F3 FOR CERIS3 EXCELLENCE LEARNING & RESILIENCE PLANNING

D.T3.2.3 Learning & Resilience Planning for A.T3.2

Version 02.00.00

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Document Control

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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 and to 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

The document represents an analysis of the 10 NCs Learning & Resilience Planning Templates *(10 Resilience Plans in total)* and summarizes contribution and completion of the Navigation Crews partners` discussions on joint work as well as the outcomes of the pilot actions.

The report includes NCs' feedbacks, lessons learned, real and potential threats of their future work as well as their vision of promotion, service portfolio and sustainability of their network with priority given to cooperation with their respective DIHs.

The contribution and completion were made based on partners` attendance at the Navigation Crews meetings, their provided templates on Resilience Planning and are also connected with learnings from previously held F3 Forums in order to ensure sustainability and future connectivity between NCs and their members.

1.3. Audience

This document is directed towards project partners, Navigation Crews` members and their respective DIHs network on how to continue to work jointly, continuously upgrade and promote efficiently connected network of Digital Innovation Hubs and their services. In addition, it will serve as a foundation for further cooperation, optimization and adjustment of their service portfolio according to market needs in a transnational context and in favour of promotion of regional competitiveness in the Central Europe.

1.4. Change Control Procedure & Structure

The Deliverable Responsible, HGK Varaždin (PP10) 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 draft document circulation).

As per normal procedure, at any time partners believe a deliverable should change, the request should be brought to the deliverable leader (HGK Varaždin) and to the Work Package Deliverable Responsible (TECOS), to consolidate feedback from other partners, integrate and disseminate the final agreed changes.

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CONTENT

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2. Introduction

The main objective of this document is to gather and analyse all the results and feedback collected from the Navigation Crews templates for reporting deliverables 3.2.3. Learning and Resilience Planning template. Navigation Crews members needed to complete one form per organisation involved in Navigation Crew. Each NC Lead summarized templates and added own content in the final version of the Resilience plan of each Navigation Crew.

HGK Varaždin (PP10) as a delivery responsible partner, used the methodology document D.T.3.2.1 Handbook on the Foundation for Future Foresight for CERIS3 Excellence to incorporate feedback from NCs and to consolidated 10 NCs Resilience plans into the final report.

This output is delivered in from of the activity A.T3.2 and is aimed at delivering concept on how to promote adaptive capacity and generate resilience system embedded within the DIH network in Central Europe.

2.1. Background

S3HubsinCE is a project where models of digital innovation hubs network and created linkages among them make a transnational supporting structure to promote value creation in Central Europe and test common model 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 tested this model and disseminated the results to strategy-responsible institutions who will benefit from this evidence to support the development of 2021 to 2027 subsidy programmes. Finally, the Work Package 3 has a dissemination focus with the specific objective of unleashing the potential of RIS3 Excellence to create future-oriented policy learning with close-to-market activities.

2.2. Foundation for Future Foresight (F3)

The Foundation for Future Foresight (F3) is the name of the network which consists of the connected network of **Digital Innovation Hubs**, the **Navigation Crews** and the **RIS3 Champions**. The Foundation for Future Foresight is a concept which is rooted in the construction of a network-oriented think tank which looks to promote discussions on methods to support RIS3 critical organisations using the developing DIH network in Central Europe.

The Foundation for Future Foresight (F3) is essentially the “branded name” for the network structure which considers the interconnections built from Navigation Crew oriented and DIH facilitated cooperation.

2.3. Purpose of the document

The purpose of this document is to create F3 for Learning and Resilience planning as recommendations on how to embed NCs service delivery through upgraded forum network learnings into the ongoing structure of regional DIHs. This document aims to:

- analyse how effective each Navigation Crew was at achieving its service objectives

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- determine what a common service portfolio could look like, which capture the most key successes and how those could be delivered on an ongoing basis
- show how the Navigation Crews will deliver the successful services in a sustainable way and who will the Navigation Crew empower to adopt this key work.

2.4. Key concept and definitions

The F3 network is a structure that arises from outputs of three distinct parts and which should be built to persist long after the completion of the project.

1. Identification of the CERIS3 Champions and the creation of the Constellation of CERIS3 Excellence and the RIS3 Champion Network Atlas (A.T3.1)
2. Planning and delivery of the Foundation for Future Foresight Forums (D.T3.2.2), which extend the regional dialogue that began with the DIH Inauguration Event and the formalization of relationships with in-region stakeholders on the purpose and intent of S3HubsinCE.
3. The 10 Resilience Plans from the CERIS3 Navigation Crews (D.T3.2.3), which create a series of recommendations on how to embed learnings from the Foundation for Future Foresight Forums as well as the needs of the CERIS3 Champions into the ongoing structure of support provided by regional Digital Innovation Hubs.

The Activity A.T.2.3., as shown in the process diagram bellow, consists of two separate lines which should be followed by each PP, where they should deliver inputs regarding F3 Forums and Resilience Planning. These inputs were used to complete the final report (D.T.3.2.3).

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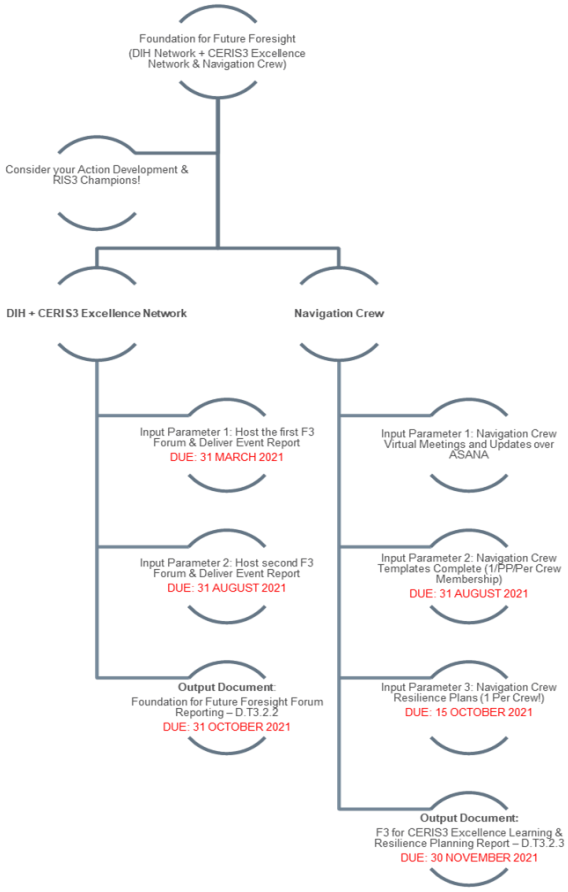

3. Methodology

3.1. Navigation Crew Meetings

The Navigation Crew meetings have been a consistent project innovation network mechanism across S3HubsinCE.

Continuing from previous WPs, the Navigation Crew meetings connected organisations transnationally, promoted discussion leveraging strengths and capabilities and optimised services of Transfer & Cooperation Actions.

The F3 network continued to be a unit around which collaboration, transfer and cooperation delivered a service-oriented model of support and met the needs of key stakeholders to the territorial area implementation of S3/RIS3 in Central Europe.

By WPT3 the Navigation Crews had begun their reflection process on how they would exist in the years following the closure of the project and maintain sustainable. Discussions were broadly focused on the function of how and in what form should the innovation network persist. The answers to the questions laid out in the Annex 1 section are the focus of the template which each Navigation Crew delivered.

The Navigation Crews' members were recommended to use similar techniques to those developing in the reflections workshop and to deliver an engaging and future-oriented discussion. Each Navigation Crew held at least two meetings to discuss the key questions, taking into accounts their commitments and to bring in views to a common learning and resilience plan.

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Key questions of discussion:

- **Mission, Vision & Objectives achievement**
- **Service-delivery and Service Portfolio Analysis**
- **Sustainability Analysis (organisation's role in the lasting innovation network structure)**

The Navigation Crews' partnership met virtually 2-3 times to work through the Learning & Resilience questions together. NCs' members updated their ASANA space during the time between meetings to ensure clear & transparent communication while individual members needed to reflect on how to deliver the key services in a sustainable way.

Navigation Crews' members contributed to the Learning & Resilience Plan by filling a template (Annex 1) and giving a different approach to the questions.

The Lead of the Navigation Crew summarized the contributions from members into a single Learning and Resilience Planning Template.

Across all items, NCs' members are asked to ensure they plan effectively, to attend all meetings (virtually/online sessions) and to provide their feedback on time.

NCs' partnership planned engagement activities using recommended reflection workshops' structure, especially the second one which followed the first draft version of the NC' Resilience plan, where members needed to reflect on how to deliver key services in a sustainable way. Rough recommended structure:

(1) **Set the stage** - introduce the purpose of the workshop

(2) **Gather & Analyse Data** - introduce data gathering method and allow questions on the method

(3) **Generate Insights** - review the gathered inputs, generate themes, ask clarifying questions

(4) **Decide What to Do** – brainstorm solutions to the biggest "issue areas", what issues still exist and how can you overcome them

(5) **Close the Session -** determine next steps, communication methods and responsibilities for action

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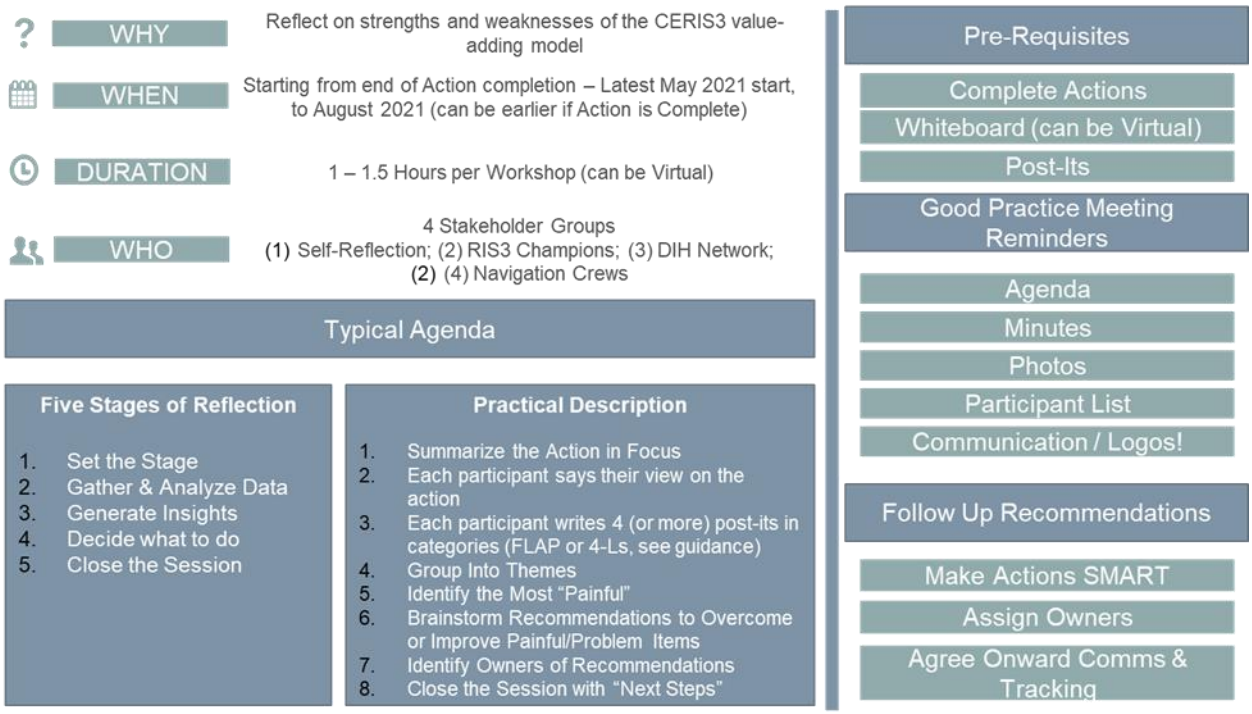

3.2. Reporting contribution

Navigation Crews' partnership completed reporting templates which summarized the information gathered from workshops and ultimately generates the inputs to the final report. The template can be found in the Appendix 1 of this document. The template is broken into four parts:

- **Administrative information** about NC' Leader and NC' members
- **Mission, Vision & Objectives achievement**

  In this part, NCs partnerships gave reflection on the commitments that the Navigation Crew made in D.T1.1.3 and D.T2.1.2. The NC partnership is asked about achieved progress or contribution of mission / vision / objectives and whether they have to be modified.

- **Service-Delivery and Service Portfolio Analysis**

  This section identified the most effective service-areas which can be fostered at a transnational level associated to each thematic focus area and service supports that did not work. NCs partnership nominated three must-have services for thematic area for development of transnationally coordinated RIS3 supported service portfolio and were also asked for the way of adaptation of the NCs concept/focus in order to optimize RIS3 value-added service delivery.

- **Sustainability Analysis (organisation's role in the lasting innovation network structure)**

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This section gave inputs on how to deliver the key & most successful features of the Navigation Crew's service delivery in an ongoing way and whom have NCs' members empowered to adopt key work.

3.3. Timeline

Action Step	Due Date	Responsible PP
Submit Guidance, Draft	20 January 2021	TECOS
Provide Feedback on Guidance	26 January 2021	All PPs
Revise Guidance, and Issue Final	2 February 2021	TECOS
Navigation Crew Leaders Plan Calendar of Virtual Meetings	By 28 February 2021	TECOS IWU IMECH CUAS FB
NEXT Navigation Crew Meetings Occur	By 30 April 2021	ALL PPs
ASANA Updates in Between Meetings & Presentations at Jour-Fixes	Ongoing	ALL PPs
Input TEMPLATE to the Learning and Resilience Planning Document Occur	By 31 August 2021	ALL PPs
FINAL Navigation Crew Meetings Occur to Discuss Results	By 30 September 2021	Led by NC Lead, ALL PPs
Navigation Crew Leaders Finalise Learning and Resilience Plans	By 15 October 2021	TECOS IWU IMECH CUAS FB
Review Reporting & Provide Quality Control Feedback	By 31 October 2021	HGK VZ
Incorporate Feedback from PPs & Issue Final Version	By 30 November 2021	HGK VZ

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Indeed, the Navigation Crews Leaders set meetings' agenda during February 2021 and all NCs held their first meetings to discuss the key reflection questions in the templates in period from April to June 2021. Due to slight delay, the process was mitigated in coordination with WP leader and PPs during regular partners meetings (JFs).

The Crews' members completed the template draft by September 2021 and enabled members' contribution to NCs Resilience plans through ASANA space. Each NCs partnership organised at least two meeting to discuss inputs. After submission of final Navigation Crew plan in November 2021, the deliverable Lead (PP10) created the Final Report presenting the 10 Plans with all final comments incorporated in January 2022.

3.4. Creation of Learning and Resilience Plan

The F3 for CERIS3 Excellence Learning and Resilience planning was made based on information collected from 10 Navigation Crews templates. All the information was gathered in one document to be able to compare answers and analyse the text using codification.

Firstly, in the section 4. Results, answers of each Navigation Crew are presented, the section 6. Discussion gives an overview taking into account the whole F3 network, while the section 7. gives conclusion and review on how to maintain the sustainability and enhance resilience of the F3 network.

3.5. Navigation Crews and their members

The list of the Navigation Crews and their members can be found in the Appendix 1 and in section 4. Results.

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4. Results

This section provides an analysis of templates submitted by 10 Navigation Crews Leaders. Each Navigation Crew's Leader was asked to summarize all members contribution to final version which is submitted for the final NS's Learning and Resilience Plan.
The NCs gave overview of their progress in achieving mission, vision and objectives, evaluation of their accuracy and whether there was a need for an update.

Furthermore, the NCs analysed the details of services identified as the most effective service-areas and service supports that did not work. The NCs partnership nominated three must-have services for thematic area for development of transnationally coordinated RIS3 supported service portfolio and were also asked for the way of adaptation of the NCs concept/focus in order to optimize RIS3 value-added service delivery.
Finally, in the Sustainability Analysis part, the NCs gave inputs how to deliver the key & most successful features of the Navigation Crew's service delivery in an ongoing way and whom have NCs' members empowered to adopt key work.

4. 1. RESILIENCE PLAN OF NAVIGATION CREW DATA ANALYTICS, COMPLEX SIMULATION AND MODELLING LEAD: IMECH (PP 5)

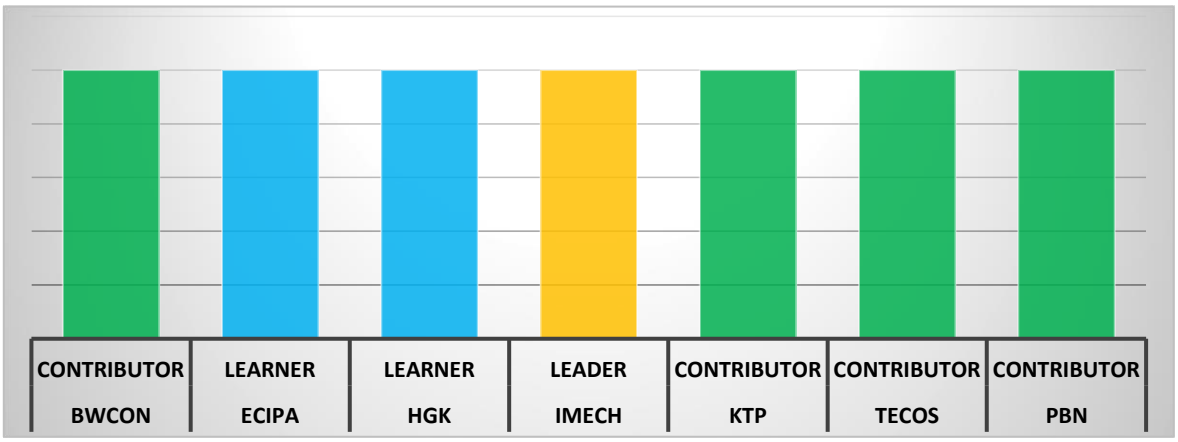

Figure 1 – Members of the Navigation Crew Data Analytics, Complex Simulation and Modelling

4.1.1. MISSION, VISION and OBJECTIVES

- **EVALUATION OF THE NAVIGATION CREW`S MISSION**

Mission

The Navigation Crew`s mission is to facilitate sharing of the current state-of-the-art of the technology domains with SMEs and accelerate their common understanding via "demonstrators", provided by relevant regional players *(DIHs, Research Centres, LABs, Technology Providers & industry players)*.

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Contribution / Progress

The Crew agrees that the creation of innovative technological solutions requires the use of advanced methods and tools needed to support their entire life cycle. In this context, the techniques and tools of modelling and simulation are of fundamental importance as they allow to create virtual representations of the physical systems and to be able to exploit them to simulate the behaviour of the system in the face of specific conditions of use. The actions, with the heterogeneous approach of each member, have been put in place to understand how these topics affect SMEs' tomorrow's business, to support DIHs in assisting SMEs in this awareness and possibly, in technology adoption process.

Validation of mission statement / Need for update

The Crew considers the mission valid for the thematic focus area with no need of changing it.

➢ EVALUATION OF THE NAVIGATION CREW`S VISION

Vision

The Crew aimed at becoming a "*reference site*" for DIHs with focus on data analytics, complex simulation and modelling.

Contribution / Progress

The Crew aims at being able to identify, connect and involve experts and knowledge assets within Central Europe and facilitate experts` cooperation with DIHs.

Validation of vision statement / Need for update

The Crew assesses the vision valid for the thematic focus area with no need of changing it.

➢ EVALUATION OF THE NAVIGATION CREW`S OBJECTIVES / GOALS

Objectives / Goals

The Navigation Crew has identified 3 main goals to be achieved during the project which comprehend establishing of a transnational network/support system of companies and experts in the field, enhancing the knowledge on data analytics and modelling in the project region and raising awareness about the topic and the application possibilities.

Contribution / Progress

All three goals have been achieved even though they are at a different maturity level. Specifically, the transnational network which is at informal level, is a part of the resilience plan of the NC, study visits and online workshops have contributed to knowledge exchange together with the analysis of service portfolio and raise awareness which has been done under the T3.

Validation of objectives and goals / Need for update

The Crew considers the set goals still valid for the TPA with no need of changing them.

4.1.2. SERVICE DELIVERY AND PORTFOLIO ANALYSIS

➢ THE MOST EFFECTIVE SUPPORT-SERVICES PROVIDED BY NC

The NC Data Analytics, Complex Simulation and Modelling considers the online thematic webinars, access and support to cascade funding schemes to be the most effective services offered.

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➢ SERVICE-SUPPORT THAT DID NOT WORK

The NC services such as direct support to enterprises did not work effectively mainly due to the pandemic situation. Considering that direct visits and on-site support to companies were not allowed, it has been quite complicated to attract interested stakeholders and arrange online sessions.

➢ THE GREATEST SERVICE SUCCESSES

Despite the somewhat difficult way of animating the companies, the NC assesses the thematic webinars as one of the greatest service successes.

➢ MUST-HAVE SERVICES FOR THEMATIC AREA

The Navigation Crew has been working on a common service portfolio where the methodology that has been adopted to create it stems out from the *AI Region* project which clusters support services around 5 domains:

1. Ecosystem Building
2. Technology provision
3. Business development
4. Maturity assessment & skills
5. Data and AI Value Chain

Based on these domains, the Navigation Crew has identified its roles & contributions within a long-term alliance.

➢ HOW TO ADAPT OR SHIFT THE CONCEPT / FOCUS OF THE NC TO OPTIMIZE RIS3 VALUE-ADDED SERVICE DELIVERY

The Navigation Crew finds the focus in line with the current RIS3 strategies which will probably still be in line with future reviews, therefore there is no need for shift or adaptation.

