective support mechanisms.

The overall aim of future actions should be to develop the current network and increase public-private cooperation around digitalization. Therefore, gaining support from policymakers and strategies needs to be fostered. Following “Activating PPPs to support digital innovation processes” by IMECH, they observed that there are just few public and private initiatives concerning shared innovation models. Thus, orient the policy in this direction can have a huge impact on the creation of a virtuous ecosystem of synergies.

Moreover, future actions should not only focus on regional ecosystem but acknowledge the transnational ecosystem as good practices can be identified worldwide. According to IWU through “Smart3 Services for CEE”, it is crucial to link the networks on a regional and European level to bring future successes and improvements.

Finally, regarding funding, projects’ partners should first notice the low chances of success regarding H2020 program. Therefore, future cooperation should raise awareness of potential funding and support policymakers to define their strategies. For policymakers, they should not only identify current needs but also anticipate trends and potential technological risks. “SHARE 4.0” by FB will be able to support regional authorities in taking strategic decisions such as defining new financial perspective 2021-2027, preparing the new RIS3 policy, adapt policy instruments to stakeholders needs, align regional and transnational policies. They even defined roles per type of stakeholders: RIS3 champions will act as technology solution providers, RIS3 policymakers as technology solution receivers, RIS3 policy will be supported through new planning for EU 2021-2027.



Figure 37 - Key Recommendations (Source: Author generated, S3HubsinCE, 2021)



4.2.5. Future Actions/ Follow-up Actions

Follow-up actions were identified by all Partners. Most of the follow up actions identified are aimed at answering needs and recommendations analysed previously in this report. Indeed, some of them want to foster awareness on DIHs services and support SMEs. TECOS wants to develop a project aimed at bridging the gap between SME and Research field.

Others aim at enhancing the network between all types of stakeholders increasing the connection between DIHs, SMEs, service providers, regional training providers, policymakers, and research centres. For instance, IWU wants to improve offers and services in order to attract new partners and grow the joint smart materials movement in Germany and in Europe through the “Smart3 application for regional funding to establish new services”

Others will develop a system to enhance the sharing of good practices and therefore enhance sustainable cooperation. KPT should develop an international collaborative innovation project consisting of a different group of organisations, which aim is to bring together technology and policy making best practice and industry leaders in digital circular economy across Central Europe, and generates a learning tool box for knowledge exchange and capacity building, which is connected to a series of regional, Digital Innovation Hubs.

Finally, most of the actions will be deployed according to the RIS3. Therefore, some of the actions are focused on influencing policymakers to raise awareness on funding opportunities and in the definition of the regional strategies. One of the future action planned by IMECH is aimed at identifying funding sources for the implementation of industrial innovative projects.

The objective of most of them are to submit a proposal to the new program period 2021-2027. Most of the actions should start in 2022-2023. For instance, PBN plan to re-submit the SMARTEN proposal



Figure 38 - Future Actions (Source: Author generated, S3HubsinCE, 2021)



5. Discussion and Recommendations

This part is aimed at providing insights to foster cooperation and emphasize the added value that was already created during the implementation of the Training & Mobility Actions and the Transfer & Cooperation Actions. The objective of this project lies in fostering cooperation around DIHs. Indeed, the Blueprint report seeks to answer the following question: ***“How can policy-makers and best-in-class organisations work together to evidence RIS3 implementation at the local, regional and national level”*** through evidence-based recommendations on the utilisation of a connected network of Digital Innovation Hubs. Through these recommendations, the Partners and their stakeholder give insights on how these connections can be strengthened to build tangible market and strategy benefits to aid in the implementation of smart specialisation strategies.

5.1. Discussion

This section of the report is aimed at providing insights to foster cooperation and emphasize the added value that was already created during the implementation of the Training & Mobility Actions and the Transfer & Cooperation Actions. This section will therefore highlight specific analysis that are aimed at demonstrating critical characteristics of the delivered actions, which were necessary to achieve the functional added-value of the actions.

5.1.1. Training & Mobility Actions

Building on critical classification of T&M Actions which took place at the end of the pilot program’s delivery, the stakeholders of S3HubsinCE have generated reflections on how to deliver excellence within these classifications of actions. In highlighting these key elements, we present pathways for further actions and projects. As a reminder Training & Mobility Actions were one-time events aimed at enhancing cooperation and linkages around DIHs. 3 categories of types of actions have been classified as the base structure of promoting connections between DIHs:

- Foster the Learning Environment
- Increase Policy Lab and therefore enhance cooperation with Policy-Influencing Stakeholders
- Ensure development of services and offers according to Market needs.

The main types of activities which took place to create a successful action have been written under each category section which should provide to the reader insights on potential future topics of cooperation.

5.1.1.1. Learning Environment

To foster a learning environment, T&M Actions expressed the following insights as the basis for why the formula for this classification was a success:

- Discover technologies and new fields such as Circular Economy.
- Meet and learn about new actors.
- Foster the Quadruple Helix of Stakeholders which means engaging with all types of stakeholders (Public Administration, Higher Education and Research Centres and Private companies).
- Understand infrastructures and develop the offers according to market needs.



- Learn about DIH governance.
- Learn new approaches to deliver services (from assessment to product validation).
- Reiterate Mobility Actions on regular basis to enhance exchange and create synergies.

5.1.1.2. Policy Lab

To build on the functionality of events which connect DIHs as a means of building policy understanding, the following focus areas were identified as the target subjects to be explored as part of the agenda for events connecting policy - market stakeholders:

- Present how measures and incentives work.
- Describe Impacts of measures and technologies on industries, labour, and digitalization strategies.
- Develop supportive actions from Policy Makers especially towards SMEs.
- Develop and raise awareness on funding opportunities.
- Develop strategies for the next Period 2021-2027 with transparency and involve all type of stakeholders in the definition.

