EUR3KA

D6.3

Final Outreach, Communication and Exploitation Plans

D6.3 Final Outreach, Communication and Exploitation Plans

Work Package: WP6

Lead partner: Engineering Ingegneria Informatica S.p.A.

Mariarosaria Russo (ENG)

Author(s): Anil Turkmayali (IDSA)

Diego Ospina (INNO)

Due date: February 2023

Deliverable Type: Public

Version number: 1.0   **Status:** Final

Project Number: 101016175   **Project Acronym:** Eur3ka

Project Title: *EUropean Vital Medical Supplies and Equipment Resilient and Reliable Repurposing Manufacturing as a Service NetworK for Fast PAndemic Reaction*

Start date: December 1st, 2020

Duration: 27 months

Call identifier: H2020-SC1-PHE-CORONAVIRUS-2020-2-NMBP

Topic: SC1-PHE-CORONAVIRUS-2020-2A
Repurposing of manufacturing for vital medical supplies and equipment.

Instrument: IA

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

Revision History

Revision	Date	Who	Description
0.1	01 / 02 / 2023	ENG	Table of Content
0.2	15/02/2023	ENG BPI	Section 1 Section 7
0.3	17/02/2023	ENG ALL	Section 5 Sub-Section 5.1
0.4	27/02/2023	ALL	Annex II
0.5	02/03/2023	INNO	Section 6
0.6	06/03/2023	IDSA ENG	Section 2 and Section 3 Conclusion
0.7	08/03/2023	UiO	Internal Review
0.8	13/03/2023	TNO	Internal Review
0.9	14/03/2023	ENG IDSA INNO BNP	Integration of feedbacks from the reviewers
1.0	17/03/2023	ENG	Final coordinator review before submission

Quality Control

Role	Date	Who	Approved/Comment
Internal review	01 / 12 / 2020	ENG	Approved
Internal review	13 /03 / 2023	TNO	Approved
Internal review	08 /03 / 2023	UiO	Approved

Disclaimer

This document has been produced in the context of the Eur3ka Project. The Eur3ka project is part of the European Community's Horizon 2020 Program for research and development and is as such funded by the European Commission. All information in this document is provided 'as is' and no guarantee or warranty is given that the information is fit for any particular purpose. The user thereof uses the information at its sole risk and liability. For the avoidance of all doubts, the European Commission has no liability with respect to this document, which is merely representing the authors' view.

Executive Summary

The 2020 represented a crucial turning point for all humanity. The impact of the Covid-19 pandemic "forced" entire nations to redesign and reorganize people's lifestyles and entire production processes. For the first time, the urgent need for resources, skills, and services that would allow for the rapid response to the pandemic's requirements and provide those goods and services that suddenly became essential was evident to the entire world.

The European Union promptly responded to the emergency, and in this context, the solutions developed under the Eur3ka project fit perfectly as a response to the crisis.

This document illustrates the results achieved by the Communication and Dissemination strategy, which contributed to promoting the project, making its results known, and creating synergies and connections not only among consortium members but also with the wider public reached through the different communication channels adopted.

The document describes the Key Exploitable Results (KER) produced by the project activities of the entire consortium, from a business perspective, highlighting the economic opportunities that each result could generate in the future, and emphasizing how these results will fit into the market's recovery after the Covid crisis.

The exploitation strategy is outlined through two parallel tracks. Firstly, each consortium member has identified their individual strategy, emphasizing how Eur3ka's results will be integrated into their business strategies and will continue to be developed and maintained even after the project's completion. Secondly, the presence of the three founding partners of the Digital Factory Alliance in the consortium has enabled the identification of this association as the primary driver for the promotion and sustainability of Eur3ka's results in the near future.

Table of Contents

List of figures

List of Tables

Definitions and acronyms

AAS	Asset Administration Shell
AI	Artificial Intelligence
AM	Additive Manufacturing
APAC	Asia Pacific Region
API	Application Programming Interface
APMS	Advances in Production Management System
AWS	Amazon Web Services
BDVA	Big Data Value Association
CA	Consortium Agreement
CAD	Computer Aided Design
CAGR	Compound Annual Growth Rate
DB	Database
DBMA	DataBase Management System
DHM	Digital Hub Management
DFA	Digital Factory Alliance
DoA	Description of Action
EBDVF	European Big Data Value Forum
EC	European Commission
EFFRA	European Factories of the Future Research Association
ERP	Enterprise Resource Planning
EU	European Union
GA	Grant Agreement
GDPR	General Data Protection Regulation
HR	Human Resources
HRMS	Human Resources Management Systems
ICT	Information and communication technology
IDS	International Data Space
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IOT	Internet of Things
IP	Internet Protocol
IPR	Intellectual Property Rights
ISO	International Organization for Standardization
JSON	JavaScript Object Notation
KER	Key Exploitable Result
KPI	Key Performance Indicators
Maas	Manufacturing as a Service
OEE	Overall Equipment Efficiency
OEM	Original Equipment Manufacturer
PIN	Personal Identification Number
PKI	Public Key Infrastructure
P&R	Plug and Response
PLC	Programmable Logic Controller
PPE	Personal Protection Equipment
QC	Quality Control
RAM	Random Access Memory

REST	Representational State Transfer
SCSN	Smart Connected Supplier Network
SEO	Search Engine Optimization
SFW	Smart Factory Web
SME	Small and Medium-sized Enterprises
SMMA	Smart Matching and Mediation App
TC	Technical Coordinator
TRL	Technology Readiness Level
USD	United States Dollar
USP	Unique Selling Point
VPN	Virtual Private Network
WP	Work Package
YR	Year
ZDM	Zero-defect Manufacturing

1 Introduction

1.1 Scope and objectives of this deliverable

Deliverable "6.3 Final outreach, Communication and Exploitation Plan" presents the final communication, dissemination and exploitation plans, outlining all activities that have been undertaken to achieve the project's objectives and results.

This document is closely related to the other documents produced by WP6, in particular to *D6.1 "Outreach & Communication Plan"*, submitted in M3 and D6.2 *"Eur3ka-D6.2.Outreach Communication Report and First Exploitation Plan"* submitted in M12 and it reports all the final achievements reached in WP6 closing, in fact, this WP.

The European IPR Helpdesk[1] defines **Communication** as "a strategically planned process that starts at the outset of the action and continues throughout its entire lifetime, aimed at promoting the action and its results", and **Dissemination** as "the public disclosure of the results" and Exploitation as "the utilisation of results in further research activities […], or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities".

Following the European guidelines[2] in the field of communication &Exploitation of project's results, deliverable D6.3 presents:

- The final description of the **Dissemination and Communication** activities including target audiences, communication channels, activities and strategy, key performance indicators, in order to raise awareness, share knowledge and attract potential users.

- The final **Exploitation** approach for Eur3ka project which combines both the overall project expected impact and the individual exploitation perspectives of each partner.

The purpose of this document is to:

- Present the **Dissemination and Communication** activities, highlighting the obtained results and the awareness built around the project;

- Present all the **Key Exploitable Results** (KER) of the Eur3ka project analysing them from a business perspective, identifying their economical and technological benefits;

- Present the key role of the **Digital Factory Alliance** as the main exploitation vehicle for Eur3ka results.

1.2 Structure of the document

Apart from the Introduction and the Conclusion, the document hosts:

---

[1] https://www.ecsel.eu/sites/default/files/2018-10/EU-IPR-Brochure-Boosting-Impact-C-D-E_0-1.pdf
[2] https://www.kdt-ju.europa.eu/sites/default/files/2018-10/EU-IPR-Brochure-Boosting-Impact-C-D-E_0-1.pdf

- **Section 2 and Section 3** – **Dissemination and Communication**. These sections provide the description of the dissemination and communication activities, reporting results, KPIs and the impact.

- **Section 4** – **Project results analysis**. This section provides the description of the final project outcomes considering their business and economical features

- **Section 5 - Exploitation Strategy**. This section shows the Exploitation strategy

- **Section 6** – **Final Market Analysis**. This section provides an updated market analysis more focused on the market evolution after the Covid19 pandemic

2 Tracking progress and Main Results in Dissemination & Communication Activities

The KPIs reported in D6.1 and D6.2 can be found on the table below with recent statistics (as of February 28, 2023). This table also reflects the changes made upon the communication & dissemination strategy, as well as the achievements since the beginning of the project. The impact of the communication and dissemination activities conducted during the project is explained in the next chapter 3 Dissemination & Communication Impact

Measure	Driver	Action	KPI	Total Stats
Monthly Web content	Regular information updates with SEO-driven approach	Identify and publish new content on a regular basis	YR1: min. 2/month; YR2: min: 3/month	78 news[3]
In-house newsletters	Different stakeholders are properly informed in a timely manner	Produce and circulate biannual newsletters	YR 2: min 2	12 newsletters
Promotional material, including video content	Specific audiences receive tailored and timely messages	Produce focused material (for stakeholders/events)	YR1: min 3 YR2: min 6	10 booth presentations[4]
Press releases targeting major stakeholders on supply/demand sides	Raise interest and recruit demand actors, supply side actors & healthcare providers	Produce press releases targeting different media channels and audiences	YR2: min 2 for IT audiences; min 1/major stakeholder category	4 major press releases
Press releases for general public	Raise interest amongst nonspecialized audiences	Lightweight blog for nonspecialized channels	≥ 2 press clippings	2 press releases performed
Visibility of Eureka in channels used by	Ensure backlinks/branding	Liaise and engage with initiatives with journalists and LinkedIn groups;	≥20 backlinks across major stakeholders	1316 backlinks[5]

---

[3] 66 news published on Eur3ka.eu website and 12 news were produced and shared via DFA website.

[4] First year, these materials were focusing more on the project, its scope, network, approach and liaisons. During the second year, these promotional materials were putting the project pilots in its focus.

[5] 53 backlink sources can be identified as major stakeholders (big organizations or websites which could be considered as the ones with a high volume of traffic), that referred to Eur3ka website.

Measure	Driver	Action	KPI	Total Stats
different stakeholder categories	recognition to website through synergies and social media; General brand recognition is demonstrated	produce a survey for brand recognition	≥ 50 responders identified Eur3ka (questionnaire)	
Social media content: Twitter	Grow community; Regular stakeholder engagement gives important insights into interests/concerns	Publish tweets, including SMART based campaigns & monitor outcomes	YR1: min 8/month YR2: min 24/month	242 Tweets
Social media content: LinkedIn	Grow community Regular stakeholder Engagement gives important insights into interests/concerns	Publish posts, make relevant tweets, including SMART-based campaigns & monitor outcomes	YR1: min 1 post/month; YR2: min. 4 posts/month; Direct engagement is also envisaged	189 Posts
Stakeholder database	Early identification of prospective marketplace and service stakeholders	Develop a database of contacts for community development and stakeholder engagement	300 profiled Stakeholders by M12; >600 by M24	1260 stakeholders were identified and classified on a database
Exhibitions/workshops with free access	Ensure outreach to external audiences and even non-specialized ones, making use of channels such as the DFA	Show Eur3ka use cases to visitors in lively, lightweight and virtual environment provided to a wider audience.	≥ 1 Digital Factory Trial ≥ 20 external attendees	4 workshops
Online networking events and technological conferences	To gain, spread and foster technological knowledge sharing, best practices and	Through the DFA, events are being scheduled based on the manufacturing Global Response	≥ 3 online sessions	4 Online events

Measure	Driver	Action	KPI	Total Stats
	lessons learnt on manufacturing resiliency leadership for future industrial collaboration	Initiative that it is fostering. Eur3ka partners will be able to join/participate in these events.		
Online and/or F2F training sessions	Ensure general public is "educated" about the need to advanced research to address their needs	Provide a service for non IT savvy to show what the new service means for them	≥ 1 online session ≥ 50 non-specialized attendees	Webinar planned on Q2 2023 to communicate project outcomes and pilots
F2F interactions with local people	Ensure engagement with "real people" at the local level	Work with use case partners to co-host an open day or similar, including media presence	≥ 1 local events ≥ 3 appearance in local media	Realized via the organization of a Eur3ka booth in 3 major events (such as EBDVF, Hannover Messe, Back to a Healthy Future)
Free trials for general public	Facilitate and drive uptake through early trial testing	Organize free trials after having reached a predefined maturity level	≥ 5 testers	Planned as part of the webinar in Q2 2023
Marketing events, e.g., trade fairs/exhibitions	Ensure direct engagement with major stakeholders	Stand decked with demos, videos, informative material	Min. 1 in YR1 and 2 in YR2	8 participation in events

Table 1: KPIs for General Communication Activities, Stakeholders and Community Engagement

2.1 Genaral evaluation of KPI results

The dissemination and communication efforts of the Eur3ka project have been crucial in ensuring its success. Throughout the 27-month project duration, the project team has utilized various communication channels to reach a wider audience. While the number of tweets was lower than expected, the number of LinkedIn posts exceeded expectations, possibly due to the platform being ideal for engaging with professionals who actively participate in

discussions. Additionally, the level of engagement and impressions on LinkedIn were significantly higher than on Twitter, further justifying the team's focus on LinkedIn.

The project team also organized four workshops to reach out to external audiences, including non-specialized ones, utilizing channels such as DFA. These workshops provided valuable opportunities to disseminate information and engage with potential stakeholders, while also receiving feedback to shape the project's direction. Moreover, the team has participated in very important and large-scale events, leveraging them as additional communication channels. The project team also used their large network of partners, alliances, partnerships, and other projects of the PREPARE cluster as dissemination and communication channels.

Looking ahead, the project team is planning to host a webinar in Q2 2023 to communicate the pilots and project outcomes. The webinar will also offer free trials for the general public after reaching a predefined maturity level, with the aim of driving uptake through early trial testing. This approach recognizes the importance of engaging a broader audience to increase the project's impact and sustainability.

The project team has actively sought to engage with the wider community, leveraging their partnerships and networks to increase their reach. Collaborations with relevant associations, networks, and organizations have enabled the team to effectively reach out to the relevant stakeholders and communities. These efforts have resulted in increased visibility and awareness of the Eur3ka project.

In conclusion, the Eur3ka project's communication and dissemination efforts have been integral to its success. Despite some challenges, the team utilized a range of channels and approaches to effectively reach out to the relevant audience, engage with potential stakeholders, and disseminate valuable information about the project's progress and outcomes. The team's commitment to ongoing communication and dissemination efforts, coupled with their partnerships and networks, ensures that the project's impact will be maximized and sustained over the long term.

2.2 Dissemination reporting

2.2.1 Social Media

Eur3ka has been actively engaging with its stakeholders through various communication channels, such as social media platforms. Among these, Twitter and LinkedIn are the most widely used platforms to share information about project activities and outcomes. Through these channels, Eur3ka aims to provide its followers with timely updates and insights into the project's progress and achievements.

The project team has been consistently utilizing Twitter and LinkedIn to reach out to a wider audience, which includes researchers, policymakers, industry experts, and other interested stakeholders. By sharing updates on these platforms, Eur3ka has been able to establish a strong online presence and connect with its audience on a more personal level. The project's social media accounts provide an excellent platform for discussions and interactions, enabling Eur3ka to engage with its followers and receive valuable feedback.

To evaluate the effectiveness of its social media strategy, Eur3ka has been tracking the performance metrics of its Twitter and LinkedIn accounts. Table below presents the performance metrics of both channels since the beginning of the project, which includes a comparison between first and second years. The data collected provides insights into the engagement levels, reach, and impact of Eur3ka's social media activities. By analyzing this data, the project team can assess the effectiveness of its social media strategy and make necessary adjustments to improve its performance.

EUR3KA Social Media Channels	Followers (Dec '20 – Dec '21)	Followers (Jan '22 – End of Feb '22)	Increase vs previous period	KPIs	Activities (in Total)
Twitter	126	152	+26	Total # of tweets: 96 (1st Year) 288 (2nd Year) (8 per month)	# of Tweets: 242[6]
LinkedIn	137	244	+107	# of posts: 60 (2 years)	# of Posts: 189[7]

Table 2: Social Media Performance

The social media posts that were shared over 27 months reached 12058 impressions in total (12758 impressions via Twitter and 21152 impressions for LinkedIn posts).

2.2.2 Website

During this period, the majority of the traffic to the Eur3ka website has originated from direct users 36% (that was 56% in the previous period), which indicates that the majority of the traffic is originated from the users who directly type the website address into their browsers. On the other hand, the percentage of users arriving at the website via search engines reached 33% (which was 24% in the first six months). This shows that the SEO (Search Engine Optimization) work on the website worked well and attracted some new visitors via search engines. The rest of the traffic (31%) is originated from the referring websites (backlinks) and social media (LinkedIn and Twitter).

The peaks happen during business days and office hours, as well as the drops during weekends, give an indication of the target audience.

---

[6] 196 tweets were shared via project's account and 46 tweets shared via DFA Twitter account, to announce project activities and events

[7] 142 posts were shared via project's account and 47 posts shared via DFA's LinkedIn page.

Criteria	KPI (project duration)	Statistics (M1-M12)	Statistics (M13-M27)	Total
Number of visits	Not defined	921	4390	5311
Number of unique visitors	3000	428	3293[8]	3721
Number of back-links to the website	20	105	1211	1316

Table 3: Website Performance

As seen on the table the number of backlinks increased dramatically during the second year of the project. The majority of these were sourced by social media posts and website referrals that were provided by Digital Factory Alliance and other projects that are part of the Prepare Cluster. This helped to increase the visibility of Eur3ka, as well as constitutes a robust baseline for the future dissemination activities. The number of total and unique visitors to be website also increased in the second year as an outcome of more websites and initiatives linking to us.

2.2.3 Events

In addition to the 3 events that have been organized during the first six months of the project, 7 events were organized/participated by the consortium partners between M6-M12. After the completion of the first year of the project, the events below were organized/participated by the consortium members.

---

[8] These unique visitors visited the website between the beginning of M13 (December 1, 2021), and M27 (February 28, 2023)

Event Name	Organizing /Participating Partner	Date	Place/Venue	Link	Statistics (participants)
Lombardy dissemination Eur3ka event	AFIL	12/01/2022	Italy	https://www.afil.it/eventi/webinar-strumenti-a-supporto-della-resilienza-lesperienza-eur3ka/	20
European Big Data Value Forum (Joint with PREPARE Cluster)	INNO, FhG IDSA	21/11/2022	Czech Republic	https://european-big-data-value-forum.eu/	500
AM Summit 2022	AM Hub	September 2022	Denmark	https://amsummit.dk/	450
Hannover Messe 2022	VIS	May-June 2022	Germany	https://www.hannovermesse.de/de/news/news-fachartikel/hannover-messe-2022-findet-anfang-juni-statt	45000
Hannover Messe 2022	IDSA	May-June 2022	Germany	https://www.hannovermesse.de/de/news/news-fachartikel/hannover-messe-2022-findet-anfang-juni-statt	45000
APMS 2022	UIO	September 2022	South Korea	https://www.apms-conference.org/	150
Back to a Healthy Future (with PREPARE Cluster)	IDSA	September 2022	Brussels	https://covidx-inno4cov.eu/	150
CIRP CMS 2022	UIO	July 2022	Luganno, Switzerland	https://www.cirp-cms2022.org/	200

Event Name	Organizing /Participating Partner	Date	Place/Venue	Link	Statistics (participants)
ISM 2022	UIO	November	Austria, Linz	https://www.msc-les.org/ism2022/	150
ARCI	UIO	February	France	https://arci-conference.com/	50

Table 4: List of Events Participated/Organized by Project Partners

In addition to those, there will also be the organization of a webinar (around May 2023) to share the pilots and results of the projects.

2.2.4 Liaisons

Liaisons played a crucial role in ensuring the success of Eur3ka project in repurposing manufacturing, not only for dissemination purposes but also as a mechanism to gather feedback from multiple industry stakeholders (researchers, engineers, manufacturers, suppliers) and potential end users. Liaisons acted as a bridge between these different groups, facilitating communication and collaboration to ensure that the project runs smoothly. By working closely with all these potential stakeholders, liaisons help to ensure that the project delivers high-quality results that meet the needs of all involved parties.

During the project, various activities to build liaisons were performed. Thanks to the broad network of the project partners, many worldwide organizations were reached out to. These include:

Activity	Liaison with	Partner	Project Month
Mailing to SMEs (~3500) that are part of Digital Enabling Centre	German SMEs in Manufacturing	ECM	M24
Collaboration with similar projects	PREPARE Cluster Projects	ENG	M12
Establishing Liaison with World Economic Forum	World Economic Forum	AFIL	M11
Establishing Liaison with World Manufacturing Foundation	World Manufacturing Foundation	AFIL	M24
Establishing Liaison and Partnership with Digital Factory Alliance	Digital Factory Alliance	INNO, ENG	M1
Establishing Liaison with Intelligent Factory Cluster	Intelligent Factory Cluster	AFIL	M24
Disseminating project results to IDS Industrial Community	IDS Industrial Community	IDSA	M22
Disseminating project results to IDS Healthcare Community	IDS Healthcare Community	IDSA	M22
Attending European Big Data Value Forum	Big Data Value Association	IDSA, INNO	M23

Activity	Liaison with	Partner	Project Month
Reaching out to Healthcare Professionals and Policymakers	Back to a Healthy Future (Covid-X, INNO-Cov19)	IDSA	M21

Table 5: List of Liaisons

2.2.5 Publications

The publications produced during the project (in first and second years) are reported in the table below:

Partner(s)	Author(s)	Title	Details
UiO	F. Psarommatis and D. Kiritsis	Comparison Between Product and Process Oriented Zero-Defect Manufacturing (ZDM) Approaches	pp. 105–112, Sep. 2021, doi: 10.1007/978-3-030-85874-2_11
UiO	F. Psarommatis, J. Sousa, P. Mendonça, D. Kiritsis, and J. P. Mendonça	Zero-defect manufacturing the approach for higher Manufacturing sustainability in the era of industry 4.0: a position paper	Int. J. Prod. Res., 2021, doi: 10.1080/00207543.2021.1987551
UiO	F. Psarommatis, G. May, and D. Kiritsis	Predictive maintenance key control parameters for achieving efficient Zero Defect Manufacturing	Procedia CIRP 104C (2021) pp. 79-83
IDSA	Oliver Hillermeier, (SAP SE), Matthijs Punter (TNO), Dr. Karsten Schweichhart, (Deutsche Telekom) Dr.-Ing. Thomas Usländer (Fraunhofer IOSB), Simon Dalmolen (TNO), Jörg Langkau, (Nicos AG), Robin Schwarz, (ISTOS GmbH)	Data Sovereignty – Critical Success Factor for the Manufacturing Industry (Position Paper)	Available via: https://www.eur3ka.eu/publications/position-paper

Partner(s)	Author(s)	Title	Details
UiO	F. Psarommatis, D. Kiritsis, Oscar Lazaro (O. Meyer and F. Fraile not Eur3ka partners)		Proposed and running a journal special issue (Frontiers Manufacturing technology) for publishing Eur3ka results https://www.frontiersin.org/research-topics/27428/zero-defect-manufacturing-in-the-era-of-industry-40-for-achieving-sustainable-and-resilient-manufact
AFIL	AFIL	Article on Eur3ka project and regional dissemination event	https://www.afil.it/afil-journal/il-progetto-eur3ka-strumenti-a-supporto-della-resilienza-delle-imprese-manifatturiere/
FhG	Thomas Usländer, Felix Schöppenthau, Boris Schnebel, Sascha Heymann, Ljiljana Stojanovic, Kym Watson, Seungwook Nam and Satoshi Morinaga	Smart Factory Web—A Blueprint Architecture for Open Marketplaces for Industrial Production	https://www.mdpi.com/2076-3417/11/14/6585
IDSA, SQS	Anil Turkmayali	Article on explaining the purpose of Eur3ka project published on SQS Magazine	https://www.sqs.es/visualizar-revista/?lang=en

Partner(s)	Author(s)	Title	Details
UiO	Foivos Psarommatis, Gökan May	A practical guide for implementing Zero Defect Manufacturing in new or existing manufacturing systems	https://www.eur3ka.eu/_files/ugd/16d284_b351171e4af54f43b13c86ba4e609335.pdf
UiO	Foivos Psarommatis, Gökan May	A standardized approach for measuring the performance and flexibility of digital twins	https://www.eur3ka.eu/_files/ugd/16d284_5fdecf01a0e645f0af03f8dc58d6c993.pdf
UiO	Foivos Psarommatis, Gökan May	Achieving Global Sustainability Through Sustainable Product Life Cycle	https://www.eur3ka.eu/_files/ugd/16d284_735c820c870d4954938d9dbdb3458e7e.pdf
UiO	Foivos Psarommatis, Gökan May	A literature review and design methodology for digital twins in the era of zero defect manufacturing	https://www.eur3ka.eu/_files/ugd/16d284_757cb401e91c437e899931654c160a71.pdf
UiO	Eirini Katsidoniotaki Foivos Psarommatis, Malin Göteman	Digital Twin for the Prediction of Extreme Loads on a Wave Energy Conversion System	https://www.eur3ka.eu/_files/ugd/16d284_11570b6eb6ab48c883b6148c26d8df87.pdf
UiO	Foivos Psarommatis, George Bravos	A holistic approach for achieving Sustainable manufacturing using Zero Defect Manufacturing: a conceptual Framework	https://www.eur3ka.eu/_files/ugd/16d284_24081fae82944bc2a11d86d776c51e51.pdf
UiO	Foivos Psarommatis Morad Danishvar, Alireza Mousavi, Senior Member, IEEE, and Dimitris Kiritsis	Cost-Based Decision Support System: A Dynamic Cost Estimation of Key Performance Indicators in Manufacturing	https://www.eur3ka.eu/_files/ugd/16d284_f66300aa0cdd466390c3425b9253bb40.pdf

Partner(s)	Author(s)	Title	Details
AM HUB	Danish AM HUB	Crisis Response Governance: The Role of Additive Manufacturing	https://www.eur3ka.eu/_files/ugd/16d284_984a575d3d1a44f49884b987d7b1533f.pdf

Table 6: List of Publications

3 Dissemination & Communication Impact

This section will report an analysis of the communication and dissemination results of the previous section in order to show the concrete impact of these activities.