4.1.3. SUSTAINABILITY ANALYSIS

➢ ADAPTATION OF THE NAVIGATION CREW SERVICE PORTFOLIO

When it comes to adaptation of the Navigation Crew`s service portfolio, the Navigation crew has structured, according to their specific competences, shareable services around 5 main thematic domains: *Ecosystem Building, Technology provision, Business development, maturity assessment and skills, Data and AI value chain*. Within each domain, each member identified service domains where he can possibly contribute while 3 members *(IMECH; PBN; FB)* have explicitly declared to be able to have a proactive role *(fields marked in yellow)*.

The Navigation Crew
Data Analytics, Complex Simulation and Modelling

Adaptation of Service portfolio in
5 main thematic domains and their subdomains

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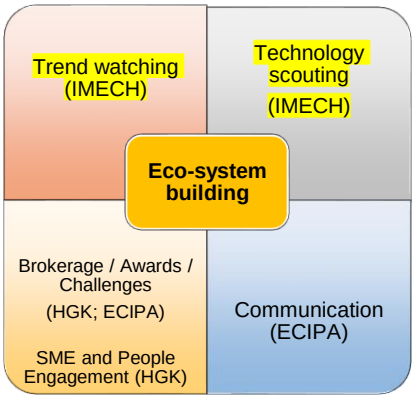

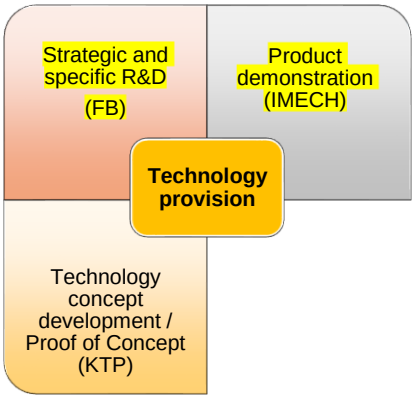

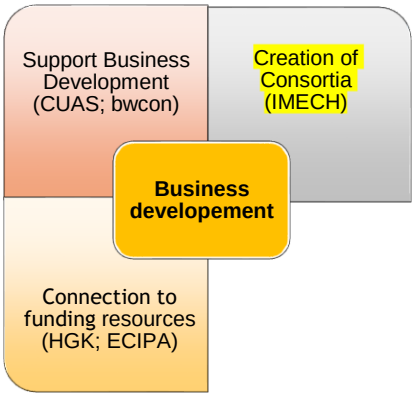

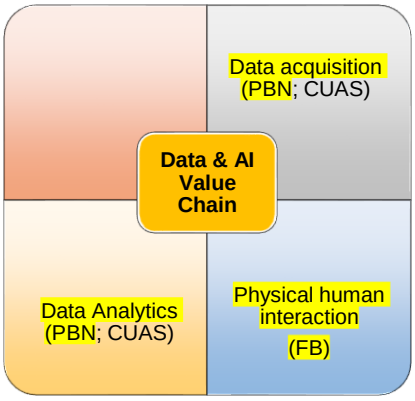

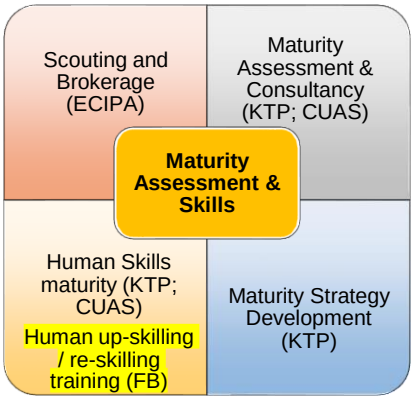

➢ ORGANISATIONS EMPOWERED TO ADOPT KEY WORK

Lead partner of the Navigation Crew Data Analytics, Complex Simulation and Modelling, IMECH – PP5, together with other two NC members PBN – PP9 and FB – PP2 will lead future initiatives of the NC. IMECH will be responsible for the class covering Ecosystem building with focus on the Trend watching, Technology scouting, Technology provision and Business development. The Trend watching involves monitoring the state of innovative technologies implementation, analysing literature and meeting technology providers. The Technology scouting is another field of IMECH responsibility which includes supporting stakeholders through business model development cycle using internal expertise or connection with external experts in the area of innovative mechatronics while the Technology provision deals with Product demonstration and supporting stakeholders in business model development cycle using internal or external expertise. Pre-competitive demonstrators are developed to allow a better understanding of the technology's potential. The sustainability of this service will

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be guaranteed through funded projects related to innovative technologies in the AI field and on the business basis where price is to be discussed based on the specific project.
Within the Business development area IMECH helps create a virtuous ecosystem for skills and best practices exchange acting as an intermediary of the network enabling linkages between specific expertise and technology providers. The sustainability of this service will be guaranteed by the creation of networks to identify new opportunities.
PBN coordinates Data and AI Value Chain area with focus on Data acquisition and Data analytics offering services of *am-LAB* with aim to increase the profitability and efficiency of businesses by analysing previously untapped but valuable data and enabling smaller businesses to profit from data analytics. The sustainability will be assured in frame of further projects *(e.g: pilot action on data analysis)* or on business basis which price is to be discussed depending of amount of data, deadline, complexity, etc.
FB is a NC member who coordinates Technology provision area with focus on Strategic and specific R&D by supporting the transfer of innovative ideas into demonstrational concepts. New products/services or improvement of existing ones will be developed through cooperation with the University of Applied Sciences Burgenland and regional stakeholders as for example the Chamber of Commerce or Wirtschaftsagentur Burgenland, a regional agency for economy and regional companies. One main field of interest is the automated measurement, online storage and accessibility of regional data for different business branches. The sustainability of this service will be guaranteed by funded project related to innovative technologies in the data analytics field or on business basis which price is to be discussed based on the specific project. The area of Maturity assessment & Skills focus on Human up-skilling, re-skilling training through the strong cooperation with the University of Applied Sciences Burgenland and Akademie Burgenland. Development of joint training programs, specific training programs for companies, training bootcamps, workshops, infrastructure days, access to laboratories for stakeholders like students, companies, etc. are among the services offered by FB. The sustainability of this services will be achieved by cooperation partners and partly by participation fees. The price is determined based on the type and duration of the training. The area of Data and AI Value Chain focuses on Physical human interaction and will also be coordinated by FB due to existing Informatikum infrastructure building which offers different target groups *(students, companies, project partners*) the opportunity to test different technologies in the course of projects or direct research contracts. The sustainability of this service will be guaranteed by ERDF for the next three years *(Digital Security Living Lab - DSL2),* through projects related to innovative technologies in the field of data sciences and on business basis which price is to be discussed based on the specific project.

➢ REASONS OF NOT PURSUING SUCCESS OF THE NAVIGATION CREW

The Navigation Crew did not consider this question as relevant.

➢ Other comments

The Navigation Crew does not have any further comments.

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4.2. RESILIENCE PLAN OF NAVIGATION CREW - PREDICTIVE MAINTENANCE
LEAD: IMECH (PP5)

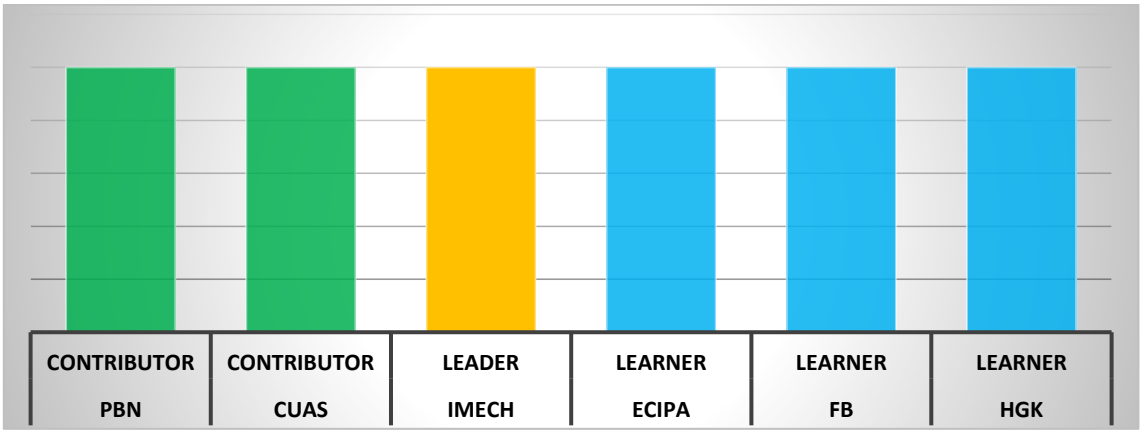

Figure 2 – Members of the Navigation Crew Predictive Maintenance

4.2.1. MISSION, VISION AND OBJECTIVES

➢ EVALUATION OF THE NAVIGATION CREW MISSION

Mission

The Navigation Crew's mission was acknowledged and identified in facilitating the sharing of the current state-of-the-art of the technology domains with SMEs and accelerating their common understanding via "demonstrators" provided by relevant regional players *(DIHs, Research Centres, LABs, Technology Providers & industry players)*.

Contribution / Progress

Artificial Intelligence is a strategic topic in all involved regions of the project. Specifically, the Predictive Maintenance (PM) is one of the most interesting AI technologies for the industrial context. SMEs face all the same challenges: *lack of knowledge, limited practical approaches in transferring know-how, demonstrators, use cases*. The Crew was initiated to better understand how these topics will affect SMEs' tomorrow' business, to support DIHs in assisting SMEs trying to raise awareness and to possibly support SMEs technology adoption process.

Validation of mission statement / Need for update:

The NC considers the mission as being accomplished with no need to change it.

➢ EVALUATION OF THE NAVIGATION CREW VISION

Vision

The Navigation Crew has been working to become a "reference site" for DIHs with focus on Predictive Maintenance.

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Contribution / Progress

The Navigation Crew is already able to identify, connect and involve experts and knowledge assets in Central Europe and facilitate cooperation among experts and DIHs.

Validation of vision statement / Need for update

The Navigation Crew considers vision to still be appropriate.

➢ EVALUATION OF THE NAVIGATION CREW OBJECTIVES / GOALS

The Navigation Crew initially identified 4 major achievements:

1. Setting up a robust European network of experts and SMEs with already reached good stage in progress
2. Achieving a comprehensive understanding of SME's needs in the field of Predictive Maintenance was successful so far thanks to the webinars and individual meetings with experts
3. Acting as a known observatory of existing demonstrators in the field of Predictive Maintenance where all relevant initiatives at EU level have been mapped and knowledge shared among crew members
4. Establishing a formal cooperation between DIHs and EU initiatives in the field of Predictive Maintenance. The work is still in progress.

4.2.2. SERVICE DELIVERY AND PORTFOLIO ANALYSIS

➢ THE MOST EFFECTIVE SUPPORT-SERVICES PROVIDED BY THE NC

The most effective services provided by Navigation Crew Predictive Maintenance consisted in online thematic webinars, access and support to cascade funding schemes.

➢ SERVICE-SUPPORT THAT DID NOT WORK

As for the services that did not work, the NC members highlights a direct support to enterprises which partly failed due to the pandemic situation which also made difficult to attract interested stakeholders and arrange with them online sessions.

➢ THE GREATEST SERVICE SUCCESSES

The Navigation Crew assesses the thematic webinars as one of the greatest service successes.

➢ MUST-HAVE SERVICES FOR THEMATIC AREA

The Navigation Crew has been working on a common service portfolio where the methodology, that has been adopted to create it, stems out from the *AI Region* project which clusters support services around 5 domains:

1. Ecosystem Building
2. Technology provision
3. Business development
4. Maturity assessment & skills
5. Data and AI Value Chain

Based on these domains, the NC has identified its roles & contributions within a long-term alliance.

➢ HOW TO ADAPT OR SHIFT THE CONCEPT / FOCUS OF THE NC TO OPTIMIZE RIS3 VALUE-ADDED SERVICE DELIVERY

Since the focus of the thematic area is in line with the current RIS3 strategies and will probably still be in line with future reviews, the NC considers that no shift or adaptation of the focus is needed.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

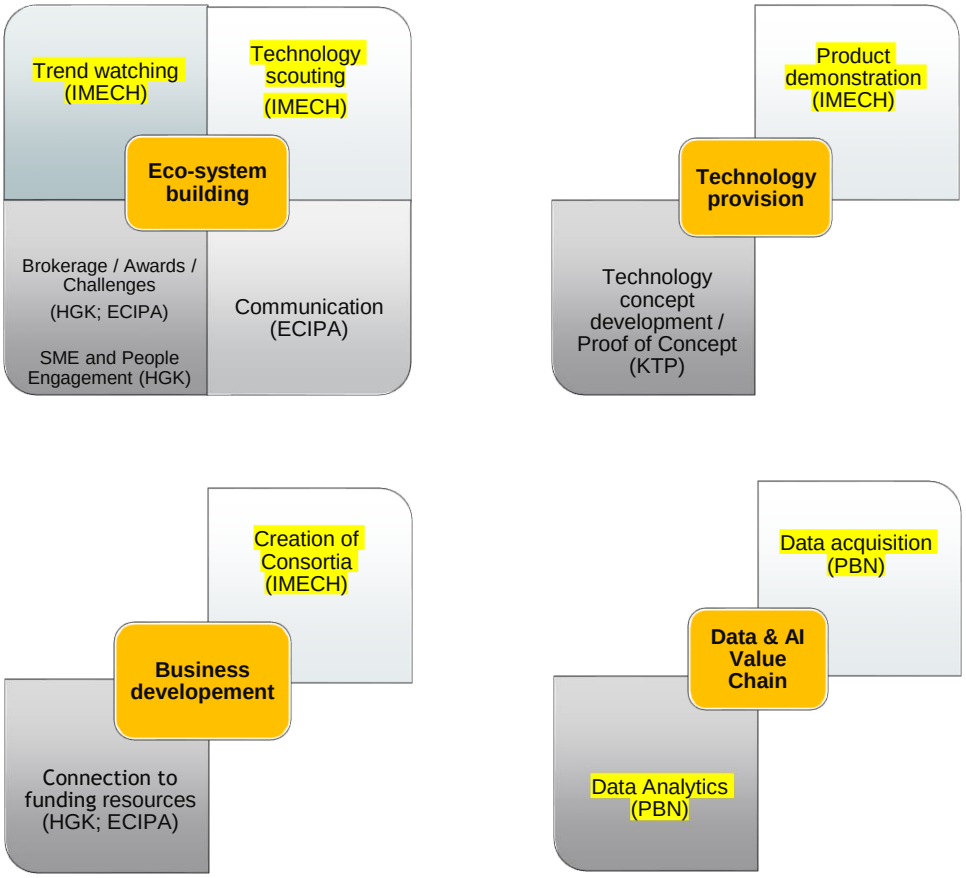
4.2.3. SUSTAINABILITY ANALYSIS

➢ ADAPTATION OF THE NAVIGATION CREW SERVICE PORTFOLIO

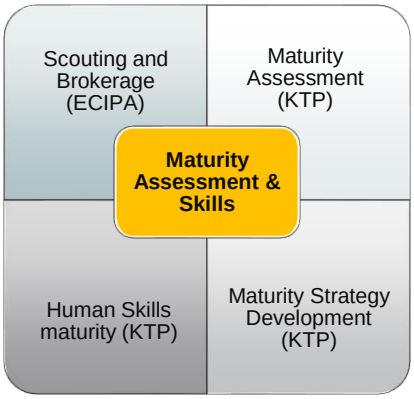
The Navigation Crew has structured its shareable services around 5 thematic domains - *Ecosystem Building, Technology provision, Business development, Maturity assessment & skills, Data and AI value Chain.* Within each domain, Crew members identified service domains where they can contribute while 2 members *(IMECH; PBN)* have explicitly declared to be able to have a proactive role *(fields marked in yellow)*.

The Navigation Crew
Predictive Maintenance

Adaptation of Service portfolio in
5 main thematic domains and their subdomains



This project is co-financed by the European Regional Development Fund through Interreg Central Europe.



➢ ORGANISATIONS EMPOWERED TO ADOPT KEY WORK

Lead partner of the Navigation Crew Predictive Maintenance - IMECH (PP5) with NC member PBN (PP9) will lead future initiatives of the NC.
IMECH will be responsible for the class covering **Ecosystem building** focusing on the **Trend watching**, which means monitoring the state of implementation, analysing the literature and meeting technology providers. The **Technology scouting** is another field of IMECH responsibility which includes business model development cycle using internal expertise or connection with external experts in the area of innovative mechatronics.
The sustainability of both these services will be guaranteed through funded projects related to innovative technologies in the AI field and on **a** business basis which price is to be discussed based on the specific project.
The class covering field of the **Technology provision** deals with **Product demonstration** and IMECH will support stakeholders in business model development cycle using internal or external expertise. Pre-competitive demonstrators are developed to allow a better understanding of the technology's potential. The sustainability of this service will be achieved through funded projects related to innovative technologies in the AI field or on business basis where price is to be discussed based on the specific project,
The **Business development** is area where IMECH helps create a virtuous eco-system for skills and best practices exchange acting as an intermediary of the network enabling linkages between specific expertise and technology providers. The sustainability of this service will be guaranteed by the creation of networks to identify new opportunities.
PBN – the second member of the Navigation Crew who will lead future initiatives coordinates the **Data and AI Value Chain** area with focus on **Data acquisition** and **Data analytics** offering services of am-LAB with aim to increase the profitability and efficiency of businesses by analysing previously untapped but valuable data enabling smaller businesses to profit from data analytics. The sustainability will be assured in frame of further projects *(e.g: pilot action on data analysis)* or on business basis which price is to be discussed depending of amount of data, deadline, complexity, etc.

➢ REASONS OF NOT PURSUING SUCCESS OF THE NAVIGATION CREW

The Navigation Crew considered this question as not relevant.

➢ Other Comments

The Navigation Crew did not have any further comments.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

4.3. RESILIENCE PLAN OF NAVIGATION CREW – MACHINE VISION

LEAD: IMECH (PP5)

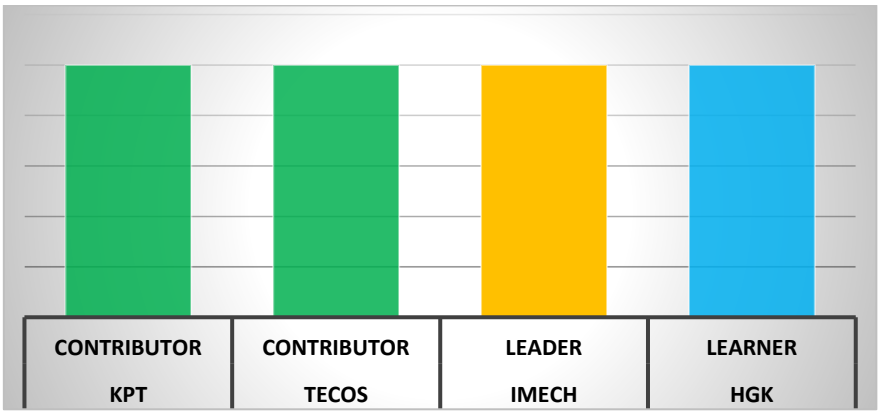


Figure 3 – Members of the Navigation Crew Machine Vision

4.3.1. MISSION, VISION AND OBJECTIVES

➢ EVALUATION OF THE NAVIGATION CREW MISSION

Mission

The Crews mission is to facilitate sharing of the current state-of-the-art of the technology domains with SMEs and accelerate their common understanding via "demonstrators", provided by relevant regional players *(DIHs, Research Centres, LABs, Technology Providers & industry players)*.

Contribution / Progress:

Machine Vision is one of the most interesting Artificial Intelligence technologies for industrial context. SMEs face all the same challenges: *lack of knowledge, limited practical approaches in transferring know how, demonstrators, use cases*. The Navigation Crew has been working and aiming at understanding how these topics will affect SMEs' tomorrow's business, to facilitate sharing of the current state-of-the-art of the technology domains, to support DIHs to assist SMEs in this awareness and possibly, to support them in technology adoption process. The uniqueness of the approach has been guaranteed by the heterogeneous approach of each member by focusing on these topics from several different stakeholders` perspectives *(large industry, SMEs, micro-enterprises and artisans, etc.)*.

Validation of mission statement / Need for update:

The Navigation Crew considers the mission as the right one without the need to change it.

➢ EVALUATION OF THE NAVIGATION CREW VISION

Vision

The Crew aimed at becoming a "reference site" for DIHs focused on Machine Vision.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

Contribution / Progress

The Navigation Crew will be able to identify, connect and involve experts and knowledge assets in Central Europe, to facilitate cooperation between experts and DIHs and to identify a way to permanently act as a reference site for the thematic focus area.

Validation of vision statement / Need for update

The Navigation Crew considers the vision still valid and without need to change it.

➢ EVALUATION OF THE NAVIGATION CREW OBJECTIVES / GOALS

Goals / Objectives

The Navigation Crew Machine Vision identified four main goals which focus on setting up a robust European network of experts and SMEs, achieving a comprehensive understanding of SME's needs, acting as a known observatory of existing demonstrators and establishing a formal cooperation between DIHs and EU initiatives in the respective field.

Contribution / Progress

The formal structure of the cooperation still must be established but its operational model has already been identified.

Validation of statement / Need for update

The navigation Crew finds the goals and objectives valid with no need of changing them.

4.3.2. SERVICE DELIVERY AND PORTFOLIO ANALYSIS

➢ THE MOST EFFECTIVE SUPPORT-SERVICES PROVIDED BY THE NC

The Navigation Crew finds online thematic webinars, access and support to cascade funding schemes as the most effective services.