5.1.1.3. Development of Market & Technology

To build on the functionality of events which connect DIHs as a means of developing market and technology opportunities between territorial areas, the following points were highlighted as the “recipe-for-success” agenda components for fostering this trust and understanding:

- Test what works and avoid wrong investments.
- Reduce the time required to find appropriate providers.
- Connect to partners.
- Find or acquire skills and ensure continued skills improvement according to Market needs.
- Ensure exchange of best practices through different types of events: workshops, webinars, study visits.
- Develop DIHs services and offers according to Market needs and in the aim to answer general needs.



5.1.2. Transfer & Cooperation Actions

As already described, Transfer & Cooperation Actions are activities that

- create evidence of **close to market initiatives** enhancing the value-chain of and the value-added benefits to RIS3 Champions (i.e. organizations which are critical to regional RIS3) like
- showcase **how a connected network of digital innovation hubs can be used to promote this close-to-market activity**, and ultimately enhance RIS3 implementation; which means for instance how
- **connect to a framework of activities** to exchange products, solutions, projects, services know-how and processes from the identified knowledge and experience of other S3HubsinCE PPs
- **test a method of promoting cooperation, engagement, and common development** through the joint capitalization of proven success stories and use cases

Therefore, 4 categories were developed in the analysis of the Transfer & Cooperation Actions, as a means of generating a classification of the value-adding benefit which was created by the portfolio of actions completed. These four categories were as shown below:

- Develop infrastructures
- Develop strategies
- Support Close to Market Activities
- Support Digital Innovation Operations and Strategies

To build on the work completed during the Pilot Program's initial analysis, the stakeholders of S3HubsinCE have provided feedback whereby critical examples are raised to showcase how future actions can be developed more effectively to boost action within this classification. Thanks to this graph made in DT2.3.4, we can first have an overview on the classification weight of the actions completed.

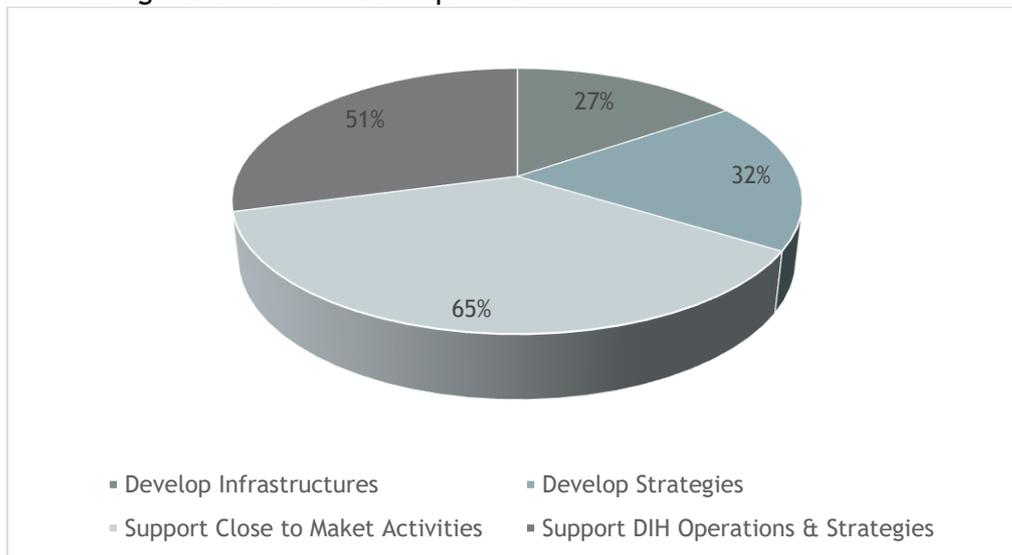


Figure 39 - T&C Actions repartition in 4 categories (Source: DT2.3.4 Support Action 2: CERIS3 Excellence Transfer & Cooperation Actions, S3HubsinCE, 07/2021)



5.1.2.1.1. Develop infrastructures

This “category” includes all those Transfer and Cooperation Actions that aimed at planning, designing and setting up a facility (DIH or similar) which will host any of the listed possible actions.

For instance, the implementation of DIHs such as “DIH Süd” reported by CUAS and FB is aimed at developing supporting infrastructure to enhance the ecosystem competitiveness. Indeed, FB reported the necessity to bundle initiatives and services in order to offer align services according to the regional and transnational ecosystem.

Moreover, infrastructure towards trainings have also been discussed. “Activating PPPs support” by IMECH has stressed the necessity to develop trainings towards SMEs Needs. The main objective of this action was to foster the launch of a Joint Lab focused on developing a humanoid robotic platform and extend the Public Private Partnership model to other areas.

In the same objective, ECIPA reported on “Talent Journey” which is an action aimed at reducing the skills gap in the manufacturing sector in the field of IoT in smart manufacturing. Indeed, developing infrastructures to help SMEs is a very interesting point. However, to optimize the different support initiatives, it is important to enhance harmonization in skills. Therefore, trainings facilities should be developed in future actions.

Finally, KPT with “BOWI” participate to build a digital innovation hub (DIH) network based on experience and practice sharing. They searched to build a network that supports companies in turning their most innovative projects to life, aid investors in discovering the leaders of digital revolution and help development agencies understand the needs of industry. Moreover in BOWI project a matchmaking process was introduced in order to assign validated mature hubs with developing hubs in underrepresented regions. The selected mature hubs in the matchmaking process have received dedicated sum for delivering technology support services for SMEs/ Midcaps and developing hub.

5.1.2.1.2. Develop strategies

This “category” includes all those Transfer and Cooperation Actions that aimed at discussing, preparing, sharing or implementing strategies aimed at facilitating.

For instance, “SHARE 4.0” reported by FB helped in the definition of the strategy and action plan 2021-2027 for the Smart Industry Network SK-AT. FB also reported that RIS3 strategies must take into account regional objectives and strategies in individual disciplines.

With the Action “SMARTEN”, PBN acknowledged the willingness from Policymakers to foster appearance of digitalization developments in local and regional strategies. The policy stakeholders also advocated their willingness to participate (directly or indirectly) in cross-border initiatives.