Effective communication and dissemination of research and development (R&D) projects is crucial to ensure that their outcomes and impacts are shared widely and used to their full potential. The Eur3ka project was a prime example of how R&D projects can contribute to the fight against pandemics such as COVID-19 through repurposing manufacturing capabilities for the production of vital medical supplies and equipment. To maximize the impact of Eur3ka's innovative approach, it was crucial to implement effective communication and dissemination strategies and constantly reach out to the target stakeholders and inform them about the outcomes of the project, and how these outcomes will add value to their lives.

One key aspect of effective communication and dissemination was to identify the target audience and tailor the message accordingly. For Eur3ka, the target audience included stakeholders such as policymakers, healthcare professionals, industry experts, and the SMEs. The project team used various communication channels, such as social media, press releases, events and webinars, to reach out to these audiences and provide them with updates on the project's progress and achievements.

Another important aspect of effective communication and dissemination is to use clear and concise language to convey complex scientific concepts to a broader audience. Eur3ka leveraged the expertise of its project team members and communication professionals to develop targeted communication materials that made the message to be conveyed in an easier way to different audiences. Throughout the project, partners worked with industry associations, attended trade shows and conferences to showcase the project's innovations and successes. By sharing its results with the wider community, Eur3ka had the chance to attract more attention to its work and fostered collaborations with other organizations that share this mission.

During the project, the consortium periodically assessed the impact of communication and dissemination efforts by measuring and by monitoring engagement metrics, such as website traffic, social media followers, media coverage and had some minor adjustments in the dissemination and communication strategy. Eur3ka used these metrics to evaluate the effectiveness of its communication and dissemination strategies and make necessary adjustments to improve its performance. Some examples of this include:1) redirecting the communication efforts on social media towards LinkedIn, rather than Twitter, 2) sharing general news from manufacturing and healthcare domains 3) organizing joint booths with other projects from PREPARE cluster.

In addition to these communication and dissemination efforts, Eur3ka also benefited from engaging with potential end-users of the pilots and involving them in the development process. This task was adopted by all pilots of the project. By soliciting feedback from manufacturing experts and healthcare professionals, the project team ensured that the repurposed medical supplies and equipment meet the needs of the end-users. This is

expected to increase the acceptance and adoption of the innovations and contribute to their wider impact after the project.

In conclusion, effective communication and dissemination was carried out during the project along with many important initiatives (such as Digital Factory Alliance, the wide network of all partners, the other projects of PREPARE cluster).

Digital Factory Alliance had a great impact on the project's dissemination with the help and contribution of its members consisting of European SMEs, large companies, and Research Centres working on driving the data-driven digital transformation of the manufacturing sector.

On the other hand, an excellent synergy has been formed with other projects in the PREPARE cluster and used this opportunity to 1) align our activities within projects, 2) disseminate project activities into larger communication channels, 3) organize sessions together in various events (European Big Data Value Forum, Back2aHealthyFuture). +

An important work carried out by IDSA was to globally scan the content that can be relevant to the context of Eur3ka based on many parameters (such as hashtags, keywords project partners, PREPARE cluster partners) resulted in a highly effective way in providing the up-to-date information about the relevant news happening in that domain.

Besides the quantitative communication statistics (on website, social media) the project consortium also organized and attended many important events that brought Eur3ka pilots into attention of global manufacturing (and healthcare) communities. The list of events can be seen in the Annex I: Communication & Outreach Plan.

4 Project results analysis

4.1 Key Exploitable Results

In this section, we report the final presentation of Eur3ka Key Exploitable Results (KERs). For each result, an 'exploitation and business-oriented' description is provided with main features, together with the most relevant stakeholders, possible exploitation channels, possible competitors and the maturity of the Asset. For completeness purposes, interrelations and additional components involved are mentioned and also replicability opportunities are identified.

In addition, the evolution of the TRL is reported to highlight the Eur3ka improvements and also the ownership and co-ownership is reported.

In order to ensure consistency and a unified approach, the definition of KERs was carried out as a collaborative process with all partners using a shared template that is presented (along with descriptions) in Annex II: KERs Template

In the following sections, a detailed description of KERs is reported and the related Business Model Canvas.

4.1.1 Optimized CO2 machine

The CO2 machine is a device that allows to verify how much CO2 remains trapped in the Full-face masks after one breathing cycle. This machine is therefore very useful for diving companies, but not mandatory as FF-masks do not have regulatory requirements on breath parameters. However, testing with this device allows for a higher quality product and increase the safety. The upgraded machine reduces testing times, then it is able to store data in a digital way, indeed it is possible now to analyze different masks models through testing parameters; finally, the machine can be rented out to competitors thanks to its digitalization level.

Asset title	Optimized CO2 machine
Description	The machine has been automatized to speed up the FF mask testing process, introducing new sensors and valves that can be controlled automatically from a totally new digital dashboard available on the touchpad installed on the testing bench, but also from pc. This allows to increase the productivity of SEAC personnel in this stage of the product life cycle, with more precision in the results and with the opportunity to store the results in a digital way. In fact, the test results will be stored together with the one from the ANSTI machine on a cloud to fully characterize the FF mask features and then understand the design optimization opportunity. Moreover, the testing machine can be rent to SEAC's competitors for their tests.

Lead partner (point of reference) and other partners	SEAC
Contributing Partners	STAM
Eur3ka results and components involved	Upgrade of a testing machine from an analogical one to a digital one.
Type(s) of asset	Product and service
TRL before Eur3ka (if applicable)	TRL9
Expected TRL by end of the project	TRL 9
Eur3ka improvements	Thanks to Eur3ka the CO2 testing machine from SEAC has been completely renewed. The machine is now able to acquire on a digital dashboard the testing data in real time, store them and it is faster and more precise during the testing phase. Almost the totally of the manual operations have been automatized reducing the uncertainty of the manual calibration of the tests.
IPR strategy (if any)	The dashboard on the machine is based on the open-source platform Thingsboard. However, SEAC the specific settings of the platform to be adapted to the CO2 machine are owned by SEAC and the partner STAM.
Sole owner or co-ownership	SEAC is the owner of the asset however in case of issues on the testing machine or the dashboard STAM will be contacted.
Relevant stakeholders	Possible stakeholder are the companies involved in the scuba market. Due to the presence in Liguria of the scuba district some stakeholders are geographical very close to SEAC.
Exploitation channel(s)	Service to third companies; optimized production cycle; training • Eur3ka Consortium • Company Networks and scuba events • Direct Customers all over the world Research Activities and other EU projects
Possible competitors	Other scuba companies with similar testing machines
Replicability in other domains and ecosystems	The optimized machine will be used for FF masks in diving sector too.

Business Value:	The target market are the companies in the scuba market that produces the FF masks. This renewed CO2 machine can be rented by competitors to analyse their FF masks. This solution solves different problems in SEAC activities. First, the tests can be done with the same boundary conditions having then more precise and comparable results between different FF masks models. This lead to understand better the relation between the quantities observed during the testing phase (CO2 concentration, tightness, etc), that can affect the optimization of the FF masks. Finally, the time necessary for testing a FF mask, is substantially less with the automatizations introduced. The CO2 machine developed in eur3ka project is certainly one of the most advanced among this kind of testing machines. For these reasons, its degree of automation is one of its strength points. After the Eur3ka project, the solution will be further improved with additional features in order to optimize the user experience of the SEAC operator. Furthermore, using the renewed CO2 machine will allow to generate a great amount of data that will be used to optimize and modify the design of SEAC FF mask models.
Innovation Value:	The innovation obtained by the test machine relates to the possibility of obtaining real-time data respectively for the tests conducted and setting the machine to carry out the tests in a completely automatic way towards the test conditions themselves. The solution allows data to be saved in order to be able to compare them directly on the dashboard present on the machine, but which can also be consulted from a pc desktop wherever you are (the data are in fact saved on an online drive), and therefore also consultable by the product engineering division of SEAC rather than only by those who conducts the tests. For this reason, the solution is very flexible and simple and allows to amplify the mere test output. With respect to graph in figure, the optimized CO2 machine is placed on "Sustaining" square, being able to deeply improve an existing machine and the data management.
Customer Value: **Customer Value:**	The direct beneficiary of the solution is certainly SEAC, but other companies in the diving field can also benefit enormously from it. As said in the previous questions, the benefits are considerable thanks to this optimization. The test data are now digital, perfectly comparable thanks to the direct control of the boundary conditions and can originate a database characterizing all the models of FF masks that are produced by SEAC to better understand the relationship between the design and the performance of the same mask. Furthermore, the data can be consulted not only on the machine but also from any PC in the SEAC network as the data is saved in the drive.

Which role(s) will you assume at the end of the project?	After the end of the project, SEAC's role will stem from both Joint Exploitation and Individual Exploitation. The optimized machine will be used constantly for regular tests with the eventual help of STAM for the maintenance of the software behind.
After the end of the project, what costs do you consider affordable?	The potential economical involvement of SEAC will entail maintenance cost of the equipment and personnel costs for training in the use of the optimized machine.
Maturity level of Innovation/Asset	This asset will be "Market Ready" after the end of the project

Table 7: Optimized CO2 machine

Business Model Canvas

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
1. Eur3ka Partners 2. Scuba Companies	1. Data acquisition and Mangaement 2. Real time visualization to follow test progress 3. Data storaging	1. Customizable graphs and dashboards 2. Real time data acquisition 3. Historical data consultation 4.Increased tests accuracy and velocity	1. Consultative 2. Training 3. Support	Other Scuba companies

Key Resources	Channels		Cost Structure	Revenue Streams
Thingsboard infrastructure	1. Eur3ka website 2. SEAC Social Channels and website		1. Equipment maintenance 2. Dashboard maintenance 3. Operators training	1. CO2 testing machine rent 2. Creation of a dataset that can be the base for future regolations 3.FF mask optimization

Figure 1: Optimized CO2 machine – Business Model Canvas

4.1.2 Optimized ANSTI Machine

This KER concerns the ANSTI machine used by SEAC. This testing equipment, necessary for conducting specific tests on regulators and FF-masks, was built by third parties and for this reason, the software parts are not editable. Moreover, the test output were only in pdf format, then useful for a deeper analysis. This equipment is generally a must-have for companies in the diving industry like SEAC because it allows checking some parameters of mask adherence and correct breathing cycle effort. Therefore, a tool was created to install on SEAC operators PC, which allows digitalizing the output of the machine, making it compatible with data analysis platforms.

Asset title	**Optimized ANSTI Machine**
Description	The ANSTI machine was analyzed in all its software and hardware components. From this analysis, it was realized that since the machine is designed by a third-party company, this company is the owner of the software part which is therefore not modifiable, and

	consequently also the hardware part. Therefore, the way in which test results are obtained was modified. Through a tool developed by STAM, the output data are transformed into another format, compatible with Engineering's platform, reprocessed, and automatically sent.
Lead partner (point of reference) and other partners	SEAC
Contributing Partners	STAM
Eur3ka results and components involved	Upgrade of the ANSTI machine able now to automatically send data
Type(s) of asset	Service
TRL before Eur3ka (if applicable)	
Expected TRL by end of the project	
Eur3ka improvements	Thanks to Eur3ka, the operation of the machine was learned, but the machine cannot be modified in its software. Therefore, an application was included that allows the data to be converted, transformed, and automatically sent to Engineering's platform.
IPR strategy (if any)	Not applicable
Sole owner or co-ownership	SEAC is the owner of the tool however in case of issues STAM will be contacted.
Relevant stakeholders	Users of ANSTI machines, then direct competitors
Exploitation channel(s)	Service to third companies; optimized production cycle; training • Eur3ka Consortium • Company Networks and scuba events • Direct Customers all over the world Research Activities and other EU projects
Possible competitors	Other scuba companies with similar testing machines
Replicability in other domains and ecosystems	The optimized machine will be used for FF masks in diving sector too.

Business Value:	The business to be considered is in common with the CO2 machine, in fact, the sum of the data extrapolated from the two machines allows the characterization of the FF mask in a complete way. After the Eur3ka project, the solution will be further improved with additional features in order to optimize the user experience of the SEAC operator. Furthermore, using the renewed ANSTI machine will allow to generate a great amount of data that will be used to optimize and modify the design of SEAC FF mask models.
Innovation Value:	The developed solution represents an element of improvement and integration of the ANSTI machine. The ANSTI machine succeeds through the developed application to integrate the output into the Engineering platform allowing a total FF mask characterization. For this reason, with respect to the graph on the left, the solution results in "Incremental".
Customer Value: **Customer Value:**	The direct beneficiary of the solution is certainly SEAC. The application developed to allow the integration of the ANSTI machine with other platforms. This is useful to store data, manage them and further analyse them.
Which role(s) will you assume at the end of the project?	After the end of the project, SEAC's role will stem from both Joint Exploitation and Individual Exploitation. The ANSTI machine will be used constantly for regular tests with the eventual help of STAM for the maintenance of the application.
After the end of the project, what costs do you consider affordable?	The potential economical involvement of SEAC will entail the maintenance cost of the equipment as before the project.
Maturity level of Innovation/Asset	This asset will be "Market Ready" after the end of the project

Table 8: Optimized ANSTI Machine

Business Model Canvas

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
1. Eur3ka Partners 2. SEACSUB, ENG e STAM	1. Data format change 2. Data analysis	1. Development of a tool that allows the file format to be changed in output from the ANSTI machine and automatically sent to the Engineering platform	1. Consultative 2. Support	Other Scuba companies

Key Resources	Channels		Cost Structure	Revenue Streams
STAM Application	1. Eur3ka website 2. SEAC Social Channels and website		Nothing	Creation of a DB for the future standardization

Figure 2: Optimized ANSTI Machine – Business Model Canvas

4.1.3 Test Data

This KER concerns a database that, thanks to the digitalization of the ANSTI and the CO2 machines, will be populated with test results. As FF-masks still lack regulations in terms of respiratory parameters, this database aims to become the standard for the FF-masks market for scuba market and health related FF-masks market. Therefore, this database can also be used for FF-masks adapted with breathing filters to enable standards bodies to define standards for such products.

Asset title	Test Data
Description	A database will be populated thanks to the digitalization of the testing process in SEAC. The data can be exploited commercially, to allow standardization bodies to define new standards for this kind of product for both medical and diving markets.
Lead partner (point of reference) and other partners	SEAC
Contributing Partners	ENG and STAM
Eur3ka results and components involved	In the Eur3ka project, data has been collected on the Engineering platform sent through a tool realized by STAM and thanks to the test realized by SEAC. The main hardware part is the optimized CO2 machine and the ANSTI machine that thanks to the project can now send their data.
Type(s) of asset	Service
TRL before Eur3ka (if applicable)	N.A
Expected TRL by end of the project	N.A

Eur3ka improvements	Thanks to Eur3ka now is available a platform where the testing data can be collected and used to allow the standardization bodies the creation of new standards for FF masks product.
IPR strategy (if any)	N.A
Sole owner or co-ownership	N.A
Relevant stakeholders	ENG and STAM
Exploitation channel(s)	• Eur3ka Consortium, • Company Networks, • Research Activities, Consulting, report, and DB selling
Possible competitors	Companies from the scuba market such as Mares, technisub, Cressisub.
Replicability in other domains and ecosystems	The data can be produced referring to FF masks for diving sector too.
Business Value:	The target market is the regulation of products for medical use but also for scuba applications. Through the Eur3ka project SEAC wants to solve the regulatory gap present in the Italian legislation for these FF-masks in the markets defined above; creating a database to be used as a reference for standardization and regulation that is lacking today. At the end of the project, it is expected to have a sufficient amount of data to continue with the standardization process.
Innovation Value:	The innovation in this KER is to introduce regulation and standardization for products that do not yet have it. This will allow SEAC to gain more prominence among its competitors and also become a benchmark in the medical industry for full-face masks. In the graph below the solution can be considered "Radical" because it can change partially the way to produce full face masks both for health and scuba market.
Customer Value: Customer Value:	The direct beneficiary is SEAC, which from the moment a regulation was implemented would already be ready for it. However, end consumers of FF-masks would also benefit from purchasing products that are subject to a recognized standard.
Which role(s) will you assume at the end of the project?	At the end of the Project we could use our global network of stakeholders to do dissemination and promotion
After the end of the project, what costs do you consider affordable?	The expected costs may be of a commercial nature to carry out promotions, however, they are integrated into our usual activities.

Maturity level of Innovation/Asset	This asset will be "Market Ready" after the end of the project

Table 9: Test Data

Business Model Canvas

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
1. Eur3ka Partners 2. SEACSUB, ENG e STAM	1. Database management 2. Data analysis for the standardization	1. Creation from standardization bodies of new standards for FF-masks in scuba and health sectors based on SEAC database. 2. Customers will buy product regulated from authorities	1. Consultative 2. Support	Standardization bodies and companies

Key Resources	Channels		Cost Structure	Revenue Streams
ENG dashboard	1. Eur3ka website 2. SEAC Social Channels and website		DB Service maintenance and updates.	Commercial exploitation towards standardization bodies

Figure 3: Test Data – Business Model Canvas

4.1.4 Measuring Machine Automation Service

The present KER was born as a result of the collaboration with SEAC. In fact, STAM during the project had the opportunity to upgrade two of their testing machines (the so-called CO2 machine and the ANSTI machine), and through the project development, acquired a high level of knowledge in the integration of sensors, digital measuring tools, and web interfaces. This machinery revamping service, whether for testing or other equipment, can be easily sold to all manufacturing companies at lower costs than purchasing a new machine.

Asset title	Measuring Machine Automation Service
Description	STAM will improve its know-how in sensorizing and integrating complex measuring and testing machines. This service will be sold to manufacturing companies and test laboratories.
Lead partner (point of reference) and other partners	STAM
Contributing Partners	
Eur3ka results and components involved	In Eur3ka project, the digitalization of the CO2 machine from SEAC
Type(s) of asset	Service
TRL before Eur3ka (if applicable)	-

Expected TRL by end of the project	-
Eur3ka improvements	-
IPR strategy (if any)	-
Sole owner or co-ownership	Sole Owner
Relevant stakeholders	Direct Customers that have testing machine. Thanks to the expertise acquired within the project STAM can direct sell this service.
Exploitation channel(s)	• Eur3ka Consortium, • Company Networks • Direct Customers
Possible competitors	Main automation big companies
Replicability in other domains and ecosystems	Any automated machine dealing with real time measuring and data generation can be associated to this service
Business Value:	This service is flexible to be adapted in different market segments. All the companies that have testing equipment or machines that can be sensorized and integrated with complex measuring. This solution is very flexible and adaptable; indeed, it can be tailor made on the customer. For sure after the end of the project some other development of the service can be done. But the service is currently operational.
Innovation Value:	Respect a lot of solution from big players, this one can be tailor made on the final customer. The solution, respect the graph below, is on the "Sustaining" square.
Customer Value: Customer Value:	The direct beneficiary is STAM, because thanks to eur3ka it has a new service that can be sold on the market. The solution is simple and customizable.
Which role(s) will you assume at the end of the project?	After the end of the project, STAM's role will stem from both Joint Exploitation and Individual Exploitation. The service will be provided to customers but also some maintenance and updating activities will be done on the SEAC service.
After the end of the project, what costs do you consider affordable?	The potential economical involvement of STAM will entail maintenance cost of the service developed for SEAC partner.

Maturity level of Innovation/Asset	This asset is between "Market ready" and "Tech ready" levels; some steps need to be done towards the full marketability, but technical capabilities are ready.

Table 10: Measuring Machine Automation Service

Business Model Canvas

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
1. Eur3ka Partners 2. SEACSUB	1. Data acquisition and management 2. Complex measuring and signal acquisition 3. Data storage	1. High technological sensors, installation, and management 2. Real time data acquisition set up. 3. Data flow management and storage 4. Sensors automatization	1. Consultative 2. Training 3. Support	1. Companies with testing machines 2. RTO or research centers with testing machines

Key Resources	Channels		Cost Structure	Revenue Streams
Thingsboard infrastructure	1. Eur3ka website 2. STAM Social Channels and website		1. Service maintenance 2. IT technician training	1. Service sold 2. Maintenance of the service

Figure 4: Measuring Machine Automation Service – Business Model Canvas

4.1.5 Context-Awareness Dashboard

The Context-Awareness Dashboard is a business analytics suite for Big Data analysis and visualization producing valuable and meaningful insights. It includes a variety of features, such as data federation, mash-up, data/text mining, and advanced data visualization, that allow for a focus on data-driven analytics processes. This solution is designed to handle and process large volumes of data, generating reports and general-purpose dashboards that can be customized for different users and in different application domains.