➢ SERVICE-SUPPORT THAT DID NOT WORK

As for the services that did not work, the NC highlights a direct support to enterprises which partly failed due to the pandemic situation which at the same time made quite complicated to attract interested stakeholders and arrange with them online sessions.

➢ THE GREATEST SERVICE SUCCESSES

Despite the somewhat complicated approach to stakeholders, the Navigation Crew members still look at thematic webinars as the greatest service success.

➢ MUST-HAVE SERVICES FOR THEMATIC AREA

The Navigation Crew has been working on a common service portfolio where the methodology, that has been adopted to create it, stems out from the AI Region project which clusters support services around 5 domains:

1. Ecosystem Building
2. Technology provision
3. Business development
4. Maturity assessment & Skills
5. Data and AI Value Chain

Based on these domains, the NC has identified its roles & contributions within a long-term alliance.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

➢ HOW TO ADAPT OR SHIFT THE CONCEPT / FOCUS OF THE NC TO OPTIMIZE RIS3 VALUE-ADDED SERVICE DELIVERY

No shift or adaptation is needed. The focus is in line with current RIS3 strategies and will probably still be in line with future reviews.

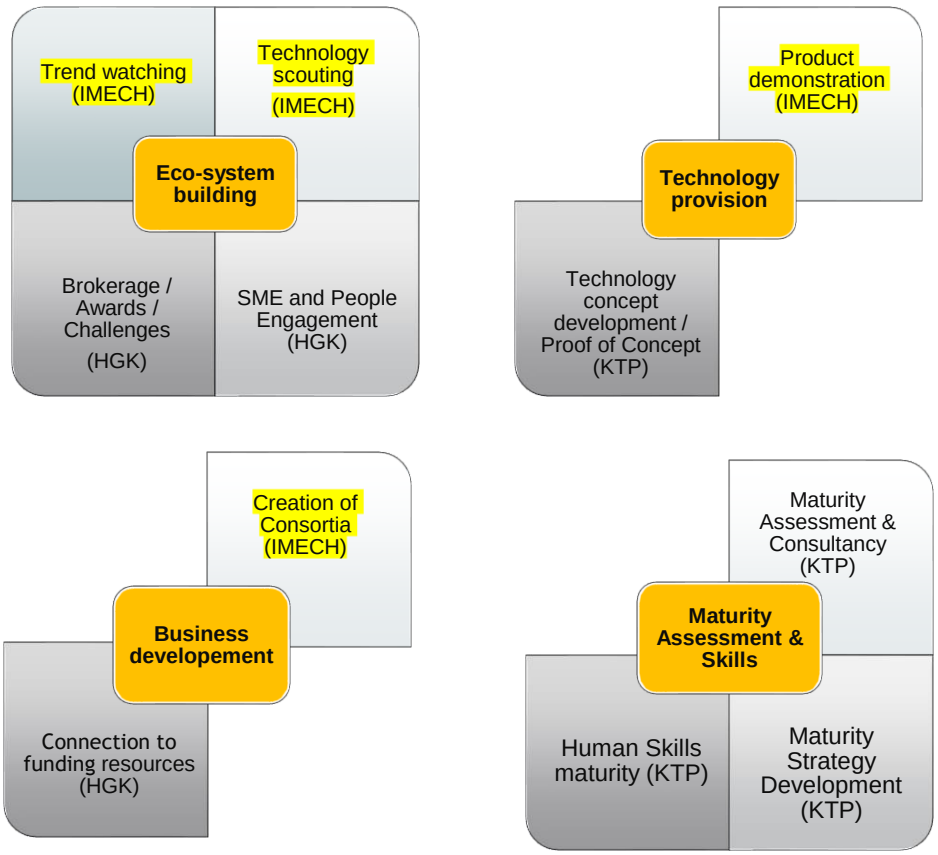
4.3.3. SUSTAINABILITY ANALYSIS

➢ ADAPTATION OF THE NAVIGATION CREW SERVICE PORTFOLIO

Navigation crew members have structured their shareable services around 4 thematic domains – Ecosystem Building, Technology provision, Business development and Maturity assessment and skills. Within each domain, each Crew member identified service domains where he can contribute while only one member (IMECH) has explicitly declared to be able to have a proactive role *(fields marked in yellow)*.

The Navigation Crew
Machine Vision

Adaptation of Service portfolio in
4 main thematic domains and their subdomains



➢ ORGANISATIONS EMPOWERED TO ADOPT KEY WORK

Lead partner of the Navigation Crew Machine Vision - **IMECH (PP5)** will lead future initiatives of this NC. **IMECH** will be responsible for the class covering **Ecosystem building** focusing on the **Trend**

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watching, which means monitoring the state of implementation, analysing the literature and meeting technology providers.
The **Technology scouting** is another field of IMECH responsibility which includes business model development cycle using internal expertise or connection with external experts in the area of innovative mechatronics. The sustainability of both these services will be guaranteed through funded projects related to innovative technologies in the AI field and on **a** business basis which price is to be discussed based on the specific project.
The **Business development** is area where IMECH helps create a virtuous eco-system for skills and best practices exchange acting as an intermediary and enabling linkage of specific expertise and technology providers. The sustainability of this service will be guaranteed by the creation of networks to identify new opportunities.

➢ REASONS OF NOT PURSUING SUCCESS OF THE NAVIGATION CREW

The Navigation Crews considers this question not relevant.

➢ Other Comments

The Navigation Crew does not have any further comments.

4.4. RESILIENCE PLAN OF THE NAVIGATION CREW - DESIGN and ENGINEERING for ADDITIVE MANUFACTURING

LEAD: CUAS (PP 1)

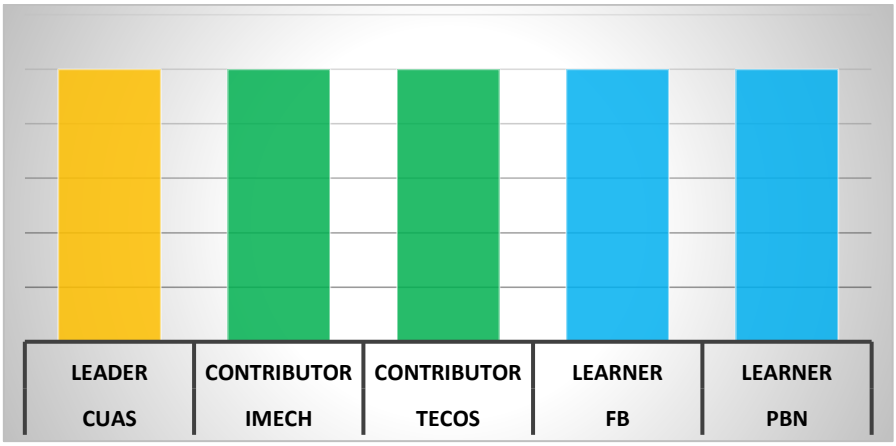

Figure 4 – Members of the Navigation Crew Design and Engineering for Aditive Manufacturing

4.4.1. MISSSION, VISION AND OBJECTIVES

➢ EVALUATION OF THE NAVIGATION CREW MISSION

Mission

The Navigation Crew Design & Engineering for Additive Manufacturing sees its mission in building awareness among the existing network of enterprises of the Crew members, by providing structured engineering and design guidelines for products and services based on existing work in the focus thematic area, by integrating structured engineering and design guidelines in education & training

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offers of enterprises and training/education organizations, through establishing a network for knowledge exchange between enterprises and/or training and education organizations among the regions of the crew members and finally, **by p**roviding a network of existing regional, national and trans-national infrastructure for additive manufacturing and respective engineering services.

Contribution / Progress

Contribution to the mission has been provided through workshops and trainings with Navigation Crew partners and their network, through participation in design & engineering for additive manufacturing webinars introducing best practice examples in different sectors and through connecting partners for further cooperation.

Validation of mission statement / Need for update:

The Navigation Crew agrees that the mission is still the right one.

➢ EVALUATION OF THE NAVIGATION CREW VISION

Vision

The Navigation Crew sees the Crew as a network for transfer of knowledge concerning utilization of additive manufacturing and how to consider its potential during engineering and design of new products.

Contribution / Progress

The Navigation Crew contribution manifests through national and transnational workshops in the field of design & engineering for additive manufacturing, mutual and cooperation with other respective networks and in different T&C actions which exceed the S3HubsinCE project time frame.

Validation of vision statement / Need for update:

The Navigation Crew considers the vision still as valid and the right one.

➢ EVALUATION OF THE NAVIGATION CREW OBJECTIVES/GOALS

Objectives / Goals

The Navigation Crew Design and Engineering for Additive Manufacturing set their objectives in structured engineering and design guidelines for supporting of additive manufacturing, in structured business model support for affected enterprises, in providing curricula for education/training on structured engineering and design guidelines for supporting of additive manufacturing, in connection to digital platforms, in connecting fab lab infrastructure, manufacturing service providers, design experts and product engineering experts together with the broad public. Moreover, they tend to create a transnational network of companies and experts in the field of additive manufacturing along with identifying the needs of companies at Central European level in order to start new collaborations in additive manufacturing field.

Validation of statement

The Navigation Crew agrees that the goals were and are the right ones and shouldn’t be changed.

4.4.2. SERVICE DELIVERY AND PORTFOLIO ANALYSIS

➢ THE MOST EFFECTIVE SUPPORT-SERVICES PROVIDED BY THE NC

The Navigation Crew members provided and participated in services which offered information on technology benefits, introduction to regional RIS3 structure and regional network, developing of

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

follow-up activities and project ideas supported by workshops and bilateral meetings, showcase of practical experience and creation of a reference network for stakeholders who want to use additive manufacturing technologies.

➢ SERVICE-SUPPORT THAT DID NOT WORK

Many of the additional services offered on the regional level are provided only in the national language and were therefore not open to all possible interested parties.

➢ THE GREATEST SERVICE SUCCESSES

The knowledge transfer through the T&C Actions, NC meetings, bilateral meetings and workshops was the most successful service derived from the project. It provided valuable information on the technology topics, regional cooperation structures, possible synergies between competence centres and overall great insight on how to promote RIS3 development.

➢ MUST-HAVE SERVICES FOR THEMATIC AREA

For the thematic area of Design & Engineering for Additive Manufacturing the 3 services regarded as the most valuable have reflected through establishing a real and sustainable transnational network of external experts as contact persons for interested companies, through establishing hands-on workshops for applying Design & Engineering for Additive Manufacturing solutions and through providing help and matchmaking for the partners in order to foster concrete cooperation with the associated networks.

➢ HOW TO ADAPT OR SHIFT THE CONCEPT / FOCUS OF THE NC TO OPTIMIZE RIS3 VALUE-ADDED SERVICE DELIVERY

The NC consider that focus must shift more towards the identification of regional partners and their involvement on an early stage in the project and towards more concrete cooperation and hands-on mentality (some concrete workshops with companies and to talk about special needs). Moreover, fostering cooperation between technology providers and SMEs must be highlighted as well as joint knowledge transfer projects between NC partners involving targeted SMEs. The language barriers need to be overcome while keeping up with the most updated technologies in relation to additive manufacturing has to provide the most competitive solutions for enterprises.

4.4.3. SUSTAINABILITY ANALYSIS

➢ ADAPTATION OF THE NAVIGATION CREW SERVICE PORTFOLIO

The Navigation Crew will share news, information, expertise among members via already established communication tools *(e-mail newsletter; website; DIHs, dihnet.eu)* and will continue screening the upcoming funding programs and possibilities to identify common research topics.

➢ ORGANISATIONS EMPOWERED TO ADOPT KEY WORK

The Navigation Crew Design & Engineering for Additive Manufacturing lead by CUAS and following institutions will conduct future activities related to this thematic focus area: Smartfab Carinthia, DIH Süd; DIH Slovenia; DIH 4P; CUAS, TECOS, IMECH, PBN; AFIL; CFI and am-LAB.

➢ REASONS OF NOT PURSUING SUCCESS OF THE NAVIGATION CREW

The Navigation Crew considers this question as not relevant.

➢ Other Comments

The Navigation Crew considers this question as not relevant.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

4.5. RESILIENCE PLAN OF THE NAVIGATION CREW - INNOVATION IN CIRCULAR ECONOMY

LEAD: CUAS (PP 1)

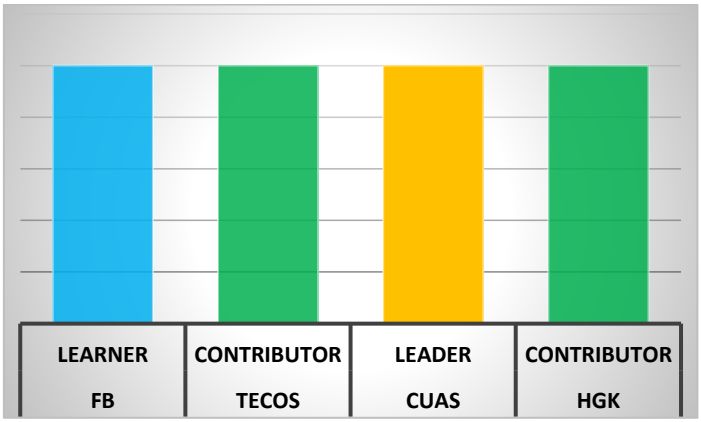

Figure 5 – Members of the Navigation Crew Innovation in Circular Economy

4.5.1. MISSION, VISION AND OBJECTIVES

➢ EVALUATION OF THE NAVIGATION CREW MISSION

Mission

The Navigation Crew see its mission in rising awareness on circular economy among the existing network of enterprises, experts and academia among the regions of the crew members, in providing structured engineering and design guidelines for products and services based on existing work and in developing business models for manufacturing enterprises along the transition process from manufacturing to manufacturing and product-related services.

Contribution / Progress

The Navigation Crew contributed to the mission through workshops and trainings with Navigation Crew partners and their network regarding innovation in a circular economy, through participating in circular economy webinars introducing best practice examples in different sectors and through building linkages between the partners for further cooperation.

Validation of mission statement / Need for update

The Navigation Crew members consider the mission as valid and still the right one.

➢ EVALUATION OF THE NAVIGATION CREW VISION

Vision

The Navigation Crew apprehend the vision as adopting the engineering and design guidelines by enterprises and performing a transition of their business models towards circular economy support.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

Contribution / Progress

The Navigation Crew contribution manifests through national and transnational workshops in the field of Innovation in Circular Economy, mutual and cooperation with other respective networks and in different T&C actions which exceed the S3HubsinCE project time frame.

Validation of vision statement / Need for update

The Navigation Crew members consider the vision as still the right one.

➢ EVALUATION OF THE NAVIGATION CREW OBJECTIVES/GOALS

The Navigation Crew`s objectives are foreseen in structured engineering and design guidelines for supporting of circular economy, in structure business model support for affected enterprises as well as providing curricula for education/training on structured engineering and design guidelines for supporting in the area of circular economy.

Validation of vision statement / Need for update

The Navigation Crew considers that the goals were and are the right ones and shouldn't be changed.

4.5.2. SERVICE DELIVERY AND PORTFOLIO ANALYSIS

➢ THE MOST EFFECTIVE SUPPORT-SERVICES PROVIDED BY THE NC

The Navigation Crew members provided and participated in services which offered information on technology benefits, introduction to regional RIS3 structure and regional network, developing of follow-up activities and project ideas supported by workshops and bilateral meetings and showcase of practical experience.

➢ SERVICE-SUPPORT THAT DID NOT WORK

Many of the additional services offered on the regional level are provided only in the national language and were therefore not open to all possible interested parties. In addition, the topic of innovation in a circular economy is quite young therefore there is not a lot of knowledge available now.

➢ THE GREATEST SERVICE SUCCESSES

The Navigation Crew state the experience and know-how exchange realised through meetings and actions of the crew as the most valuable success. Moreover, they see the potential in gaining new insights on the topic through shared specific application examples for innovation in a circular economy and best practices but also in the raising awareness. Besides some minor national characteristics, in all participating regions similar needs of stakeholders must be addressed. In addition, the design component of products and processes is very important as well as the interaction with similar topics, e.g. the ENOVA Conference.

➢ MUST-HAVE SERVICES FOR THEMATIC AREA

In the thematic area of Innovation in a Circular Economy the Navigation Crew addresses the establishing a real and sustainable transnational network of external experts as contact persons for interested companies, hands-on workshops for applying innovation in a circular economy solution and providing help and matchmaking to foster concrete cooperation between the partners and the associated networks as the 3 must have services.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

➢ HOW TO ADAPT OR SHIFT THE CONCEPT / FOCUS OF THE NC TO OPTIMIZE RIS3 VALUE

The Navigation Crew considers that focus must shift more towards the identification of regional partners and their involvement on an early stage in the project and towards identification of the regional needs regarding the technology topic (divided by the RIS 3 categories) and more concrete cooperation and hands-on mentality (some concrete workshops with companies and talks about special needs).

4.5.3. SUSTAINABILITY ANALYSIS

➢ ADAPTATION OF THE NAVIGATION CREW SERVICE PORTFOLIO

The Navigation Crew will share news, information, expertise among members via already established communication tools *(e-mail newsletter; website; DIHs, dihnet.eu)* and will continue screening the upcoming funding programs and possibilities to identify common research topics. EDIH is a suitable network for further cooperation.

➢ ORGANISATIONS EMPOWERED TO ADOPT KEY WORK

The Navigation Crew Innovation in Circular Economy lead by CUAS (PP1) in cooperation with following institutions will conduct future activities related to this thematic focus area*: CUAS-DIH Smartfab Carinthia; Green Tech Cluster; KWF as a funding organization; WKO; Forschung Burgenland - DIH Süd, DIH- Ost and regional stakeholders; HGK – DIH Connect Varaždin.*

➢ REASONS OF NOT PURSUING SUCCESS OF THE NAVIGATION CREW

The Navigation Crews members consider this question as not relevant.

➢ Other Comments

The Navigation Crew considers this question as not relevant.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

4.6. RESILIENCE PLAN OF THE NAVIGATION CREW – DIGITAL MARKETING

LEAD: FB (PP 2)

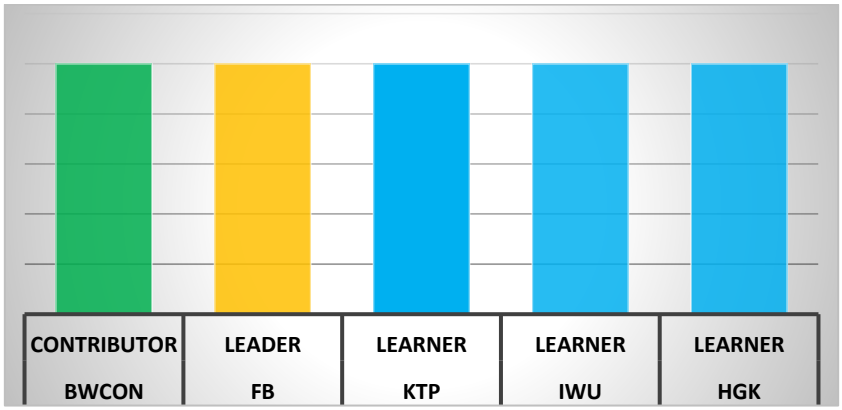

Figure 6 – Members of the Navigation Crew Digital Marketing

4.6.1. MISSION, VISION AND OBJECTIVES

➢ EVALUATION OF THE NAVIGATION CREW MISSION

Mission

The Navigation Crew lead by FB sticks to the support the implementation of digital technologies in the field of Digital marketing, inform stakeholders about innovative methods and future developments, identify added value for companies and communicate benefits in a clear way. The aim is to raise company's competitiveness on an international playground by showing best practices in the area of digital marketing. The NC can assure it through network of highly qualitative partners like DIHs, Research Centres and Technology Providers who can help understand how Digital Marketing will affect most of our companies' future business. In doing so, the NC wants to be flexible and approachable contact partner for even the smallest companies and a variety of institutions and stakeholders.

Contribution / Progress

The NC contributes to the mission through definition of relevant digital marketing topics, development of information material *(fact sheets)* about thematic topics and possible services, by providing information / training to regional stakeholders about digital marketing topics through connecting with the NC and finally, through participation in the development of possible follow-up activities for future engagement with the NC.

Validation of mission statement / Need for update

The NC thinks that there is no need to change the mission statement now and that the mission objectives are the right ones. Being a cross-cutting topic, digital marketing is important for regional stakeholders in order to prepare themselves for future market developments and to communicate the benefits of their services in an appropriate way to their target groups.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

➢ EVALUATION OF THE NAVIGATION CREW VISION

Vision

The Navigation Crew strives to identify the respective needs for stakeholders and connect with regional partners and service providers in order to initiate future projects as well as to be a centre of competence by bundling and strengthening the information and initiatives of different actors in the region.

Contribution / Progress

The NC members contributed to the mission through establishing a regional network of RIS3 stakeholders, assessing the needs of the regional stakeholders in terms of digital technologies with special focus on digital marketing and through connecting and strengthening the relations to regional partners and service providers.

Validation of vision statement / Need for update

The Navigation Crew agrees that the vision is the right one for the topic of Digital marketing and that there is no need to change it.

➢ EVALUATION OF THE NAVIGATION CREW OBJECTIVES/GOALS

Goals / Objectives

The Navigation Crew sees the objectives in supporting their stakeholders to identify their specific needs in the field of digital marketing, in providing independent knowledge, connection to regional partners and service providers and mutual informing about future developments and innovative trends. Additionally, the NC would like to build strong cooperation among DIHs on a transnational level that allows enterprises to improve their understanding of the future impact of digital marketing on their businesses.
In the long term, the Navigation Crew wants to become an integrating partner connecting actors from business, education and policy in order to conduct practice-oriented and interdisciplinary know-how transfer together with them. With its innovations, the NC can create social benefits and economic dynamism and be a driving force for the region in the field of digitization and innovation.