Moreover, initiatives and future actions should be included and in phase with RIS3. “Talent Journey” reported by ECIPA answered needs and specialization defined in the RIS3 for the Veneto Region.

Finally, through “HIA- High Impact Action For Industrial Transition” reported by TECOS, they expressed their willingness to define a call according to the 5 specialization areas of Factories of the future in Slovenia



5.1.2.1.3. Support Close to Market Activities

This category includes all those Transfer and Cooperation Actions that aimed at directly supporting beneficiaries (especially enterprises).

Through the development of DIHs such as “DIH Süd”, FB reported on the necessity to support the region's SMEs in their digital transformation and to give them easy access to the know-how and the existing infrastructures of the partners in the ecosystem (digital centers, network partners and multipliers) and the digitization measures already offered, or to develop and implement new formats. Moreover, knowledge of regional needs is crucial in order to develop functioning services and thus to increase regional innovation. Finding regional support network in a broad technology area as well as regional financing to continuously offer services to a wide range of companies over a longer period of time was identified as crucial and critical.

Moreover, with “PietMontE”, IWU reported on the need to improve technology readiness level. The robustness, industrial acceptance and reproducibility is aimed to be significantly improved. Future Actions could therefore be fostered.

In this objective, BWCON Through “Circular 4.0” search to strengthen digitalization processes by SMEs to foster innovation processes and accelerate the transition to the Circular Economy (CE) in Alpine Space.

Finally, with “InnovaMare”, HGK reported that cross-border collaboration between science and private sector on a higher level will facilitate the involvement of SMEs in international networks.

5.1.2.1.4. Support DIHs operations and strategies

This category includes all those Transfer and Cooperation Actions that aimed at supporting involved DIHs.

Through “ATC Technology Center/ Additive Manufacturing priorities and strategies in manufacturing in Lombardy”, IMECH reported on the necessity to promote transnational DIH support services and enhance cooperation between business players at all level (regional and transnational). Moreover, this action tries to extend the reference network of the DIH which leads to increasing the connectivity between DIHs.

Moreover, through “Better Factory”, HGK highlighted the need to help companies to become aware of their potentials and how to articulate their need for upgrading the production process with compatible service offered by DIH stakeholders. Awareness raising and knowledge sharing within consortia is therefore a way toward the digitalisation of company's services.

Finally, HGK reported on “DIH Connect Varaždin” which is connected, among others, with one of the strongest DIH in Croatia - ICENT (Innovation Centre Nikola Tesla) which enable all the members and business sector to share information, gain knowledge and search for new business and project opportunities.



5.2. Recommendations

After discussing stakeholder reflections on the components which made different classification of actions successful, and by fostering further could lead to future actions, this section provides direct insight and recommendations on the critical success factors necessary to start cooperating on future actions. This section is therefore divided in 3 parts:

1. Define the roles of each stakeholder (Who Needs to Work Together)
2. Identify the common interests and therefore the topics that needs to be fostered (On What do They Need to Work)
3. Plan and discuss on how to implement a common and shared action (How Should They Work Together)

5.2.1. Who Needs to Work Together

First, every type of stakeholder has a role to play in this enhancement of cooperation. The results (section 4) highlighted the importance of fostering the Quadruple Helix which means that all type of stakeholders must be represented in the cooperation. The Quadruple Helix include Public Administration, Research Centres and Higher Education Institutions, Businesses and Citizens representation including NGOs.

With regards to delivering stakeholder value in the execution of a connected network of Digital Innovation Hubs, supported via linkages with transnational thematic innovation networks, the following recommendations were identified based on stakeholder type:

- SMEs should be aware of DIHs services towards digitalisation and new technologies. The general objective is to foster the understanding of SMEs towards digital transformation. Shared project should therefore showcase the benefits of digitalization and enable SMEs to accept and move towards change. It is crucial to demonstrate that they are more benefits than risk to enable SMEs to engage change.
- Policymakers and policy-influencing stakeholders should develop a support system towards SMEs and Market needs. Indeed, they have to take market needs into account while defining their strategies and funding opportunities. Added to this increase in commitment, it is crucial that they remain flexible and can adapt their strategies and support mechanisms according to Market needs
- DIHs should first define their support services according to market needs. In this objective, a complete picture and mapping of the ecosystem should be made to be able to build upon existing initiatives and services, and to ensure differentiated services. The objective is to increase competitiveness and therefore DIHs should work together to provide the most complete and qualitative support ecosystem possible. Then, they need to raise awareness on their offers. As seen in the templates, they have the responsibility to become the link in cooperation regarding digitalization. They can be the centre of cooperation and should embody this role of facilitator.
- Higher Education Organisation should help DIHs raising awareness on their services, cooperate with them and therefore with all the other types of stakeholders. It is very crucial that Higher Education Organisations work toward Market needs.



- Other innovation networks here such as Navigation Crews could help fostering thematic innovation networks. Indeed, we can see that topics gathered in Navigation Crews were well chosen as all of them was covered by a lot of actions as seen below:

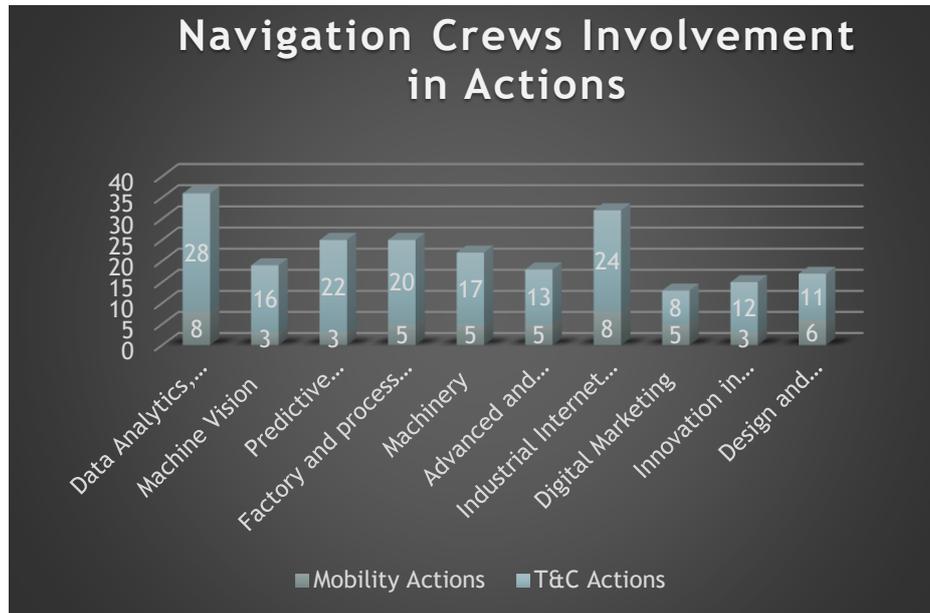


Figure 40 - Navigation Crews involvement (Source: Author generated, S3HubsinCE, 2021)

Most of the Navigation Crews are well covered with a high representation for Data Analytics, Complex simulation and Modelling, and Industrial Internet of Things. On the opposite, Digital Marketing and Innovation in Circular economy are the topics that were the less developed during the Actions. Therefore, these subjects should be fostered acknowledging that more exchanges and cooperation has already been implemented for some topics than others.



5.2.2. On What do they Need to Work

This section provides insights on what are the next steps to be fostered, following this project. This section will firstly talk about how cooperation was fostered through the implementation of T&C Actions around the RIS3 Definition and Implementation. Then, we will talk about how it enhanced DIHs Alignment. Finally, we will observe the involvement of the Navigation crews in the T&C Actions.

5.2.2.1.1. RIS3 Definition and Implementation in T&C Actions

At the close of the DIH Pilot Program, a classification of activities was made to support the analysis of the T&C value-added benefit for defining and implementing smart specialisation strategies. Thus, this section will talk about how the T&C Actions fostered a better RIS3 Definition and Implementation across Central Europe. **RIS3** represent national or regional innovation strategies which set priorities in order to build competitive advantage by developing and matching research and innovation strength to business and market needs... This is synonymous with the term Smart Specialisation Strategies (S3)

The activities which were most often fostered by the Partners actions are portrayed in the figure below.

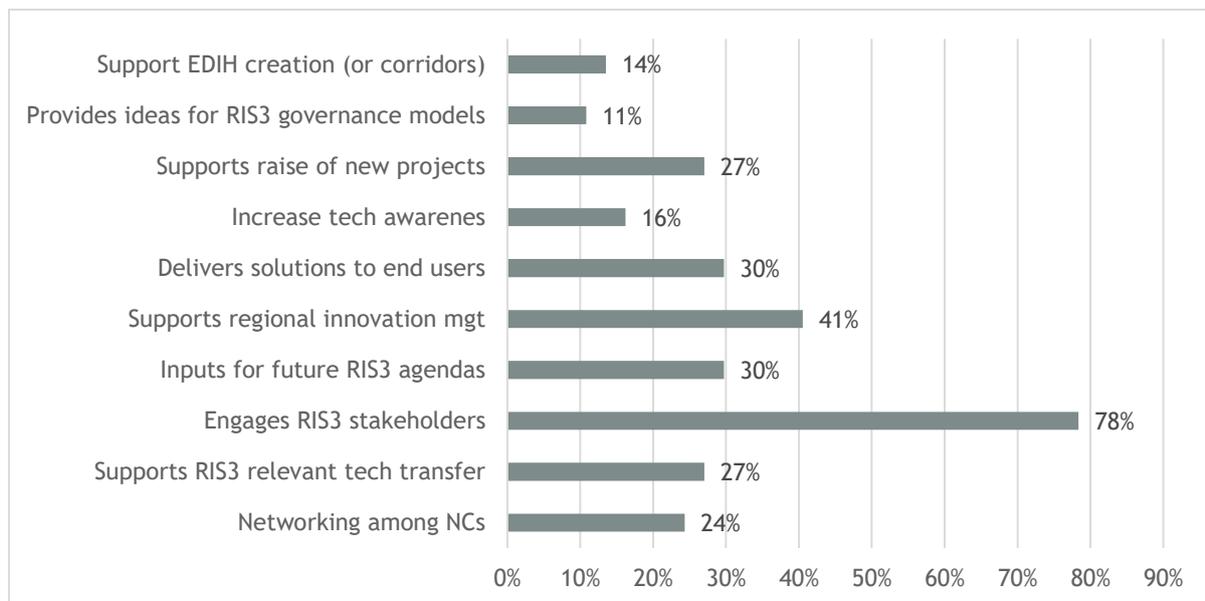


Figure 41 - RIS3 Definition and Implementation in Actions (Source: DT2.3.4 Support Action 2: CERIS3 Excellence Transfer & Cooperation Actions, S3HubsinCE, 07/2021)

Building on this classification, through the insights of the S3HubsinCE Stakeholder ecosystem, a number of new categories have been identified, which can be recommended as focus area for future actions which thematically connected DIH Networks can foster jointly with RIS3 Strategy-Oriented Stakeholders:

- Develop RIS3 for the next period 2021-2027. Stakeholders help defining the strategies for the new period, helping creating new research strategic priorities based on Market needs and aligning them with policies.
- Develop or raise awareness on funding opportunities; raising awareness on funding and designing appropriate funding scheme by Policymakers should be a priority in the future



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- Foster the quadruple helix which means to engage with all types of stakeholders. Through Mentimeters, public events and surveys, it is very important to include also citizens and NGOs.
- Increase Transparency in decision-making processes. DIH network help provide information on how decisions are made especially regarding funding opportunities.
- Build a sustainable knowledge-based economy
- Engage regular discussions at regional and transnational level
- Monitor Horizon Europe opportunities
- Plan and submit proposal for European funding

5.2.2.2. Alignment with Digital Innovation Hubs

The objective of this subsection is to provide insights on how the T&C Actions foster the definition of the roles of Digital Innovation Hubs (DIHs) and include them in the ecosystem. DIHs have indeed been created to enhance cooperation around the common topic of digitalization.