Asset title	Context-Awareness Dashboard
Description	The Context- Awareness Dashboard is a suite for business analytics that combines traditional data and big data sources into valuable and meaningful information. A full set of features, such as data federation, mash-up, data/text mining and advanced data visualization, enable special focus on data-driven analytics processes. This solution is able to manage and process large volumes of data, to provide reports and general-purpose dashboards allowing to scale users and provide them with the information they need at the right time. Exploiting different data sources, or owned by different organizations, the system provides security functionalities based on end-user roles and data sovereignty principles.
Lead partner (point of reference) and other partners	ENG
Contributing Partners	

Eur3ka results and components involved	In Eur3ka project, different dashboards have been realized in Pilot Family #2
Type(s) of asset	Product and Services
TRL before Eur3ka (if applicable)	TRL 6
Expected TRL by end of the project	TRL 8
Eur3ka improvements	Thanks to the adoption in SEAC Pilot, the Context Awareness Dashboard functionalities have been extended to perform historical analysis. In detail, the tools is able to acquire data using a secure endpoint to receive batch data in JSON format (Eur3ka System Adaptation), collect data plant in a MySQL DBMS, and at the end of the process there is the possibility to run processing on the datasets in order to apply logic and AI on them.
IPR strategy (if any)	The Context Awareness Dashboard is based on Knowage, an Open Source suite for modern analytics and business intelligence initiatives from data visualization to deep analysis. ENG is the owner of the solution which will be released both in Community Edition (free) and Enterprise Edition.
Sole owner or co-ownership	ENG is the owner of the solution. Access Rights shall be given under previous agreement between parties involved.
Relevant stakeholders	All technical stakeholders in Eur3ka including from pilots. All technology providers involved in Eur3ka and other research activities. More in general, offering advanced ad-hoc analysis that enhance the user's autonomy in exploring his data space and creating customized dashboards, the Context Awareness Dashboard is a software tool suitable for any application context in which analytics and insight can represent an added value, create competitive advantage, provide innovative services based on AI.
Exploitation channel(s)	• Eur3ka Consortium • Digital Factory Alliance • Company Networks • Direct Customers Research Activities
Possible competitors	Advanced analytics platforms provided by big IT players such as Siemens, IBM, Microsoft, Bosch.
Replicability in other domains and ecosystems	The software solution could be used in several business domains satisfying a wide range of needs due to its general-purpose nature

Business Value:	The Context Awareness Dashboard is an open source tool for analytics and business intelligence that satisfies traditional requirements as well as innovative and challenging informative domains, combining traditional data and big data sources into valuable and meaningful information. The tool adapts to different areas of use, modulating complexity and costs according to real needs and adapting to their variation over time. The main differences in the Context Awareness Dashboard compared to its similar solutions are that the tool offers a self consistent suite ready to use but also allows high levels of customization to adapt to technological situations and diversified business models. In addition, the context Awareness Dashboard, being open source, adopts open standards and it can be easily embedded in third-party products. After the Eur3ka project, the solution will be further improved with additional features in order to combine data coming from different and new sources, to add new and innovative AI services, to improve trust and security mechanisms.
Innovation Value:	The Innovation gained by the Context Awareness Dashboard expresses in carrying out business intelligence algorithms on structured data, focused on self-service and ad-hoc reporting. The solution also allows to combination and analyze different raw data giving the possibility to create new services and Decision Support Systems built on top of them. The solution also enables the creation of new business models based on data analysis that create value for companies in different domains by facilitating data ingestion and data analysis. With respect to graph in figure, the Context Awareness Dashboard tool is placed on "Radical" square, being able to deeply innovate existing data elaboration processes.
Customer Value: Customer Value:	Direct beneficiaries of the solution are all partners involved in Eur3ka project and, in general all the companies interested in the creation of smart services based on big data analysis. Also Technology providers should choose the Context Awareness Dashboard to improve their offering adding a flexible and open source solution easy to be integrated in third parties systems. The Context Awareness Dashboard should be chosen due to its flexibility, its open source nature, its ability to integrate different kinds of data, the possibility to create ad hoc reports and dashboards.
Which role(s) will you assume at the end of the project?	After the end of the project, ENG's role will stem from both the Joint Exploitation and Individual Exploitation plans according with ENG's expertise. In particular, ENG will provide support and maintenance for the Context Awareness Dashboard, in particular in SEAC Pilot.
After the end of the project, what costs do you consider affordable?	The potential economical involvement of ENG will entail operation costs of the platform, personnel costs and training costs.

Maturity level of Innovation/Asset	Tech Ready, Business Ready and Market Ready

Table 11: Context-Awareness Dashboard

Business Model Canvas

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
1.Smart Manufacturing Companies 2. Technology Providers 3. Big data Providers 4. Eur3ka Partners	1.Data integration and analysis 2. "Ad hoc" reports and high customizable dashboards 3. Visualization capabilities	1. Client trust and security 2. Big data visualization 3. Insights creation 4. Heterogeneous data sources acquisition 5.Customizable graphs and dashboards	1.Consultative 2.Training 3.Support	1.Smart Manufacturing SMEs 2. Large Enterprises 3. Technology Providers 4. Eur3ka Consortium

Key Resources	Channels		Cost Structure	Revenue Streams
1. AI Services and tools 2. Infrastructure 3. AI Catalogue	1. Eur3ka website 2. ENG social channels 3. Corporate customer networks 4. National and International Associations		1. Infrastructure 2. Operational 3. Promotion and Administration 4. New product development	1. Community edition - Open Source 2. Enterprise Edition - Various service fees 3. Grants 4. Integration, Installation and Maintenance

Figure 5: Context-Awareness Dashboard- BM Canvas

4.1.6 Reference Architecture Model (RAM) v3.0

Focusing on the generalization of concepts, functionality, and overall processes involved in the creation of a secure 'network of trusted data' , the IDS-RAM resides at a higher abstraction level than common architecture models of concrete software solutions do. Table 12 provides an overview and dedicated architecture specifications. It provides an overview supplemented by dedicated architecture specifications defining the individual components of the International Data Spaces (Connector, Broker, App Store, etc.) in detail

Asset title	**Reference Architecture Model (RAM) v4.0**
Description	Implementation and adoption of RAM by project partners and stakeholders in their ecosystem. This is expected to increase the adoption of IDS RAM, thus contribute to the dissemination of IDS standard.
Lead partner (point of reference) and other partners	IDSA
Contributing Partners	SQS, ENG, INNO, FhG, ATOS, TNO
Eur3ka results and components involved	Eur3ka results are indirectly involved in this asset.
Type(s) of asset	Methodology

TRL before Eur3ka (if applicable)	Not applicable
Expected TRL by end of the project	Not applicable
Eur3ka improvements	The entire adoption and application process of IDS RAM in Eur3ka is valuable for IDSA to work backwards and update the standard when and where necessary.
IPR strategy (if any)	Open-Source (Apache 2.0 license)
Sole owner or co-ownership	Not applicable
Relevant stakeholders	Direct adopters
Exploitation channel(s)	Adoption
Possible competitors	Not applicable
Replicability in other domains and ecosystems	Not applicable
Business Value:	IDS RAM is a domain-agnostic architecture that consists of generalization of concepts, functionality, and overall processes involved in the creation of a secure "network of trusted data", the IDS-RAM resides at a higher abstraction level than common architecture models of concrete software solutions do. After the end of the project, an internal evaluation process will be conducted to identify what needs to be improved within IDS RAM.
Innovation Value:	Incremental, IDS RAM is a standard that continuously evolves with iteration based on the feedback from IDSA Network.
Customer Value: Customer Value:	Data space enthusiasts, all organizations and/or individuals who would like to experiment with data spaces and who would like to share data in a secure and sovereign way.
Which role(s) will you assume at the end of the project?	Provider of standards
After the end of the project, what costs do	Not applicable

you consider affordable?	
Maturity level of Innovation/Asset	Tech Ready

Table 12: Reference Architecture Model (RAM) v3.0

4.1.7 Manufacturing Repurposing Framework

Through an empirical case study approach, we present a two-layer framework to guide practitioners in identifying the enablers and barriers to manufacturing repurposing. Through the utilization and application of this framework, they are guided in rethinking the existing operations and shaping their strategic approach.

Since this framework is built through the causal-loop diagram approach, practitioners can better understand the underlying relationships between the different enablers and barriers and obtain a structured approach to manufacturing repurposing activities.

Asset title	Manufacturing Repurposing Framework
Description	The Manufacturing Repurposing Framework provides
Lead partner (point of reference) and other partners	ETHZ
Contributing Partners	-
Eur3ka results and components involved	A manufacturing repurposing framework built based on empirical case study data. Collected from manufacturers who have engaged in manufacturing repurposing activities in four different product categories i) face masks ii) sanitizers iii) ventilators iv) face shields. This framework serves as a reference for manufacturers who would like to engage in manufacturing repurposing activities as it provides a structural overview of the various factors of consideration vital for manufacturing repurposing activities.
Type(s) of asset	Framework
TRL before Eur3ka (if applicable)	N/A
Expected TRL by end of the project	N/A
Eur3ka improvements	Due to the extensive network of Eur3ka, we tap upon the expertise of the individual partners to obtain empirical data.
IPR strategy (if any)	N/A
Sole owner or co-ownership	ETHZ is the owner of the solution. Access Rights shall be given under previous agreement between parties involved.

Relevant stakeholders	All repurposing stakeholders in Eur3ka including from pilots. Input from Eur3ka team and workshops to test the validity of the framework.
Exploitation channel(s)	• Eur3ka Consortium • Manufacturing companies Research Activities
Possible competitors	Consulting companies such as Mckinsey, Boston Consulting Group
Replicability in other domains and ecosystems	The framework is applicable in manufacturers who would want to implement repurposing activities to build their strategies or assess current readiness.
Business Value:	The target segment is the manufacturing community or stakeholders who wish to engage in manufacturing repurposing activities. This framework addresses the current gap in the system, as repurposing is a new phenomenon and has rapidly increased due to the onset of the pandemic. The main differentiator of the framework provided is that it is built upon empirical data collected from manufacturers which have engaged in manufacturing repurposing activities. After the Eur3ka project, the solution will be further validated to understand the applicability for other situations for a better generalisability.
Innovation Value:	The innovation of this framework lies in the data it is built upon. It is built on rich empirical data and hence differentiating it from other frameworks.ùIn terms of impact on the market, it is high, and in terms of newness it would be low as frameworks have existed for a long time. Based on these two metrics, it can be classified as sustaining.
Customer Value: Customer Value:	Direct beneficiaries of the solution are all partners involved in Eur3ka project and manufacturing firms who would like to engage in manufacturing repurposing activities.
Which role(s) will you assume at the end of the project?	After this project, ETHZ will serve as a knowledge centre to provide consultation to firms who require expert input on the usage of the framework.
After the end of the project, what costs do you consider affordable?	After this project, ETHZ will serve as a knowledge centre to provide consultation to firms who require expert input on the usage of the framework
Maturity level of Innovation/Asset	Market ready

Table 13: Manufacturing Repurposing Framework

Business Model Canvas

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
1. Manufacturing firms 2. Research centres 3. Eur3ka Partners	1. Visualization of key factors 2. Structure for decision making	1. Visibility of the factory affecting manufacturing repurposing 2. Inform managers and hence aid better decision making	1.Consultative 2.Training 3.Support	1. Manufacturing firms 2. Eur3ka Consortium

Key Resources	Channels		Cost Structure	Revenue Streams
1. Research institutions 2. Case studies	1. Eur3ka website 2. Research articles		Resources for framework development	Grants

Figure 6:Manufacturing Repurposing Framework – Business Model Canvas

4.1.8 COVID19 Shift Allocation Service

The COVID19 Aware Shift Scheduling Service is a software solution that provides a smart shift allocation system for businesses during the COVID19 pandemic. The software allows operators to define production plant departments and assign employees based on their skills. The departments can be divided into sectors to ensure appropriate social distancing measures during a shift. The software automatically assigns employees to sectors and shifts according to their skills, with support for morning, afternoon, night, and emergency shifts. The software also includes additional features based on user feedback, such as an emergency disruption declaration form to address manufacturing line disruptions and an employee upskilling capability to define training programs for employees. Overall, this software solution aims to maintain business continuity while preventing the spread of COVID19 among staff workers.

Asset title	**COVID19 Shift Allocation Service**
Description	Shifts allocation/optimization service that considers COVID19 related constraints and restrictions e.g., infected or quarantined employees
Lead partner (point of reference) and other partners	Netcompany-Intrasoft (INTRA)
Contributing Partners	SEAC contributed to the provision of requirements, yet it has not any involvement in the development of the product
Eur3ka results and components involved	Developed in Eur3ka
Type(s) of asset	Product/Service
TRL before Eur3ka (if applicable)	N/A

Expected TRL by end of the project	TRL=6
Eur3ka improvements	Provision of Manufacturing Repurposing and Resilience Requirements based on Pragmatic Scenarios Integration with training platforms and other HR systems (as per a comment received during the first review)
IPR strategy (if any)	Licensed Product (for B2B sales) Software as a Service
Sole owner or co-ownership	INTRA, Sole Owner
Relevant stakeholders	Manufacturers, Industrial Solution Integrators, HR Experts
Exploitation channel(s)	DFA, EFFRA, INTRASOFT's Sales and Marketing Channels in the Manufacturing Sectors Other Industrial Sectors will be considered following relevant pivots and repurposing of the application
Possible competitors	Vendors of Shift Scheduling Products and of Workforce Management Applications <u>Indicative Competitors</u> • Wrike (https://www.wrike.com/vr/) • BuddyPunch (https://buddypunch.com/) Zoho People (https://www.zoho.com/people)
Replicability in other domains and ecosystems	Other Industrial Sectors involving Shifts e.g., Critical Infrastructures Production Sites, Oil and Gas, Mining
Business Value:	<u>**Target Market**</u>: Manufacturers considering resilience scenarios <u>**Problem Addressed**</u>: Flexible Shifts (Re)Allocation to address potential disruptions <u>**USP**</u>: Consideration of Resilience and Disruption requirements <u>**Further Research**</u>: This is a need for a pivot of the application to address other manufacturing resilience scenarios, as COVID19 resilience is no longer a priority for manufacturers
Innovation Value:	Consideration of disruptive events that compromise the organizations resilience. This is a key value proposition that differentiates the product from the state of the art. With respective to the graph, our solution is "Incremental" since it can be considered an add-on to state of the art shift allocation platforms.

Customer Value: Customer Value:	**Direct Beneficiary**: Manufacturing enterprises that need to implement rapid manufacturing repurposing transformations **Benefits for End-Users**: Shifts reallocation that considers disruptive events to the normal workflows; Integration with the training of the workers and consideration of the skill in the allocation process
Which role(s) will you assume at the end of the project?	Solution Vendor and Integrator (B2B Sales) Cloud Software Provider (SaaS sales)
After the end of the project, what costs do you consider affordable?	Development Costs: 2 Developers X 6 months Marketing Costs: 2 Marketing Officers X 1 year
Maturity level of Innovation/Asset	Tech Ready in 2022; Market Ready after the end of the project Market Launch in the beginning of 2025 as per the given timeline

Table 14: COVID19 Shift Allocation Service

Business Model Canvas

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
1. HR Companies 2. HRMS Vendors and Solution Providers	1. Development to raise TRL levels 2. Development to address other markets 3. Marketing & Sales	1. Workforce reallocation to support manufacturing resilience scenarios 2. Employee shirt (Re)allocation for manufacturing resilience scenarios (e.g., in the presence of disruptive events)	1. Personalized B2B Sales 2. Standard Pay-as-you-go	1. Manufacturing market (primary) with emphasis on the countries where we have established presence (Belgium, Luxembourg, Greece, Denmark) 2. Secondary markets: Oil & Gas, Mining, Critical Infrastructures

Key Resources	Channels		Cost Structure	Revenue Streams
1. Software Developers 2. Marketing Officers 3. Cloud Computing Resources	1. LinkedIn 2. Face2Face customer meetings 3. Electronic/Cloud Sales		1. Marketing Costs 2. Development Costs 3. Integration Costs 4. Maintenance and Support Costs	1. B2B Sales Revenues (License) 2. Pay-as-you-go-fees (Cloud) 3. Sales of complementary services

Figure 7: COVID19 Shift Allocation Service – Business Model Canvas

4.1.9 Smart Matching and Mediation App

The Smart Matching and Mediation App extends the standard search functionality of a marketplace to include not only static information such as capabilities, but also dynamic data such as price, availability, risks, etc.

Asset title	**Smart Matching and Mediation App**

Description	The Smart Matching and Mediation App (SMMA) extends the standard search functionality of a marketplace to include not only static information such as capabilities, but also dynamic data such as price, availability, risks, etc. SMMA also sorts the search results according to the user's preferences and constraints like delivery time. As the dynamic information is sensitive, SMMA is embedded in the IDS data space connector to ensure trustworthiness in dynamic marketplace scenarios. SMMA can be easily connected to different sources as it supports standardized, I4.0-compliant interfaces.
Lead partner (point of reference) and other partners	Fraunhofer IOSB
Contributing Partners	
Eur3ka results and components involved	In Eur3ka project, the SMMA has been integrated with the Smart Factory Web
Type(s) of asset	Service
TRL before Eur3ka (if applicable)	TRL 0 as SMMA was developed from scratch
Expected TRL by end of the project	TRL 4
Eur3ka improvements	The SMMA is used to extend the functionalities of the Smart Factory Web, where factory owners offer their production capabilities to customers world-wide. The extension was done to take into account additional information like price limits, time requirements and supply-chain based risks. As capacity and workload are sensitive data, the factory owners only allow this data to be used to enhance search requests. The SMMA provides a smart search algorithm with constraints like delivery time. As the SMMA is integrated within an EDS connector, the data owner's data sovereignty is always respected.
IPR strategy (if any)	The SMMA is available as open source under the Apache 2.0 license.
Sole owner or co-ownership	Fraunhofer IOSB is the owner of the SMMA.
Relevant stakeholders	Marketplace owners and all users interested in advanced Manufacturing as a Service (MaaS), where not only capabilities but also capacities and other constraints are considered.
Exploitation channel(s)	Eur3ka Consortium; IDS-Industrial community; SFW community; Company Networks; Research Activities
Possible competitors	-

Replicability in other domains and ecosystems	The SMMA can be used in any domain where a combination of static search based on capabilities and dynamic search based on capacities is required.
Business Value:	The target market is any domain where MaaS paradigm is used. The SMMA is an open source tool for filtering and sorting supply chains based on real-time data and given constraints. It is designed to improve the quality and usability of search results. We are not aware of any other product that combines static and dynamic search while quarantining data sovereignty. After the end of the project, the SMMA will be further enhanced to improve usability, especially to facilitate integration with factories based on Industrie 4.0 standards.
Innovation Value:	The innovation of SMMA lies in extending the search capabilities of MaaS to sensitive data while providing user control over data usage. With respect to graph in figure, the SMMA is placed on "Radical" square, as it proposes how existing MaaS platforms can be innovated through new, innovative and combined use of Industrie 4.0 and IDS technologies that ensure interoperability, standards compliance and data sovereignty.
Customer Value: Customer Value:	Direct beneficiaries of the solution are all partners involved in the Eur3ka project and, in general, all companies interested in advanced MaaS solutions. Next, factories could benefit from the SMMA, as Industrie 4.0-compliant digital twins created semi-automatically could be used in other application scenarios. In addition, technology providers could use the SMMA to improve the quality of search functions by ensuring data sovereignty. The SMMA should be chosen due to its Industrie 4.0 specification compliance, configurability, open- source nature, and ability to be easily integrated with factories.
Which role(s) will you assume at the end of the project?	After the end of the project, Fraunhofer IOSB as technology provider will take over the support and maintenance of the SMMA.
After the end of the project, what costs do you consider affordable?	The potential economical involvement of Fraunhofer IOSB will entail personnel costs, promotional costs and training costs.
Maturity level of Innovation/Asset	Research prototype

Table 15: Smart Matching and Mediation App

Business Model Canvas

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
1. Manufacturing companies 2. Eur3ka partners	1. Modeling of domain-specific capabilities 2. Acquisition of capacities 3. Deployment of an EDC connector	1.Smart search for supply chains based on capabilities and capacities 2. Personalized ranking of search results 4. I4.0 compliant digital twins for factories 5. Data sovereignty assurance for sensitive data	1.Consultative 2.Training 3.Support	1. Manufacturing SMEs 2. MaaS platform providers 3. Eu3ka Consortium

Key Resources	Channels		Cost Structure	Revenue Streams
1. Human resources 2. Infrastructure	1. Eur3ka website 2. Smart Factory Web 3. Customer networks of Fraunhofer IOSB 4. Natiopnal and international associations		1.R&D for further innovation of the SMMA 2. Marketing 3. Infastructure	1. Modeling of capabilities 2. Creation of I4.0 compliant digital twins 3. Integration, installation and maintenance

Figure 8: Smart Matching and Mediation App- Business Model Canvas

4.1.10 Digital Quality Management Platform

The Eur3ka project is implementing advanced functionalities and options to the M3 software, which is a powerful tool for surface inspection that works by point cloud segmentation. It lets users analyze the dimensions of an object and compare it to the original CAD design. It can be done in real time or offline. Some of the new features integrated directly to the M3Workspace platform are going to let users manage documentation, measure projects and parts, work with metrological and statistical reports, or even get an insight of the data generated.

Asset title	Digital Quality Management Platform
Description	Upgrade the Innovalia Metrology M3 Workspace platform for quality and data analysis, thriving new versions with new functionalities in order to manage in an efficient way, the information sharing with the clients
Lead partner (point of reference) and other partners	INNO
Contributing Partners	INNOVALIA
Eur3ka results and components involved	Eur3ka results have been involved in this asset.
Type(s) of asset	Product/Service

TRL[9] before Eur3ka (if applicable)	5
Expected TRL by end of the project	6
Eur3ka improvements	Integration of the M3Workspace platform and the M3 software to implement Data Spaces.
IPR strategy (if any)	Licensed
Sole owner or co-ownership	INNOVALIA Metrology
Relevant stakeholders	Manufacturing sector SMEs
Exploitation channel(s)	Innovalia Metrology current clients
Possible competitors	Metrology service companies like MetroLog, Hexagon, Renishaw, Nikon
Replicability in other domains and ecosystems	It could be used in all domains where quality management in manufacturing is needed
Business Value:	The main target market of M3 are companies in the healthcare, automobile, aviation, and machine-tool industries. With this software, users can get a very precise digital copy of the surface being inspected, which can be downloaded and analysed in detail in order to make a proper comparison with the CAD of the piece. It ensures dimensional quality in 3D printed parts. M3 is a software that is easy to use and that simplifies metrology management compared to other programs of point cloud segmentation. It allows for both automatic and manual capture, it's suitable for parts of all sizes and materials, and it incorporates features specifically designed for in-line inspection. M3 can be used to work in real-time and offline and generate customized reports and statistics, everything in just one workflow for optical and contact measurement.
Innovation Value:	Eur3ka is implementing advanced functionalities in the M3Workspace platform, such as the functionalities that demand a Peer 2 Peer (P2P) approach, which are fundamental for the delivery of a more customised QC digital service. Users can upload/download documents, mainly concerning products design, measurement projects, measured parts, or even metrological and statistical reports, supporting any format with which the user can work and depending on the type of file. From the interface, measurement results can be uploaded directly, and licenses can be managed for M3 users/customers.