Contribution / Progress

The Navigation Crew Digital Marketing contributed to achievement of goals by identifying the specific needs in the field of digital marketing, by defining the possible “next steps” for the companies on their way to digital applications, by communicating the information to the NC members and trying to find synergies between different regions and finally, by building strong cooperation among DIHs of NC members on a transnational level.

Validation of statement / Need for update

The set goals are the right ones for the topic of digital marketing and now there is no need to change the statement.

4.6.2. SERVICE DELIVERY AND PORTFOLIO ANALYSIS

➢ THE MOST EFFECTIVE SUPPORT-SERVICES PROVIDED BY THE NC

The Navigation Crew members provided and participated in services which offered information on technology benefits, introduction to regional RIS3 structure and regional network, developing of follow-up activities and project ideas supported by workshops and bilateral meetings and showcase of practical experience.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

➢ SERVICE-SUPPORT THAT DID NOT WORK

It was not possible to carry out concrete services for reginal SMEs e.g. regional RIS 3 champions. This has multiple reasons.

➢ THE GREATEST SERVICE SUCCESSES

The Navigation Crew considers knowledge transfer through the training and mobility actions, NC meetings, bilateral meetings and workshops as most successful service derived from the project since it provided valuable information on the technology topics, regional cooperation structures, possible synergies between competence centres and overall great insight on how to promote RIS3 development.

➢ MUST-HAVE SERVICES FOR THEMATIC AREA

Based on the experience gained from the project activities, the stakeholders needs assessment analysis and their needs regarding a specific technology field which could be carried out by e.g online market research *(primary and secondary marketing research methods)*, specialized thematic workshops *(by target group or by topic)* with goal of identification of possible actions *("next steps")* and follow up activities/projects, study tours and study visits to showcase successful implementations using them as a multiplier for similar applications, are stated as three key services to support RIS3.

➢ HOW TO ADAPT OR SHIFT THE CONCEPT / FOCUS OF THE NC TO OPTIMIZE RIS3 VALUE-ADDED SERVICE DELIVERY

The Navigation Crew considers that focus must shift more towards the identification of regional partners and their involvement on an early stage in the project and towards identification of the regional needs regarding the technology topic (divided by the RIS 3 categories). Moreover, the definition of a service portfolio which can be provided by the NC members and/or regional partners to serve the identified needs and the establishment of a technology radar to provide up-to-date technology trends must be taken into account as well.

4.6.3. SUSTAINABILITY ANALYSIS

➢ ADAPTATION OF THE NAVIGATION CREW SERVICE PORTFOLIO

The Navigation Crew will continue to cooperate and carry out an active information exchange by using different project tools *(like Asana and DIH.net)*. Each member will foster cooperation and networking with the regional partners, coordinate the NC activities with the service offers of the regional DIHs and connect the NC members with the project activities of the regional DIHs and cooperate with EDIH network, screen the upcoming EU research and technology funding programs and its priority topics and work on possible follow-up activities, transnational cooperation and follow-up projects. Carrying out a technology radar to be aware of technology trend.

➢ ORGANISATIONS EMPOWERED TO ADOPT KEY WORK

The actions related to thematic area of Navigation Crew Digital Marketing lead by Forschung Burgenland will be implemented in cooperation with Forschung Burgenland GmbH, respective regional DIHs, Krakow Technology Park and its regional DIH by sharing knowledge, best practices and portfolio of joint services with companies from KTP network and with Fraunhofer IWU who will strive to contribute through the regional DIH Innosax and their established partner network. Additionally, the smart[3] network will be a key organization to support the work, share best practices within the network and stand up for creating synergies.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

➢ REASONS OF NOT PURSUING SUCCESS OF THE NAVIGATION CREW

The Navigation Crew members consider this question as not applicable.

➢ Other Comments

The Navigation Crew does not have any further comments.

4.7. RESILIENCE PLAN OF THE NAVIGATION CREW - INDUSTRIAL INTERNET OF THINGS

LEAD: IWU (PP 4)

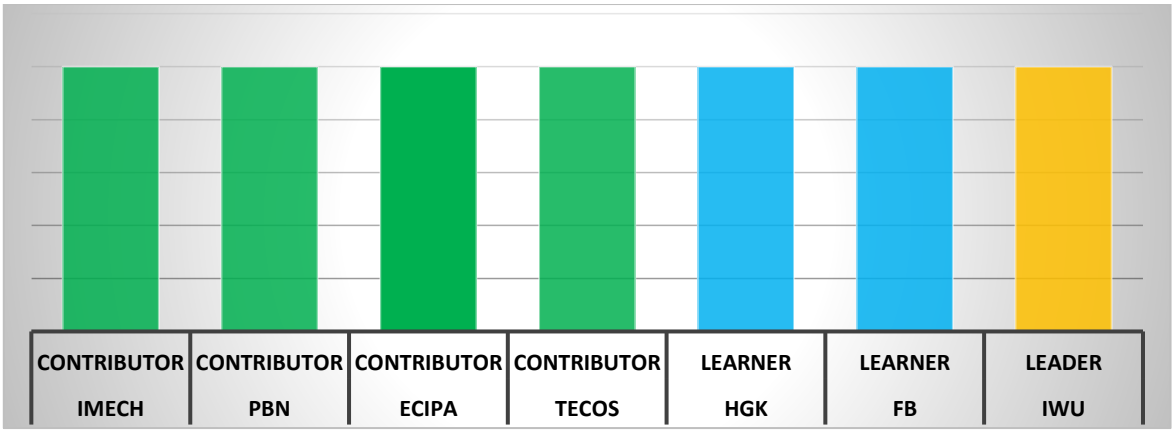

Figure 7 – Members of the Navigation Crew Industrial Internet of Things

4.7.1. MISSION, VISION AND OBJECTIVES

➢ EVALUATION OF THE NAVIGATION CREW MISSION

Mission

The Navigation Crew strives to share current state-of-the-art of Industrial Internet of Things with SMEs and accelerate their common understanding due to their connections with highly qualitative stakeholders like DIHs, Research Centres and Technology Providers, that will indeed help to understand how Industrial Internet of Things will affect most of future products and manufacturing as part of our companies tomorrow businesses.

Contribution / Progress

The T&M actions participated and performed by the Navigation Crew members were implemented in order to share knowledge and best practice among project partnership in the thematic area of IIoT, as well as the T&C actions which were implemented in connection to IIoT and were introduced to all other Crew`s members. The RIS3 Champions selected by NC members participated in the actions and promoted the Navigation Crew`s mission.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

Validation of mission statement / Need for update

The Navigation Crew considers mission as the right one, relevant and up to date for IIoT because SMEs need the help of external experts to get an understanding of IIoT and to implement IIoT solutions.

➢ EVALUATION OF THE NAVIGATION CREW VISION

Vision

Having in mind the vision, the Navigation Crew wants to identify the respective needs for their stakeholders and connect them with regional partners and service providers in order to initiate future projects. The Crew strives to become a centre of competence by bundling and strengthening the information and initiatives of different actors in the field of Industrial Internet of Things.

Contribution / Progress

The Navigation Crew contributed to achievement of the goals by establishing a strong regional network with partners that offers services like the digital assessment tools, by organising workshops / training sessions, testbed and the possibility to create and later implement IIoT projects with interested companies or other institutions and other comprehensive services. They develop pilots related to IIoT which might be shared and utilized by regional partners (PBN) in order to showcase IIoT data display and decision-making functionality along with identified T&C Actions which are strongly related to IIoT topics.

Validation of vision statement / Need for update

The Navigation Crew considers that is not necessary to change the vision as it is up to date.

➢ EVALUATION OF THE NAVIGATION CREW OBJECTIVES/GOALS

Objectives / Goals

The objectives and goals of the Navigation Crew derive from its common strategy in which they want to support our 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. Additionally, they would like to test a possible cooperation model among DIHs that allows enterprises to improve understanding of the future impact of Industrial Internet of Things on their businesses. In the long term the NC wants to become 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.

Contribution / Progress

The Navigation Crew Industrial Internet of Things set the foundation for the specific services that should help stakeholders in developing their IIoT projects. This foundation gathers available experts in the field of IIoT, available sources of information on IIoT in the involved regions, a consolidated fact sheet individualized with regional content, knowledge transfer about case studies, awareness workshop about the IIoT potentials for regional competitiveness, scouting and counselling, digital skills updating activities and networking. Some of T&C Actions are strongly related to IIoT topics.

Validation of statement / Need for update

The Navigation Crew considers that is not necessary to change objectives and goals.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

4.7.2. SERVICE DELIVERY AND PORTFOLIO ANALYSES

➢ THE MOST EFFECTIVE SUPPORT-SERVICES PROVIDED BY THE NC

The most effective support-services provided by and for or the Navigation Crew IIoT partners were organised workshops and webinars on the topic of IIoT, sharing of best practice examples in partners` regions, lists of IIoT information sources and experts as common starting point and networking in multilateral and bilateral meetings to identify common interest and possibilities for future projects.

➢ SERVICE-SUPPORT THAT DID NOT WORK

The Navigation Crew members stated that many of the additional services offered on the regional level were provided only in the national language and were not open to all possible interested parties. The COVID-19 pandemic also disabled study visits in favour of virtual visits which have been stimulating but not as much the physical ones could have been. In addition, the ASANA software has been introduced for sharing the activities carried out within the Navigation Crew, but it was not fully working as a supporting/facilitating tool.

➢ THE GREATEST SERVICE SUCCESSES

The exchange of experiences and know-how through meetings and actions of the Navigation Crew were stated as the most valuable successes. The shared specific IIoT solutions and best practices enabled new insights into the topic of IIoT, but awareness raising, besides some minor national characteristics, must be addressed in all participating regions as well as the stakeholders` needs. In addition, the services portfolio provided by other DIHs has been an inspiration in order to compare and better tune their own hubs services.

➢ MUST-HAVE SERVICES FOR THEMATIC AREA

The digital assessment tools enabling companies to define the right implementation strategy for IIoT solutions by assessing their needs and state-of-the-art, the establishment of a real and sustainable transnational network of external experts, organization of hands-on workshops for developing concrete IIoT solutions for the participants, update of best in class services for developing concrete IIoT solutions, matchmaking events and boosting of technology and innovation adaptation through possible financial mechanisms are seen as a must-have services.

➢ HOW TO ADAPT OR SHIFT THE CONCEPT / FOCUS OF THE NC TO OPTIMIZE RIS3 VALUE-ADDED SERVICE DELIVERY

For the optimization purposes, the Navigation Crew concept should switch to more hands-on in order to develop and transfer more tailored IIoT solutions. A public platform where stakeholders could access and check the type of the available services provided by each DIH of the network could also be a value-added service.

4.7.3. SUSTAINABILITY ANALYSIS

➢ ADAPTATION OF THE NAVIGATION CREW SERVICE PORTFOLIO

The Navigation Crew will share information and news via already established institutional email newsletters or by delivering updates through already shared platforms, like the website of our DIH Innosax. Further boost of NC services could be reached by better inclusion of regional and national stakeholders with connection of RIS3 champions. Map of expertise is also a way of upgrading service portfolio for possible upcoming projects in the future. In order to keep the level of commitment of NC members to cooperate, cascade funding and further relevant call opportunities are to be screened

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

and shared. It would be useful to have a public platform where companies and stakeholders can access and check the type of the available services provided per each DIH of the network.

➢ ORGANISATIONS EMPOWERED TO ADOPT KEY WORK

The Fraunhofer IWU as the lead partner of the Navigation Crew Industrial Internet of Things will implement actions through regional DIH Innosax and their established partner network. Ecipa will involve Ecipa Hub to take charge of key work as a regional DIH and a part of the S3 platform managed by the EC. Forschung Burgenland GmbH will conduct activities this through regional DIH-Ost and DIH-Süd cooperation and regional stakeholders. HGK Varaždin newly established regional DiH Connect Varaždin will be the contact point and involve the experts from the regional partner network. Intellimech will act internally by sharing the outcomes with its industrial partners and relies also on the support of the regional DIH AFIL and national DIH CFI. PBN shall be supporting the work from project management side and its am-LAB, as regional accredited DIH will be contributing from the technical part. TECOS will participate through DIH Slovenia and EDIH partnership within 4PDIH of Slovenia.

➢ REASONS OF NOT PURSUING SUCCESS OF THE NAVIGATION CREW

The Navigation Crews does not consider this question as relevant. However, only one partner (HGK Varaždin PP10) sees the potential risk in insufficient financial means for further contribution.

➢ Other Comments

The Navigation Crew does not have any further comments.

4.8. RESILIENCE PLAN OF THE NAVIGATION CREW – SMART & ADVANCED MATERIALS

LEAD: IWU (PP 4)

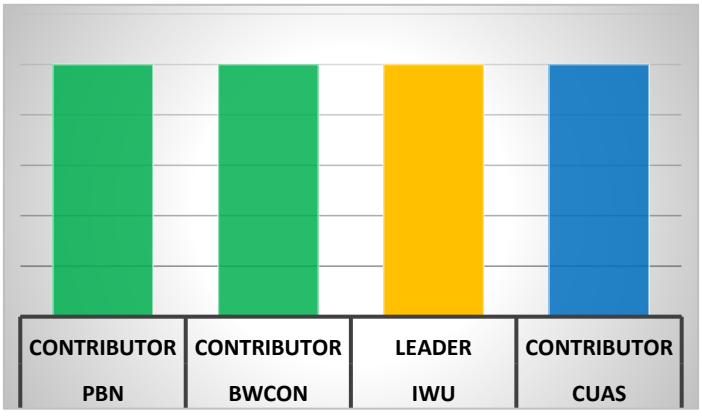

Figure 8 – Members of the Navigation Crew Smart and Advanced Materials

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4.8.1. MISSION, VISION AND OBJECTIVES

➢ EVALUATION OF THE NAVIGATION CREW MISSION

Mission

The Navigation Crew's mission correlates with its common strategy in view of sharing the current state-of-the-art of the technology domains (*materials know-how, lists of experts, …)* with SMEs and stakeholders and accelerate their common understanding due to connections with highly qualitative stakeholders like DIHs, Research Centres, Makerspaces, etc.

Contribution / Progress

The Navigation Crew contributed to the mission by providing best practices on smart structures in many industrial sectors, through actions *(T&M, workshops, trainings, webinars ...)* implemented with Navigation Crew partners and their network, through organizing webinars introducing the best practice examples of smart materials application in different sectors and through linkages between the partners for further cooperation. Moreover, the NC wants to become a contact partner even for smallest companies and all other stakeholders.

Validation of mission statement / Need for update:

The Navigation Crew considers the mission as the right one for Smart and Advanced Materials since SMEs need the knowledge on new materials and their applications.

➢ EVALUATION OF THE NAVIGATION CREW VISION

Vision

The Navigation Crew`s vision was to identify the respective needs for stakeholders connecting them with other partners and service providers in order to initiate future projects. The Crew strives to be the centre of competence by bundling and strengthening the information and initiatives of different actors in the field of Smart and Advanced Materials.

Contribution / Progress

The Navigation Crew contributed to the vision through engagement with each other as well as their respective networks and through cooperation in different T&C actions which exceed the S3HubsinCE project time frame.

Validation of vision statement / Need for update

The Navigation Crew sees the vision as still the right one for Smart and Advanced Materials.

➢ EVALUATION OF THE NAVIGATION CREW OBJECTIVES/GOALS

Objectives / Goals

The Navigation Crew Smart & Advanced Materials sees its objectives in being a one-stop-shop for Smart and Advanced Material applications by making institutional players aware of the offer and potential of materials. The Crew wanted to inform about future developments and innovative trends and to test a possible cooperation model among DIHs which enable enterprises to improve understanding of the future impact of the technologies. The Crew strive to be an integrating partner connecting actors from business, education and policy in order to conduct together practice-oriented and interdisciplinary know-how transfer.

Validation of statement / Need for update

The Navigation Crew considers goals to be the right ones and should not be changed.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

4.8.2. SERVICE DELIVERY AND PORTFOLIO ANALYSIS

➢ THE MOST EFFECTIVE SUPPORT-SERVICES PROVIDED BY THE NC

The Navigation Crew considers workshops / webinars / study visits related to the topic, sharing of best practice and information on sources and experts as a common starting point for networking and identifying common interest and possibilities for future projects as the most effective provided support-services.

➢ SERVICE-SUPPORT THAT DID NOT WORK

The opinion of the Crew is that the additional services offered on the regional level were provided only in the national language and therefore were not open to all possible interested parties.

➢ THE GREATEST SERVICE SUCCESSES

The exchange of experiences and know-how through meetings and actions of the Navigation Crew were stated as the most valuable successes. The shared specific application examples for Smart and Advances Material and best practices enabled new insights into the topic, but awareness raising, besides some minor national characteristics, must be addressed in all participating regions as well as the stakeholders` needs.

➢ MUST-HAVE SERVICES FOR THEMATIC AREA

Establishing a real and sustainable transnational network of external experts as contact persons for interested companies, establishing hands-on workshops for applying smart materials solutions and providing help and matchmaking in order to foster concrete cooperation between the partners and their associated networks are must-have services for the thematic area of Smart and Advanced Materials.

➢ HOW TO ADAPT OR SHIFT THE CONCEPT / FOCUS OF THE NC TO OPTIMIZE RIS3 VALUE-ADDED SERVICE DELIVERY

Even though some concrete project proposals have already derived from the Navigation Crew's activity, a slight increase could benefit even more the innovative ecosystem. In addition, a fact sheet with achievements and service offer will be created in order to have a lasting overview of service offer that Crew members can provide.

4.8.3. SUSTAINABILITY ANALYSIS

➢ ADAPTATION OF THE NAVIGATION CREW SERVICE PORTFOLIO

The Navigation Crew will deliver in an ongoing way through staying in touch and sharing possible interesting events with NC members via already established organizational email newsletters. The members are also invited to join the smart[3] network for smart materials and make use of the community effects and benefits. Also, by delivering updates through the already shared platforms, like the website of our DIHs, Asana or DIH.net, connections will be maintained. The shared lists of experts and information sources in the regions is also a good starting point for possible upcoming projects in the future. The Crew members will continue screening the upcoming funding programs and possibilities to identify common research topics in order to work on establishing and broaden innovation corridors for smart materials and their applications as started by PBN, CUAS, smart[3] and Fraunhofer IWU. Recent example highlights project (PBN) where a demo production line is built and

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smart material learning boards implemented. IWU is working in cooperation with a circular economy cluster and bring in smart material expertise.

➢ ORGANISATIONS EMPOWERED TO ADOPT KEY WORK

Fraunhofer IWU as a lead of the Navigation Crew Smart & Advanced Materials and Nanotechnology will conduct actions through the regional DIH Innosax and the established partner network there. Additionally, the smart³ network will be a key organization to support the work, share best practices within the network, stand up for creating synergies and the expansion of smart materials knowledge. Regarding PBN, the technical activities are to be carried out by their related DIH - am-LAB. CUAS will promote and perform the work through activities of CISMAT and DIH-Süd. CISMAT is a research institute on smart materials under the umbrella of CUAS and DIH-Süd CUAS as one of the key digital centres. Intellimech, as smart material learner, will perform the actions internally by sharing the outcomes with its industrial partners and will also rely on the support of the regional DIH AFIL and national DIH CFI.

➢ REASONS OF NOT PURSUING SUCCESS OF THE NAVIGATION CREW

The Navigation Crew does not consider this question as relevant. However, only one partner (HGK Varaždin PP10) sees the potential risk in insufficient financial means for further contribution.

➢ Other Comments

The Navigation Crew does not have any further comments.

4.9. RESILIENCE PLAN OF THE NAVIGATION CREW - DI&I MACHINERY

LEAD: TECOS (PP 8)

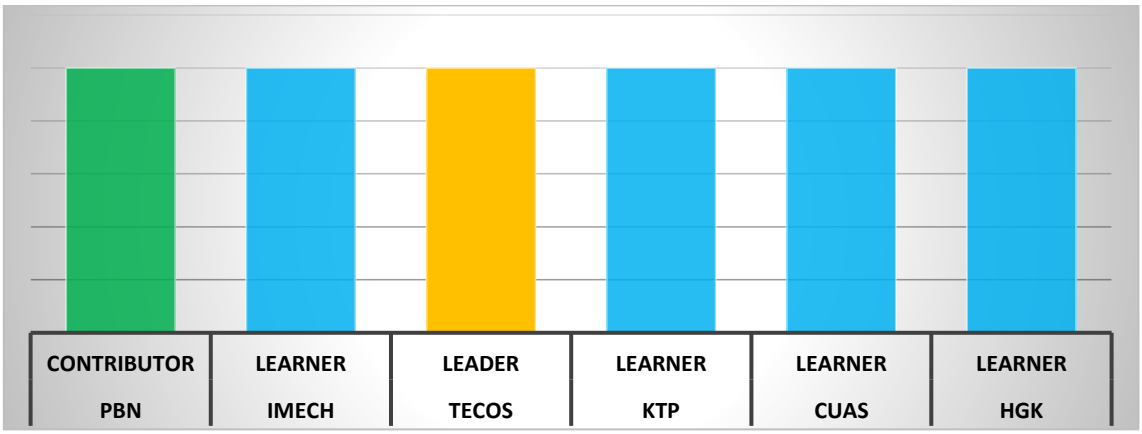

Figure 9 – Members of the Navigation Crew DI&I Machinery

4.9.1. MISSION, VISION AND OBJECTIVES

Mission

The adoption of digital innovation tools in Machinery and connections created by the Navigation Crew`s experts is the Navigation Crew`s mission.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

Contribution / Progress

The contribution is achieved through involvement of the stakeholders in promotion of Digital innovation in Machinery, through support to SME sector and promotion of innovation needs to be further strengthened.