Below is an estimated graph, pulled out from a previous report presenting the different T&C Actions (DT2.3.4.from S3HubsinCE), which attest the added value of the T&C Actions regarding the definition of the roles of DIHs and what type of objective should be fostered through future actions.

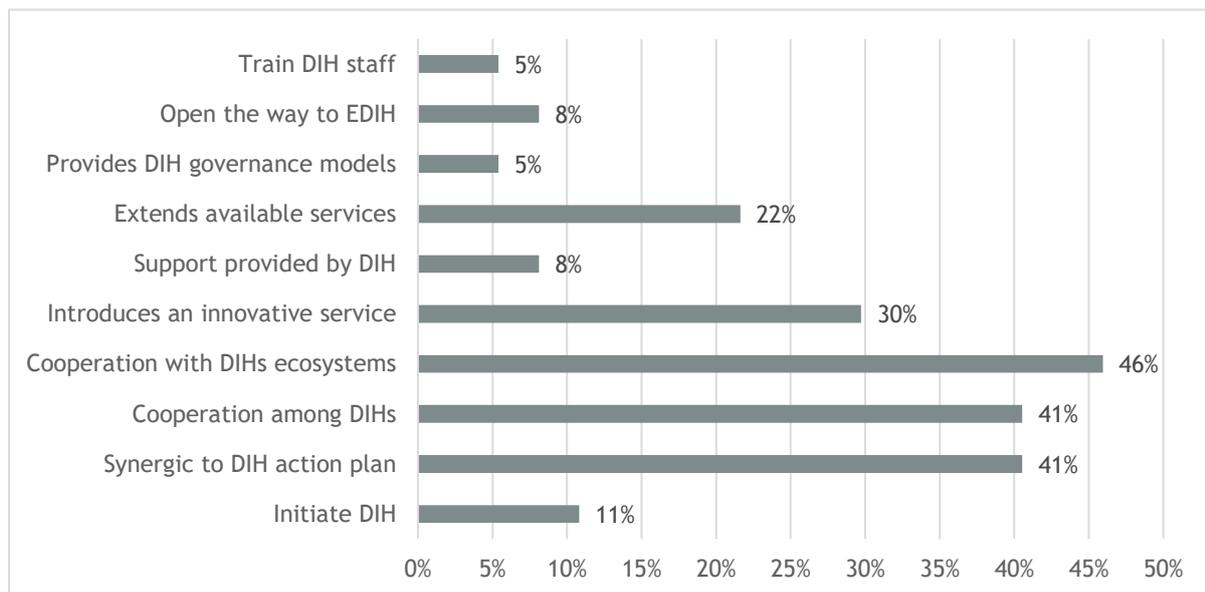


Figure 42 - Alignment with DIHs in Actions (Source: DT2.3.4 Support Action 2: CERIS3 Excellence Transfer & Cooperation Actions, S3HubsinCE, 07/2021)

Building on this classification, through the insights of the S3HubsinCE Stakeholder ecosystem, a number of new categories have been identified, which can be recommended as focus area for future actions that specifically build linkages between Digital Innovation Hubs:

- Raise awareness on DIHs services
- Develop DIHs portfolio
- Align and harmonize offers between DIHs
- Develop trainings infrastructure particularly towards DIHs’ staff and SMEs



- Ensure exchange of best practices and innovative models through different types of events: workshops, webinars, study visits, B2B meetings and open days to showcase results.
- Increase the readiness level to change on new technologies and digitalization especially for SMEs.

5.2.2.2.1. Navigation Crews Involvement in T&C Actions

As seen in the previous sections, Navigation Crews were involved in the development and delivery of all Actions. Innovation Networks are a critical component which can bind Digital Innovation Hubs together, and promote aligned service development that takes maximum advantage of regional smart specialisation. Here is a graph illustrating their connections to the T&C Actions developed.