---

[9] https://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-g-trl_en.pdf

	From the interface, users can visualize CAD files, point clouds, or metrological reports, and they have access to training support and guidelines for users such as Webinars or tutorials. Another new element is the Context-Awareness Dashboard based on Knowage, which is an open-source suite that combines traditional and big data sources into valuable and meaningful information. End-users can build their own analysis autonomously, get insights on data, and turn them into a tool for effective decision-making processes. These upgrades to the platform are gradual and continuous, and they are going to fulfil customers' needs and reach out new ones.
Customer Value: Customer Value:	This is an easy-to-use software for analysing and capturing point clouds, it's reliable and it doesn't require much training. The direct beneficiaries of this software are Innovalia Metrology's clients who manufacture products that need a high precision digital copy to make a comparison with a CAD.
Which role(s) will you assume at the end of the project?	At the end of this project, INNOVALIA Metrology will maintain and update both the software and the platform, and it will provide the necessary technical support to its customers.
After the end of the project, what costs do you consider affordable?	Costs related to marketing, promotional cost, personnel, and new tools development and improvements.
Maturity level of Innovation/Asset	Research prototype

Table 16: Digital Quality Management Platform

Business Model Canvas

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
1. 3D Printing OEM 2. P&R Platform	1. Software support 2. Development of new platform tools 3. Updates to existing functions	1. 3D Point Could Capture 2. Real-time data storage 3. Product dimensional analysis and control 4. Customized visual (colour mapping) reports and statistics	1. Training (webinars) 2. On-site demos	1. Medical products 2. Automobile, Aviation, and Machine Tool Industries 3. EU countries, Mercosur countries, Mexico

Key Resources	Channels		Cost Structure	Revenue Streams
1. Cloud Service Costs 2. Cloud Data Storage Costs 3. Data Connector as a Service Costs. 4. Product certification	1. Website 2. Distribution network		1. Marketing expenses 2. Product development 3. Technical Assistance (Personnel Cost)	1. -License sales 2. Maintenance service 3. Software updates 4. Personnel training

Figure 9: Digital Quality Management Platform – Business Model Canvas

4.1.11   Digital Factory Alliance Services and MGRI implementation

The Digital Factory Alliance (DFA) is a platform created to support the digital transformation of the manufacturing industry and it serves as a dissemination and exploitation vehicle for R&D projects' results by providing specific services to its members. Within these services, the Plug & Respond Network – developed in the Eur3ka project – is offered as a Manufacturing as a Service Network for health products in crisis scenarios. The DFA also offers access to unique innovation marketplaces, standardization processes, information and events relevant to the digital manufacturing arena

Asset title	Digital Factory Alliance Services and MGRI implementation
Description	Through the DFA, INNO will reinforce and expand its services and its opportunities in the market. The DFA becomes a way to effectively set-up and coordinate the Manufacturing Global Response Initiative.
Lead partner (point of reference) and other partners	INNO
Contributing Partners	ENG, DTI, TNO, SQS, SIEIL
Eur3ka results and components involved	Eur3ka results have been involved in this asset.
Type(s) of asset	Service
TRL before Eur3ka (if applicable)	4
Expected TRL by end of the project	6
Eur3ka improvements	The Digital Factory Alliance (DFA) had been set up as a vehicle for dissemination and exploitation of R&D projects' results and, as such, it has been structured around 4 lines of services: Body of Knowledge, Innovation Campus, Flagship Initiatives and Business Networks. Before Eur3ka, The Flagship Initiatives and the Business Networks were two conceptual lines of services that needed to be further developed. Due to the work done in Eur3ka, a new original catalogue of innovation products (ZX Marketplace) has been developed and integrated into the Flagship Initiatives and the Plug & Response (P&R) Network has been integrated into the Business Networks. After Eur3ka, the DFA is able to provide rapid response to crisis scenarios by helping the stakeholders to prepare before the crisis (ZX Marketplace and Q-Med-Tech Qualification process) and to act efficiently during the crisis by coordinating the use of the P&R Network, serving as the vehicle for the MGRI implementation.
IPR strategy (if any)	Stakeholders that want to participate in the DFA need to become members by paying a yearly fee to get access to DFA Portal and

	Services. Then, each stakeholder retains all IP rights of their assets that they bring to the ZX Marketplace and/or other catalogues and can choose the way the want to commercialize them.
Sole owner or co-ownership	The DFA has a Steering Board Members – currently INNO, ENG and ATOS –, regular members and collaborators.
Relevant stakeholders	Manufacturing sector SMEs, technology providers, testing and experimental facilities, as well as Digital Innovation Hubs.
Exploitation channel(s)	- Eur3ka Consortium - Digital Factory Alliance - Company Networks - Direct Customers - Research Activities
Possible competitors	N/A
Replicability in other domains and ecosystems	As one of the Business Networks of the DFA, the P&R Network can be seen as a Manufacturing as a Service (MaaS) Network that, in the case of Eur3ka, is focused in Pandemic Crisis. However, its structure as MaaS can be expanded to cover areas beyond health crisis, such those derived from geopolitical conflicts (i.e., wars), natural disasters and de-centralized manufacturing at an industry level.
Business Value:	The DFA service offer related to Eur3ka is comprised to access to an Open Innovation Catalogue (free access), a paid catalogue (ZX Marketplace) and a paid business network (P&R Network). The segments of customers include legal entities (either public or private) that could provide designs of health products, manufacturing capacities to produce them and end-users of these products. With this service offering, the customers will get access to a certification process that will allow them to qualify their products and publish them in the ZX Marketplace, a unique marketplace that will give them a platform to showcase their standardized innovations to end users. At the same time, they will be able to participate in the P&R Newtwork at different levels: they could become providers of designs of their products or they could offer manufacturing capabilities to produce products based on other providers' designs. At the same time, end-users will get access to a catalogue of end products, being able to place and order and getting the delivery to their facilities. Thus, the DFA is operating an unique MaaS Network for effective pandemic crisis management and, at the same time, becoming a novel market maker of new related innovations in this specific area.
Innovation Value:	The DFA can be seen as a single-entry point and shopfloor for a set of innovation related services that couldn't be found in any other platform. The DFA serves as a vehicle for both dissemination and exploitation of project results. In the case of Eur3ka, this is particularly true via the utilisation of the different product catalogues and the access and coordination of the Plug & Response Network. But the array of services of the DFA are more extensive, they also cover areas where stakeholders can share their innovation-related results in an open innovation area and can leverage their know-how through the different

	tools created for dissemination of knowledge about new products, processes, sharing information about pilot cases, deep diving into specific technical topics, among others, providing a platform for strong stakeholder engagement and knowledge transfer within the manufacturing community. The DFA as a platform is sustaining a significant improvement of the exploitation and dissemination isolated efforts done in the framework of R&D public funded projects and is creating new marketplaces and business networks of high impact.
Customer Value: Customer Value:	An approach to the customer value needs to be divided into the segregated services offered by the DFA and the specific services provided by the P&R Network. The P&R Newtok users are composed by providers and consumers of health products, designs for health products, production capacity and specialized networks. The P&R can be seen as a "network of networks" that provides a Manufacturing as a Service space for medical products in crisis scenarios. This approach opens up a room for new business opportunities for both providers and consumers as new marketplaces are being created in these interactions. On the other hand, the DFA is benefiting 4 main stakeholders: technology providers, end user companies, testing and experimental facilities and digital innovation hubs through the service offering in areas such as knowledge sharing and dissemination, open and paid marketplaces, and the integration of added value business networks, becoming a unique platform that integrates dissemination and exploitation tools in one place.
Which role(s) will you assume at the end of the project?	Innovalia is a founding and steering board member of the DFA and thus will continue to participate in the further development and managing of the platform by working in the widening of its portfolio of services and the sustainability of the business model, as well as in the technical support (hosting and website maintenance).
After the end of the project, what costs do you consider affordable?	As mentioned, the cost of platform operation and maintenance (including hosting and website management), as well as the promotion of its services (marketing). However, the DFA Steering Board is working on making the DFA economical sustainable through the membership fees and participation fees in the Business Networks, as well as the value that it can capture on the financial operations carried out in the platform.
Maturity level of Innovation/Asset	Asset is ready

Table 17: Digital Factory Alliance Services and MGRI implementation

Business Model Canvas

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
1.World Economic Forum. 2. Sectorial Clusters and Associations. 3. Public administration bodies.	Promotion of the DFA by actively engaging in sector specific activities like webinars, assistance to conferences, as well as ongoing service development via R&D	1. A unique and centralized platform for dissemination and exploitation of innovation results. 2. A unique Manufacturing as a Service Network for fast deployment in crisis scenarios. 3. A unique marketplace to showcase state of the art products in digital manufacturing.	1. Informational and training webinars. 2. Live events in digital manufacturing (conferences, customized events).	1. P&R Network: Consumers and providers of health products, health product designs, production capacity and business networks. 2. DFA: technology providers, end user companies, testing and experimental facilities and digital innovation hubs.

Key Resources	Channels		Cost Structure	Revenue Streams
1. Investment in R&D towards development of new services. 2. Technical support team. 3. Sales personnel.	1. W- DFA Website. 2. e-mail support. 3. Phone support.		1. M- Platform maintenance and hosting. 2. Promotion and marketing efforts. 3. Management and operational staff.	1. -Membership fees (steering board/regular). -2. Commission-based revenue over financial transactions done in the platform. 3. Fees for accessing specific services.

Figure 10: Digital Factory Alliance Services and MGRI implementation – Business Model Canvas

4.1.12   SCSN – Smart Connected Supplier Network

The Smart Connected Supplier Network (SCSN) is a data standard that aims to improve the efficiency of information exchange within the supply chain of manufacturing companies. It enables companies to share data easily, quickly and reliably, simplifying the data sharing process within the entire supply chain. SCSN messages can be automatically processed in the Enterprise Resource Planning (ERP) system of a connected company, resulting in higher productivity within the supply chain through fast, secure and interoperable exchange of information between companies. The SCSN network is designed according to the four-corner model and is managed by the independent SCSN Foundation

Asset title	**SCSN – Smart Connected Supplier Network**
Description	Smart Connected Supplier Network (SCSN) is a data standard that makes exchanging information in the supply chain more efficient, allowing companies to share data more easily, quickly and reliably. SCSN simplifies data sharing within the whole supply chain, because SCSN messages can be automatically processed in the ERP system of a connected company. There are also strict agreements in place on the semantics of the messages, so they can only be interpreted in one way. This results in higher productivity within the supply chain through fast, secure and interoperable exchange of information between companies. Brainport Industries (BPI) closely collaborates with TNO within the Eur3ka project. While TNO focusses on the technical activities, i.e.

	designing and realizing the required IDS/SCSN software components, BPI focusses on overall project management, dissemination, exploitation and validation activities.
Lead partner (point of reference) and other partners	BPI
Contributing Partners	TNO
Eur3ka results and components involved	Extended knowledge on SCSN, shared and discussed with our '*Resilience leading group*' of companies. Also researched and developed two new types of messages to be published in a scientific paper.
Type(s) of asset	Product and Services
TRL before Eur3ka (if applicable)	TRL 6
Expected TRL by end of the project	TRL 8
Eur3ka improvements	Since the start of the Eur3ka project, BPI and TNO have obtained the knowledge and technical expertise needed to extend and further exploit SCSN, positioning it as a Resilient Connected Smart Supply Chain, therefore using the not-for-profit Foundation SCSN as sustainable ecosystem to build upon the results of the EUR3KA project. Together with TNO's dataspace efforts and data sovereignty mechanisms for logistic planning, we have extended the framework solutions with resilience, re-planning and re-schedule services.
IPR strategy (if any)	At the moment, the SCSN standard is publicly available and may be used by Service Providers. There is no software license linked to SCSN yet, but this may change in the (near) future.
Sole owner or co-ownership	SCSN as an independent and autonomous foundation, is the owner of the solution. Access Rights shall be given under agreement between the parties involved.
Relevant stakeholders	BPI, TNO, SCSN foundation, Resilience leading group of companies, Service Providers and SCSN end-users (manufacturing companies).
Exploitation channel(s)	- BPI's members - Direct SCSN Customers - Service Providers - Eur3ka Consortium - Other European projects Research Activities
Possible competitors	Up to now, we have not found any competitors. Since it is a standard, which only works with a certain market penetration, it makes it hard to implement for others without us knowing.

Replicability in other domains and ecosystems	In theory, the solution could be used in several business domains, i.e. health domain, satisfying a wide range of needs due to its general-purpose nature. The message types could be the same, although sector-specific adjustments may be necessary.
Business Value:	Smart Connected Supplier Network (SCSN) is a data standard that makes exchanging information in the supply chain more efficient, allowing companies to share data more easily, quickly and reliably. It is primarily focused on companies active in the manufacturing industry and their service providers. The standard is continuously improving by gathering feedback from companies working with SCSN and research organizations, such as TNO. After the Eur3ka project, the solution will be further improved with adjustments to current practices and new message types.
Innovation Value:	The new element of the Smart Connected Supplier Network (SCSN) is the fact that it entails the entire supply chain. Technologically the solution is not that advanced. The message standard is based on Oasis' Universal Business Language (UBL), which is a widely internationally accepted domain language, also known as standard ISO/IEC 19845:2015.
	The impact on the market, however, is huge. SCSN is not only a communication standard, it is also a network that is designed according to the four-corner model. The four-corner model is very scalable because each company only has to setup a single connection to a single service provider[10]. The SCSN network is a network of networks, in which all service providers/brokers are connected to each other. This enables every manufacturing company to communicate with all other manufacturing companies in the SCSN network, irrespective of the service providers to which the manufacturing companies are affiliated. This is made possible by strict technical and commercial agreements between the service providers, which are managed by the independent SCSN Foundation.
	This network is comparable to the telecom sector. Everyone is free to choose a telecom provider that suits them best. The customers of the telecom providers can call all other connected people, regardless of which telecom provider they are connected to or which type of mobile phone they have.
Customer Value: Customer Value:	The Smart Connected Supplier Network (SCSN) aims to provide value to its customers, which are small and medium-sized enterprises (SMEs), by helping them to improve their supply chain management. SCSN's customer value proposition is to offer SMEs a platform that enables them to better manage their supply chains, reduce inefficiencies and delays, and ultimately become more competitive.
	Through SCSN, SMEs can connect with suppliers and customers, streamline their procurement processes, and gain visibility into their supply chains. This can help SMEs to identify bottlenecks and inefficiencies, improve communication and collaboration with suppliers

---

[10] https://smart-connected-supplier-network.gitbook.io/processmanual/architecture/four-corner-model

	and customers, and reduce costs. In addition to providing a platform for supply chain management, SCSN also offers various services, such as training and support, to help SMEs take advantage of the platform and improve their supply chain capabilities.
Which role(s) will you assume at the end of the project?	After the Eur3ka project BPI will keep promoting, disseminating and communicating about SCSN to the manufacturing industry and service providers to scale the network. TNO will keep doing research related to SCSN, such as new message types, optimisation possibilities and support and maintenance.
After the end of the project, what costs do you consider affordable?	The potential economical involvement of BPI and TNO will entail operation costs of the platform, personnel costs, and MarCom costs.
Maturity level of Innovation/Asset	Tech Ready, Business Ready and Market Ready

Table 18: SCSN – Smart Connected Supplier Network

Business Model Canvas

Figure 11: SCSN – Smart Connected Supplier Network- Business Model Canvas

4.1.13 Knowledge Sharing – Supply Chain Resilience & Resilience Thinking

In the context of supply chain resilience and resilience thinking, knowledge sharing plays a crucial role in enhancing the ability of companies to adapt to unexpected events and

disruptions such as the COVID-19 pandemic. Brainport Industries, a consortium of suppliers in the open High-Tech supply chain of the Netherlands, has been sharing its first-hand experiences and insights with its members through initiatives such as the Resilience Leading Group and Use Cases of Supply Chain Resilience during the COVID-19 pandemic. Brainport Industries aims to convey the information and knowledge gained during the Eur3ka project, in close collaboration with TNO, by focusing on the need for optimal data and information sharing. The knowledge sharing was done through physical and online meetings with manufacturers, researchers, and technology providers, resulting in an extended knowledge on SCSN and two new types of messages for SCSN.

Asset title	Knowledge Sharing – Supply Chain Resilience & Resilience Thinking
Description	Brainport Industries is a consortium of tier-one, tier-two and tier-three suppliers in the open High-Tech supply chain of the Netherlands. Its members are the actual companies involved in a lot of the supply chains which have been affected by the COVID-19 pandemic and which have shown an adequate response to the rising issues during the pandemic. Therefore, their first-hand experiences and their insights were very useful for designing the future approach of similar issues. This information was obtained by initiatives like the *''Resilience Leading Group''*, a group of manufacturing companies we have formed, and *''Use Cases of Supply Chain Resilience during the COVID-19 pandemic''*. Brainport Industries aimed at conveying the information and knowledge gained during the Eur3ka project with her members. Additionally, in close collaboration with TNO we have progressed Supply Chain resilience with the SCSN platform. By focussing on the need for optimal data & information sharing. The knowledge sharing regarding supply chain resilience and resilience thinking has been done in several ways such as physical and online meetings with manufacturers, researchers and technology providers. One of the concrete outcomes of this research and meetings is a yet-to-be-published scientific paper about two new types of messages for SCSN. Brainport Industries (BPI) closely collaborates with TNO within the Eur3ka project. While TNO focusses on the technical activities, i.e. designing and realizing the required IDS/SCSN software components, BPI focusses on overall project management, dissemination, exploitation and validation activities.
Lead partner (point of reference) and other partners	BPI
Contributing Partners	TNO
Eur3ka results and components involved	Extended knowledge on SCSN, shared and discussed with our '*Resilience leading group*' of companies. Also researched and

	developed two new types of messages to be published in a scientific paper.
Type(s) of asset	Product and Services
TRL before Eur3ka (if applicable)	TRL 1
Expected TRL by end of the project	TRL 7
Eur3ka improvements	Since the start of the Eur3ka project, BPI and TNO have obtained the knowledge and technical expertise regarding supply chain resilience and resilience thinking. We gathered a group of manufacturers willing to share their expertise and experience on resilient supply chain management based on the COVID-19 pandemic. We have communicated and disseminated our knowledge through internal and external channels.
IPR strategy (if any)	n/a
Sole owner or co-ownership	Knowledge sharing does not entail specific ownership.
Relevant stakeholders	BPI, TNO, SCSN foundation, Resilience leading group of companies, Service Providers and SCSN end-users (manufacturing companies).
Exploitation channel(s)	- BPI's members - Resilience leading group - Service Providers - Eur3ka Consortium Other European projects
Possible competitors	Since this is not a specific product or solution, it is hard to define possible competitors.
Replicability in other domains and ecosystems	In theory, the knowledge obtained and shared between the actors involved, could be used in several other domains, i.e. health domain, satisfying a wide range of needs due to its general-purpose nature, although sector-specific adjustments may be necessary.
Business Value:	The knowledge sharing has been primarily focused on companies active in the manufacturing industry and their service providers. We have organised several workshops and disseminated our results in online newsletters among others. Companies were eager to participate in the workshops and have learned a lot around the topic of resilience and how they can (re)design the supply chain becoming more resilient together. After the Eur3ka project, these will be continued every now and then, also based on new insights.

Innovation Value:	The new element of the knowledge sharing is that it entails the entire supply chain. It may consist of an OEM with several direct and indirect suppliers, that are also interrelated as well. Although sharing knowledge across the whole supply chain is not technologically advanced, it has great socio-economic impact. Suppliers are not only mutually dependent on their supplies in one field, they could also be direct competitors in another field. This makes it very challenging to share sensitive and company-specific information across the whole supply chain. Even in critical market situations, the hesitation to communicate about these things, keeps up the barrier before falling into a valley of death. This is where trust and information sharing are a crucial element to maintain a strong position and act properly in a collaborative business network. The workshops and meetings we have organised within the Eur3ka project helped strengthening the trust to be transparent to each other.
Customer Value: Customer Value:	The ideas and visions shared during the sessions helped the affiliated companies in (re)designing the supply chain becoming more resilient as a whole, hence improving companies' partnerships, competitiveness and revenue. The saying we have often used in these meetings: "If the whole cake we bake together is bigger, each individual part is bigger as well".
Which role(s) will you assume at the end of the project?	After the Eur3ka project BPI will keep promoting, disseminating and communicating about the importance to share knowledge on the topic of resilience. We will be hosting events and meetings on this specific topic from time to time. TNO will keep doing research related to supply chain resilience and resilience thinking, such as new message types for SCSN, optimisation possibilities and support and maintenance.
After the end of the project, what costs do you consider affordable?	The potential economical involvement of BPI and TNO will entail personnel costs, and MarCom costs.
Maturity level of Innovation/Asset	Tech Ready, Business Ready and Market Ready

Table 19: Knowledge Sharing – Supply Chain Resilience & Resilience Thinking

Business Model Canvas

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
1. Resilience Leading Group 2. Manufacturing Companies 3. Technology partners 4. Service Providers 5. Strategic Partners in related projects	1. Sharing knowledge 2. Researching and developing 3. Marketing and promoting 4. Training and implementation 5. Customer support for issues/concerns	1. A platform for manufacturing companies and researchers to share their knowledge and expertise on resilience thinking. 2. Creating a community of learners and experts that can benefit from each other's knowledge.	1. Community creation 2. Regular updates to keep SMEs informed	1. Smart Manufacturing SMEs that need help in (re)designing their supply chain more resilient. 2. Experts and professionals who are willing to share their knowledge.

Key Resources	Channels		Cost Structure	Revenue Streams
1. Staff with expertise in resilient supply chain management. 2. Knowledge sharing content. 3. Team of experts to curate and create relevant content.	1.Eur3ka website 2. BPI communication channels 3. SCSN communication channels 4. National and International projects		1. Costs for organising and hosting workshops. 2. Research and development costs on the topic of resilience. 3. Content creation and curation costs.	1. Partly based on subscription fees paid by SMEs to access and use the SCSN platform. 2. Fees for additional services, such as training and support. 3. National and international grants

Figure 12: Knowledge Sharing – Supply Chain Resilience & Resilience Thinking- Business Model Canvas

4.1.14   Component Recommendation Engine

This tool brings a dynamic level over marketplace static information. It provides and added value to the user, because it translates the marketplace information in their specific needs.

Asset title	Component Recommendation Engine
Description	Tool to allow users to use the results of the Eur3ka project to help them to compose their own solutions for their specific need/problems.
Lead partner (point of reference) and other partners	UNPARALLEL
Contributing Partners	n. a.
Eur3ka results and components involved	All Eur3ka components metadata
Type(s) of asset	Service
TRL before Eur3ka (if applicable)	TRL 2
Expected TRL by end of the project	TRL 6
Eur3ka improvements	The asset existed as a technological concept (TRL 2) and was fully developed in Eur3ka to be demonstrated in an industrially relevant environment (TRL 6)

IPR strategy (if any)	Service
Sole owner or co-ownership	Sole owner
Relevant stakeholders	Marketplace users
Exploitation channel(s)	Digital Factory Alliance
Possible competitors	n. a.
Replicability in other domains and ecosystems	Applicable to any marketplace
Business Value:	The service is targeted to industrial integrators/end-users (the 'user') and use the service to get a recommendation of a technological solution for their goal/project. The aim of the service is to provide users with a way to rapidly have one (or more) solutions for their need and to check if that solution would fit their requirements (by perceiving their context of use, by interacting with the people that is promoting the solution, etc.). The service can compose solutions that uses Eur3ka technologies or not – the service uses a database of digital technologies/solutions to provide the user with a solution that closely matches the described needs. As such, the product is novel as it can accommodate any digital technology to a minimal (sufficient) level of detail so that the user is able to inspect further to decide to adopt it (or discard it) for the intent/project. At the end of the project the service is fully operational (in terms of the technical capability/algorithms) and will become more responsive as more data is added to its database of digital components/solutions.
Innovation Value:	The innovation value of the service is high as the service provides recommendations on digital solutions with only minimal information required from the user of – users describe their need/problem as value propositions and/or technological problems and the service can infer solutions that closely match that need in a similar context of application. Presently, there is no solution in existing marketplaces for digital solutions for industry – e.g., MARKET4.0 for manufacturing http://platform.market40.eu, or others – that is able to provide this service, i.e., of users being able to find digital solutions fast and promptly asserting their potential value for the problem at hand. In terms of the type of innovation, one could classify the service as a 'radical innovation' as it represents a technological novelty of having a transformative recommendation service duly available for picking & choosing digital technologies.
Customer Value: Customer Value:	Industrial integrators who engage in development and integration work in industrial environments, as well as end-users such as industrialists or factory owners seeking digital solutions to solve various problems within their industrial settings, including MaaS solutions proposed by the Eur3ka project, are the direct beneficiaries of the solution. From the user's perspective, the service provides quick and easy recommendations for digital solutions to address a range of industry challenges. The service acts as a knowledge broker, providing users

	with access to several existing solutions that could address any industrial challenge, including new technologies, standards, and approaches that the user may not have previously considered. This service enables users to identify technologies that can help them address their needs and challenges, saving them the costs associated with consulting services for integration projects. Additionally, users can identify interesting new technologies, standards, and approaches they may wish to integrate into current and future projects.
Which role(s) will you assume at the end of the project?	UNPARALLEL will be updating and maintaining the service as well as facilitating data providers to integrate the data of their digital offerings in the platform for having a broad catalogue of digital technologies/solutions for industrial applications for the recommender to use. Additionally, it planned that the service to be integrated into UNPARALLEL's IoT-Catalogue platform to act as a powerful recommender service of digital solution for any domains (industrial or any other) taking-up the platform's large knowledge base of digital technologies – UNPARALLEL will be responsible for integrating the service developed in Eur3ka in the IoT-Catalogue platform. Then, UNPARALLEL will be promoting the service via several industrial forum/associations/alliances – this will be greatly facilitated by the integration with the IoT-Catalogue as the platform is already being used to power the Innovation Catalogue services of industrial initiatives, e.g., the Digital Factory Alliance https://digitalfactoryalliance.eu/innovation-catalogue-2/, and it will be an added-value service to provide to members/users of such communities.
After the end of the project, what costs do you consider affordable?	The service involves web hosting costs but that will be part of UNPARALLEL own data centre as also it will be part of the overall IoT-Catalogue computational/storage infrastructure, so cost as generally unsubstantial. Also, further development, maintenance and promotional activities related to the service will be part of the general IoT-Catalogue product cost structure which is covered by UNPARALLEL's own costs for the development and evolution of the IoT-Catalogue.
Maturity level of Innovation/Asset	This asset will be "Market Ready" after the end of the project

Table 20: Component Recomendation Engine

4.1.15   Risk Assessment Engine

The Risk Assessment Tool has the purpose to help the users evaluate the existing risks, for example in the case of repurposing and reconfiguration of the production lines regarding COVID19. This tool contains details like, plant size, distance between workers or number of bathrooms and if any of these parameters changes it is necessary to evaluate once again the risk.