Validation of mission statement / Need for update

The Navigation Crew considers the mission as still very relevant, thus should be even more invested in.

➢ EVALUATION OF THE NAVIGATION CREW VISION

Vision

The Crews vision is to be a counterpart to DIHs and to serve as a hub for experts.

Contribution / Progress:

The Crew contributed to the achievement of the NC`s vision by compiling a pool of experts, knowledge and best practices through different cooperation actions.

Validation of vision statement / Need for update

The Navigation Crew considers the vision as still very relevant, however, the need for promotion of the digitalization in the Machinery sector and awareness raising on investing sources into digital innovation should be considered as well. Having a pool of experts and supporting DIH in promotion of digital innovation requires a specific set of competences and tailored support to SMEs.

➢ EVALUATION OF THE NAVIGATION CREW OBJECTIVES/GOALS

Objectives / Goals

The Navigation Crew DI&I Machinery made a certain progress in becoming a platform for connecting experts with SMEs and as a reference point for respective DIHs connecting competencies of involved regions and developing a complete offer for companies.

Contribution / Progress

The pool of experts was developed, and some pilot actions were tested in cooperation with companies. Best practices examples through demonstration facilities were collected and some of them presented in webinar formats. Due to Covid-19 situation as well as the lack of resources in SMEs, the NC estimated that the support to SMEs creation of in-house groups of practitioners able to support digital innovation in machinery is overambitious, therefore awareness raising and promotion actions on digital innovation in the sector is needed. Participation in formal networks of DIHs and other digital innovation platforms specialized in Machinery digital innovation is in progress. Competencies of partners are mapped through the Navigation Crew platform in order to provide a complete service offer to companies.

Validation of statement / Need for update

The Navigation Crew considers the objective as still relevant.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

4.9.2. SERVICE DELIVERY AND PORTFOLIO ANALYSIS

➢ THE MOST EFFECTIVE SUPPORT-SERVICES PROVIDED BY THE NC

The Navigation Crew members consider introducing the best practices in SME, identification of trainings and best practices in trainings and webinars as most successful support services.

➢ SERVICE-SUPPORT THAT DID NOT WORK

It has been proven hard to develop a sustainable platform of experts in DI&I Machinery since the relevant area is not just Central Europe, so a broader view should be taken into account.

➢ THE GREATEST SERVICE SUCCESSES

The Navigation Crew members find the thematic webinars as greatest service success.

➢ MUST-HAVE SERVICES FOR THEMATIC AREA

The Navigation Crew has been working on a common service portfolio which emphasized cascade funding, competencies building, awareness and promotion raising as a must have services.

➢ HOW TO ADAPT OR SHIFT THE CONCEPT / FOCUS OF THE NC TO OPTIMIZE RIS3 VALUE-ADDED SERVICE DELIVERY

Strengthen Business to Research (B2R) cooperation in order to further promote innovation and digitalization bringing together knowledge from institutions and companies' needs, thus bringing researchers from the specific fields into companies.

4.9.3 SUSTAINABILITY ANALYSIS

➢ ADAPTATION OF THE NAVIGATION CREW SERVICE PORTFOLIO

The Navigation Crew will further align and focus its service portfolio on the development of the ecosystem, involvement of the decision-makers to ensure cascade funding and tailored support to SMEs and creation of value chains. The service portfolio will add needs for awareness raising and bring together digital innovation practitioners from research into companies.

➢ ORGANISATIONS EMPOWERED TO ADOPT KEY WORK

TECOS as a lead of the Navigation Crew DI&I Machinery will be involved in the further alignment and development of the activities and will be supported by associated DIHs. Furthermore, for sustainability purposes the successes will be shared with key eco-system stakeholders and decision-makers.

➢ REASONS OF NOT PURSUING SUCCESS OF THE NAVIGATION

The Navigation Crew does not consider this question as relevant.

➢ Other Comments

The Navigation Crew does not have any further comments.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

4.10. RESILIENCE PLAN OF THE NAVIGATION CREW – FACTORY AND PROCESS AUTOMATION

LEAD: TECOS (PP 8)

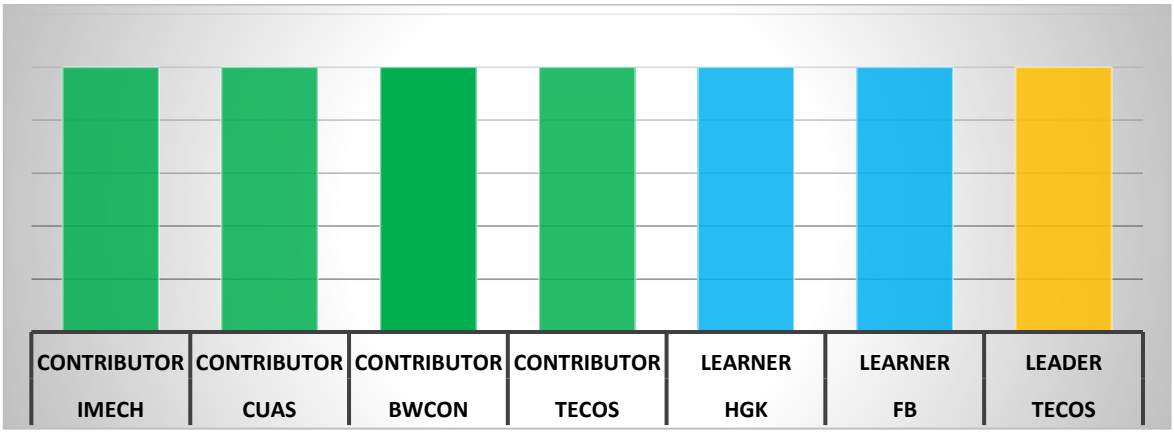

Figure 10 – Members of the Navigation Crew Factory and Process Automation

4.10.1. MISSION, VISION AND OBJECTIVES

➢ EVALUATION OF THE NAVIGATION CREW MISSION

Mission

The mission is to become a counterpart of DIHs in order to develop service portfolio and a pool of experts that would enable support to SMEs, faster development and adoption of solutions and real support.
The mission derives from the strategic intent of the Navigation Crew Factory and Process Automation to develop cross-regional collaboration in addressing challenges and support development and implementation of solutions to end users with expertise of partners having in focus SMEs of Central Europe which have specific characteristics and challenges mainly arising from their size and ownership.

Contribution / Progress

Through the activities of the project, the Navigation Crew has understood the expertise of crew members and abilities in support of companies.

Validation of mission statement / Need for update

The Navigation Crew considers the mission for sure as the right one, however, its services would have to be adjusted to local environment language.

➢ EVALUATION OF THE NAVIGATION CREW VISION

Vision

The Navigation Crew vision is to become a counter part of DIHs and to become stakeholder in the development of initiatives.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

Contribution / Progress:

The contribution has been achieved through cooperation of Navigation crews which lead to best practices scope and instruments identification. Subsequently, several instruments were proposed for the new value chains and cooperation programmes as well as national and international initiatives while new cooperation processes and ideas have been developed through visibility of the Navigation Crew and the project.

Validation of vision statement / Need for update

The more intensive involvement of the decision makers and policymakers, the sustainability of the Navigation Crew and definition of instruments should be prolonged.

➢ EVALUATION OF THE NAVIGATION CREW OBJECTIVES / GOALS

Objectives / Goals

The Navigation Crew Factory & Process Automation in its intention to create a sustainable platform has designed a pool of experts connecting with SMEs which has defined available services as a reference point for respective DIHs. The sustainability of services and cooperation is the one that would have to be ensured. Thus, identified scope of services is based on cooperation tool with aim to meet the SMEs needs.

Contribution / Progress

The best practice examples were collected through demonstration facilities with aim to widen them out through new cooperation tools. The formal networks of DIHs and other digital innovation platforms specialized in automation were easily accessible thus bringing in new knowledge and expertise was achieved.

Validation of statement / Need for update

The Navigation Crew considers the objective as still relevant.

4.10.2. SERVICE DELIVERY AND PORTFOLIO ANALYSIS

➢ THE MOST EFFECTIVE SUPPORT-SERVICES PROVIDED BY THE NC

The most effective services provided by the Navigation Crew were online webinars, B2B meetings and tailored support.

➢ SERVICE-SUPPORT THAT DID NOT WORK

The least effective service was focus on allocation of funds towards the process and integration of initiatives.

➢ THE GREATEST SERVICE SUCCESSES

The Navigation Crew consider thematic webinars and identification of training opportunities as the greatest service success.

➢ MUST-HAVE SERVICES FOR THEMATIC AREA

The Navigation Crew has been working on a common service portfolio which emphasized cascade funding, ecosystem building and B2b system of cooperation as a must have services.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

➢ HOW TO ADAPT OR SHIFT THE CONCEPT / FOCUS OF THE NC TO OPTIMIZE RIS3 VALUE-ADDED SERVICE DELIVERY

The Navigation Crew find focusing on the thematic area important in order to further boost RIS3 alignment.

4.10.3. SUSTAINABILITY ANALYSIS

➢ ADAPTATION OF THE NAVIGATION CREW SERVICE PORTFOLIO

The Navigation Crew will further focus its service portfolio on the development of the ecosystem, involvement of the decisionmakers to ensure cascade funding, tailored support to SMEs and creation of value chains.

➢ ORGANISATIONS EMPOWERED TO ADOPT KEY WORK

TECOS as a lead of the Navigation Crew Factory & Process Automation will be involved in the further alignment and development of the activities and it will be supported by associated DIHs. Furthermore, for sustainability purposes the successes will be shared with key ecosystem stakeholders and decision-makers.

➢ REASONS OF NOT PURSUING SUCCESS OF THE NAVIGATION CREW

The Navigation Crew does not consider this question as relevant.

➢ Other Comments

The Navigation Crew does not have any further comments.

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5. F3 for CERIS3 Excellence Learning and Resilience Planning

In literature, the term resilience is used in many ways. From a psychological point of view, resilience is defined as “an individual’s ability to properly adapt to stress and adversity”. In ecology, resilience can be used either as “the rate at which a system returns to a single steady or cyclic state following a perturbation” or “the magnitude of the disturbance which can be absorbed before the system changes to another regime of behaviour”. Finally, in economic terms, resilience is “the ability of an economy to retain function, employment and prosperity in the face of the perturbation caused by a shock or a disturbance”.

Generally, resilience describes the property of a system (a society, a network or an individual) to successfully cope with changes. Such changes may originate from sudden shocks or crises or may arise in small steps which accumulate over time and impose severe stress on the system. Resilience is not equivalent to sustainability, which addresses the ability to cope with the predictable system development.

This document highlights the main actions to be undertaken by project consortia in order to continue work and ensure the sustainability after the end of the project in February 2022.

The 10 Resilience Plans of the Navigation Crews in frame of WP T3 emerged from reflections process how they will exist in the years following the closure of this project. Discussions were focused on questions how and in what form should the established innovation network Foundation for the Future Foresight (F3) sustain. In this framework we will consider inter-organizational cooperation within F3 as a sustainable innovation network able to offer advantages for recognising and solving complex problems to improve linkages among actors of the innovation DIH system for strengthening regional innovation capacity in Central Europe.

Resilience is influenced by interaction and combination of strategic and operational factors with focus on good interaction of Navigation Crews’ members. Enhanced resilience contributes to:

- greater understanding of stakeholders’ needs and dependencies that support strategic goals and objectives
- increase coordination and integration to improve coherence and performance
- improved ability to anticipate and address risk and vulnerabilities.

There are two distinct concepts connected to resilience: risk assessments and vulnerability assessments.

Risk assessments focus on identifying potential external threats, while vulnerability assessments focus on identifying existing weaknesses inside the network.

Foundation for Future Foresight system (F3) is observed from the point of view stability and absorptive capacity. System is considered as a stable if it reacts through absorptive capacity. As the time of exposure and intensity increases, the adaptive capacity will start playing a role, strengthening the flexibility and readiness for small changes. As disturbance rises, the key transformation is needed in order that the system finds new sustainable development to avoid collapses.

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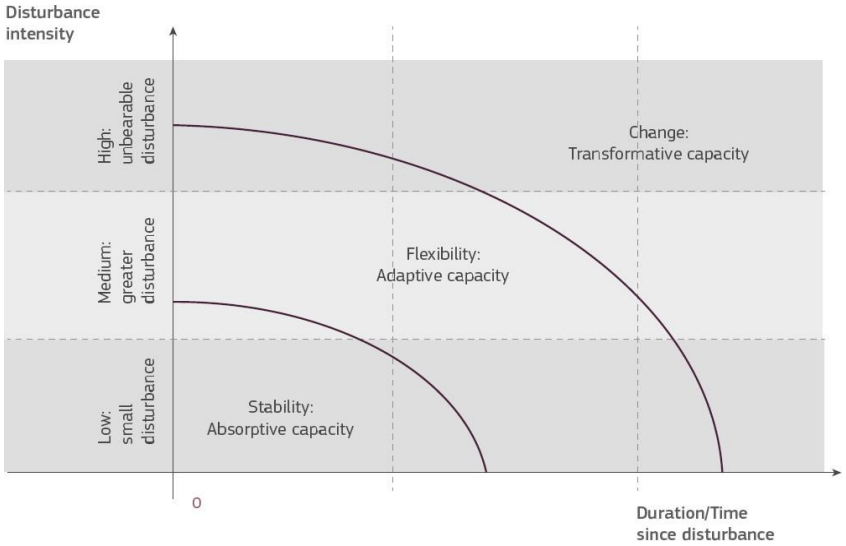


Figure 11: What are the characteristic of resilient behaviour? Source: Joint Research Centre, EC

Resilient behaviour of innovative network like F3 should be an opportunity to progress and "bounce forward" through combination of adaptation and transformation measures toward a better and more sustainable pathway.

At the same time, resilience is not only "sum" of individual resilience but includes mutual dependences and the role of various institutions and stakeholders.

This document takes into consideration risks/vulnerabilities and adaptive capacities of F3 network to strengthen the flexibility and readiness for small changes in the medium term. The aim is to point out and raise awareness about capacities which enable F3 network to cope with challenges, disruptions and to react to shocks or persistence to structural changes by either resisting to it or by adopting a degree of flexibility and making small changes to the system. However, if disturbances are not manageable any more, the system need to undergo to a transformation.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

6. Discussion

We reconsider if NCs share the same vision and purpose to provide coherence in the further development by analysing how effective each Navigation Crew was at achieving its service objectives.

Furthermore, we will clarify common effective support services provided by the Navigation Crews, common successes, what did not work and determine what a common service portfolio could look like. Also, we will define which services captured the most key successes and how those could be delivered in an ongoing basis.

Finally, the sustainable analysis will show how the Navigation Crews will deliver the successful services in a sustainable way and who will the Navigation Crews empower to adopt this key work.

6.1. Effectiveness in achieving service objective

The Foundation for Future Foresight is a lasting innovation network based on commitment decisions cooperation and service delivery successes of 10 Navigation Crews (NCs). Navigation Crews are working groups specialising in one main technology priority area which provide transnational DIH alignment.

→ **NC Data analytics, complex simulation and modelling**

→ **NC Predicative Maintenance**

→ **NC Machine Vision**

→ **NC Design and Engineering for Additive Manufacturing**

→ **NC Innovation in Circular Economy**

→ **NC Digital Marketing**

→ **NC Industrial Internet of Things**

→ **NC Smart & Advanced Materials and Nanotechnology**

→ **NC DI&I Machinery**

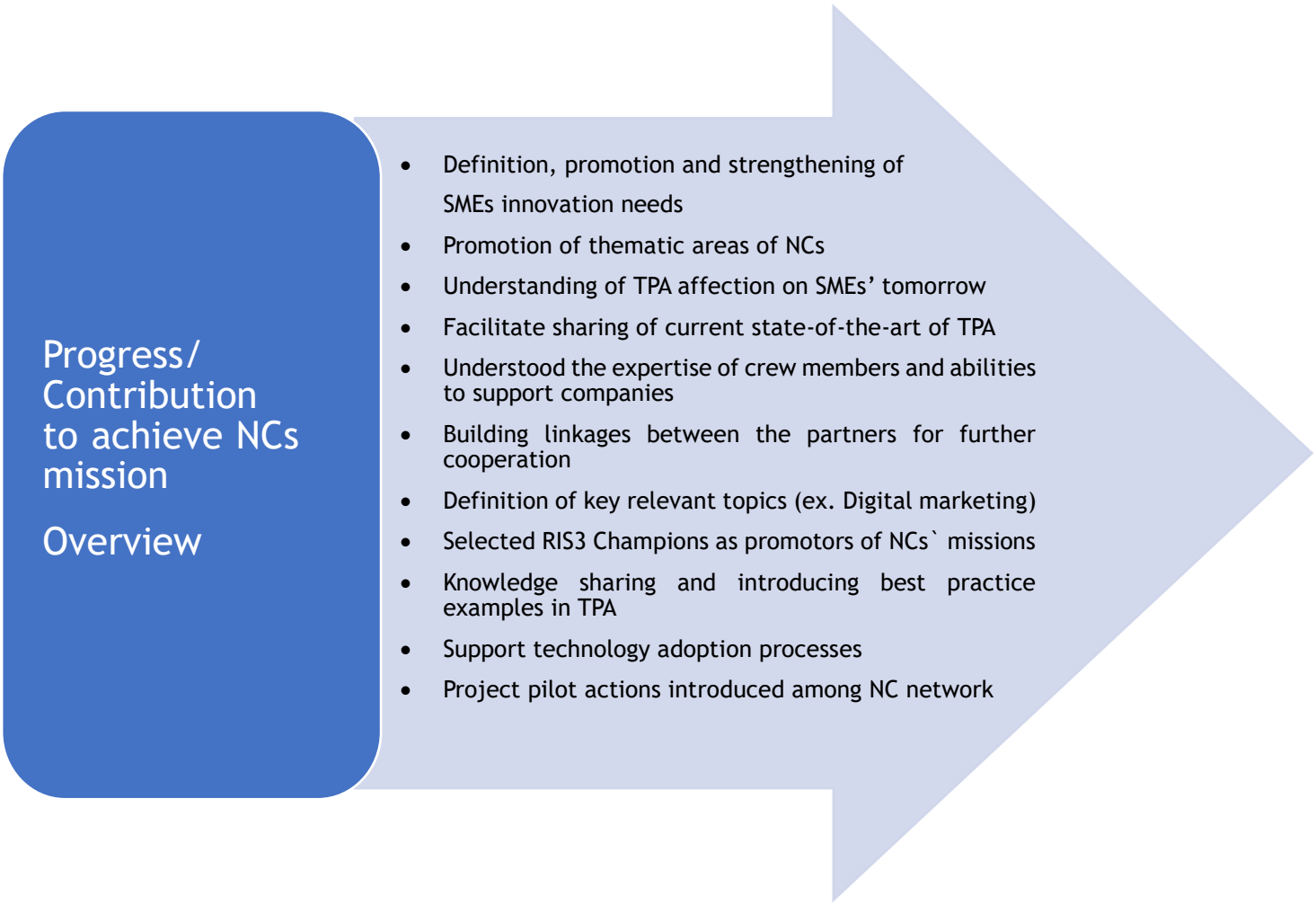
→ **NC Factory & Process Automation**

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

Progress of the Foundation for Future Foresight (F3) as a network of ten Navigation Crews in achieving services` objectives, in general, is being made in helping companies raise awareness on digital transition through access to digital technology by offering training and innovation services and generating new projects. One of the very important contributions of the project was shaping of the CERIS3 Excellence network represented by RIS 3 Champions.