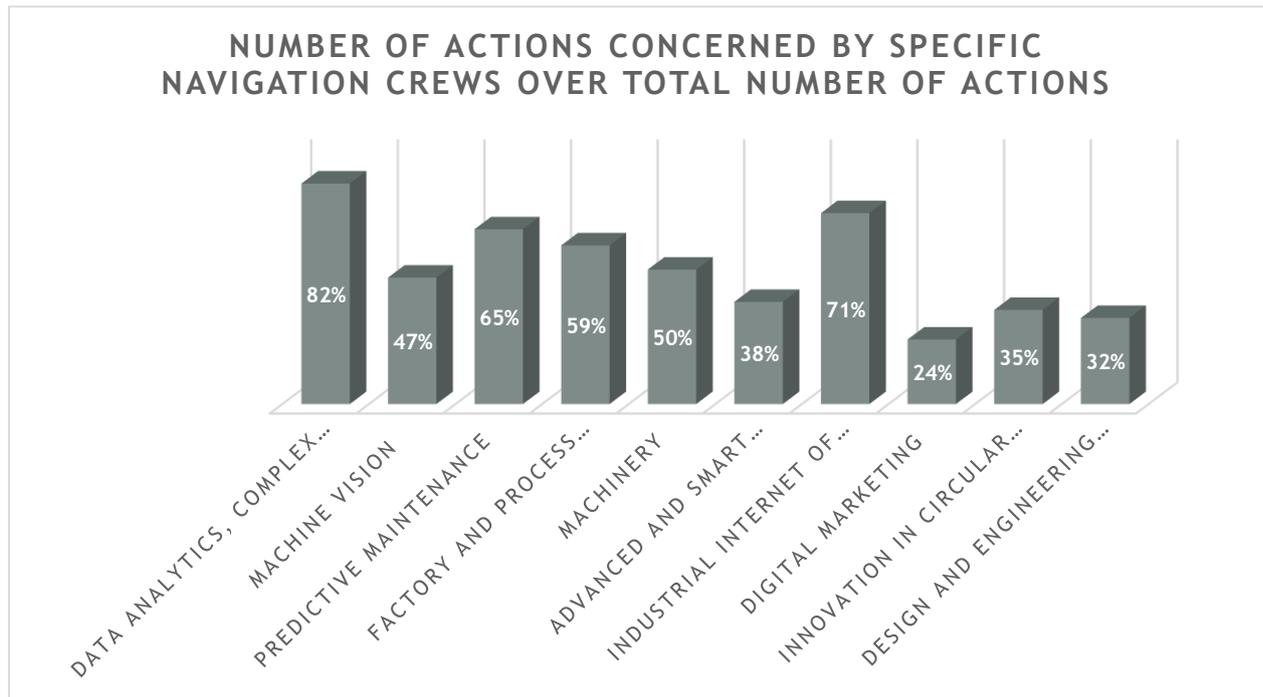


Figure 43 - Navigation Crews involvement (Source: Author generated, S3HubsinCE, 2021)

We can notice a great interest for Data Analytics and IIOT. These common interests could be therefore fostered by developing common Future Actions, which build on activating transnational knowledge exchange on the territorial smart specialisation associated to these topics.

At the same time, topics that were not fostered with lots of current T&C Actions could also be enhanced in following actions. The lack of interest could be explained by a greater interest in other topics or a lack of knowledge and capacities in these topics. Therefore, projects around these topics such as Digital Marketing or Design & Engineering could be fostered to develop understanding and build capabilities to transfer knowledge.

5.2.2.2.2. Other types of objectives addressed by T&C Actions

This section provides other types of objectives that have been addressed through the implementation of the T&C Actions. It is therefore very important to take these three following points into account while defining future actions. Therefore, to create valuable future actions, it is indeed crucial to:



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- Define clear decision-making processes, planning and monitoring tools before implementing a project
- Understand how to write a proposal and what the critical criteria to foster approval
- Harmonize the ecosystem regarding services and initiatives through exchanges of good practices and individual experiences



5.2.3. How do they Need to Work Together

This section builds upon the T&M and T&C Actions that have been implemented to define the best practices to work together. Thus, this section reflects on the key lessons learned regarding the organization and the efficiency of the Actions implemented and provide insights on how all parties included in the Central Europe Region (which were or were not included in the project S3HubsinCE) should take part in future actions. This section provides insights on how to facilitate cooperation through building trust and common understanding on specialized topics such as Digital transformation. Finally, this section highlights again the relevancy of including all types of stakeholders in future actions by providing targeted advice.

First, Research & Innovation Smart Specialisation Strategies need to be discussed in terms of the market's needs and interests. Operating at the cross-road of where R&I strategic needs meets with R&I market needs is a challenge, and therefore it is crucial that Partners plan follow-up actions which enhance cooperation and make sustainable links between strategy and market need.

Including all types of stakeholders in future actions should then enable policymakers to be aware of market needs while defining their strategies and especially their RIS3. They should be very adaptable to constantly fit with market needs. Therefore, including Policymaker's stakeholders inside the discussions should help them define their strategies and future programs according to the needs of other stakeholders and especially according to business needs. Also, cooperation with Policy-Influencing stakeholders should enable all types of stakeholders and especially SMEs to be aware of funding opportunities. Therefore, fostering discussion between all types of stakeholders should enable not only to create new initiatives together but also to raise awareness on what are the funding available, which service providers exist and what are their offers. Thus, a better understanding of the full ecosystem should enable all the parties to be more efficient and to create relevant future actions that respond to a real need.

In this objective, regular discussion at regional and transnational level, facilitated by connected networks of Digital Innovation Hubs, should be implemented to facilitate the identification of potential cooperation between stakeholders and create a harmonized ecosystem.

Finally, working around Digital Innovation Hubs is very crucial to create a neutral space where all parties can exchange and foster a common understanding on digital matter. DIHs should therefore not only develop facilities to help SMEs engaging with their Digital Transformation but also create a safe space where all type of stakeholders can join and share their ideas, needs and interests.

To conclude, these recommendations must be rooted in work plans that persist beyond a single project. It is recommended that the linked Digital Innovation Hubs, build a vision and strategy with their key stakeholders.



6. Conclusions & Next Steps

6.1. Conclusion

The main objective of the Policy and Technology Blueprint for CERIS3 Excellence has been to gather, analyse and showcase all the results and feedback from the partners and their key project stakeholders regarding the implementation of the Central European RIS3 Digital Innovation Hub pilot programme, after the implementation of 10 Mobility Actions and 34 T&C Actions.

The Blueprint has contained evidence-based recommendations and insights on how to enhance the Digital Innovation Hubs network towards excellent operation which can promote market and strategic-oriented development, delivering close-to-market and Research & Innovation Smart Specialisation Strategy benefits.

The following figure showcases the different points to develop future cooperation. First, it is crucial to define the different parties during the definition part of a project. Then, every lead partner of a new action needs to ensure that they partner with the right stakeholders and make sure they have as the right number of type of stakeholders and from different countries while defining the project. Indeed, this report highlighted the importance to broaden the network and create synergies between different types of stakeholders.

Second, some topics have been raised to be fostered in future Actions. Future Actions following the INTERREG CE project S3HubsinCE need to promote targeted Thematic cooperation based on Needs such as Actions promoting RIS3 Definition and Implementation (Support the creation of corridors of specialization through EDIH, increase cooperation between all types of stakeholders to align RIS3 on Market needs and provide ideas for RIS3 governance models, raise awareness on funding opportunities...). These Future Actions can also foster the alignment between Digital Innovation Hubs through the implementation of trainings, through exchanges between DIHs with their ecosystem and through the implementation of new DIHs providing new services and covering not answered needs. Finally, further actions can foster the cooperation built inside the Navigation Crews created during this project S3HubsinCE. A special interest on Data Analytics and Industrial Internet of Things has been identified.