Asset title	Risk Assessment Service
Description	Service to support risk assessment analysis

Lead partner (point of reference) and other partners	UNPARALLEL
Contributing Partners	n. a.
Eur3ka results and components involved	Eur3ka results are expected to be involved in this asset
Type(s) of asset	Service
TRL before Eur3ka (if applicable)	TRL 2
Expected TRL by end of the project	TRL 6
Eur3ka improvements	The asset existed as a technological concept (TRL 2) and was fully developed in Eur3ka to be demonstrated in an industrially relevant environment (TRL 6)
IPR strategy (if any)	Service
Sole owner or co-ownership	Sole owner
Relevant stakeholders	Manufacturing sector SMEs
Exploitation channel(s)	Eur3ka Consortium, Adoption
Possible competitors	n. a.
Replicability in other domains and ecosystems	Applicable in all kinds of factories
Business Value:	The target market segment of the service is the whole industrial sector as it generally applicable to any kind of production environment. The risk assessment service helps industrialists to evaluate the risks related to repurposing or reconfiguring production lines in case of some disruption, e.g., a pandemic (e.g., COVID-19 such as explored by Eur3ka). Presently, industries have their own internal guidance in respect to guidelines and regulations for dealing with disruptive situations like COVID-19 mitigation but fail to have an easy way to assess the risks while needing to repurpose or reconfigure production lines. The risk assessment service provides industrialists with this knowledge and enabling what-if analysis to be conducted. After the end of the project, the service will require additional development work to be a fully operational solution (TRL 9). The service has been development and demonstrated in the scope of the industrially relevant environment existing in Eur3ka and focusing on the pandemic/covid-19 problematic. Additional development is required to

	unleash the tool as a risk assessment solution for a myriad of situations relevant for industry today.
Innovation Value:	The differentiating element of the service is the awareness of the risk-related parameters and the total automation of these to generate risk assessment profiles. For instance, the service includes details like plant size, distance between workers, or number of bathrooms and, if any of these parameters change, a fully automated a risk assessment evaluation is triggered. Also, the tool uses AI to give recommendations/suggestions to have better results in the risk assessments, e.g., if a repurposing exists and the distance between workers change, it will suggest a new risk. The Risk Assessment Service is seen as a disruptive type-of innovation as it presents high potential of impact in industry (industrialist can much better and promptly assess the risks of repurposing/remanufacturing processes) while the technological approach (risk parameters, automation, AI for recommendations) is indeed highly new.
Customer Value: Customer Value:	The Risk Assessment Service is directly at industrialists, particularly at engineering management and risk management professionals in factories to assess production repurposing/remanufacturing/adapt scenarios in full compliance with any applicable directives or regulations (health, hygiene, or any others). The user of the service would choose this Risk Assessment Service because of its dynamicity (adaptive risks profiles when parameters change) for being able to check/explore different production solutions/scenarios. This will enable to define the best possible industrial process solution that follows directives and/or regulations.
Which role(s) will you assume at the end of the project?	UNPARALLEL will be further developing the service to TRL 9, while then also updating and maintaining the service for industry to adopt and use. Furthermore, UNPARALLEL will be creating new risk assessment profiles for a wide set of scenarios and situations in industrial operations today. Then, UNPARALLEL will be promoting the service via several industrial forum/associations/alliances e.g., the Digital Factory Alliance https://digitalfactoryalliance.eu/, the European Factory Foundation https://www.ef-foundation.com, etc., as an added-value service to provide to members/practitioners of such communities.
After the end of the project, what costs do you consider affordable?	At the end of the project, there will be two types of costs: 1) product development costs (for reaching TRL9); and 2) product management costs. For product development, UNPARALLEL will accommodate the costs under its pre-product development activities which is funded by the company own costs and possibly via the involvement in additional research and innovation projects. For product management costs, UNPARALLEL is developing a detailed cost structure for operating, maintaining, and improving the service – these costs are already duly considered in the product development budget of the company for the upcoming years.

Maturity level of Innovation/Asset	This asset will be "Market Ready" after the end of the project

Table 21: Risk Assessment Engine

4.1.16   Atos Trustcenter

The Atos Trustcenter is the component in charge of managing the certificates that will allow the different companies to operate securely and reliably, enabling them to verify their identity in the industrial data spaces within Eur3ka. The Atos Trustcenter operates as a Certification Authority, providing certificate publishing services, lists of revoked certificates and certificate validity checking. The PKI portal, a subcomponent of the Atos Trustcenter enables graphically the management of the certificates organised into organisation and groups. The Trustcenter is a key element within the Eureka project guarantying the identity of an individual, organisation, user, device, connector, or server in the creation of Eur3ka Data Spaces.

Asset title	Atos Trustcenter
Description	The Atos Trustcenter offers the functionality to request and manage Certificates through the ATOS PKI Portal Server Center. Certificate management in the PKI Portal is organised into organisation and groups and will guarantee the identity of an individual, organisation, user, device, connector, or server in the creation of Eur3ka Data Spaces.
Lead partner (point of reference) and other partners	ATOS
Contributing Partners	N.A.
Eur3ka results and components involved	Key Eur3ka component in the creation of the data spaces.
Type(s) of asset	Component
TRL before Eur3ka (if applicable)	TRL8
Expected TRL by end of the project	TRL8
Eur3ka improvements	An issuance of a certificate was only possible with a manual process at the beginning of the project. The user or the entity had to login to a web portal to request a certificate. After the generation, the user had to download the file and to copy the information to the Eur3ka system. In Eur3ka Atos has developed the process automation. Now, the user can communicate via a new REST-interface with the PKI portal center. The request can be executed directly on a Eur3ka system without accessing the Atos web portal, allowing the issuance of certificates without interaction with the PKI portal if desired, and facilitating the automation

	of the creation of data spaces. The certificate delivery to the Eur3ka system will be managed with this new interface as well.
IPR strategy (if any)	Atos already delivers the PKI service to several customers on a licensed basis.
Sole owner or co-ownership	Atos is the only owner of the solution.
Relevant stakeholders	Direct adopters
Exploitation channel(s)	• Eur3ka Consortium
	• Digital Factory Alliance
	• ATOS portfolio
	• Direct Customers
Possible competitors	Digicert, Sectigo, Entrust, GlobalSign, D-Trust
Replicability in other domains and ecosystems	Our service is provided to several domains and ecosystems. Please see the next section for more information about relevant use cases.
Business Value:	Atos has been operating PKI services since 1998. In that year, the first PKI service was launched (and is still running), for certificate-based security of communication in the German healthcare sector. Today, Atos is the largest provider of PKI services in the German healthcare sector (this includes a root PKI), operates PKIs for IOT (smart metering and cash registers), and delivers Trusted Root and Non-Trusted Root Services (TLS, codesign, user and device certificates). In addition, Atos' portfolio also includes the following PKI products: IDnomic, Cryptovision, CardOS. Furthermore, we realize PKI projects (consulting and implementation) at our customers' premises.
	Challenges: We are supporting our customers to secure their environment with certificates for
	a) User authentication to no longer use passwords for logins. They can use a certificate on smartcards (secured by PIN) to secure the environment with two-factor-authentication (possession = smartcard / knowledge = PIN).
	b) encryption to encrypt emails to protect the content between sender and recipient.
	c) signing to sign a document quickly with a certificate without printing and handwritten signature.
	d) Device authentication to allow known devices (like notebook or smartphone) the access to their environment (for example VPN or Wi-Fi access) only.
	e) Code signing to sign a file with a certificate which is trusted in all popular operating systems.
	f) TLS certificates to secure the traffic between a website and the users.

	Our customers and partners enjoy a deep cooperation. Our solution is high customizable; hence we are able to quickly implement new requirements with our development team in Germany. The data is hosted on own systems in our redundant and security certified (ISO27001) data center in Bavaria/Germany.
	The solution is fully operational. After the Eur3ka project, the solution will be further improved with new functions (if required). We stay in touch with the Eur3ka operators to figure out new possibilities to secure and improve the environment. Atos permanently improves the PKI service regarding new requirements for algorithms, key lengths and so on.
Innovation Value:	Initially, the solution couldn't automatically issue device certificates. The user had to request certificates manually. In Eur3ka has developed a new function to provide a fully automated process via REST-API.
	With respect to graph, the PKI solution is placed on "Incremental" square.
Customer Value: **Customer Value:**	The direct beneficiary is Eur3ka and other projects/companies interested in protecting their environment as well as data spaces with a PKI solution provided by a certified and trusted PKI service provider.
	Atos operates the PKI solution in a secure and certified (ISO27001) environment.
	Based on a self-developed software, the solution is high customizable and is permanently improve our solution, and we stay in touch with our customers to adapt new business needs and integrate them into our service.
Which role(s) will you assume at the end of the project?	We will assume the role "service provider" to provide the PKI service.
After the end of the project, what costs do you consider affordable?	Operational costs and personnel costs
Maturity level of Innovation/Asset	Tech Ready, Business Ready and Market Ready

Table 22: Atos Trustcenter

Business Model Canvas

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
1. Multi-sector companies 2. Eur3ka Consortium	1. PKI Service 2. Issuance of certificates 3. Publishing information about expired/revoked	1. Client trust and security 2. Customization	1. Consultative 2. Support 3. Self-Service 4. Automated Services	1. SMEs and Large Enterprises 2. Eur3ka Consortium

Key Resources	Channels		Cost Structure	Revenue Streams
1. Certificate Authority 2. Certificate revocation list	1. Eur3ka website 2. Atos website 3. Corporate customer networks		1. Infrastructure 2. Operational 3. Development	1. Operation – certificate volume dependent

Figure 13: Atos Trustcenter – Business Model Canvas

4.1.17   Digital Transformation Analysis Tool (6Ps)

The 6P methodology has been developed as an assessment tool tailored on the project requirements in terms of repurposing coordination framework and workforce qualification. More in detail, the tool is focused on performances assessment aiming at evaluating how a set of specific performances (e.g., economic, environmental, social, supply chain etc.) are currently monitored and how their monitoring has been changed across the project to improve the resilience of companies. In addition, also an assessment tool has been developed specifically focused on the workforce looking at the profiles and related skills needed to make companies be more resilient.

Asset title	Digital Transformation Analysis Tool (in the project named 6Ps)
Description	Development of a tool enabling to support companies in assessing their current state to undertake a digital transformation path to be resilient against disruptive changes in both performance and people dimensions.
Lead partner (point of reference) and other partners	POLIMI
Contributing Partners	-
Eur3ka results and components involved	Eur3ka partners were asked to perform the assessment through two iterations of survey to validate the model.
Type(s) of asset	Assessment Tool based on a survey and interview
TRL before Eur3ka (if applicable)	TRL 4 at the beginning of Eur3ka
Expected TRL by end of the project	TRL 6 by end of the project
Eur3ka improvements	During Eur3ka project the assessment tool was improved and revised based on the feedback received and the surveys performed. Moreover,

	the database about the activities for bridging the gaps have been improved.
IPR strategy (if any)	N.A
Sole owner or co-ownership	-
Relevant stakeholders	Direct adopters
Exploitation channel(s)	Eur3ka Consortium
Possible competitors	Consultancy firms
Replicability in other domains and ecosystems	This assessment tool could be applied by practitioners or researchers for repurposing manufacturing in several manufacturing sectors
Business Value:	The target segment market can be the small and medium enterprises operating especially in the manufacturing sector. The SME could be supported in the transition towards digitalization being more resilient.
Innovation Value:	The assessment tool covers 6 different areas (product, platform, performance, process, people, partnerships) and in Eur3ka project it is highly focused on the two key elements enabling companies in being resilient that are people and performances. This focus is innovative respect with the previous ones that are usually focused on digital technologies only. (Incremental innovation)
Customer Value: Customer Value:	The direct beneficiaries are SMEs
Which role(s) will you assume at the end of the project?	-
After the end of the project, what costs do you consider affordable?	-
Maturity level of Innovation/Asset	This asset will be "Market Ready" after the end of the project

Table 23: Digital Transformation Analysis Tool

4.1.18   Digital machine development

Stevanato Group, after purchasing a production machine in the pharma/medical sector, is able to offer a Digital Twin service to its customers. This service is conducted using Digital Twin technology to identify and address potential challenges before the machine is put into use. This service will also reduce the need for sample materials during the machine's testing phase.

Asset title	Digital machine development
Description	In extension of the purchase of a production machine in the pharma/medico sector Stevanato Group will provide the option for digital twin as a service. The Digital Twin service will be conducted as close as possible to the existing project execution of the machine to identify challenges ahead of running in as much as possible using Digital Twin technology. For this a number of digital twin models will be created in Visual Components which will be the property of the customer, the models and it's components can be used by Stevanato Group. The service with digital twin technology enables a new way of communicating and resolving challenges which exist in machine development. With this added service, simulation models are created which gives an improved basis for aligning on impact and counter measures throughout the machines lifetime, from idea generation to after sales service. In addition to improving communication and collaboration, it is expected that the digital twin service will reduce the need for sample materials during running in since the machine may be matured more than traditionally by digitally testing.
Lead partner (point of reference) and other partners	SG Denmark (SVM before)
Contributing Partners	Visual Components
Eur3ka results and components involved	Examples of digital twin service from sales to design process etc is created.
Type(s) of asset	Services
TRL before Eur3ka (if applicable)	**3 -** Experimental proof of concept
Expected TRL by end of the project	7 System prototype demonstration in operational environment

Eur3ka improvements	A number of examples of digital twin service have been created based on assets from existing projects to ensure they were matured in a relevant context.
IPR strategy (if any)	The service will become part of a standard proposal process for our machines, and we will investigate when and which services are procured by the customers.
Sole owner or co-ownership	The technology is not patented and the models created in the project is owned by Stevanato Group.
Relevant stakeholders	Visual components in terms of technology development and SQS for future tool in machine design review process.
Exploitation channel(s)	Customers of Stevanato Group machines.
Possible competitors	There are currently simulation companies dedicated to digital twin tech in machine building.
Replicability in other domains and ecosystems	The software solution could be used in several business domains satisfying a wide range of needs due to its general-purpose nature.
Business Value:	The use of a digital twin can impact the machine development positively in ways as described below: It can estimate the impact on over all equipment efficiency (OEE) by a reduced cycle time on single equipment module. It can estimate the impact by infeed errors at a given rate on the machine OEE. It may give input on labor workload to operate the line.
Innovation Value:	As a machine builder we will be seen as an innovative supplier giving a stronger service and customization than customers experience from competitors. Sustaining, the technology will in a few years become an expectations from our customers.
Customer Value: Customer Value:	The values for the customers is a more coherent understanding of the development initiatives, a more confident lead time of our machines because issues are avoided. Finally and very importantly it can reduce the amount of sample material used during machine development that is our customers expense today.
Which role(s) will you assume at the end of the project?	It will become a service we provide to our customers in deployment of new machines and retrofitting.
After the end of the project, what costs do	It will require that we from a machine builder can provide the test and development setup independently of the machines so a customer can realise the full benefits of a digital machine development. It will require

you consider affordable?	license for software as well as competence in the organization to make it an established way of working.
Maturity level of Innovation/Asset	As a service the technology is market ready, and we look forward to proposing it to customers.

Table 24: Digital machine development

4.2 KERs and project's objectives

To better identify the value of KERs achieved within the Eur3ka project, it is possible to map the results with the project's objectives in order to visualize the synergies created in the context of the activities carried out and to concretely understand how the Consortium fulfilled the set goals.

The main declared objectives are the following:

- **Objective 1** – enable a global Plug & Response (P&R) manufacturing repurposing coordination framework for certified production processes of PPE & CCE products up to complexity level 3

  o All the KERs that provide methodological support for network creation meet this objective: *Reference Architecture Model (RAM) v4.0, Manufacturing Repurposing Framework, Digital Factory Alliance Services and MGRI implementation, Atos Trustcenter, Knowledge Sharing - Supply Chain Resilience & Resilience Thinking, 6P*

- **Objective 2** – ensure production continuity and workforce qualification for factories in subsequent waves of the pandemic

  o All the tools (typically assessment/planning) developed and improved during the project fulfil this objective: *Optimized CO2 machine, Context-Awareness Dashboard, Reference Architecture Model (RAM) v4.0, Manufacturing Repurposing Framework, COVID19 Shift Allocation Service, Atos Trustcenter , Smart Matching and Mediation App, Digital Factory Alliance Services and MGRI implementation, Knowledge Sharing - Supply Chain Resilience & Resilience Thinking, Component Recommendation Engine*

- **Objective 3** – provide rapid and trusted access at scale to both global on-demand flexible Manufacturing As A Service (MAAS) facilities and resilient cross-sectorial supply networks for PPE & CCE production

  o All the tools and solutions for network growth meet this objective: *Reference Architecture Model (RAM) v4.0, Smart Matching and Mediation App, Digital Quality Management Platform, Digital Factory Alliance Services and MGRI implementation, SCSN - Smart Connected Supplier Network, Component Recommendation Engine, Atos Trustcenter, Digital machine development*

- **Objective 4** – reduce/minimize ramp-up times and ensure zero defect manufacturing for PPE & CCE production

- o All the tools and solutions concerning the quality of products and processes meet this objective: *Reference Architecture Model (RAM) v4.0., Optimized CO2 machine, Manufacturing Repurposing Framework, COVID19 Shift Allocation Service, Smart Matching and Mediation App, Digital Quality Management Platform, Digital Factory Alliance Services and MGRI implementation ,SCSN - Smart Connected Supplier Network, Knowledge Sharing - Supply Chain Resilience & Resilience Thinking, Component Recommendation Engine, Risk Assessment Engine, Atos Trustcenter, Digital machine development*

- **Objective 5** – challenge and validate plug & response technologies and manufacturing repurposing processes at scale in real-life production of PPE & CCE products

  - o This objective concerns the KERs adopted in the pilots: *Optimized CO2 machine, Optimized ANSTI Machine, Test Data, Measuring Machine Automation Service, Context-Awareness Dashboard, Digital Factory Alliance Services and MGRI implementation, Digital machine development*

- **Objective 6** – ensure the wider use of the project's technologies across PPE & CCE manufacturers through international dissemination, global cooperation and business exploitation

- All the KERs that promote the exploitation and dissemination of Eur3ka results meet this objective: *Reference Architecture Model (RAM) v4.0, Measuring Machine Automation Service , Manufacturing Repurposing Framework, Digital Factory Alliance Services and MGRI implementation , Knowledge Sharing - Supply Chain Resilience & Resilience Thinking*

	Obj1	Obj2	Obj3	Obj4	Obj5	Obj6
Optimized CO2 machine		x		x	x	
Optimized ANSTI Machine					x	
Test Data					x	
Measuring Machine Automation Service					x	x
Context-Awareness Dashboard		x			x	
Reference Architecture Model (RAM) v4.0	x	x	x	x		x
Manufacturing Repurposing Framework	x	x		x		x
COVID19 Shift Allocation Service		x		x		
Smart Matching and Mediation App		x	x	x		
Digital Quality Management Platform			x	x		
Digital Factory Alliance Services and MGRI implementation	x	x	x	x	x	x
SCSN - Smart Connected Supplier Network		x	x			
Knowledge Sharing - Supply Chain Resilience & Resilience Thinking	x	x		x		x
Component Recommendation Engine		x	x	x		
Risk Assessment Engine		x		x		
Atos Trustcenter	x	x	x	x		

6P	x	x				
Digital machine development			x	x	x	

Table 25: KERs and Eur3ka Objectives

Each KERs contributed to achieving the project objectives not only individually but also collectively, thanks to the synergies created between the different services and products.

5 Joint Exploitation Strategy

5.1 Joint Exploitation vehicle: DFA

The Digital Factory Alliance is an initiative that supports the digital transformation of the manufacturing sector by providing specialized services to the manufacturing community. These services are built around 4 pillars that aim to fulfil the specific sectorial needs. A pillar for the "Search of Knowledge" focused on supporting the dissemination of relevant knowledge within the community. A pillar based on an "Innovation Campus" offering access to open innovation catalogues and partner programs. A pillar for those in "Search for Solutions" focused in DFA's Lighthouse Initiatives, such as the ZX Marketplace, a unique catalogue of products that have passed a qualification process and can certify a level of compliment with DFA's standards, and a pillar dedicated to "Business Networks", where the Plug & Response Network is being incorporated. Therefore, by having these pillars and associated lines of services, the DFA is able to serve as a vehicle for dissemination and exploitation of Eur3ka results. This section is focused on the exploitation side and will give details on how the DFA structure is relevant for the purposes of Eur3ka.

5.1.1 DFA in a nutshell

As mentioned in the previous section, the DFA mission in to support the digital transformation of the manufacturing sector by providing services around four main pillars. Figure 14 shows how the pillars and the services are related among them:

Figure 14:Pillars and services of the DFA

These pillars are grouped in two innovation loops: an Open Digital Innovation and a Market Driven Innovation. The Open Loop is providing open access to services that support the dissemination of R&D project results. The Body of Knowledge is covering services such as the DFA Auditorium and Digital Corner where stakeholders can engage in dissemination activities focused on relevant sectorial topics, such as trends, technology demonstrations,

use case descriptions, among others, and the Innovation Campus is hosting two open access innovation catalogues: the DFA Innovation Catalogue and the Lighthouse Factory Network Catalogue. In these catalogues, any participant in the DFA community can showcase and browse innovation solutions and pilot cases developed in the project. So, for example, a company that developed a specific solution in the framework of the project can upload a description of the solution, who was involved in its development and where it was applied. In this same line, use cases utilizing these solutions can be showcased in these catalogues so a potential end user can find the solution and assess whether the conditions of the pilot case allows for replication in their facilities or specific user case. Thus, the DFA is becoming a market-maker of innovations, matching the supply and the demand side.