6.1.1. Progress / Contribution to achieve mission

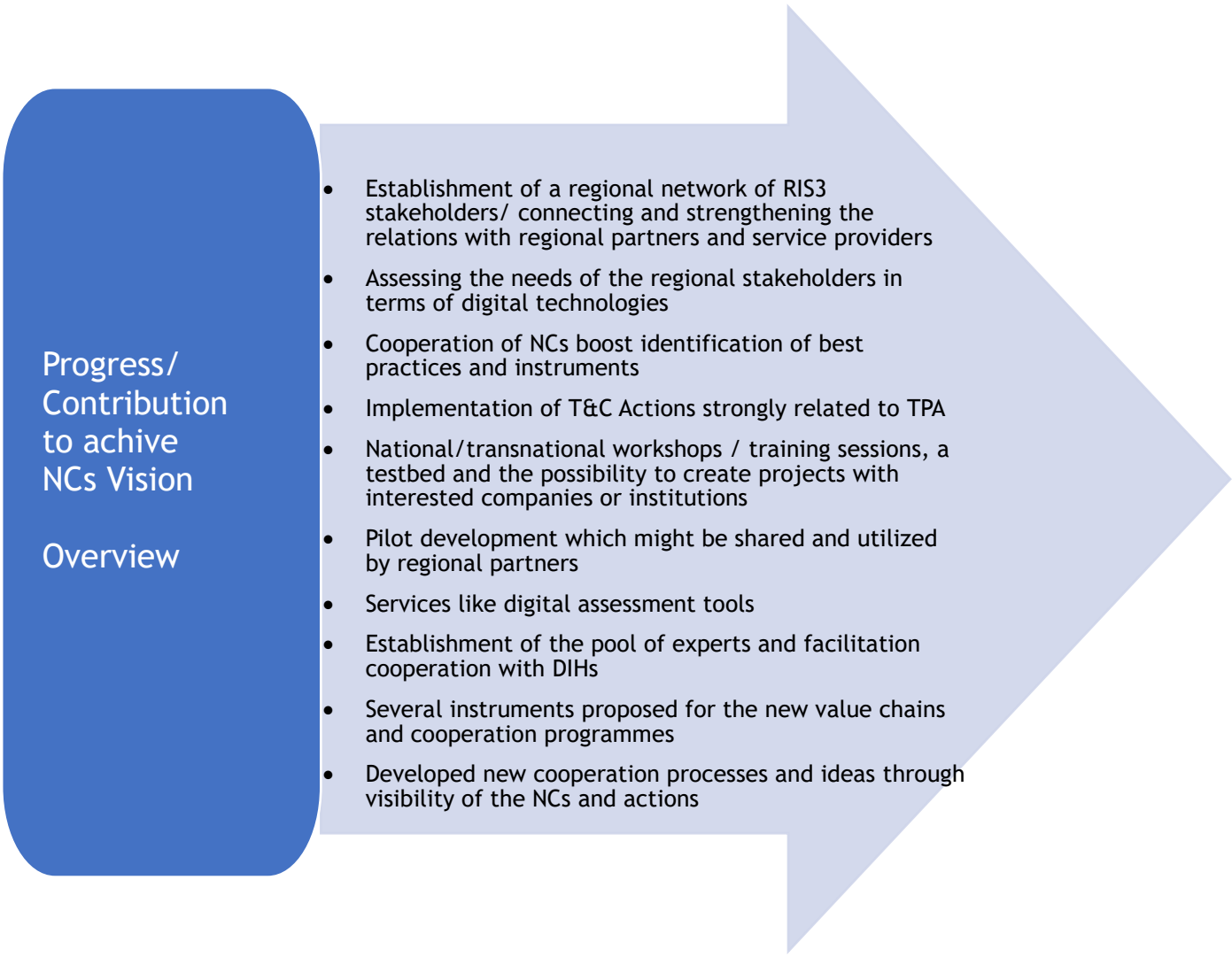
The Navigation Crews stated that the mission progress has been achieved by understanding of SMEs innovation needs and sharing the current state-of-the-art of each specific topic. The RIS3 Champions also performed the role of the mission promotors. The linkages between the partners institutions became stronger because they understood the expertise of crew members and their abilities to support companies.



This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

6.1.2. Progress / Contribution to achieve vision

Contribution to Navigation Crews` visions has been achieved through strengthening the relations with regional partners and service providers and by establishing a regional network of RIS3 stakeholders taking into consideration the needs of regional stakeholders in terms of digital technologies adoption. The digital transition has been supported by several instruments proposed for the new value chain in cooperation programs like national/transnational workshops, training sessions, testbeds, the possibility to create projects with interested companies or institutions and services like digital assessment tools. Pool of experts and cooperation with DIHs provided additional knowledge. Further cooperation processes and ideas exchange were enabled through a visibility of the NCs and implemented actions.



This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

6.1.3 Evaluation of objectives / goals

NC Data analytics, complex simulation and modelling

The Navigation Crew Data analytics, complex simulation and modelling identified different maturity levels of set objectives. Transnational support network is established in a formal way through implemented project pilot actions enhancing knowledge sharing and awareness rising in TPA.

NC Predictive Maintenance

The Navigation Crew Predictive Maintenance identified several major achievements in setting up a robust European network of experts and SMEs, defining SMEs' needs, mapping of all relevant initiatives at EU level acting as a known observatory of existing demonstrators and finally, in attempting to establish formal cooperation between DIHs and EU initiatives in the field of Predictive Maintenance.

NC Machine Vision

The Navigation Crew Machine Vision has identified operational model, but formal structure of the operation still has to be established in order to set up a European network of experts and SMEs.

NC Design and Engineering for Additive Manufacturing

The Navigation Crew Design and Engineering for Additive Manufacturing made progress in identification of companies' needs in order to start new cooperation and transnational network of companies and experts. Contribution is also made in field of education/training through development of curricula, structuring engineering, designing guidelines and respective business model for supporting affected enterprises.

NC Innovation in Circular Economy

The Navigation Crew Innovation in Circular Economy contributed to set objectives through structuring of engineering and design guidelines for supporting of circular economy, structuring business model support for affected enterprises and in field of education/training.

NC Digital Marketing

The Navigation Crew Digital Marketing (FB) contributed to achievement of goals by identifying the specific needs in the field of digital marketing, by defining the possible "next steps" for the companies on their way to digital applications, by communicating the information to the NC members and trying to find synergies between different regions and finally, by building strong cooperation among DIHs and NC members on a transnational level.

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NC Industrial Internet of Things

The Navigation Crew Industrial Internet of Things set the foundation for the specific services that should help stakeholders in developing their IIoT projects. This foundation gathers available experts and sources of information on IIoT in the involved regions, a consolidated fact sheet individualized with regional content, knowledge transfer about case studies, awareness workshop about the IIoT potentials for regional competitiveness, scouting and counselling, digital skills updating activities and networking. Some of T&C Actions are strongly related to IIoT topics.

NC Smart & Advanced Materials and Nanotechnology

The Navigation Crew Smart & Advanced Materials and Nanotechnology made progress in integrating different actors to conduct practice-oriented and interdisciplinary know-how transfer, informing them about innovative trends in order to test possible cooperation model among DIHs that allows to improve enterprises understanding of the future impact of the technologies and finally to become one-stop-shop for smart material applications.

NC DI&I Machinery

The Navigation Crew DI&I Machinery made a certain progress implementing a series of activities in becoming a platform for connecting experts with SMEs and as a reference point for respective DIHs connecting competencies of involved regions and developing a complete offer for companies. Due to Covid-19 situation as well as the lack of resources in SMEs, the NC estimated that some of objectives like creation of in-house groups of practitioners to help SMEs is overambitious, therefore awareness raising and promotion actions on digital innovation in the sector is needed.

NC Factory & Process Automation

The Navigation Crew Factory & Process Automation in its intention to create a sustainable platform has implemented several activities like setting a pool of experts which has defined available services for respective DIHs, collection of best practice examples and bringing new knowledge and expertise. Identified scope of services is based on cooperation tool with aim to meet the SMEs needs. However, the sustainability of services and cooperation have to be ensured.

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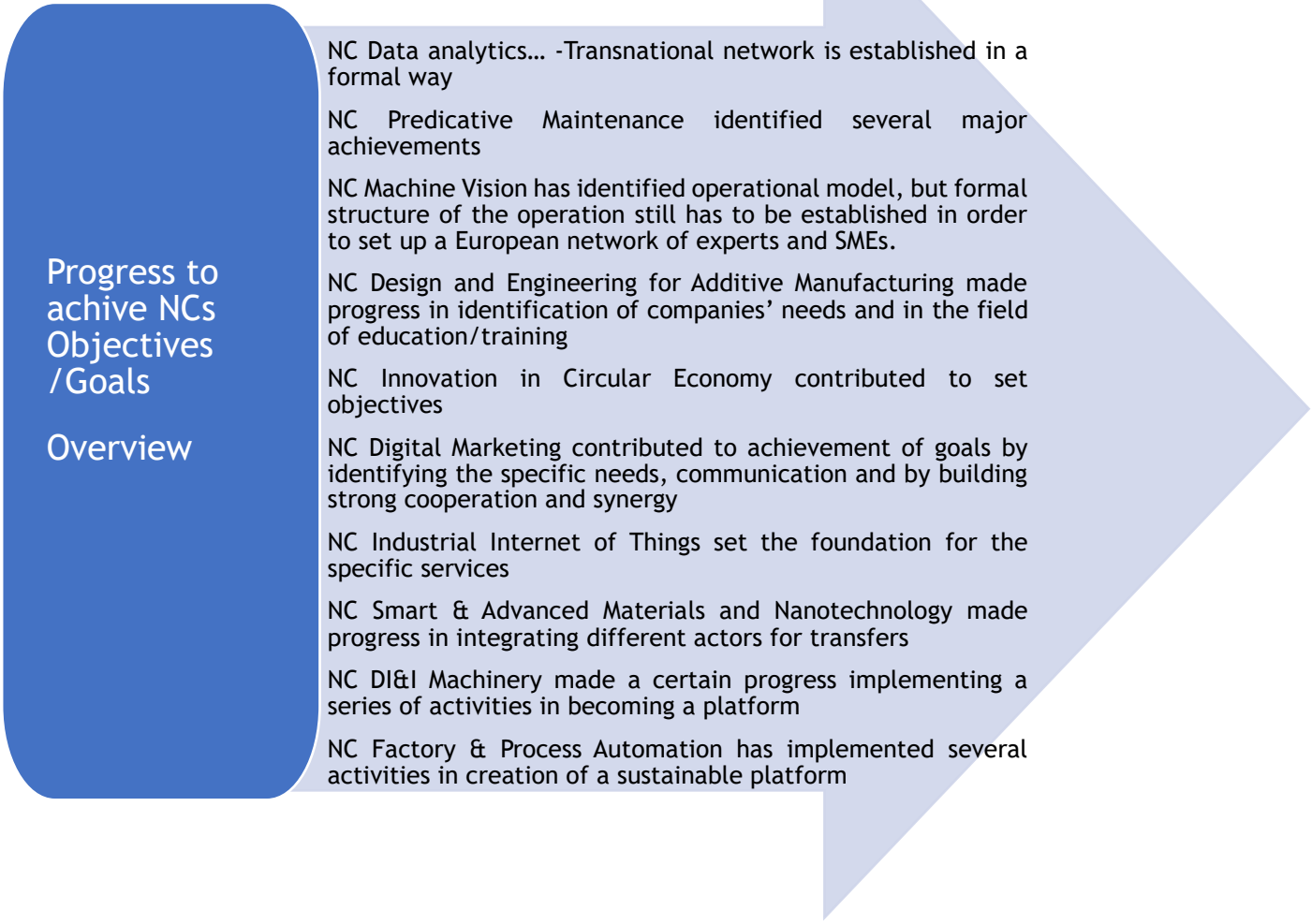

6.1.4. Mission, Vision & Objective analysis resilience building

Building resilience starts with different capacities boosting and / or reducing vulnerabilities.

VULNERABILITY

The vision and shared values have to be clearly articulated and understood by all stakeholders, continuously. During the process of creation of the NCs' Resilience Plans and after actions being implemented, all NCs visions are considered appropriate, up to date and with no changes needed.
However, the need for a stronger promotion of digital transition and awareness raising about the opportunities on investing into digital innovation were identified. In addition, F3 network with its pool of experts and supporting DIHs requires a specific set of competences and tailored support to SMEs when promoting digital innovation. For the more intensive involvement of the decision and policy makers, the more sustainable F3 network and defined instruments, more time is required.

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CAPACITY

Resilience is enhanced by a clearly articulated and understood missions, visions and objectives to provide coherence and commitment of actors and stakeholders to the shared values. The adequacy of strategic statements and compliance with the common vision and core values of the F3 network should be continuously reviewed and aligned with external and internal changes. Furthermore, maintaining strong relationships with stakeholders that share the same vision and foster co-operation at all levels is also of utmost importance. Finally, to maintain and develop the strategic statements of the F3 network, it is crucial to continue to identify, share and promote new and innovative ideas.

6.2. Service delivery & Portfolio analyses

The purpose of this section is to analyse what F3 network delivered during the project lifetime and take a foresight-oriented step forward to develop a service portfolio which could be delivered at a transnational level to promote RIS3 Implementation in an ongoing way.

6.2.1. The most effective support-services provided by the Navigation Crews

The assessment of the performance of the most effective services delivered by F3 network is shown in Chart below. Here is an overview of the most frequently mentioned services:

- Online thematic webinars/trainings/study visits
- Introduction to regional RIS3 structure and networks
- Networking to identify common interest for future projects
- Showcase of practical experience
- Access and support to cascade funding schemes
- Information on technology benefits
- Lists of information sources and experts
- Reference network for stakeholders
- Tailored support
- B2B meetings

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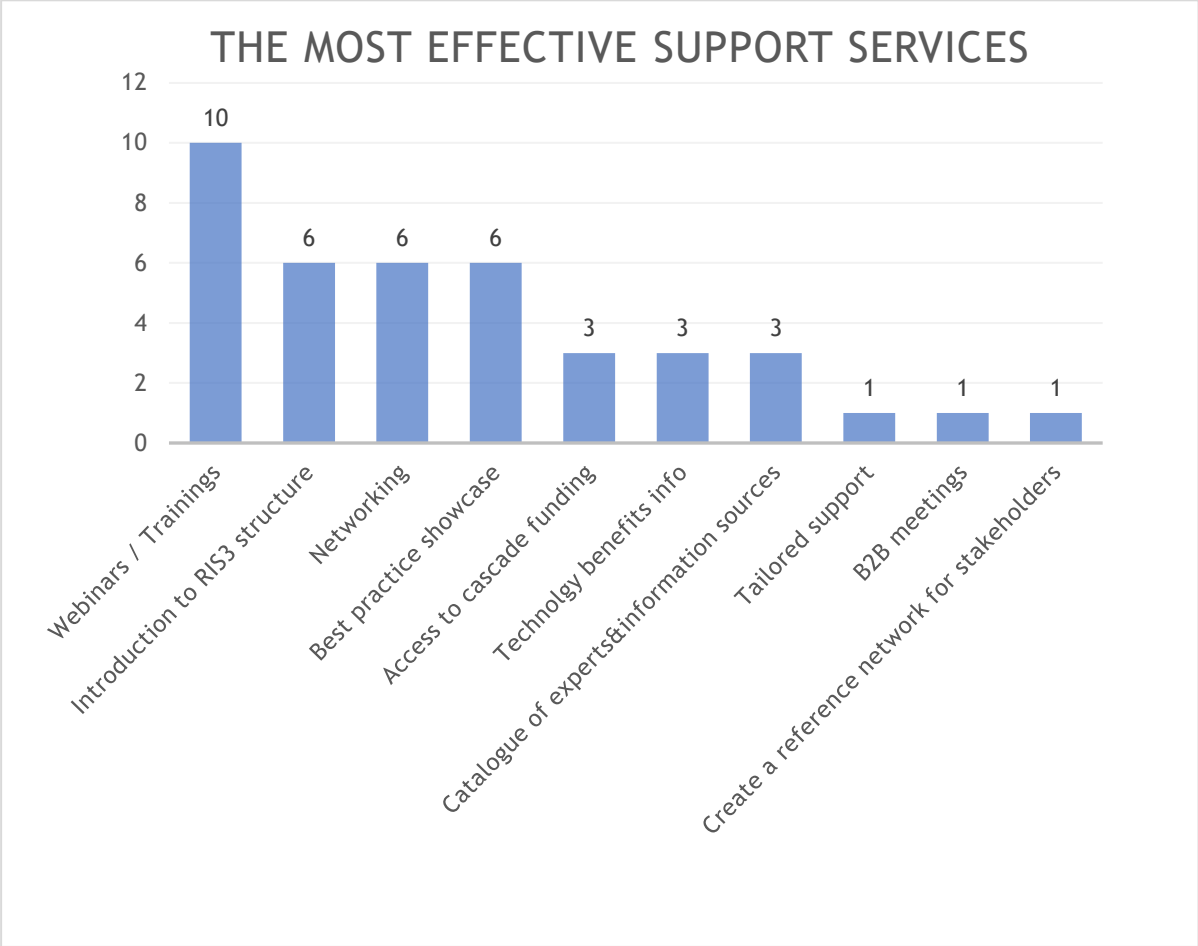

Figure 12: The most effective support services

6.2.2. Service support that did not work

The Navigations Crews consider some services implemented within the actions during the project life-time as not fully effective due to:

- Difficulty in attraction of interested stakeholders (due to COVID-19 circumstances)
- Support to SMEs did not work effectively (due to COVID-19 situation)
- Language barrier
- ASANA was not fully working as a support/facilitating tool
- Establishment of the platform of experts in thematic areas (Young thematic field (NC CE); Insufficient expertise in Centrale Europe (NC DI&I)
- Lack of focus on funds allocation sources
- Lack of concrete services for regional SMEs, e.g. regional RIS3 champions.

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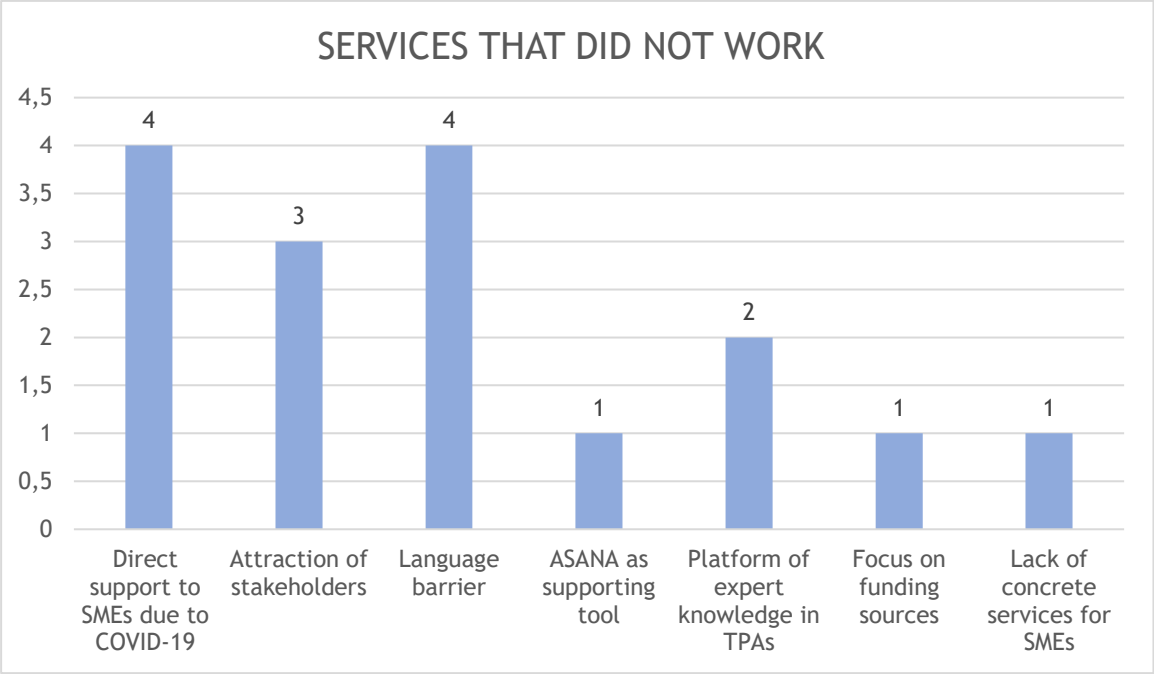

Figure 13: Services that did not work

6.2.3. The greatest service successes

The greatest service successes were identified within the knowledge transfer and exchange of experience and gaining new insight into valuable information on the Technology Priority Areas (TPAs) through thematic webinars/workshops, the training and mobility actions, NC and bilateral meetings. These activities provided valuable information on TPA, regional cooperation structures, possible synergies between competence centres and insight into the promotion of RIS3 development and comparison with the services provided by other DIHs in order to better tune service portfolio. Finally, similarities of stakeholders' need in all participating regions have been recognised.

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Figure 14: Greatest service successes

6.2.4. Must-have services for the thematic areas

According to the Navigation Crews' Resilience Plans, the service catalogue of F3 network should include some of the following must-have services:

- Ecosystem building
- Mapping of the best in class services
- Competences building & awareness and promotion raising
- Regional stakeholders' needs assessment analysis
- Business development
- Foster cooperation between partners and network
- Sustainable transnational network of external experts
- B2B system of cooperation
- Boost technology and innovation through available financial mechanisms and cascade funding
- Practical workshops for applying TPA solutions
- Study visits to showcase successful implementations as a multiplier
- Maturity assessment
- Technology provision
- Data and AI value chain.