Third, it is important to define how to make the cooperation work. It is crucial to use Best Practices that have been identified during the implementation of all the T&M and T&C Actions. It is key to build upon these Actions while defining future cooperation. For instance, to facilitate cooperation, it has been demonstrated that regular meetings between all types of stakeholders on regional and international represent a critical success factor. To ensure the efficiency of future cooperation, these regular exchanges should ensure the harmonization of the ecosystem and avoid an overlapping between Future actions. Finally, DIH should have the role of fostering the cooperation between all types of stakeholders and to raise awareness of what are the available services and offers on the market. Therefore, DIH should also try to fill in these gaps in service offers by fostering the development of facilities and offers.



Final Recommendations for Future Actions

S3HubsinCE has shown that stakeholders can work together to demonstrate RIS3 implementation at the local, regional and national level, and in doing so, bring innovation closer to the market.

The specific actions are not homogenous, but share common strategic elements which give hints for the functional approach to future actions...

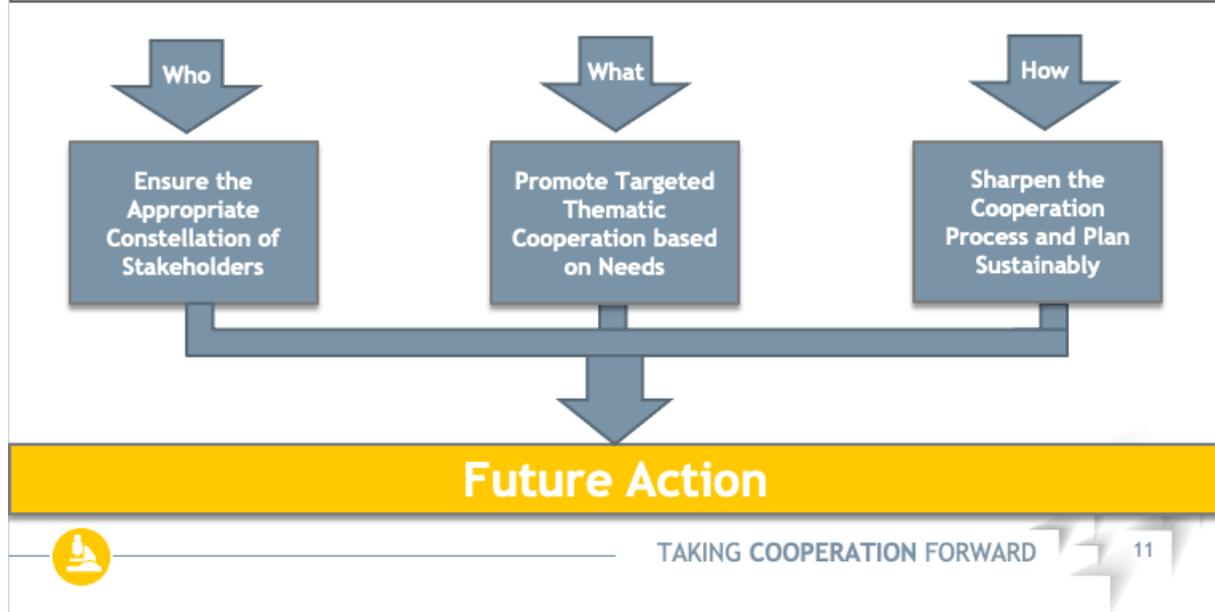


Figure 44 - Final Recommendations to foster Future Actions (Source: Author generated, S3HubsinCE, 2021)

Globally, partners and stakeholders involved in the actions agree on the need to foster and provide a following plan to these actions. Moreover, they highlighted the need to involve all type of stakeholders to enhance digital transformation. For instance, most of the stakeholders expressed their willingness to foster a common understanding of the full ecosystem in Central Europe. One option proposed to enhance this was to create specialized service corridors and clear service portfolios coordinated by DIHs based on Navigation Crews that were specially created and fostered in the project S3HubsinCE.

To conclude, partners and all stakeholders in Central Europe have to enhance exchanges to have a better understanding of the needs and interests of the geographical area and therefore develop the appropriate services and support. The future actions should therefore not only be built upon previous T&M and T&C Actions but also on the specific needs identified in Central Europe.

6.2. Next Steps

If you are interested to learn more about one of the actions mentioned in the Blueprint, we would recommend you contact the partner in charge of the development of the action. To contact the right partner, please refer to the summary table presented in the Introduction of this document.

Further, detailed information all the actions completed as part of the Pilot Programme can be found in the Project deliverables, DT2.3.3 and DT2.3.4. These documents will provide support information, so you can get involved in the right action regarding your needs and interests.



All Partner contact details can be found on the project website: <https://www.interreg-central.eu/Content.Node/S3HubsinCE.html>



7. Abbreviations

Abbreviation	Explanation
PP	Project Partner
IC	Impact Controlling
S3	Smart Specialisation Strategy
AF	Application Form
DIH	Digital Innovation Hubs
JRC	Joint Research Centre
CERIS3	Central Europe Research & Innovation Smart Specialisation Strategy
DEP	Digital Europe Programme
T&M	Training & Mobility (Actions)
T&C	Transfer & Cooperation (Actions)
TBD	To Be Determined
FLAP	Future Considerations - Lessons Learned - Accomplishment - Problem Areas
4L	Liked - Learned - Lacked - Longed-For



8. Appendix

Each Partners had to complete at least:

- 3 Templates for the Transfer & Cooperation Actions
- 1 Template for the Training & Mobility Actions

This report provides an analysis of what was pulled out in these templates according to Actions implemented.