The Market Driven Innovation loop hosts paid services grouped in Flagship Initiatives and Business Networks. Only DFA paid members can get access to these services. Within the framework of the Flagship Initiatives, the ZX Marketplace is a unique catalogue of products that have passed a DFA qualification process. It is the case of R&D project's innovations that have reached certain level of maturity to become a standardized solution in the sector and to be marketed as a product able to fulfil a common need in an industry, not only in the framework of a single project. This is another case of the DFA acting as a market-maker of standardized state-of-the-art solutions, matching end-users with technology providers. Complementing this approach, within the Business Networks is the access to the P&R Network. In this case, the DFA is acting as the overreaching umbrella for the P&R Network, providing the necessary support before crisis and the coordination during the crisis scenario. Through it, members can get access to the services of the P&R and use its Manufacturing as a Service (MaaS) capabilities during a crisis scenario.

5.1.2 Market potential

There is a set of stakeholders that are being targeted for membership to the DFA, as well as for the P&R Network. The DFA is a platform thought for participants in the digital manufacturing arena who need support for their digital transformation in their sectors. As such, four main players can be found:

- Technology Providers: companies that produces innovative solutions that comes from R&D projects and need to match them to potential end-users.

- End-users: companies that are in the search for state-of-the-art solutions and products that supports their digital transformation needs.

- Testing & Experimental Facilities: intermediaries that helps technology providers to achieve standarization of their innovations to be included in the ZX Marketplace.

- Digital Innovation Hubs: entities that are actively supporting their ecosystem by bringing them new tools to improve their competitivnes and innovation capacities.

The whole set of entities that have participated and are participating in European Commission funded projects as well as Digital Innovation Hubs in the Smart Specialisation Platform are potential customers of the DFA.

Regarding the P&R network, the participants have been already described in the aforementioned paragraphs as the main users of the DFA. They can be further described in the following categories:

- Product providers and consumers: companies that sell or need, respectively, health products.

- Design providers and consumers: in the case of 3D printed products, these are companies that sell and need, respectively, design files of health products for 3D printers.

- Production providers and consumers: companies that sell or need, respectively, production capacity to manufacture health products.

- Networks of products/design/production that want to be connected to the P&R Network.

The potential of the P&R Network is increased if its operation is expanded to become a Manufacturing as a Service Network for products beyond the health sector, to include sectors such as industry and transportation, which will benefit for having such a service to support their survival in the current Industry 4.0 environment.

5.1.3 Main business drivers

The DFA is built from and for innovation and as such it derives great part of its value from the innovative assets that are offered in the platform. The DFA assets can be grouped as:

- Open and Paid Innovation Marketplaces.

- Manufacturing as a Service Network for Health Crisis Scenarios.

- Platform for know-how dissemination, open and on-demand.

This is very attractive to the different customer segments, as they can find value such as:

- Technology Providers will have the opportunity to participate in an exclusive marketplace and be able to offer their state-of-the-art products to interested parties.

- End-users will have the opportunity to find specific, state-of-the-art, high quality, backtested and realiable products that fit their needs.

- Testing & Experimental Facilities will have the access to new business opportunities by offering their services to technology providers..

- Digital Innovation Hubs will stand-out among others by incorporating DFA assets to their tools.

It is also very important to note that the ongoing participation of the DFA in forums, conferences, webinars, projects and, in general, in a wide range of dissemination activities in crucial to make the DFA visible for potential customers and it is an activity that has a core value in the activities of the DFA.

Finally, the investment in R&D to further develop current services and create new ones is also in the core of the DFA activities and it is one of the main factors that makes the DFA unique in the market.

5.1.4 IPR Management in DFA

The Digital Factory Alliance Exploitation Agreement has to be signed-off by all the members participating in the DFA (a.k.a. known as "parties" in this Agreement). This Agreement also regulates how the Intellectual Property is going to be managed in the framework of the DFA operations. The Parties agree that the list of Project Results designated as Assets, as well as intellectual property (IP) ownership of Assets shall be ascribed as detailed in Annex III: Assets and Annex VI: IP Sharing Agreement.

Each Party retains exclusively all intellectual property rights, whether owned or licensed, in any pre-existing software, patents, ideas, methods documents, copy, data, text, trademarks, brands, logos, information, specifications, drawings and material... pertaining to them, held by them, prior to the signature of the Agreement.

The Parties agree that when any Improvement that may be eventually developed by the Parties (jointly or solely) under the Agreement, shall exclusively belong to the owner of the Asset related to this Improvement. Foregrounds[11] of collaboration, including information, ideas, inventions, writings, concepts, and know-how, whether or not such results can be protected, which are generated under the duration of the Agreement shall be the exclusive property of the Party/Parties carrying out the work generating that Foregrounds.

The Parties should decide in advance the contribution of resources and personnel for the development of a concrete Foreground in order to distribute the intellectual property and rights. This decision will be established a priori between the Parties so they can define previously the risk of starting the development. The parties will recognize the real contribution in order to establish the intellectual property rights on the Foreground, with good faith. In the event an agreement is not reached, the remaining Parties will decide the definitive margin of participation of each Party. When Parties jointly carry out work generating foreground and where their respective share of the work cannot be reasonably ascertained, they shall have joint ownership of such results in 50% and shall establish an Agreement regarding the allocation and terms of exercising that joint ownership. Up to the moment in which the mentioned agreement was concluded the parties can only use these results for internal and non-commercial research and investigation purpose.

The management of the protection and exploitation of the outcomes of the Agreement will be performed by each Party, or involved Parties, which must inform to all Members of its/their actions. The costs and profits will be distributed in proportion to the contributions of the parties, in accordance with the applicable regulations, by means of the signing of the corresponding Specific Agreement.

The Parties may establish any other system for the ownership of the results when considered necessary.

---

[11] "Foreground" are IP rights created during collaboration and research & development projects. Foreground IP can include IP rights which are developed wholly because of and during the project, and rights which are developed substantially as a result of the project

5.1.5 KERs Management in DFA

Foreground management rules that apply to KERs have been defined in the previous section. Regarding the inclusion of the KERs into the framework of the DFA, it is important to note that KERs are innovation results and such they can be showcased in the Open and Closed Catalogues of the DFA. Specifically, KERs can be included in the DFA Innovation Catalogue as well as in the ZX Marketplace.

5.1.6 Main Eur3ka contributions to the DFA

The Digital Factory Alliance (DFA) had been set up as a vehicle for dissemination and exploitation of R&D projects' results and, as such, it has been structured around 4 lines of services: Body of Knowledge, Innovation Campus, Flagship Initiatives and Business Networks. Before Eur3ka, The Flagship Initiatives and the Business Networks were two conceptual lines of services that needed to be further developed. Due to the work done in Eur3ka, a new original catalogue of innovation products (ZX Marketplace) has been developed and integrated into the Flagship Initiatives and the Plug & Response (P&R) Network has been integrated into the Business Networks. After Eur3ka, the DFA is able to provide rapid response to crisis scenarios by helping the stakeholders to prepare before the crisis (ZX Marketplace and Q-Med-Tech Qualification process) and to act efficiently during the crisis by coordinating the use of the P&R Network, serving as the vehicle for the MGRI implementation.

5.1.7 Towards the sustainability: How DFA will sustain the Eur3ka vision and results after the end of the project

Founding and Steering Board Members of the DFA - INNO, ENG & ATOS – are committed to keep the Alliance alive and working by being involved in:

a. The promotion of the DFA via participation in sector specific events such as webinars, conferences, speaks, advertisement, visits, where the potential customers can get to know the DFA and what it can offer to them.

b. The ongoing investment in R&D actions focused on developing new lines of services that can be integrated in the current portfolio.

Part of the strategy, that will positively affect the P&R Network, is focused on maintaining DFA's marketing efforts to reach the breakeven point, making the DFA financially sustainable. Also, the Steering Board Members will keep participating in R&D projects towards the development of new services and refinement of the current ones. In the case of the P&R Network, the vision is to expand its operation to become a Manufacturing as a Service Network for products beyond the health sector, to include sectors such as industry and transportation, which will benefit for having such a service to support their survival in the current Industry 4.0 environment.

There's also a funding scheme supporting this vision. Each Steering Board Member shall contribute with a yearly fee of 5000 € and members will pay a yearly fee of 1000€ to access to DFA portal and DFA services. Regarding collaborators, it will be decided on case-by-case

basis. Collaborator support to DFA activities can be realized in in-kind contributions with values agreed among parties.

6 Final market analysis

6.1 Introduction

The smart manufacturing sector has experienced significant growth in recent years, with a focus on technologies such as Industrial Internet of Things (IIoT), artificial intelligence (AI), and robotics to improve manufacturing efficiency, quality, and productivity. This growth has been driven by several factors such as increasing demand for customized products, rising labour costs, and the need for increased production speed and agility[12]. In this final market analysis, we will analyse the market evolution in the smart manufacturing sector with a focus on the evolution after the COVID-19 pandemic.

6.2 Post COVID-19 in the Manufacturing Market

First of all, the COVID-19 pandemic has accelerated the adoption of smart manufacturing technologies. The pandemic has disrupted global supply chains, creating a need for more flexible and resilient manufacturing processes. Smart manufacturing technologies such as digital twins, which simulate manufacturing processes, and predictive maintenance, which uses data analytics to detect potential equipment failures before they occur, have become essential for maintaining production levels during the pandemic[13].

Global market

In 2022, the market for smart manufacturing was expected to continue growing in the post-pandemic period. According to a report by MarketsandMarkets.com[1], the global smart manufacturing market size was projected to grow from USD 97.6 billion in 2022 to USD 228.2 billion by 2027, at a compound annual growth rate (CAGR) of 18.5%. The report attributes this growth to factors such as the increasing government involvement in supporting industrial automation, the rising emphasis on industrial automation in manufacturing processes, and the growing adoption of Industry 4.0. As you can see in figure 1, APAC is still expected to hold the highest market share throughout the forecasted period. Therefore, we have also researched the facts and figures specifically for Europe.

---

[12] ResearchAndMarkets.com. (2020). Global Smart Manufacturing Markets, 2020-2025. Retrieved from https://iotbusiness-platform.com/insights/global-smart-manufacturing-markets-2020-2025-leading-players-are-3d-systems-abb-cisco-emerson-general-electric-honeywell-ibm-oracle-rockwell-sap-schneider-siemens-and-yokogawa-research/

[13] World Economic Forum. (2020). How COVID-19 is accelerating the digital transformation of industrial manufacturing. Retrieved from https://www.weforum.org/agenda/2020/05/covid-19-digital-transformation-industrial-manufacturing/
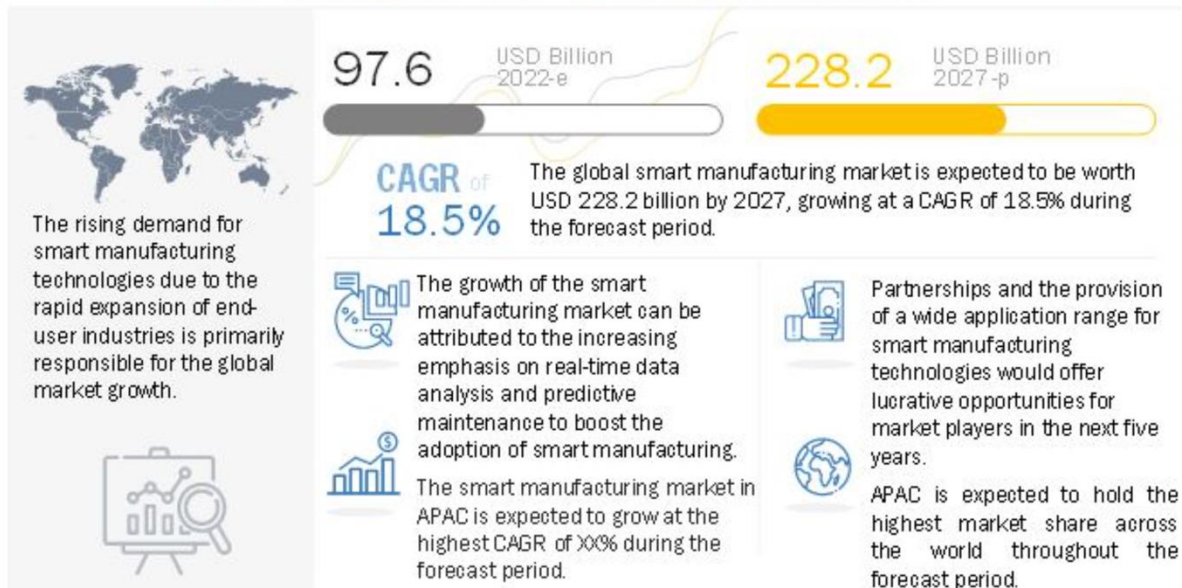
Figure 15: Global Smart Manufacturing Market (MarketsAndMarkets.com)

Europe

A recent report by ResearchAndMarkets[14] focused on the European market also highlights the growth potential of the smart manufacturing sector, particularly in areas such as machine learning, 3D printing, and industrial automation. The report cites factors such as government initiatives promoting the adoption of smart manufacturing technologies and the growing demand for real-time monitoring and predictive maintenance as key drivers of growth in the European smart manufacturing market. During the forecasted period 2022 – 2027 the European smart manufacturing market is expected to record a CAGR of 4,17%. The manufacturing sector is a strong asset of the European economy, accounting for over 2 million enterprises and nearly 33 million jobs. The region's competitiveness is highly dependent on the ability of the manufacturing sector to provide high-quality, innovative products through the latest advancements in information technologies.

However, challenges remain in the adoption of smart manufacturing technologies. One major challenge is the lack of skilled workers who can effectively implement and manage these digital transformation technologies. Another challenge is the need for significant investments in new technology, which can be a barrier for small and medium-sized enterprises[15].

If we dive deeper into the impact of the COVID-19 pandemic, the European automobile sector has been severely impacted. Factory shutdowns because of the crisis have resulted in a huge lost production in 2020. In November 2021, the region saw the lowest passenger

---

[14] ResearchAndMarkets.com. (2021). Europe Smart Manufacturing Markets, Growth, Trends, COVID-19 Impact, and Forecasts. Retrieved from https://www.researchandmarkets.com/reports/5552623/europe-smart-manufacturing-market-growth?gclid=CjwKCAiA_6yfBhBNEiwAkmXy5zausCaHa3pKMRieF3AUX--2N02cWEMJ39p6stOT7uTVw57DWgoVpRoC9AIQAvD_BwE

[15] Deloitte. (2020). Smart manufacturing: A key technology for industries in the post COVID-19 world. Retrieved from https://www2.deloitte.com/global/en/pages/manufacturing/articles/smart-manufacturing-post-covid-19-world.html

car registration since 1993, and double-digit losses were recorded across Europe[16]. Although sales recovered by late 2021, this sector is still recovering and does not have the means to invest in smart manufacturing, which will make their businesses more efficient in the long run.

6.2.1 Reflection on the Market Analysis

Analyzing the post-COVID 19 manufacturing market presented several challenges. The pandemic caused significant disruptions to global supply chains and resulted in significant changes to consumer behaviour, making it difficult to predict market trends. In addition, manufacturing companies faced new challenges, including reduced production capacity due to social distancing requirements and increased costs due to supply chain disruptions. Furthermore, data collection was hindered by lockdowns and restrictions on in-person interactions, making it challenging to gather accurate and up-to-date information.

Despite these challenges, we can conclude that the smart manufacturing sector is expected to continue growing overall, driven by the need for increased efficiency, flexibility, and resilience in manufacturing processes. The COVID-19 pandemic has accelerated this growth, highlighting the importance of smart manufacturing technologies in maintaining production levels during times of disruption[17].

The Eur3ka project aims to develop a European platform for smart manufacturing that connects stakeholders and provides access to digital tools and services[18]. The project focuses on improving the efficiency and competitiveness of manufacturing processes, which is in line with the market analysis that highlights the need for cost-effective and efficient production processes in the smart manufacturing industry[5].

Furthermore, the Eur3ka project's goals are aligned with the future evolution of the smart manufacturing market, which is expected to grow as companies increasingly adopt industrial automation and digital technologies. The project's aim to develop a European platform for smart manufacturing that leverages digital technologies and brings together stakeholders is indicative of the industry's push towards collaboration and innovation. This is also in line with the smart manufacturing industry's evolution towards more efficient and interconnected production processes[19].

---

[16] ResearchAndMarkets.com. (2021). Europe Smart Manufacturing Markets, Growth, Trends, COVID-19 Impact, and Forecasts. Retrieved from https://www.researchandmarkets.com/reports/5552623/europe-smart-manufacturing-market-growth?gclid=CjwKCAiA_6yfBhBNEiwAkmXy5zausCaHa3pKMRieF3AUX--2N02cWEMJ39p6stOT7uTVw57DWgoVpRoC9AIQAvD_BwE

[17] McKinsey & Company. (2020). The future is not what it used to be: Thoughts on the shape of the next normal. Retrieved from https://www.mckinsey.com/featured-insights/leadership/the-future-is-not-what-it-used-to-be-thoughts-on-the-shape-of-the-next-normal

[18] Eur3ka.eu. (2023). European Vital Medical Supplies . Retrieved from https://www.eur3ka.eu/about

[19] MarketsAndMarkets.com. (2023). Smart Manufacturing Market by Information Technology, Enabling Technology, Industry and Geography. Retrieved from: https://www.marketsandmarkets.com/Market-Reports/smart-manufacturing-market-105448439.html?gclid=CjwKCAiA_6yfBhBNEiwAkmXy573qTsxAFLRJbBUhsibZB_QpVsxWJuC2SRbUR3FFG71bh6PP8GffMxoCWTQQAvD_BwE

---

7 Individual Exploitation Plans

In the previous version of this deliverable *D6.2* (M12, November 2021) the individual exploitation plan of each Consortium member has been reported, following a common pattern made by the following details:

- **Partner profile:** a description of the company/organization, reporting attitude to innovation, research activities, experience in research projects, and specific role in the consortium.

- **Exploitation Actions and Return expected**: this is the core section of the Exploitation Plan showing the concrete involvement of the partner in exploiting Eur3ka and describing the possible exploitation markets/sectors, the exploitation scenarios and the expected revenues, not only economic but also in terms of positioning strategy into the market, new opportunities, company growth, wider know-how and knowledge acquired through the project etc.

- **Strategic future plans and commitment**: a description of the way Eur3ka project results and outcomes are relevant to improve each partner business and activities, gaining a better positioning in the market of action or opening new possibilities in different ones.

During the last phase of the project (M13-M27) all partners have revised their plans and their individual exploitation plans updated can be found in Annex II: Individual Exploitation Plan Update

8 Conclusions

In this deliverable, we have presented the final version of the Eur3ka Communication & Exploitation Plans, which aims to update the initial and intermediate plans presented in deliverables D6.1 and D6.2, respectively.

Since the last plans a series of communication and dissemination actions have been carried out including continuous update of the project website, social media (Twitter, Facebook and Linkedin), which saw increases in the last period compared to D6.2. Upcoming newsletter (planned after March 2021, i.e. official project end), and a set of papers submitted at conferences and journals have been presented. Most papers are available via Open Access.

Regarding exploitation an updated description of the KERs designed and developed during the project has been provided to illustrate how the project's activities contributed in the creation of economical and social value. All the KERs' owner described their solutions from a business perspective providing also a Business Model Canvas as a starting point for their future exploitation strategies. In addition, an updated market analysis was presented taking into account the evolution of the market after the Covid19 crisis. The market for Eur3ka really looks promising and analyses show that the total recovery of the overall manufacturing and productive sector is on going driven by the need for increased efficiency, flexibility, and resilience in manufacturing processes. This analysis showed that the Eur3ka project's goals are aligned with the future evolution of the smart manufacturing market, which is expected to grow as companies increasingly adopt industrial automation and digital technologies.

The Eur3ka exploitation is based on complementary and converging joint and individual exploitation plans and strategies which leverage on the project KERs. In this regard, the consortium members updated their Individual Exploitation Plans demonstrating the firm will of all Consortium Members to sustain and maintain the results of this project, incorporating its outcomes into their business strategies.

Concerning the Joint Exploitation of the project outcomes, the Digital Factory Alliance, of which three partners of the consortium (INNO, ENG, ATOS) are funding members, will represent the perfect vehicle to promote the results and made them available to a wide range of Large and Medium Enterprises. Following the rules of DFA in terms of identification of "Assets" and "IPR Management", the Eur3ka's results will be promoted, improved and commercialized through the existing networks of DFA's members and Lighthouse Factories contributing also in the growth of this association.

After three years of deep crisis, we can finally say that the threat of Covid-19 has been brilliantly faced and overcome, and all the work carried out during this project and all the results achieved will represent an important resource for future crises that will be rapidly faced with the same spirit and emphasis, building upon important and already consolidated results.