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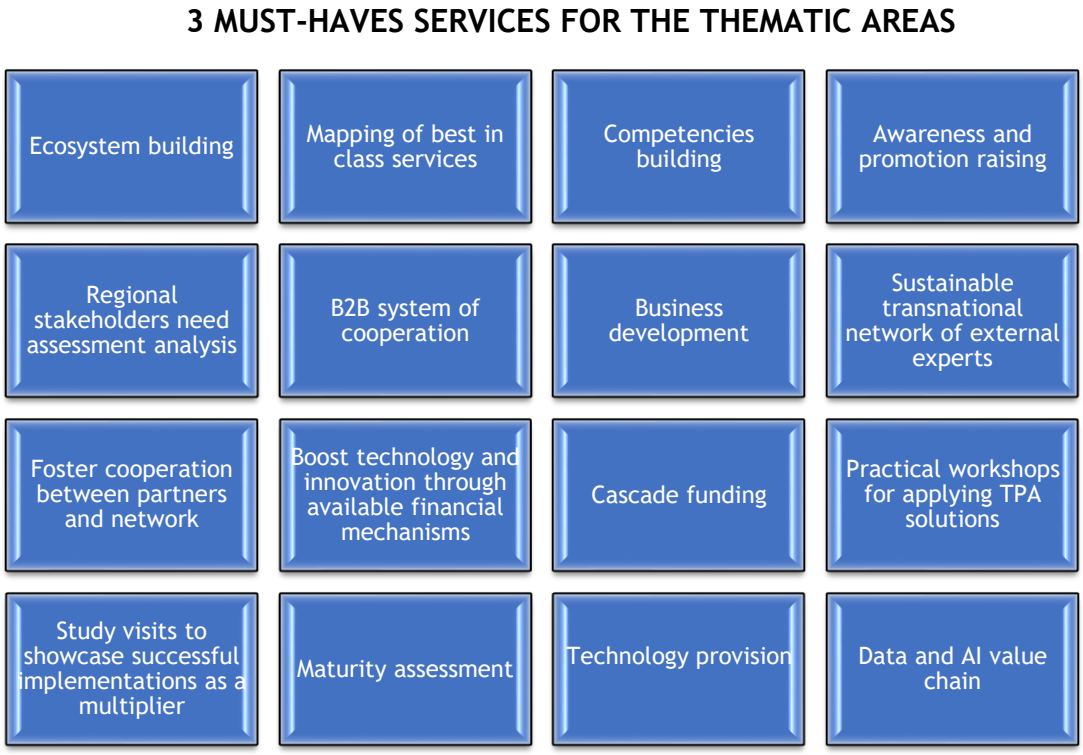

Figure 15: Must-have services for the thematic areas

6.2.5. Adaptation or shifting the Concept/Focus of the Navigation Crews to optimize RIS3 Value-Added service delivery

The key concepts of the Navigation Crews are in line with the RIS3 strategies and therefore no shift or adaptation is needed now. However, the identification of the regional needs regarding the technology topics and early identification of respective regional partners should be put in focus. On the other hand, transfer of knowledge from academia to business sector should be emphasized, a role of R&D institutions strengthened in order to effectively promote innovation and digitalization of the companies in alignment with market needs. Also, the portfolio of services must be aligned with companies' needs and available to all interested stakeholders.

Services delivery must be optimized through fostering knowledge and technology transfer between targeted SMEs, technology providers, NCs' partners and keep up with the state-of-the-art technologies in order to provide the most competitive solutions to companies. The knowledge gap that exists refers also to the existing language barrier. Up-to-date technology trends, achievements and service offers could be monitored through establishment of a technology radar in order to gain and overview of technology trends. As a final recommendation, the NCs should transfer more tailored, practical and concrete services to SMEs.

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ADAPTATION OR SHIFTING THE CONCEPT/FOCUS OF THE NAVIGATION CREWS TO OPTIMIZE RIS3 VALUE-ADDED SERVICE DELIVERY

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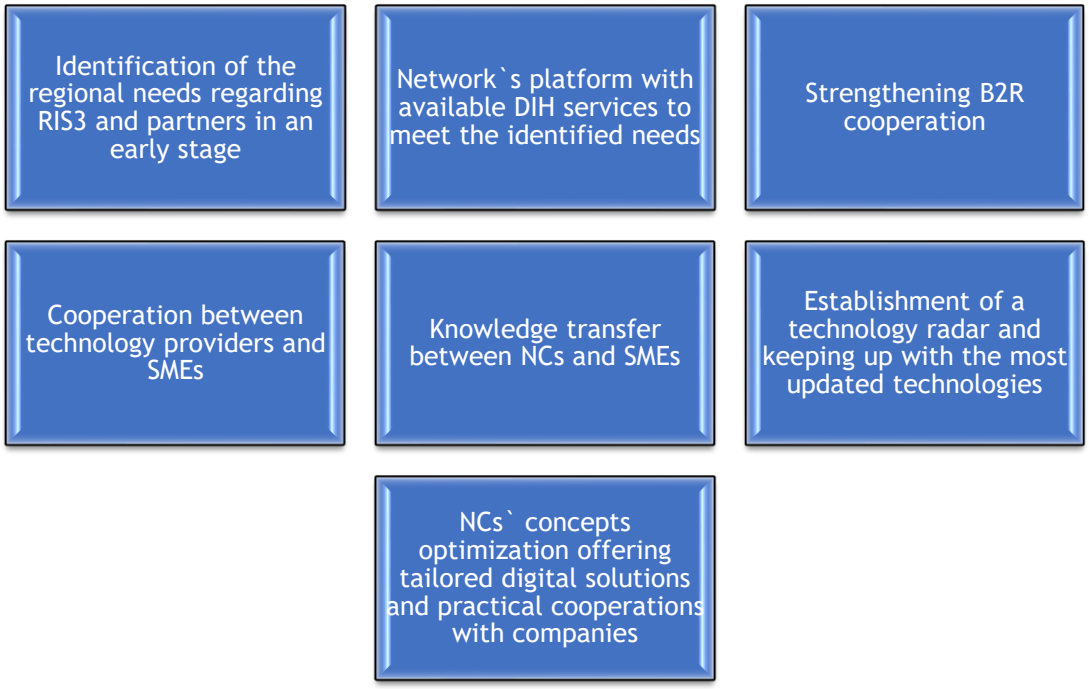

Figure 16: Areas for shifting concept/focus of the NCs

6.2.6 Vulnerabilities / Adaptive capacities of the F3 Network Service portfolio

VULNERABILITIES

During the project and activities implementation, it turned out that COVID-19 was the biggest disruption in F3 network functioning. In context of lack of direct networking, stakeholders appeared to communicate less than expected. A direct support to SMEs, according to majority of the Navigation Crews did not work fully effectively due to COVID-19 restrictions since most of the events and meetings had to be organized online. A language barrier has also been identified as one of the obstacles in the network functioning which once again stressed out the importance of human resource capacity not just regarding “hard”, but soft skills as well. Furthermore, where lack of direct communication is in question, online tools are perceived as the most significant way of communication and interconnection, especially among the respective network stakeholders. However, the ASANA tool, chosen initially as a cooperation tool, has been identified by one NC as not fully working as a s support/facilitating tool. Individual members also stated that establishment of the platform of experts in thematic area due to young thematic field (Circular Economy) or lack of expertise is difficult. Some of the relevant area, such as DI&I Machinery is not represented in Central Europe, so a broader view should be taken into

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account. Last, but not least, according to NCs, more focus should be put on sources of funding.

CAPACITY

All Navigation Crews agree that the common understanding of the business sector's needs is a main condition for a successful cooperation and precondition for active engagement of relevant regional stakeholders. Unfortunately, COVID-19 circumstances have disabled direct contact with stakeholders which caused negative impact regarding direct support to SMEs. However, online communication has expanded possibility to achieve transnational communication which opened new possibilities of best practice transfers on to other respective regions and other respective organisations which furtherly expand and deepen benefits and enhance the sustainability of F3 network. During the project, a lot of services were successfully implemented among which Navigation Crews' members have pointed out thematic webinars / trainings / study visits, showcase of practical experience, access and support to funding schemes, provided information on technology benefits and possibility of tailored support to stakeholders, B2B meetings, identification of the common interest for future projects as well as awareness raising, as the most effective. Connections realised within the project with other existing platforms and networks, like successful collaboration within DIHNET.EU, also ensure additional sustainable functioning of F3 network. The Navigation Crews identified follow-up projects as the most favourable opportunity to maintain relationships and further strengthen the network sustainability. This accomplishment shows that the F3 network, with its service portfolio, has an adaptive capacity as well as potential for further development, to learn and grow stronger.

Service portfolio should be prone to introduction of new, improvement / change of existing and retirement of obsolete services. The list of services gathered in the service catalogue should be visible, available to stakeholders and clearly understood by end-users. A design of the service portfolio should be continuously monitored according to services lifecycle and current technology trends aligned with market needs.

6.3. Sustainability analyses

Sustainability was defined through the environmental, social and economic predictable challenges, while resilience was viewed as the ability of a system to prepare for threats, absorb impacts, recover and adapt following persistent stress or a disruptive event. This section analyses how Navigation Crews intend to deliver the key successes highlighted above in a sustainable way.

6.3.1. Adaptation of the navigation crew service portfolio

When it comes to adaptation of the Navigation Crews' service portfolio, the F3 network members have identified several approaches to enhance the resilience. NCs recognised that learning from each other, information and knowledge sharing are the most valuable principles of the network sustainability. Most of the Navigation Crews emphasized that

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sharing news, information, expertise and events information via already established communication tools *(e-mail newsletter; institutional websites; DIHs, DIHNET.EU)* would be a priority in the future work within F3 network. The development of the service portfolio should focus on the further development of the ecosystem, tailored support to SMEs, creation of value chains and stronger involvement of the decision-makers to ensure appropriate cascade funding schemes. The service portfolio should additionally target needs for awareness raising and bringing together digital innovation practitioners from research into companies. The EDIH network is identified by NCs as a very suitable network for a further cooperation. Navigation Crews assessed the establishment of a new public platform where companies and stakeholders can access and check the type of the available services provided per each DIH of the network as very useful. The Navigation Crews also invited members to join their already existing networks (smart[3] network, …) to provide additional benefits to the F3 network. Continual screening the upcoming funding programs and possibilities to identify common research topics and work on possible follow-up activities, transnational cooperation and follow-up projects are also stated as one of the most important elements for the F3 network sustainability.

Some of the Navigation Crews (NC Data Analytics, Complex Simulation and Modelling, NC Machine Vision, NC Predictive Maintenance) lead by PP5 -IMECH conducted service portfolio analysis and determined structure according to specific competences, shareable services around 5 main thematic domains: Ecosystem Building, Technology provision, Business development, Maturity assessment and skills, Data and AI value chain. Within each domain, each member identified service domains where he can possibly contribute while several experienced members (PP5-IMECH, PP9-PBN, PP2-FB) have explicitly declared to be able to have a proactive role.

Further boost of NCs' services could be reached by better inclusion of regional and national stakeholders with connection of RIS3 Champions network. Navigation Crews should foster cooperation and networking with the regional partners, coordinate the NCs' activities with the service offers of the regional DIHs and connect the NCs' members with the project activities of the regional DIHs.

Map of expertise is one of the ways for further upgrading service portfolio and valuable information source for possible upcoming projects in the future. The recommendation is also to carry out a technology radar to monitor and to be aware of state-of-the-art of technology.

The Crew will work on establishing and broaden innovation corridors for TPAs. Examples are a project from PP9-PBN where a demo production line is built and smart material learning boards implemented and PP4 -IWU bringing smart material expertise to a circular economy cluster.

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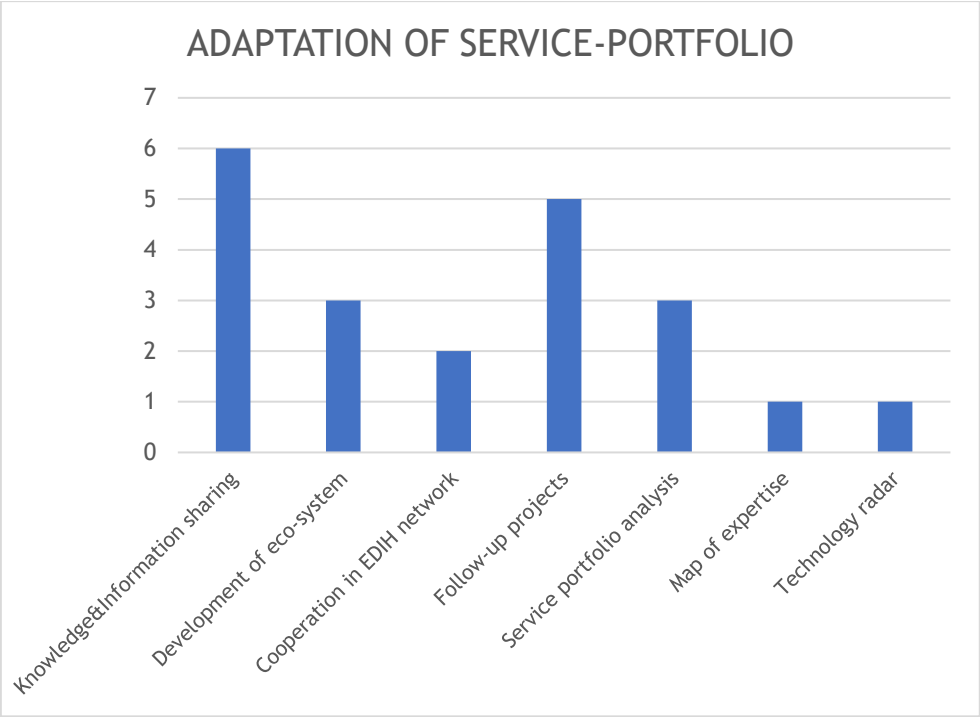

Figure 17: Areas of adaptation of service portfolio

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6.3.2 Organisations empowered to adopt key work

DATA ANALYTICS, COMPLEX SIMULATION AND MODELLING - IMECH

- Lead partner of the Navigation Crew Data Analytics, Complex Simulation and Modelling together (IMECH - PP5) with other two NC members (PBN and FB) will lead future initiatives of the NC

PREDICTIVE MIANTENANCE - IMECH

- Lead partner of the Navigation Crew **Predictive Maintenance** (IMECH - PP5) with NC member (PBN - PP9) will lead future initiatives of the NC

MACHINE VISION - IMECH

- Lead partner of the Navigation Crew **Machine Vision** (IMECH - PP5) will lead future initiatives of this NC

DESIGN and ENGINEERING for ADDITIVE MANUFACTURING - CUAS

- The Navigation Crew Design and Engineering For Additive Manufacturing lead by CUAS (PP1) and following institutions will conduct future activities related to this thematic focus area:
- Smartfab Carinthia, DIH Süd; DIH Slovenia; DIH 4P; CUAS, TECOS, IMECH, PBN; AFIL; CFI and AM-LAB.

INNOVATION IN CIRCULAR ECONOMY - CUAS

- The Navigation Crew Design and Engineering For Additive Manufacturing lead by CUAS (PP1) in cooperation with following institutions will conduct future activities related to this thematic focus area:CUAS-DIH Smartfab Carinthia; Green Tech Cluster; KWF as a funding organization; WKO; Forschung Burgenland - DIH Süd, DIH- Ost and regional stakeholders; HGK-DIH Connect

DIGITAL MARKETING - FB

- The actions related to Navigation Crew Digital Marketing lead by Fb (PP2) will be implemented by:
- Forschung Burgenland GmbH in cooperation witH DIH
- Krakow Technology Park in cooperation with DIH
- Fraunhofer IWU will strive to contribute through the DIH Innosax
- smart³ network will be a key organization to support the work

INDUSTRIAL INTERNET OF THINGS - IWU

- The Fraunhofer IWU (PP4) will lead in cooperation with DIH Innosax
- Ecipa (PP6) will involve Ecipa Hub to take charge of key work
- Forschung Burgenland GmbH (PP2) will conduct activities through DIH-Ost and DIH-Süd
- HGK Varaždin (PP10) and regional DiH will act together
- Intellimech (PP5) will act internally by sharing the outcomes and rely on DIH AFIL and DIH CFI.
- PBN (PP 9) shall be supporting the work from project management side and its am-LAB from technical side.
- TECOS (PP 8) will participate through DIH Slovenia and EDIH partnership within 4PDIH of Slovenia

SMART & ADVANCED MATERIALS AND NANOTECHNOLOGY - IWU

- Fraunhofer IWU (PP4) will conduct actions through the regional DIH Innosax.
- The smart³ network will be a key organization to support the work
- PBN (PP9), the technical activities are to be carried out by their related DIH - am-LAB
- CUAS (PP1) will promote and perform the work through activities of CISMAT and DIH-Süd
- Intellimech (PP5) will perform the actions internally by sharing the outcomes with its industrial partners and rely on the support of the regional DIH AFIL and national DIH CFI

DI&I MACHINERY - TECOS

- TECOS (PP8) as a lead of the Navigation Crew DI&I Machinery will be involved in the further alignment and development of the activities and it will be supported by associated DIHs
- For sustainability purposes the successes will be shared with key ecosystem stakeholders and decision-maker

FACTORY & PROCESS AUTOMATION- TECOS

- TECOS (PP8) as a lead of the Navigation Crew Factory&Process Automation will be involved in the further alignment and development of the activities and it will be supported by associated DIHs
- For sustainability purposes the successes will be shared with key ecosystem stakeholders and decision-maker

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6.3.3. Vulnerabilities/ Capacities of F3 Network regarding sustainability

VULNERABILITIES

Enhancing resilience should be a strategic goal and the outcome of good business practice and effective risk management of the network. Most of the Navigation Crews consider reasons of not pursuing success of the NCs as not relevant. However, some potential risk should be taken into consideration:

Organisational risk

- Unclear roles and responsibilities of the NCs` members
- Significant changes among NCs staff & lack of HR
- Not enough interested stakeholders
- NC's members cannot adapt to changed circumstance after the end of the project

Innovation risk

- Lack of interest for some TPA topics
- Lack of expertise and capacity in some TPAs

Financial risks

- Lack of call for proposals monitoring system
- Low rate of success in the submission process of follow-up projects
- NCs members' uneven availability to financial resources
- Service portfolio not aligned with market needs

Communication risks

- Low quality of relationships between NCs' members and stakeholders
- Low visibility of the F3 network & low access of new members
- Lesser or weak communication among NCs members

Policy level risk

- TPA topics not aligned with upcoming period strategic documents
- Lack of appropriate funding scheme for follow-up projects

CAPACITY

A sustainability is a concept related to the continuity of economic, social, institutional and environmental aspects. The sustainability of network will be regarded in frame of:

- **Institutional strengthening** of the NCs` members which refers to implementation of actions with special attention to transfer of sustainable technological solutions.
- **Financial sustainability** of actions refers to the financing of the follow-up activities, development of new services and continuation of cooperation within and among NCs after the project is completed.

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- Although in principle it is not in the focus of project, "green" activities and **environmental sustainability** make part the F3 network actions
- **Sustainability at the policy level** is also stressed out especially with regards to complementary initiatives at EU and CE level.

DIHNET.EU project enhances the coordination of European, national and regional initiates directly supporting the digital transformation and DIHs. S3HubsinCE project also operates within this community.

European Digital Innovation Hubs – EDIH network will play a central role in the Digital Europe Programme to stimulate the broad uptake of digital technologies by industries and public sector organisations in Europe. The majority of the involved regional DIHs of the F3 network are selected hubs for EDIH network.

NC Data Analytics, Complex Simulation and Modelling

Lead partner of the Navigation Crew Data Analytics, Complex Simulation and Modelling, IMECH – PP5, together with other two NC members PBN – PP9 and FB – PP2 will lead future initiatives of the NC. **The institutional sustainability** will be achieved through strengthening the cooperation process in frame of the NC. IMECH will, for example, support stakeholders through business model development cycle, product demonstration and creation of a virtuous ecosystem for skills and best practice exchange leaning on internal and external expertise and enabling linkages between specific stakeholders.
The PBN is committed to Data and AI Value Chain area with focus on Data acquisition and Data analytics offering services of *am-LAB*. The FB, in cooperation relevant regional partners, focuses on strategic and specific R&D by supporting the transfer of innovative ideas into demonstrational concepts, automated measurement, online storage and accessibility of regional data for different business branches, physical human interaction and the area of Maturity assessment & Skills with focuses on human up-skilling, re-skilling training.
Financial sustainability will be guaranteed through current or future funded projects related to innovative technologies in the AI field and on the business basis where price is to be discussed based on the specific project and by the creation of networks to identify new opportunities.

NC Predictive Maintenance

Lead partner of the Navigation Crew Predictive Maintenance - IMECH (PP5) with NC member PBN (PP9) will lead future initiatives of the NC. The **institutional sustainability** will be supported through focusing on the Trend watching, Technology scouting and the field of the Technology provision which deals with Product demonstration using internal or external expertise. Within the Business development IMECH plans to create a virtuous eco-system for skills and best practices exchange. PBN as the second member of the Navigation Crew will lead future initiatives coordinating the Data and AI Value Chain area with focus on Data acquisition and Data analytics. The **financial sustainability** of these services will be guaranteed through funded projects related to innovative technologies in the AI field, creation of networks to identify new opportunities and on a business basis which price is to be discussed based on the specific project.

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NC Machine Vision

IMECH (PP5), like NC1 and NC2, will lead activities of Ecosystem building focusing on the Trend watching, Technology scouting and Business development. The sustainability of these services will be guaranteed through funded projects related to innovative technologies in the AI field, creation of networks to identify new opportunities and on a business basis which price is to be discussed based on the specific project.

NC Navigation Crew Design and Engineering for Additive Manufacturing

The Navigation Crew Design and Engineering for Additive Manufacturing members will continue to share news, information, expertise via already established communication tools (e-mail newsletter; website; DIHs, DIHNET.EU). The Navigation Crew Design & Engineering for Additive Manufacturing lead by CUAS and other NC's members will conduct future activities related to this thematic focus area in cooperation with relevant regional institutions, mainly DIHs. The **financial sustainability** will be achieved through upcoming funding programs and possibilities to identify common research topics.

NC Innovation in Circular Economy

The Navigation Crew Innovation in Circular Economy members will also continue to exchange up-to-date information and expertise via already established networking channels engaging related institutions for implementation of the future joint activities. The EDIH network is a suitable network for further cooperation. The **financial sustainability** will be achieved through follow-up projects.

NC Digital Marketing

The Navigation Crew Digital marketing members will strengthen network with the regional and transnational partners by sharing knowledge, best practices and portfolio of joint services using project tools like ASANA. Additionally, current networks like DIH/EDIH or smart^3 will be used for creating synergies. Carrying out a technology radar will increase awareness on technology trends. The **financial sustainability** can be ensured through upcoming EU research and technology funding programs and joint work on possible follow-up activities, transnational cooperation and follow-up projects.