Administrative Information	
Partner	Choose an item.
Action Type	Choose an item.
Action's Short Name <i>(Provide the short identification Name of the Action)</i>	
Action Short Description <i>(Describe the Action in max. 500 characters)</i>	
Action's Financial Value <i>(Provide a value, in EUR terms, generated by the action. Only mandatory for T&C actions)</i>	
Action's Date of Implementation <i>(Provide a fixed date, which represents the implementation date connected to the documentation used to evidence completion. For ex: application submission date, or contract signature date)</i>	
Connected Navigation Crew	<p>Choose as many which will apply</p> <ul style="list-style-type: none"> <input type="checkbox"/> Data Analytics, Complex Simulation and Modelling <input type="checkbox"/> Machine Vision <input type="checkbox"/> Predictive Maintenance <input type="checkbox"/> Factory & Process Automation <input type="checkbox"/> DI&I: Machinery <input type="checkbox"/> Advanced & Smart Materials <input type="checkbox"/> Industrial IoT <input type="checkbox"/> Digital Marketing



	<input type="checkbox"/> Innovation in a Circular Economy <input type="checkbox"/> Design & Engineering for Additive Manufacturing
Connected DIH Network <i>(Provide the short name of your DIH Network which assisted with the implementation of the action)</i>	
Strategy & Action Plan Reflections <i>This section's goal is to ask PPs to reflect on their ability to meet the strategic interests of their policy makers, their DIH network and most importantly their critical RIS3 organizations.</i>	
What RIS3 critical organisation need was addressed with the implemented action? <i>(Link your answer to the interviews you conducted in WPT1, maximum 1000 characters)</i>	
What was the name or names of the RIS3 critical organisations who gained value-added benefits from the implemented action? <i>(Link your answer to the interviews you conducted in WPT1 and the organisations chosen for WPT3 Deliverable "RIS3 Champions", maximum 500 characters)</i>	
What policy need was addressed with the implemented action? <i>(Link your answer to the interviews you conducted in WPT1, maximum 1000 characters)</i>	
What Navigation Crew objective was addressed through the implemented action? <i>(Link your answer back to the specific objective of the navigation crew, maximum 500 characters)</i>	
How was the Navigation Crew involved in action? What connections were established to deliver this action?	



<p><i>(Provide a short summary of the role that other S3HubsinCE partners played in delivering the action)</i></p>	
<p>What DIH Network objective was achieved through the implementation of your action?</p> <p><i>(Link your answer back to the purpose of your DIH Pilot Action, maximum 500 characters)</i></p>	
<p>How was the DIH network involved in the action? What connections were established to deliver this action?</p> <p><i>(Provide a short summary of the role that your DIH network played in delivering the action, maximum 500 characters)</i></p>	
<p>360 ° Stakeholder Reflections</p> <p><i>This section's goal is to ask PPs to summarize and reflect on the "reflections" and thoughts of other stakeholders involved in the action's delivery. Including those which helped facilitate and received benefit from the action.</i></p>	
<p>What were the greatest successes of the action?</p> <p>What did you and your stakeholders like about this action?</p> <p><i>(Provide a summary of stakeholder input from the reflection workshop you completed, maximum 2000 characters).</i></p>	
<p>What was the greatest problem with the action?</p> <p>What did you and your stakeholder lack when implementing this action?</p> <p><i>(Provide a summary of stakeholder input from the reflection workshop you completed, maximum 2000 characters).</i></p>	



What were the top five lessons learnt during the implementation of this action on your behalf and on behalf of your stakeholder network involved in this action delivery?

(Provide a summary of stakeholder input from the reflection workshop you completed, maximum 2000 characters).

Recommendation, Future Considerations and Action Summary

This section's goal is to ask PPs to summarize the recommendations and future considerations which were raised by your own PP organization, but also by other external stakeholders, with regard to the action you implemented.

Key Recommendations from DIH Network on how to build upon this action, for the future?

(Provide a summary of stakeholder input from the reflection workshop you completed, maximum 2000 characters).

Key Recommendations from Policy-Influencing Stakeholders on how to build upon this action, for the future?

(should be Part of your DIH network, but break out any specific programme-oriented recommendations, maximum 2000 characters)

Key Recommendations from RIS3 Champions on how to build upon this action, for the future?

(Provide a summary of stakeholder input from the reflection workshop you completed, maximum 2000 characters).

Key Recommendations from Navigation Crew on how to build upon this action, for the future?



<p><i>(Provide a summary of stakeholder input from the reflection workshop you completed, maximum 2000 characters).</i></p>		
<p>Key Final Recommendation regarding your Action/ CERIS3 Excellence Model from your own organisation/PP point of view</p> <p><i>(Provide a quote or summary of a comment which summarizes your view on future considerations which are needed to create a Constellation of CERIS3 Excellence, maximum 2000 Characters)</i></p>		
<p>Future Action Summary (1)</p> <p><i>Regionally-oriented next step</i></p>	<p><i>Action Owner (Org Name)</i></p>	
	<p><i>Action Name (Follow-Up Action/Project or Connected Project Which Delivers Concept Sustainability)</i></p>	
	<p><i>Action Summary (Remember the S-M-A-R-T Target Discussion from the Reflection Workshop)</i></p>	
	<p><i>Action's explicit connection to the new Programming Period of your Region/Country</i></p>	
	<p><i>Action Timeline</i></p>	
<p>Future Action Summary (2)</p> <p><i>Transnationally-oriented next step, connected to DEP, Horizon Europe, etc.</i></p>	<p><i>Action Owner (Org Name)</i></p>	
	<p><i>Action Name (Follow-Up Action/Project or Connected Project Which Delivers Concept Sustainability)</i></p>	
	<p><i>Action's explicit connection to the new Programming Period of EU or Territorial Area of Central Europe.</i></p>	



	<p><i>Action Summary (Remember the S-M-A-R-T Target Discussion from the Reflection Workshop)</i></p>	
	<p><i>Action Timeline</i></p>	
<p>Template End</p>		