Annex I: Communication & Outreach Plan

Partner	Category	Type	Level	Activity	KPI	Date	Project month	Country	Link	Organizer	Participant Partners	Number of participants	STATUS
AM HUB	**Online**	Website	National Level	Publish press release project Kick-off			01	Denmark	https://am-hub.dk/nyt-europaeisk-projekt-etablerer-produktionsberedskab-til-fremtidige-sundhedskriser/				Done
AM HUB	**Online**	Social Media (Twitter, LinkedIn)	International Level	Share update about project			01	Denmark	_				Done
BRAIN	**Publications**	Press/release	National Level	Press Release of kick-off Eur3ka. Shared via website and newsletter			01	Netherlands		BRAIN	TNO	140 readers	Done
DTI	**Online**	Website	National Level	Publish press release project Kick-off			01	Denmark	https://www.teknologisk.dk/ydelser/nyt-europaeisk-projekt-etablerer-produktionsberedskab-til-fremtidige-sundhedskriser/42654				Done
DTI	**Online**	Social Media (Twitter, LinkedIn)	International Level	Share update about project			01	Denmark	_				Done
DTI	**Publications**	Press/release	National Level	Sharing off press in Danish media			01	Denmark	http://www.teknovation.dk/?type=page&id=750&itemid=19100				Done
ECM	**Online**	Website	International Level	news articles about the developments in the project on Digital Hub			01	Germany					Planned

				Logistics Website									Planned
ECM	**Online**	Social Media (Twitter, LinkedIn)	International Level	Regular Tweets about the project				Germany					Planned
ECM	**Publications**	Brochure/Flyer	International Level	Publication of a brochure with information about the Eur3ka project.			06	Germany					Planned
ECM	**Liasions**	Press/release	National Level	Mailing to SME Digital Enabling Centre			24	Germany		ECM		3500	Done
ENG	**Publications**	Press/release	National Level	Press Release of kick-off Eur3ka. Shared via website and newsletter			01	Italy		ENG	ENG		Work in progress
ENG	**Liasions**	International initiatives	International Level	Collaborate with other projects in our cluster (at least with CO-VERSATILE)			01	Italy		ENG	ENG		Work in progress
ENG	**Online**	Social Media (Twitter, LinkedIn)	International Level	Share update about project through corporate/personal accounts			01	Italy	-	ENG	ENG		Work in progress
ENG	**Liasions**	National initiatives	International Level	Liason with FIWARE Foundation			01	Italy		ENG	ENG		Planned

ENG	**Liasions**	National initiatives	International Level	Liason with BDVA			01	Italy		ENG	ENG		Planned
ENG	**Liasions**	National initiatives	International Level	Liason with DIH4INDUSTRY initiative			01	Italy		ENG	ENG		Planned
ENG	**Events**	Conference	International Level	Presentation at Next Generation IIoT for Resilient and Sustainable Manufacturing (IoTWeek 2021)		03/09/21	10		digitalfactoryalliance.eu/event/iot-week-2021/	DFA	ENG		Done
ENG	**Events**	Conference	International Level	Presentation at FIWARE Smart Fest – Edition 2 - Industry - Accelerating The Data Spaces Creation	107 attendees online to the session		14		https://www.fiware.org/events/fiware-technologies-as-driver-for-building-sustainable-manufacturing-data-spaces-fiware-smart-fest/	FIWARE	ENG		Done
ETHZ	**Events**	Conference	International Level	Attending the 28th European Operations Management Association (EurOMA) Conference 2021. EurOMA is an international network of academics and practitioners from around the world who		01/07/21	08	Switzerland	https://www.euroma21.org/	European Operations Management Association			Work in progress

				have a common interest in the continuing development of Operations Management.								Done
ETH Z	**Publications**	conference paper	International Level	Writing a EurOMA full paper. Title: "Manufacturing repurposing: Towards a conceptual framework"		01/07/21	08	Switzerland				Done
ETH Z	**Events**	Presentation/lecture	International Level	Presenting the results of EurOMA conference (will be held virtually on 5-7 July).		01/07/21	08	Switzerland				Work in progress
ETH Z	**Publications**	sientific paper	International Level	Writing a journal paper with a focus on manufacturing repurposing phenomenon based on multiple case studies			18	Switzerland				Planned
IDSA	**Online**	Social Media (Twitter, LinkedIn)	International Level	Regular Tweets about the project				Germany				Work in progress

IDSA	**Publications**	Brochure /Flyer	International Level	EUR3KA in a nutshell			02	Germany					Planned
IDSA	**Online**	EUR3KA Website (blogpost)	International Level	Launching project website			01	Germany	www.eur3ka.eu				Done
IDSA	**Online**	Social Media (Twitter, LinkedIn)	International Level	Launching project Twitter Channel with 1st posts			01	Germany					Done
IDSA	**Online**	Social Media (Twitter, LinkedIn)	International Level	Launching project LinkedIn Channel			01	Germany					Done
IDSA	**Publications**	Press/release	International Level	Publish press release porjekt Kick-off			01	Germany					Work in progress
IDSA	**Online**	Newsletter	International Level	Preparation and distribution of regular newsletters.	4 in total			Germany					Planned
IDSA	**Online**	Social Media (Twitter, LinkedIn)	International Level	Managing the project's own Twitter channel Eur3kaeu.	YR1: min 8/month YR2: min 24/month			Germany	https://twitter.com/EUR3KAeu				Work in progress
IDSA	**Online**	Social Media (Twitter, LinkedIn)	International Level	Management of the project own LinkedIn	YR1: min 1 post/month;			Germany	https://www.linkedin.com/company/eur3ka-eu/?viewAsMember=true				Work in pro

				profile Eur3kaeu.	YR2: min 4 posts/ month							gre ss
IDS A	**Onlin e**	Website	Intern ation al Level	Maintenance of Eur3ka's own website.				Germ any	www.eur3ka.eu			Wo rk in pro gre ss
IDS A	**Onlin e**	EUR3KA Website (blogpost)	Intern ation al Level	Provide blogposts throughout the entire duration of the project.				Germ any				Pla nne d
IDS A	**Onlin e**	Newslett er	Conso rtium Level	In-house newsletter	YR1: min 6; YR2: min 8			Germ any				Pla nne d
IDS A	**Publi catio ns**	Press/rel ease	EC Level	Press releases targeting major stakeholders on supply/demand sides	YR1: min 2 for IT audien ce; YR2: min 1/ major stakeh older catego ry			Germ any				Pla nne d
IDS A	**Publi catio ns**	Press/rel ease	Intern ation al Level	Press releases for general public	> 2 press clippin gs			Germ any				Pla nne d
IDS A	**Onlin e**	Website	Intern ation al Level	Website Events				Germ any				Wo rk in pro

												gress
IDSA	**Online**	Website	International Level	Website News				Germany				Work in progress
IDSA	**Events**	Exhibition	International Level	Information booth about the Eur3ka project at the IDSA Summit			06	Germany				Done
IDSA	**Events**	Workshop	International Level	Workshop regarding the Eur3ka project during the IDSA Winterdays.			12	Germany				Planned
IDSA	**Events**	Exhibition	International Level	Information booth about the Eur3ka project at the Hannover Messe 2022			18	Germany		IDSA	50	Done
IDSA	**Events**	Exhibition	International Level	Booth in Back to a Healthy Future event (organized by COVID-X) in Brussels		03/09/21	22	Germany	https://covidx-inno4cov.eu/	IDSA		Work in progress
IDSA	**Events**	Workshop	International Level	Workshop regarding the Eur3ka project during the IDSA Winterdays.			24	Germany				Planned
IMECH	**Online**	Social Media	International	Regular posts about the project	4/year			Italy				Planned

		(Twitter, LinkedIn)	al Level									
IME CH	**Onlin e**	Website	Natio nal Level	News article about the developments in the project on Intellimech website	1/year		03	Italy					Don e
IME CH	**Event s**	Conferen ce	EC Level	Artificial Intelligence Conference, in which a presentation of Eur3ka project and Intellimech Pilot		28/ 04/ 21	05	Italy	-	AFIL-IMECH	AFIL	100	Don e
IME CH	**Publi catio ns**	article/int erview (press / other media)	Natio nal Level	Article on our Magazine about Eur3ka: presentation, progress and results of the project			19	Italy					Pla nne d
IME CH	**Event s**	Worksho p	Regio nal Level	Dissemination Eur3ka Event			14	Italy	-	IMECH		40	Don e
IME CH	**Event s**	Exhibition	Natio nal Level	Dissemination Eur3ka at SPS Faire			18	Italy	-	IMECH			Pla nne d
SEA C	**Onlin e**	Social Media (Twitter, LinkedIn)	Intern ation al Level	Regular Tweets about the project	2/year			Italy	https://twitter.com/seacofficial			1592 followers	Wor k in pro gre ss

SEAC	**Publications**	Press/release	National Level	Press release about project developement on the company website	1/year			Italy	https://seacsub.com/it/news/				Work in progress
SEAC	**Events**	Presentation/lecture	National Level	Presentation during clustering event organized by National technological district	1		12	Italy	www.siitscpa.it	STAM	SEAC	20	Done
SEAC	**Events**	Presentation/lecture	International Level	Presentation of STAM and SEAC activities "deep dives", hosted by the DFA		25/11/21	12	On-Line	_	STAM	SEAC	20	Done
SEAC	**Events**	Presentation/lecture	International Level	Presentation of STAM and SEAC activities "deep dives", hosted by the DFA		13/05/21	6	On-Line	_	STAM	SEAC		Done
SEAC	**Events**	Presentation/lecture	International Level	Virtual Smart Factory Conference				On-Line	https://www.smartfactoryconference.gr/history/presentations-2021/	BOUSSIS	SEAC		Done
SEAC	**Publications**	Press/release	International Level	Article on Eur3kab blog: Increase testing capacity through Automation intelligence to tweak production of FF masks		17/01/22		On-Line	https://www.eur3ka.eu/post/increase-testing-capacity-through-automation-intelligence-to-tweak-production-of-ff-masks	SEAC			Done

STA M	**Onlin e**	Social Media (Twitter, LinkedIn)	Intern ation al Level	Regular post about the project	4/year	15/ 01/ 21	1	Italy	https://www.linkedin.com/feed/update/urn:li:ac tivity:6755813120230338560			1806	Don e
STA M	**Event s**	Presentat ion/lectur e	Natio nal Level	Presentation during clustering event organized by National technological district	1		12	Italy	www.siitscpa.it	STAM	SEAC	20	Don e
STA M	**Event s**	Presentat ion/lectur e	Intern ation al Level	Presentation of STAM and SEAC activities "deep dives", hosted by the DFA		25/ 11/ 21	12	On-Line	_	STAM	SEAC	20	Don e
STA M	**Event s**	Presentat ion/lectur e	Intern ation al Level	Presentation of STAM and SEAC activities "deep dives", hosted by the DFA		13/ 05/ 21	6	On-Line	_	STAM	SEAC		Don e
STA M	**Publi catio ns**	On-line article	Intern ation al Level	Increase testing capacity through Automation intelligence to tweak production of FF masks		27/ 01/ 22	13	On-Line	https://www.eur3ka.eu/post/increase-testing-capacity-through-automation-intelligence-to-tweak-production-of-ff-masks	STAM	SEAC		Don e
TN O	**Publi catio ns**	Press/rel ease	Natio nal Level	Press Release of kick-off Eur3ka. Also shared via social media (LinkedIn).			01	Neth erlan ds	https://www.tno.nl/nl/over-tno/nieuws/2020/12/eur3ka-investeren-in-veerkrachtige-toeleverketens/	TNO	BRAI N		Don e
AFI L	**Onlin e**	Social Media	Intern ation	Share update about project			01	Italy	_	AFIL			Don e

		(Twitter, LinkedIn)	al Level									Done
AFIL	**Events**	Conference	EC Level	Artificial Intelligence Conference, in which a presentation of Eur3ka project and Intellimech Pilot		28/04/21	05	Italy	-	AFIL-IMECH	IMECH	100	Done
AFIL	**Events**	Conference	Regional Level	Technology Trend Dialogue meeting to discuss automation and robotics, in collaboration with CEUP2030 Interreg Project.		14/07/21	08	Italy	-	AFIL		53	Done
AFIL	**Events**	Conference	Regional Level	Lombardy dissemination Eur3ka event		01/12/22	25	Italy	https://www.afil.it/eventi/webinar-strumenti-a-supporto-della-resilienza-lesperienza-eur3ka/	AFIL-IMECH-POLIMI		20	Done
AFIL	**Liasions**	International initiatives	International Level	Liason with World Economic Forum		12/10/21	11			AFIL			Done
AFIL	**Liasions**	International initiatives	International Level	Liason with World Manufacturing Foundation		29/11/22	24			AFIL			Done
AFIL	**Liasions**	National initiatives	National Level	Liason with Intelligent Factory Cluster		29/11/22	24	Italy		AFIL			Done
AFIL	**Liasions**	International initiatives	EC Level	Liason with Vanguard Initiative						AFIL			Work in pro

													gress
AFIL	**Publications**	Brochure /Flyer	Regional Level	AFIL Booklet 2022 (including a presentation of Eur3ka project and activities)		28/07/22	20	Italy	https://www.afil.it/wp-content/uploads/2022/09/Booklet-AFIL-2022-Il-contributo-del-Cluster-AFIL-al-manifatturiero-avanzato-della-Lombardia_finale.pdf	AFIL			Done
AFIL	**Publications**	Press/release	Regional Level	Article on Eur3ka project and regional dissemination event		20/02/23	27	Italy	https://www.afil.it/afil-journal/il-progetto-eur3ka-strumenti-a-supporto-della-resilienza-delle-imprese-manifatturiere/	AFIL			Done
FhG	**Liasions**	International initiatives	International Level	Liason with IDS-Industrial									Work in progress
FhG	**Publications**	sientific paper	International Level	Conference/Journal will be selected as initial results are available					https://www.mdpi.com/2076-3417/11/14/6585				Done
FhG	**Online**	Website	International Level	FhG will include the EUR3KA project in our website					https://www.iosb.fraunhofer.de/en/projects-and-products/eur3ka-manufacturing-as-a-service.html				Done
ATOS	**Online**	Website	International Level	ATOS will include the EUR3KA project in our portfolio of the project and the annual Atos Research			04	Spain	https://booklet.atosresearch.eu/	ATOS			Planned

			and Innovation booklet: https://booklet.atosresearch.eu/							
ATOS	**Online**	Social Media (Twitter, LinkedIn)	International Level	ATOS will make use of the two corporate social media accounts on Twitter (Atos Spain and ARI MarComm) to promote the project activities and obtained results.		03	Spain	https://twitter.com/AriMarcomm https://twitter.com/AtosES	ATOS	> 4000 followers	Work in progress
ATOS	**Online**	Social Media (Twitter, LinkedIn)	International Level	ATOS also will make use of the two corporate social media accounts on LinkedIn on the international lever to promote the project		05	Spain	https://www.linkedin.com/company/atos/	ATOS	> 800,000 followers	Work in progress
ATOS	**Publications**	article/interview (press / other media)	Consortium Level	ATOS will include the project in the monthly internal Newsletter of the ATOS Research & Innovation group.		06	Spain	-	ATOS	> 150	Planned

Partner	Category	Type	Level	Description	Target		Num	Country	Link	Owner			Status
ATOS	**Publications**	article/interview (press / other media)	International Level	ATOS will prepare the blog post for the EUR3KA website regarding the technical achievements			09	Spain	_	ATOS			
DTI	**Online**	Social Media (Twitter, LinkedIn)	National Level	Updates on relevant activities	3 times during project			Denmark		DTI			Planned
DTI	**Publications**	Press/release	National Level	Updates on relevant activities	3 times during project			Denmark		DTI			Planned
INTRA	**Publications**	sientific paper	International Level	Publication in Journal or On-line conference Proceedings			14						Planned
INTRA	**Online**	Social Media (Twitter, LinkedIn)	International Level	Regular Publishing of posts (INTRASOFT media & J.Soldatos, 10.000 Followes)	>12 posts					INTRA			Planned
INTRA	**Events**	Workshop	International Level	Workshop regarding Industry 4.0 & COVID19						INTRA			Planned
TNO	**Publications**	Social Media (Twitter, LinkedIn)	International Level	Regular publication of LinkedIn posts				Netherlands		TNO			Planned
TNO	**Events**	Exhibition	International	Publication of results in European fairs									Planned

			al Level										
TNO	**Publications**	article/interview (press / other media)	National Level	Dissimination of results with SCSN innovation network							BRAIN	300	Planned
BRAIN	**Online**	Social Media (Twitter, LinkedIn)	International Level	Regular publishing of updates on linkedin	2/year		Netherlands			BRAIN			Work in progress
BRAIN	**Events**	Workshop	National Level	Dissemination of results in Brainport Industries network	2/year		Netherlands			BRAIN	TNO		Planned
BRAIN	**Online**	Newsletter	National Level	Regular project updates	4/year		Netherlands			BRAIN			Work in progress
BRAIN	**Online**	Website	National Level	Technology updates	2/year		Netherlands			BRAIN			Work in progress
UIO	**Online**	Social Media (Twitter, LinkedIn)	International Level	Regular Publishing of posts						UiO			Work in progress

UIO	**Publications**	conference paper	International Level	Participation on interenational conferences	2/year					UiO			Planned
UIO	**Publications**	sientific paper	International Level	Publications on international journals	2/year					UiO			Planned
INNO	**Events**	Presentation/lecture	International Level	Meet the Digital Factory Network	>=1			Spain		INNO			Planned
INNO	**Events**	Workshop	International Level	Deep Factory Trials (DFA)	>=1			Spain		INNO			Planned
INNO	**Events**	Conference	International Level	Manufacturing Repurposing: COVID-19 Products	>=1			Spain		INNO			Planned
INNO	**Events**	Exhibition	International Level	European Big Data Value Forum 2022		21/11/22	24	Spain	https://european-big-data-value-forum.eu/	IDSA	INNO	500	Done
INNO	**Publications**	article/interview (press / other media)	International Level	INNO will prepare one blog post for the EUR3KA website regarding the DFA?	>=1			Spain		INNO			Planned
SQS	**Online**	Social Media (Twitter, LinkedIn)	International Level	Promote Eur3ka project	>10 posts/retweets		01	Spain	https://twitter.com/sqsspain	SQS			Work in progress

SQS	**Online**	Website	International Level	SQS will make some publications on their news section, including some project updates.	>2 posts		01	Spain	https://www.sqs.es/sqs-will-lead-validation-and-certification-activities-in-eur3ka-project/?lang=en	SQS		Work in progress
VIS	**Online**	Social Media (Twitter, LinkedIn)	International Level	Regular updates of the project progress				Finland				Work in progress
VIS	**Online**	Website	International Level	New VIS release, with a new section dedicated to the research projects. Update of the project ongoing			05	Finland	TBU			Work in progress
AM HUB	**Events**	Webinar	International Level	"AM - Leading the Rebound of American Manufacturing" Webinar		11/03/21	04	Denmark		AM HUB		30 participants, 14 no-show	Done
AM HUB	**Events**	Conference	International Level	AM Summit 2021		19/08/21	09	Denmark	https://amsummit.dk/	AM HUB		420 participants, 70 no-show	Done
AM HUB	**Events**	Webinar	International Level	Webinar on sustainable product development		15/09/21	10	Denmark	https://www.addifab.com/event-details/form	AM HUB		25 physical participants	Done
AM HUB	**Events**	Conference	International	AM Summit 2022			22	Denmark	https://amsummit.dk/	Danish AM Hub	AM HUB	450	Done

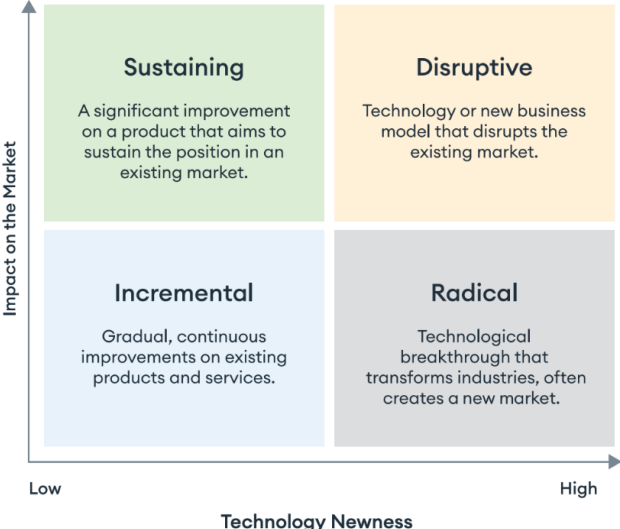|												
			al Level									Done
BRAIN	**Online**	Workshop	Regional Level	Kick-off leading group of Manufacturing SMEs in order to progress development of SCSN and Resilience		20/09/21	10	Netherlands			BRAIN	TNO	20 participants	Done
BRAIN	**Online**	Workshop	Regional Level	Continuation of Leading Group of Manufacturing SMEs		29/11/21	12	Netherlands			BRAIN	TNO		Work in progress
BRAIN	**Online**	Social Media (Twitter, LinkedIn)	Regional Level	SCSN Socials & website post about leading group and Eur3ka		20/10/21	11	Netherlands	https://smart-connected.nl/nieuws-events/terugblik-kopgroep-resilience	BRAIN	TNO		Done
DTI	**Events**	Presentation/lecture	International Level	Keynote and presentation at AEPR - France		22/06/21	06		https://afpr.asso.fr/content/assises/2011/FR/v_conf_prog.htm#s1		DTI		Done
UIO	**Publications**	conference paper	International Level	Research presentation	Every year	23/09/21		Norway	http://cirp-cms2021.org/	CIRP	UIO	530	Done
UIO	**Publications**	conference paper	International Level	Research presentation	Every year	27/09/21		Norway	https://apms2021.sciencesconf.org/	IFIP	UIO	426	Done
VIS	**Events**	Conference	International Level	Research presentation	Every year	16/11/21	12	Finland	https://www.automaatioseura.fi/sas/jaostot/opc/tapahtumat/opc-day-finland-2021/?	Finnish Society of Automation	VIS	200	Done

VIS	**Events**	Exhibition	International Level	Hannover Messe, info point at Visual Components Booth	Every year		18	Germany		Hannover Messe	VIS	45000	Done
VIS	**Events**	Exhibition	International Level	Hannover Messe, info point at Visual Components Booth	Every second year		19	Germany	https://www.visualcomponents.com/resources/events/meet-us-at-automatica-sprint/	Munich Messe	VIS	45000	Done
			International Level	APMS 2022 in South Korea		26/09/22	22	Norway	https://www.apms-conference.org/		UIO		Done

Annex II: KERs Template

Name of the Asset	*Please report here the Key Exploitable Results (KERs)*
Describe the main features of the results and the business value created (internal and external)	Please describe the main economic features of your results underlining the added value from internal (related to your company) and external (related to the market in general) perspective
Lead Partner	Please indicate the leading partner
Contributing Partners	Please indicate the partners contributing to the asset
Completeness (%)	Please state the percentage of completion at the time of writing
Delivery Date	Please indicate the expected delivery date
TRL[20] before Eur3ka (if applicable)	TRL at the beginning of Eur3ka
Expected TRL by end of the project	Expected TRL by end of the project
Eu3ka improvements	Please describe how Eur3ka contributes to the improvement of the asset
IPR strategy (if any)	Please indicate the foreseen IPR strategy (Copyrighted, Service, Licensed, None) if applicable
Sole owner or co-ownership	Please indicate whether it will be a sole owner, co-ownership
Relevant stakeholders	Stakeholders involved in the use of the asset. This should include parties already contacted / involved in EUR3KA and exploitation already put forward, for example by direct contact, presentation, take-up of the component. Example: Direct customers, Direct suppliers, Suppliers of complementary products
Exploitation channel(s)	The main exploitation channels for the asset. E.g. Support, Training, Consulting, Extension/Customization. More than one channel is possible for an asset also depending on the partners involved
Possible Competitors	Possible key competitors in the market offering similar / competing value propositions
Business Value: Which is the target market segment? What problem or challenge do you try to solve with your solution? How is your product different from others on the market and why that solution should be chosen among others?	Please insert a brief description of the Business Value taking into consideration the questions reported in the column on the left.

---

[20] [20] https://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-g-trl_en.pdf

After the end of the project, would be any further internal research needed to get a fully operational solution?	
Innovation Value: What is the new element of the solution that distinguishes it from the state of the art? With respect to graph below where would you place your solution? 	Please insert a brief description of the Innovation Value taking into consideration the questions reported in the column on the left.
Customer Value: Customer Value: Who is the direct beneficiary of the solution? From the end-user perspective, why the solution should be chosen? What are the exact benefit of user value worth considering to deliver?	Please insert a brief description of the Customer Value taking into consideration the questions reported in the column on the left:
Why is your organization interested in those results?	Please describe the business motivation behind your results
Will you get a direct business advantage over competitors from the results? Will you commercialize the asset as-is, or further developments have to be done?	Please describe as your company intends to create business from Eur3ka results
Which role(s) will you assume at the end of the project?	Please describe your role after the end of the project: Technical backend provider (updating and maintaining the Eur3ka platforms), service providers, dissemination and promotion, technical provider, etc…
After the end of the project, what costs do you consider affordable?	Please describe your potential economical involvement, for example costs related to the operation of the platforms, Maintenance (hosting, domain, etc.), project website, promotional costs, training costs, etc…

Annex II: Individual Exploitation Plan Update

Engineering Ingegneria Informatica S.p.A (ENG)

Partner Profile

Engineering (ENG) is Italy's largest systems integration company. With approximately 12,000 professionals in 40+ locations (in Italy, Belgium, Germany, Norway, Serbia, Spain, Switzerland, Sweden, Argentina, Brazil, Mexico and the USA), the Engineering Group designs, develops, and manages innovative solutions for the areas of business where digitalisation generates major change, such as digital finance, smart government & e-health, augmented cities, digital industry, smart energy & utilities, and digital media & communication. The greater performance of Engineering in the Industry and Services segment is due to the ability to combine twenty years' experience with the potential offered by technologies such as Cloud, Artificial Intelligence, Digital Twin, Digital Enabler, IoT, Cybersecurity, and Big Data.

The R&D lab, founded in 1987, with 250 researchers has participated in more than 100 EU funded projects and gained international research awards.

Engineering has also a long-standing expertise in Industry and a strong focus on R&I projects, where it has shown the capacity of exploiting research results. In addition, ENG has put into place a strong strategy to acquire a leading position in the digital transformation landscape through its active participation in various Big Data related initiatives such as the OW2 Big Data Initiative (www.ow2.org), the BDVA (Big Data Value Association – www.bdva.eu), FIWARE (www.fiware.org) and GAIA-X initiative (https://www.data-infrastructure.eu/GAIAX/Navigation/EN/Home/home.html) and through the valorisation of its big data services and tools offering.