NC Industrial Internet of Things

The Navigation Crew Industrial Internet of Things will continue to maintain sustainability by already shared platforms and established channels sharing knowledge and information and delivering updates with and among DIH/EDIH network members. Further boost could be reached by better inclusion of regional and national stakeholders with connection of RIS3 champions. Map of expertise is also an effective way of upgrading service portfolio for possible upcoming actions and projects. A public platform where companies and stakeholders can access and check the type of the available services could also be useful for strengthening sustainability of the NC. As for the **financial sustainability**, cascade funding and further relevant call opportunities are to be screened and shared among members.

NC Smart and Advanced Materials

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The Navigation Crew Smart and Advanced Materials sustainability will be maintaining through shared platforms, by using joint tools and already established communication channels like DIH/EDIH and DIHNET.EU, ASANA, smart[3] and research institute. The shared lists of experts and information sources in the regions is also a good starting point for possible upcoming projects. Lead and contributing partners will bring in smart material expertise and experience with a demo production line. The **financial sustainability** will be achieved through identification of common research topics and follow-up projects.

NC DI&I Machinery

The Navigation Crew DI&I Machinery will continue to align and focus on the development of the ecosystem, involvement of the decision-makers to ensure cascade funding and tailored support to SMEs and creation of value chains. Additionally, awareness raising and bringing together digital innovation practitioners from research into companies will be added to service portfolio. The NC DI&I Machinery will be supported by associated DIHs.

NC Factory and Process Automation

The Navigation Crew Factory and Process Automation will boost sustainability with further development of ecosystem, tailored support to SMEs, creation of value chains and inclusion of relevant decisionmakers to ensure cascade funding. NC will be supported by associated DIHs.

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7. Conclusion

The Foundation for Future Foresight (F3) is a sustainable innovative network formed through mutual cooperation of multiple actors with an intention to better achieve goals through than without a network. Some critical success indicators for the multi-actor networks are derived, like Network diversity, Network density, Performance assessment.

Optimal diversity of involved stakeholders in the network brings knowledge, other networks' connections, authority, etc. while network density as the indicator of inter- and intra-connection and communication of the core network brings better common understanding and higher performance of the network in achieving goals. In that context, it should be mentioned the high involvement of the NCs in project T&M and T&C Actions and consequently positive indication of stability and adaptive capacity of the F3 network. These indicators *(number of involved stakeholders from different target groups, number of communications between F3 members/ stakeholders, number of follow-up projects and funds leveraged)* could be used as the measurement criteria to monitor and evaluate the status of the resilience attributes of the F3 network.

For an assessment and improvement of performance of F3 network, we were leaning on the EFQM model criteria (Appendix 2) as a management framework for delivery of positive performance, manage excellence, cultural change and transformation of the network.

The learnings from the implemented actions reveal some weak points of the F3 network development in the follow-up period after the project closure.

Better inclusion of regional and national stakeholders, connection of RIS3 Champions network could further boost the NCs' services performance ensuring coherent link of strategic objectives with results of actions so that the F3 network reflects RIS3 Excellence in CE.

Roles and responsibilities of the F3 network are not defined clearly enough. This task requires identification of effective tools and resources.

Services should be designed and managed regarding their lifecycle with continuous improvement introducing new services and retiring of existing ones in order to bring value, balance overall risks of the portfolio and achieve alignment with the strategic statement of F3 network.

Some of the partners stated the difficulties in establishing, developing and maintaining relationships with stakeholders with whom they could create and implement projects for mutual benefit and achievement of continued engagement.

The NCs have identified some obstacles in creating partnerships with stakeholders which refers to inability of the direct contacts due to COVID-19 circumstance, language barriers, etc. Due to Covid-19, most of the events and meetings were organized online which led to a lower level of commitment to the F3 network. English, as a working language, influenced the smooth implementation of trainings, but was not entirely accepted by some involved stakeholders.

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Not all follow-up project applications were assessed positively which also reduced financial capabilities.

Key stakeholders' needs can change over the time and it is important to continuously collect and analyse stakeholders' feedback to improve the services or change the portfolio. Identification of new and innovative ideas to achieve and develop strategical statements of F3 network is needed to ensure future performance and sustainability. Conditions for realizing future changes are not clearly created.

Continuous monitoring of expression of value propositions, evaluation of performance in relation to stakeholders' needs and implementation of appropriate actions to secure the future performance of the F3 network are needed.

The F3 network was not adequately recognised among wider expert society. Work on visibility of the F3 network is also very important task for sustainability.

At the same time, the F3 network has shown a large resilience capacity.

Disruption caused by COVID-19 and smooth implementation of all planned actions and projects activities showed that the F3 network had flexibility and adaptive capacity.

Core values of F3 network are aligned with stakeholders needs identified during project lifetime. The F3 network has clearly articulated and understood missions/visions/objectives to provide coherence and commitment to the shared values. During the WP T2 and WP T3 strategical documents and actions plans with aim of connecting all core actors *(NCs, DIHs, RIS3 Champions)* are developed and aligned with regional eco-systems. The F3 network successfully addresses target groups identified within the project *(Local/Regional/National Public Authorities; Higher Education and Research; Education/Training Centres and Schools; Large Enterprises; SMEs; BSOs)* whereby the network met the initially set indicators.

The network has a capability to provide and share information and knowledge due to its broad stakeholders' base and furthermore, it recognizes the importance and has a focus on creativity, innovation and disruptive thinking. Involvement and commitment to prominent young topics, such as the circular economy, opens opportunities for new collaboration and adds new value to the network.

Most of the implemented actions were aligned with the RIS3 and therefore influence further communications with public authorities and policymakers.

Online communication, due to COVID-19, has additionally increased transnational contacts and consequently transferability of the best practices and know-how solutions to other respective regions and other respective organisations. These transfers are assessed, according to stakeholders, as the most effective ones and vital for a long-term success of the F3 network. The RIS 3 Excellence network consisting of 51 RIS3 Champions was established and became operative demonstrating synergy between best-in-class organizations.

Through exchange of best practices and individual experiences, a great interest towards digital potential emerged leading to a few proposals submitted which is very important element for creation of sustainable value. Series of qualitative follow-up actions will ensure the necessary transformation of the network in the future.

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The possible F3 business model, as shown below in the Business Model Canvas, is based on the findings of 10 Resilience Plans of Navigation Crews and reflects an understanding of strategical statements, services portfolio analysis, sustainability of the value it provides with regards to ecosystem support, technical and business support with focus on market needs.

F3 Business Model Canvas

<table>
<tr>
<td rowspan="2">8
Key Partners

-Business sector -RIS3 Champions network

-Organisations empowered to adopt key work

-DIHs and EDIH network

-Universities

-LA/RA/NA

-Business support institutions

-Support service providers</td>
<td>7
Key Activities

-Thematic webinars/trainings/study visits, B2B meetings
-Showcase of practical experiences
-Access and support to funding schemes
-Access to experts' networks
-Access to best in class services
-Tailored support
-Technology provision
-Technology radar
-Regional networking
-Awareness raising
-Maturity assessment</td>
<td rowspan="2">2
Value Proposition

-Ecosystem building

-Access to services that support business growth based on adoption of solution related to NCs' TPAs

-Access to up to date trends and best in class services in CE

-Advanced networks connectivity

-Network of RIS3 Excellence in CE

-Identification of common interests

-Identification of market needs

-Access to finances

-Portfolio management</td>
<td>4
Customer Relationship

-Direct contacts

-Expert networks

-Relevant platforms and networks, like EDIH, DIHNET, smart^3 …

-Brokerage</td>
<td rowspan="2">1
Customer Segments

- Companies looking for solution in NCs' TPAs

-Technology providers

-Universities & Research organisations

-Local/Regional/ National Authorities

-EDIH/DIH networks

-Public</td>
</tr>
<tr>
<td>6
Key Resources

-Platforms
-Tool: ASANA
-Networks of Experts
-Facilities</td>
<td>3
Channels

-Networks
-Events
-Platforms
-Regional communities</td>
</tr>
<tr>
<td colspan="3">9
Cost Structure
- Services
-Staff costs, Overheads, External costs, Equipment, …</td>
<td colspan="2">5
Revenue Streams
-Funding (EU funds, national and regional funds, LE)
-Fees for services
-PPP</td>
</tr>
</table>

The F3 network with its organisational culture, established and shared during the project, represents a role model within eco-systems, especially by promoting RIS3 Excellence in Central Europe.

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8. Abbreviations

Abbreviation	Explanation
PP	Project Partner
NC	Navigation Crew
IC	Impact Controlling
S3	Smart Specialisation Strategy
AF	Application Form
DIH / EDIH	Digital Innovation Hub / European Digital Innovation Hub
JRC	Joint Research Centre
CERIS3	Central Europe Research & Innovation Smart Specialisation Strategy
RIS3	Research & Innovation Smart Specialisation Strategy
T&M	Training & Mobility (Actions)
T&C	Transfer & Cooperation (Actions)
TPA	Technology Priority Area
LA/ RA /NA	Local / Regional /National Authority
PPP	Public Private Partnership

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9. Appendix 1.

Learning & Resilience Planning Templates

This template will be used as the reporting inputs for deliverable D.T3.2.3.

Navigation Crew Members need to complete 1 form per organisation involved in the Navigation Crew. Each Navigation Crew Lead will be asked to summarize all Member content & add their own content in the final version which is submitted for the Learning & Resilience Plan.

Each PP must submit 1 for each Navigation Crew membership; and each Navigation Crew will ultimately submit one, comprehensive plan together for the final report.

Therefore, a short table reminding PPs of their membership, has been provided below:

Navigation Crew	Members
Data Analytics, Complex Simulation and Modelling	IMECH
	bwcon
	TECOS
	KPT
	PBN
	ECIPA
	HGK
Machine Vision	IMECH
	TECOS
Predictive Maintenance	IMECH
	PBN
	CUAS
	ECIPA
	FB
	HGK
Innovation in Circular Economy	CUAS
	TECOS
	HGK
	FB
Design & Engineering for Additive Manufacturing	CUAS
	IMECH

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	TECOS
	PBN
	FB
Advanced & Smart Materials and Nanotechnology	IWU
	PBN
	bwcon
	CUAS
Industrial Internet of Things	IWU
	IMECH
	PBN
	ECIPA
	TECOS
	HGK
	FB
Digital Marketing	FB
	KPT
	IWU
	HGK
	bwcon
Factory and Process Automation	TECOS
	IMECH
	CUAS
	bwcon
	KPT
	FB
	HGK
Machinery	TECOS
	PBN
	IMECH
	KPT
	CUAS
	HGK

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Administrative Information		
Navigation Crew	Choose Navigation Crew Name	
Navigation Crew Leader	Choose Name of Leading Institution	
Navigation Crew Member Filling Form	Choose Name of Member Filling Form	
Role of Member in Navigation Crew	Choose Role of Member in Crew	
Navigation Crew Members (Only for Navigation Crew Leader's Form)	☐ CUAS ☐ FB ☐ bwcon ☐ IWU ☐ IMECH	☐ ECIPA ☐ KPT ☐ TECOS ☐ PBN ☐ HGK
MISSION, VISION & OBJECTIVES ANALYSIS		
EVALUATE THE NAVIGATION CREW'S MISSION. What was your progress or contribution to achieving this? Is the mission the right one for the thematic focus area? How would you change it?	*[Maximum 2000 Characters, in English]*	
EVALUATE THE NAVIGATION CREW'S VISION. What was your progress or contribution to achieving this? Is the vision the right one for the thematic focus area? How would you change it?	*[Maximum 2000 Characters, in English]*	
EVALUATE THE NAVIGATION CREW'S OBJECTIVES / GOALS. What was your progress or contribution to achieving this? Are your objectives and goals the right one for the thematic focus area? How would you change it?	*[Maximum 2000 Characters, in English]*	
SERVICE DELIVERY &PORTFOLIO ANALYSIS The purpose of this section is to analyze the detail of what you delivered as a collective "Navigation Crew" unit. The specific goal is to put ideas together and take a foresight-oriented step forward to develop a a service portfolio which could be delivered at a transnational level to promote RIS3 Implementation in an ongoing way.		
WHAT WERE THE MOST EFFECTIVE SUPPORT-SERVICES PROVIDED BY THE NAVIGATION CREWS?	*[Maximum 2000 Characters, in English]*	
WHAT SERVICE-SUPPORT DID NOT WORK (AT LEAST NOT FROM A TRANSNATIONALLY-COORDINATED PERSPECTIVE)	*[Maximum 2000 Characters, in English]*	
WHAT WAS THE GREATEST SERVICE SUCCESS (WAS THERE A COMMON SERVICE DELIVERY AREA WHICH WAS MOST SUCCESSFUL TO DEVELOP AT A TRANSNATIONAL LEVEL)	*[Maximum 2000 Characters, in English]*	

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IF YOU WERE DEVELOPING A SERVICE PORTFOLIO FOR TRANSNATIONALLY COORDINATED RIS3 SUPPORT SERVICES, WHAT 3 SERVICES WOULD BE A MUST-HAVE FOR YOUR THEMATIC AREA?	*[Maximum 2000 Characters, in English]*
HOW WOULD YOU ADAPT OR SHIFT THE CONCEPT/FOCUS THE NAVIGATION CREW TO OPTIMIZE RIS3 VALUE-ADDED SERVICE DELIVERY?	*[Maximum 2000 Characters, in English]*
SUSTAINABILITY ANALYSIS The purpose of this section is to analyze how your Navigation Crew intends to deliver the key successes highlighted above in a sustainable way. You will explore what needs to change & how the service delivery model needs to be improved to do this.	
HOW WILL YOU ADAPT THE NAVIGATION CREW'S SERVICE PORTFOLIO TO BE DELIVERED IN AN ONGOING WAY, TO TAKE ADVANTAGE OF THE SUCCESSFUL SERVICES WHICH WERE DELIVERED?	*[Maximum 2000 Characters, in English]*
WHO WILL YOUR ORGANISATION EMPOWER TO ADOPT THIS KEY WORK? *i. Will it be your own organisation?* *ii. Will it be your own connected DIHs?* *iii. Will you pass the successes to another organisation or network (if so, whom? Or which network - Be explicit).* *NOTE: NAVIGATION CREW LEADER MUST CONSOLIDATE RESPONSES AND PROVIDE A LIST OF ALL ORGS WHO WILL MAINTAIN THIS NETWORK.*	*[Maximum 2000 Characters, in English]*
IF YOUR OWN ORGANISATION IS NOT GOING TO PURSUE THE SUCCESSES OF THE NAVIGATION CREW, WHY NOT?	*[Maximum 2000 Characters, in English]*
ANY OTHER COMMENTS, CONCERNS ABOUT NAVIGATION CREWS GENERALLY, SERVICE PORTFOLIO DEVELOPMENT, OR SUSTAINBLE DELIVERY. In other words - what is the answer to the question you'd wish we'd asked.	*[Maximum 2000 Characters, in English]*
TEMPLATE END	

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10. Appendix 2.

European Foundation for Quality Management - EFQM 2020 model

For an assessment and improvement of performance of F3 network, we were leaning on the EFQM model criteria as a management framework for delivery of positive performance, manage excellence, cultural change and transformation of the network.

The EFQM 2020 model introduces new mindsets, disruptive approaches and collaborative leadership to ensure that organizations can simultaneously manage both changes and operations with increased agility and improved levels of performance.

The novel EFQM 2020 model https://assessbase.digitalefqm.com/

The EFQM 2020 model comprehends three different dimensions: Direction (Why), Execution (how), and Results (what), with a total of seven criteria *(and the RADAR (Result, Approach, Deploy, Assess and Refine)* assessment tool.

Risks and opportunities should be assessed, and the analysis of data and performance should prepare for the future and contribute to sustainable performance.

According to EFQM Model, there are seven criteria suggested and by having insight into vulnerabilities and adopting capacities of the F3 network, we are giving outlook how to identify current position and determine potential improvement opportunities.

Criterion 1: Purpose, Vision & Strategy

This criterion give direction and prepares the way forward for the organisation to be a leader in its ecosystem and well positioned to execute its plan.

1.1 Define Purpose & Vision
1.2 Identify & Understand Stakeholders Needs
1.3 Understand the Ecosystem, Own Capabilities & Major Challenges
1.4 Develop Strategy
1.5 Design & Implement a Governance & Performance Management System

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VULNERABILITY

- Governance and performance management system that aligns with its aspirations and addresses the strategic statements.
- Identification of new and innovative ideas to achieve and develop strategical statement of F3 network is needed to ensure future performance and sustainability.

CAPACITY

- The F3 network has clearly articulated and understood missions/visions/objectives to provide coherence and commitment to the shared values.
- Core values of F3 network are aligned with stakeholders needs identified in frame of WP T1.
- During the WP T2 and WP T3 strategical documents and actions plans to connect all core actors (NCs, DIHs) are developed and aligned with regional eco-systems.
- RIS 3 excellence consisting of 51 RIS3 Champions network was established.
- The impact controlling system was created ensuring during the whole project duration achievement of the set goals/objectives but also delivery of the sustainable added value.

Criterion 2: Organisational Culture & Leadership

2.1 Steer the Organisation's Culture and Nurture Values
2.2 Create the Conditions for Realising Change
2.3 Enable Creativity & Innovation
2.4 Unite Behind & Engage in Purpose, Vision & Strategy

VULNERABILITY

- Conditions for realizing changes are not clearly created.

CAPACITY

- However, the F3 network with its organisational culture established and shared during the project, represents a role model within eco-systems, especially by promoting RIS3 Excellence.

Criterion 3: Engaging Stakeholders

3.1 Customers: Build Sustainable Relationships
3.2 People: Attract, Engage, Develop & Retain
3.3 Business & Governing Stakeholders: Secure & Sustain Ongoing Support
3.4 Society: Contribute to Development, Well-Being & Prosperity
3.5 Partners & Suppliers: Build Relationships & Ensure Support for Creating Sustainable Value

VULNERABILITY

- Some of the partners stated the difficulties in establishing, developing and maintaining relationships with stakeholders with whom they could create and implement projects for mutual benefit and achievement of continued engagement.
- Expression of value propositions, evaluation of performance in relation to stakeholders needs and implementation of appropriate actions to secure the future performance of the F3 network are needed.

CAPACITY

- The F3 network successfully addresses target groups identified within the project *(Local/Regional/National Public Authorities; Higher Education and Research; Education/Training Centres and Schools; Large Enterprises; SMEs; BSOs)* whereby the network met the initially set indicators.

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- Furthermore, most of the implemented actions were aligned with the RIS3 and therefore influence the further communications with public authorities and policymakers

Criterion 4: Creating Sustainable Value

4.1 Design the Value & How it is Created
4.2 Communicate & Sell the Value
4.3 Deliver the Value
4.4 Define & Implement the Overall Experience

VULNERABILITY

- The NCs have identified some obstacles in the above-mentioned steps in creating sustainable value which refers to inability of the direct contacts with stakeholders due to COVID-19 circumstance, language barriers, etc.
- Key stakeholders` needs can change over the time and it is important to continuously collect and analyse stakeholders` feedback to improve the services or change the portfolio.
- There was also a difficulty to get the full picture on available service portfolios which defines the DIHs offers.

CAPACITY

- Online communication has increased transnational contacts and consequently transferability of the best practice and know-how solutions to other respective regions and other respective organisations and was assessed, according to stakeholders, as the most effective ones and vital for a long-term success of the F3 network.
- Through exchange of best practices and individual experiences, a great interest towards digital potential emerged leading to a few proposals submitted which is very important element for creation of sustainable value.
- Simplified access to funding due to increased policymakers' involvement is needed for adjusting RIS3 strategy regarding market needs.
- Furthermore, inclusion and commitment to new topics, such as Circular Economy, open possibilities for new cooperation and enhance sustainability of the network.

Criterion 5: Driving Performance & Transformation

5.1 Drive Performance & Manage Risk
5.2 Transform the Organisation for the Future
5.3 Drive Innovation & utilise Technology
5.4 Leverage Data, Information & Knowledge
5.5 Manage Assets & Resources

VULNERABILITY

- Better inclusion of regional stakeholders, especially RIS3 Champions could further boost the NCs' services performance ensuring coherent link of strategic objectives with results of actions so that the F3 network reflects RIS3 Excellence in CE. This task requires identification of effective tools and resources.

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CAPACITY

- The network has a capability to provide and share information and knowledge due to its broad stakeholders' base and furthermore, it recognizes the importance and has a focus on creativity, innovation and disruptive thinking.
- Inclusion of all types of stakeholders on regional and transnational levels enabled identification of innovative models in favour of sustainable cooperation.
- Series of qualitative follow-up actions ensure the necessary transformation of the network in the future.

Criterion 6: Stakeholder Perceptions

6.1 Customer Perception Results
6.2 People Perception Results
6.3 Business & Governing Stakeholders Perception Results
6.4 Society Perception Results
6.5 Partners & Suppliers Perception Results Strategic & Operation Performance

VULNERABILITY

- The F3 network is not adequately recognised among wide expert society, while publicly it has a low visibility.
- Due to Covid-19, most of the events and meetings were organized online which led to a lower level of commitment to the F3 network.
- English as a working language influenced the smooth implementation of trainings or even on proposal submission and was not entirely accepted by all stakeholders.

CAPACITY

- Developed impact monitoring system enables insight into stakeholders' perception, commitment and positive trends by redefining the set goals.

Criterion 7: Strategic & Operational Performance

This criterion concentrates on results linked to the organisation's performance in terms of the ability to fulfil its purpose, deliver the strategy and create sustainable value.

VULNERABILTY

- Not all follow-up project applications were assessed positively which significantly reduced future financial capabilities.

CAPACITY

- Focus on priorities and technology areas is well set but should be continuously reviewed.
- The Navigation Crew considers goals and objectives as the right ones, relevant and up to date with no need to change them.

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