Exploitation Actions and Return expected

ENG expects to **increase its capability of offering innovative solutions** to its clients, especially in the manufacturing and healthcare domains, by utilizing Eur3ka results and possibly expanding its current services portfolio.

In Eur3ka, ENG's exploitation commitment pertains, in particular to **Context Awareness Dashboad** promoting this solution through dedicated commercial activities both internally and externally. Moreover, ENG will use the project outcomes in order to identify and address the new and emerging key clients' needs and to strengthen its presence in the healthcare sector especially by offering support and services for rapid manufacturing repurposing. In addition to that, ENG is also interested in the potential **re-use and adaptation** of some innovative technologies being researched and developed in Eur3ka; in this perspective the acquired know how concerning the design and development of Digital Twins and AI algorithms will be further adopted in both existing solutions, to improve the offering, and in the new ones that will be created starting from the Eur3ka results .

As founding member, ENG will spread Eur3ka solutions and services through the **Digital Factory Alliance**, a global initiative with a factory focused mission able to reach manufacturing companies all over Europe.

Internally, ENG will exploit Eur3ka results through its own **innovation pipeline**, where research results are presented internally to relevant **business units** for further development and possible integration into the business portfolio.

Furthermore, ENG will promote and exploit Eur3ka project and outcomes through dedicated commercial activities supported by corporate **marketing** and **communication units**.

Strategic future plans and commitment

ENG is strongly interested in committing to joint initiatives with other project partners, both ones whom it already collaborates with (e.g. INNOVALIA, IDSA, INTRASOFT, Siemens, Unparallel, Politecnico di Milano, etc.) and 'new' ones met in this project (e.g. SEAC, DTI, …). The idea is to find opportunities to further exploit Eur3ka results in the future by continuously improving the solutions in future R&D activities.

Through active participation in this project, ENG acquired know-how and technological capabilities to continue working on innovative solutions in the smart health and smart manufacturing domains improving its expertise in the big data management and in the design and development of innovative Reference Architectures and services.

In the next months, ENG will exploit the use of Eur3ka solutions adoption among its industrial customers and, at the same time ENG will exploit and disseminate Eur3ka results among its national and international research community network (e.g. EIT Digital, BDVA, Future Internet PPP initiative, IDSA, ...).

Siemens Industry Software Ltd Israel and Siemens Romania (SIEIL)

Partner Profile

Siemens is a global leader on digitalization, automation and electrification. The portfolio of the company spans from Digital Industry, Mobility, Smart Infrastructure and Healthcare, in every place where the IT meets OT. Well rooted on its own history is the deep understanding of real life needs, aiming for the own motto: "Technology with purpose".

In Eur3ka Siemens is involved with two units, each of them with complementary purposes towards societal and company needs.

Siemens' AM (Additive Manufacturing) Network (developed in Siemens Industry Software Ltd Israel) is an online order-to-delivery collaboration platform for the industrial additive manufacturing community. It connects the AM ecosystem, simplifies the collaboration process, and streamlines the AM production process. It enables AM experts, AM service bureaus and end customers to effectively collaborate on a design or production project, leading to quick and successful delivery of industrial AM parts.

In Eur3ka project Siemens' AM Network worked for a solution (Catalogue) able to connect to AMN capabilities like:

1. Manage the list of qualified suppliers for the medical device industry.

2. Collect requirements and order information from customer organizations and support the customer organization in defining the requirements needed according to the required application.

3. Identify the appropriate suppliers, manage the commercial process and production planning.

4. Enable collaboration / co-creation between the customer organizations to the service providers to provide the appropriate design of the parts needed.

5. Transfer the technical requirements to the supplier and the production quality reports and the order status reports to the customer organizations.

As linked third party, Siemens T (Technology) team (hosted in Siemens Romania) works together with Siemens AM focused on specification and implementation of an on-demand 3DP service network making available of a certified parts Catalogue. In addition, Siemens T works towards smart matching and mediation usable to discover best fitted AM suppliers available via Siemens AM Network.

Current Catalogue implementation support the ordering process of certified design parts towards AMN. In addition, AMN offer an AWS SQS message queue capable to forward the demand towards other matchmaking mechanisms capable to contact and connect suppliers with demand (as demonstrated in the project frame together with FhG Smart Factory Web).

Exploitation Actions and Return expected

Exploitation on Siemens AM Network side:

- Enhancing Siemens' AM Network capabilities in supporting non-AM professional, such as hospital personals. This would make AM technology more accessible for organizations and individuals in their early stage of adapting the AM technology in their products and operations.

- Improve Siemens' AM Network ability to respond to crises resulting in increased demand for quick production, such as natural disasters. In such crises, the response time for providing production solutions is essential. AM Network could improve its ability to connect those at need with the experts and resources that could support quickly and efficiently and deliver fast response to the situation at hand.

- Provide the suppliers registered to AM Network new production orders in crises situation and at routine times.

- Enable the capability to extend search of fitted suppliers via an open message queue, publishing well formatted requests for good with certified designs

Exploitation on Siemens T side:

Siemens T team will promote toward the Digitalization business unit's portfolio key values of the projects. Most prominent areas where project may generate business leads are in the area of connected infrastructures platform extensions where multi-site, multi-application platforms can be safely linked to provide trusted integrated services towards distributed customers. Another example of improvement area is related to threats and security as a

service screening of industrial equipment instrumentation and AI based mitigation of potential threats and failures. Both areas may support actively the evolution of company from an equipment delivery business model to a service model and innovative discovery of opportunity in a digitalized marketplace. Another valuable path is related to modelling of manufacturing infrastructure capability for automated matching of demand with capacity.

Strategic future plans and commitment

Exploitation on Siemens AM Network side:

- Enhancing Siemens' AM Network capabilities in supporting non-AM professional, such as hospital personals. This would make AM technology more accessible for organizations and individuals in their early stage of adapting the AM technology in their products and operations. Certified product design catalogues ease the work of professionals to identify specialized product designs belonging to niche markets and their compatibilities (e.g. medical grade ventilators)

- Improve Siemens' AM Network ability to respond to crises resulting in increased demand for quick production, such as natural disasters. In such crises, the response time for providing production solutions is essential. AM Network could improve its ability to connect those at need with the experts and resources that could support quickly and efficiently and deliver fast response to the situation at hand. This improvement act for a different dimension of a crisis. If certified design aim to guarantee complexity understanding of products, this subject relates to the scalability of execution, targeting Manufacturing as a Services concept.

- Provide the suppliers registered to AM Network new production orders in crises situation and at routine times.

Siemens AM Network team aim to integrate lessons learned on the platform in order to provide safe and secure collaboration of AM space roles. More, various technological aspects observed and validated will be considered to open new opportunities and new industries near AM.

Exploitation on Siemens T side:

Siemens T team will promote toward the Digitalization business units portfolio key values of the projects. Most prominent areas where project may generate business leads are in the area of connected infrastructures platform extensions where multi-site, multi-application platforms can be safely linked to provide trusted integrated services towards distributed customers. Another example of improvement area is related to threats and security as a service screening of industrial equipment instrumentation and AI based mitigation of potential threats and failures. Both areas may support actively the evolution of company from an equipment delivery business model to a service model and innovative discovery of opportunity in a digitalized marketplace.

Siemens T will use knowledge achieved in order to support various Siemens businesses to better connect with customers data via Data Spaces and trusted connectors and will use experience learned in the area of situation modelling to link it with Knowledge Graph

technologies usable to provide semantic description and automated reasoning between products, facilities, offered services and operational tools data.

Atos IT Solution and Services Iberia SL (ATOS)

Partner Profile

Atos is the global leader in secure and decarbonized digital with a range of market-leading digital solutions along with consultancy services, digital security and decarbonization offerings, providing end-to-end Orchestrated Hybrid Cloud, Big Data, Business Applications and Digital Workplace solutions, with the purpose to help to design the future of the information technology space. Atos Research & Innovation (ARI) is the R&D hub for emerging technologies and a key reference for the whole Atos group. With more than 28 years of experience in running Research, Development and Innovation (RDI) projects, we have become a well-known player in the EU context. Due to our expertise in Digital Platforms for manufacturing and the interoperability of IT systems, i.e, implementing secure and efficient integration layers to connect heterogenous solutions through all the manufacturing value chain, in Eur3ka Atos provides its expertise in the design and implementation of Digital platforms by participating in the design and implementation of the Eur3ka digital solution, covering in particular the Eur3ka data sharing spaces and security aspects.

The knowledge and technical expertise acquired during the implementation of the Eur3ka project has permitted ATOS to extend and improve the Trust Center to cover specific security needs in the creation of dynamic and flexible data spaces that allow data sovereignty and controlled access to data under different operating conditions.

Exploitation Actions and Return expected

The enhanced Trust Center developed in the Eur3ka project will allow developing and deploying trustworthy, reliable, dynamic and flexible data sharing spaces for creating fast manufacturing repurposing solutions as well as Resilient Connected Smart Supply Chains, providing mechanisms to establish security and privacy requirements for different sources or actors, enforcing the preservation and protection of confidential or sensitive data. Atos currently plans to exploit the Trust center solution in several ways:

1. Using the Trust center solution to increase the capabilities of the different products that are part of the company Manufacturing software portfolio, e.g., Atos Smart Industry Platform, Intelligent Supply Chain, the AX4 supply chain. Thus, these Manufacturing solutions will be able to continuously improve their flexibility for the integration and exchange of data in a controlled and secured environment, resulting in better services for the company customers. This will be of paramount importance in verticals exploiting data that must be protected according to regulations like GDPR and data sovereignty.

2. Integrating the Trust center for certificate-based security of communication in other multi-sector data sharing spaces. Today, Atos is the largest provider of PKI services in the German healthcare sector and wants to extend its presence to other key

sectors, such as industry, Energy, transport, telco,. where there is great potential for data exchange.

3. Extend our commercial offer of the company portfolio with the inclusion of consulting services to our customers interested in the implementation of dynamic and flexible data sharing spaces for multi-sectorial supply chains, increasing the current value proposition of several Atos Business Units.

In addition, ATOS will strengthen collaboration with other consortium partners and new partnerships with industrial companies to offer a comprehensive solution for the creation of flexible data spaces that facilitate both the reconfiguration of supply chains and manufacturing repurposing solutions.

Strategic future plans and commitment

As global leader in digital transformation, ATOS will take advantage of the results of Eur3ka project related to the supply chain management and logistics optimization and repurposing, improving some aspects of their Smart Manufacturing solutions, and offering innovative solutions in the management of flexible data sharing spaces when problems may arise due to a variety of unexpected situation.

As part of the strategic plan is to offer the knowledge and the final solutions and assets resulting from the project to current customers, as well as to potential industries that may need this type of solutions, helping in the adoption of this type of solutions and technology, and allowing to improve the solutions offered based on the feedback and the specific needs of each one of them.

Intrasoft International SA (INTRA)

Partner Profile

Netcompany-Intrasoft is a leading European IT Solutions and Services Group with strong international presence and expertise, offering innovative and added-value solutions of the highest quality to a wide range of international and national public and private organizations. We offer digital solutions to organizations in many industrial sectors, including manufacturing, telecommunications, finance and public sector organizations.

Exploitation Actions and Return expected

INTRA's exploitation plan for Eur3ka will be centred round the Intellectual Property (IP) that we developed in the project, notably the COVID19 aware shifts allocation solution/application. Our ambition is to use this solution to penetrate the human resources and resilience applications market based on the following considerations:

1) Value Proposition: The application helps industrial organizations to sustain their resilience by effectively (re)allocate personnel into work tasks during disruptive events. It is primarily aimed to be used by the Human Resources (HR) departments of the organizations that are typically in charge of workforce allocation. Nevertheless, it can be relevant to organizations where shifts and workforce allocations are carried out by other departments.

2) Target Markets/Sectors: The development of the application has considered the requirements of manufacturing enterprises, notably requirements of the COVID19 period

that created significant disruptions in the operation of factories. Nevertheless, the main mechanisms and functionalities of the application are fairly general and can therefore be customized to the needs of other disruptive events (e.g., large scale supply chain disruptions), as well as to other industrial sectors where employees are allocated to shifts (e.g., oil & gas, mining). In this direction, there will be certainly a need for additional investments towards extending and customizing the application.

3) Main Costs: Our exploitation plan involves additional costs to finance the enhancement and transformation of the applications, as well as its transformation to penetrate other markets. Moreover, sales & marketing costs are envisaged. The main cost components are as follows:

- Development costs to advance the TRL (Technology Readiness Level) of the solution.

- Development costs to implement a pivot of the applications and enable it to address additional industrial markets.

- Marketing costs to communicate the value of the product to the targeted industrial sectors, starting from manufacturing.

4) Business Models: Two business models are considered for the monetization of the shifts allocation product/service:

- Sales of enterprise licenses (B2B sales), along with complementary services like support and maintenance.

- Sales of the functionalities of the application as a service based on a SaaS (Software-as-a-Service) model (i.e., pay-as-you-go). Pay-as-you-go fees can be combined with an initial registration cost, which entitles the end-user organizations to access to training and support materials.

4) Expected Revenues: We envisage the possibility of direct commercial revenues based on B2B sales of licenses and pay-as-you-go fees. Nevertheless, our exploitation plan foresees also additional revenues and intangible benefits from the positioning our company in the enterprise resilience market. This position holds the promise to complement our other solutions in areas like enterprise risk assessment and cybersecurity.

Strategic future plans and commitment

Our future exploitation activities for the COVID19 aware shifts applications involves the following steps and timelines:

- **June 2023 – March 2024 (Pivot)**: Pivot of the application to support additional enterprise resilience scenarios beyond shifts allocation.

- **March 2024 – December 2024 (TRL advancement (TRL6→8))**: Advancing the TRL level of the application. Currently the application is at TRL=6 based on its validation with SEAC, yet there is a need for validation in production environments and more scenarios at larger scale. Emphasis will be paid in the provision of SaaS support, which provides a more scalable business model.

- **January 2025 – June 2025 (Market Launch):** Attempt for a first launch in the manufacturing market, based on contacts with existing customers.

- **July 2025 – June 2026 (Pivots and Penetration of Other Markets):** During this period, we will consider additional requirements and new pivots to potentially address other industrial sectors.

In the scope of this timelines we will carry out the following activities:

1. **Marketing**: Creation of marketing materials, participation in exhibitions, direct contacts with potential customers, as well as advertisement through social and electronic channels (e.g., LinkedIN Sales Navigator).

2. **Access to Finance**: We will seek additional financial resources to increase the TRL level of the applications in programs like the DEP (Digital Europe Programme), as well as internal financing.

3. **Alliances**: INTRA will explore synergies and collaborations with vendors/integrators of HRMS (Human Resources Management Systems) and enterprise resilience solutions.

Svm Automatik A/S (SVM)

Partner Profile

SG SVM is specialized in the design and construction of high-technology machines and systems for packaging, assembly and serialization for the pharmaceutical products. SG SVM develops specialized machines from the conceptual phase up to production, testing and service. Stevanato Group Denmark is a leading supplier of high-end customized production and inspection machines, in general used for by the pharma sector for drug delivery systems as auto-injectors and inspection of glass vials for drug containers.

For the Eur3ka project SG have provided insight in to the challenges in manufacturing and retrofitting high volume manufacturing as is required to respond on a pandemic. Here the real impact of having a responsive manufacturing process can impact a societies resilience towards pandemics as the Covid being able to provide large quantities of approved quality drugs. As the focus have been to knowledge share with partners from the project on the challenges in machine manufacturing and demonstrate the use of the partners technology.

In addition to the insight in machine manufacturing SG have explored the used of digital twin technology for internal process improvements, ensuring first time right in design of mechanical components with included dynamics. This can be exploited explicitly by identifying design challenges ahead of machine delivery time, reducing cost of rework and improving responsiveness.

The impact of digital promotion activities has been shared toward existing key customers with proposals of accelerating their machine development process based on technology and capabilities developed in the Eur3ka project. As part of this we have grown the knowledge of how to incorporate the technology into our future sales process. This is a new potential exploitation for SG to generate more sales.

Exploitation Actions and Return expected

The partners involved in Eur3ka have given SG a unique insight into the capabilities by accelerating the machine development process and growing our capabileties for designing machines digitally. The project has focused in on exemplifying the technology in key project for the company as well as generating tools for future that when matured can make digitalization a backbone of our machine manufacturing process from design to after sales support.

- **Market positioning and promotion**: We will build on our companies existing relation to customer for manufacturing machines in the pharma sector, and extend our offering with examples of digital twin solutions in four different properties. This gives a strong natural exposure that also emphasis the companies focus on innovation in its core. In addition to this, the technology will be promoted at trade fairs where SG participate, here the ability to use digital twin technology enables engage with potential new customers seeing and experiencing our machine portfolio that would otherwise be impossible to make alive in practice. Finally the technology is expose in network activities for machine manufacturing, to expose our capabilities accelerate by new collaboration partners and potentially recruitment by a gain exposing the companies ability to embrace innovation.

- **Partnering and collaboration**: We have established a supplier/customer relation ship to Visual Components as a result of the successful collaboration in Eu3rka. But we will continue to expand this, also outside Eur3ka, to ensure that the technologies are matured further, for our existing customer there are preferred partners for simulation technology and SG expect it in a few years will become a prerequisite that we can integrate our machine towards a suppliers preferred simulation software.

- **Licensing and commercialization**: The current product offering consist of four principles of products. 1. Design exploration where a new process of workflow is simulated as an alternative to physically constructing. This can be used to identify issues not expected by our customers or to convince regulatory organizations. 2. Animation of machine behavior under normal production processes, this will enable the customer to instruct operators on machine behavior in a more involving manner than to day. 3: Focused machine dynamics, by creating a detailed digital twin of limited machine modules integrating PLC software and Cad design. Finally our 4th is a full digital representation of the machine with hardware (PLC's) to simulate the complete line behavior.

Our expected revenues from the exploitation of the outcomes and assets of the Eur3ka project include:

- **Positioning strategy**: We expect to enhance our appeal for existing customers by exposing our new ways of working with digital twin technology as well as generating new products or services as described. We use the knowledge obtained through the Eur3ka project in disseminating and communicating to our customer and optional customers actively in our sales promotion strategy. This will assist us in being a

leading machine builder and better at delivering machine on time and quality with a continued global impact.

- **Knowledge acquired through the project:** We have educated 4 colleagues in the used of Digital Twin software provided by Visual Components through the Eur3ka project. This will make it a lasting capability for the company in the future. This have been a unique acceleration of our capabilities that would not otherwise have been possible to realize.

- **Strategic future plans and commitment:** As a result of the successful demonstration in the Eur3ka project we are expanding a newly generated team for digital products to include Digital Twin capabilities. In addition to this we will continue to offer Digital Twin as a service of customer project to increase the competences we have grown with the Eu3rka project into established process and tools for manufacturing

Strategic future plans and commitment

The topic of resilience is considered a major element, following up earlier focus elements on security, interoperability and sovereignty. The realization of framework for resilient networks, while focusing on repurposing and re-planning, enables network organisations in various domains, such as manufacturing networks, medical equipment networks and supply chains, to continue their business in turbulent situations.

Both of these types of developed knowledge will be part of the TNO Knowledge Roadmaps on Digital Innovation and Smart Industry, therefore becoming part of a larger portfolio of knowledge. Our ambition is to further develop this knowledge as part of these roadmaps.

Based on the final outcomes and assets of the project, for Brainport Industries it is important to identify the potential target markets or sectors that would benefit from the project's solutions, such as manufacturers, service providers or suppliers. We will also continue building partnerships with key players in the industry, which is essential to expand our reach and increase the adoption of our solutions, such as SCSN. These partnerships can also provide valuable feedback on the project's solutions and help identify areas for further improvement. Last but not least, it is important to monitor and evaluate. To ensure the success of our exploitation strategy, it is important to monitor and evaluate the project's performance, including the adoption of its solutions, revenue generated, and customer feedback. This feedback can be used to continually improve the project's solutions and adapt the exploitation strategy as needed.

Brainport Industries Cooperatie UA (BPI) and Nederlandes Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (TNO)

Partner Profile

Brainport Industries collaborates with TNO in the Eur3ka project.

- **TNO** focusses on the technical activities, i.e. designing and realizing the required IDS/SCSN software components.

- **Brainport** Industries focusses on the overall project management, dissemination, exploitation, and validation activities.

BPI

Brainport Industries is a cooperative of tier-one, tier-two and tier-three suppliers in the open High-Tech supply network in The Netherlands. Together they do projects in the areas of digitization & production technology, sustainability, human capital, international collaboration and growth capital, in order to further strengthen and develop the innovation power of the organisations involved. Brainport Industries provides a fertile ground and a solid structure for collaborative projects whether they are related to technology, market or people. It's an environment that provides for a continuing flow of knowledge workers and experts and enables suppliers to increase their output and steadily grow into market leaders. Brainport Industries serves as a network of associated suppliers in the open High-Tech supply chain and a solid structure for collaborative projects, addressing topics within the core themes of the Eur3ka project. Brainport Industries is chairing the Digital Innovation Hub – Smart Connected Supplier Network (DIH SCSN), which focusses on the fast and secure sharing of data in highly complex supply chains.

In relation to the Eur3ka project the main tasks for Brainport Industries were to share the knowledge gathered in the DIH SCSN regarding data sharing in complex & dynamic supply chains by contributing to T2.1 Reference Architecture and Assets for On-demand & Fast Manufacturing Repurposing.

Moreover, Brainport Industries contributed to designing processes for alignment, assessment and optimisation of multi-sectorial supply chains as part of T3.3 Resilient Cross-Sectorial Supply Chain Management Process Specific. Finally, Brainport Industries contributed to the dissemination and exploitation activities of WP6 by involving Brainport Industries' member companies and align the efforts within several regional, national and EU projects, which are relevant to the Eur3ka objectives.

TNO

TNO is a Dutch independent not-for-profit research institute with the mission to connect people and knowledge to create innovations that boost the sustainable competitive strength of industry and the well-being of society. TNO contributes to the innovation capacity of businesses and government. We will also work on the specification of a service for the smart matching that can be applied in ecosystems in various industrial domains such as Industry 4.0, automotive and medical supply chains. The organisation is involved in many international research projects.

In the Eur3ka project TNO actively collaborates with Brainport Industries on knowledge development on interoperability, scalable framework solutions and communication standards, for example vocabularies for supply chain management and logistics optimization. TNO and Brainport Industries founded the data ecosystem for the manufacturing industry called Smart Connected Supplier Networks (SCSN).

Since the start of the Eur3ka project, TNO has obtained the knowledge and technical expertise needed to extend and further exploit their Smart Connected Supply Chain, positioning it as a Resilient Connected Smart Supply Chain, therefore using the not-for-profit Foundation SCSN as sustainable ecosystem to build upon the results of the EUR3KA project. Together with TNO's dataspace efforts and data sovereignty mechanisms for logistic planning, TNO has extended their framework solutions with resilience, re-planning and re-schedule services.

Exploitation Actions and Return expected

The Eur3ka project has been a valuable opportunity for Brainport Industries (BPI) and TNO to collaborate on knowledge development, technical expertise, and collaborative projects related to supply chain management and logistics optimization. Specifically, the Smart Connected Supplier Networks (SCSN) is a critical asset that we believe will help us gain the results.

We aim to offer our solutions and services to manufacturing companies that are looking to optimize their supply chain processes and enhance their competitiveness. This market is particularly relevant for us as we have already established the SCSN data ecosystem for the manufacturing industry, which currently consists of ten service providers and more than 300 SMEs. We plan to pursue the following exploitation scenarios:

- **Market positioning and promotion**: We will position our solutions and services as unique and valuable for manufacturing and logistics companies, highlighting our technical expertise and knowledge developed through the Eur3ka project. We will leverage our existing networks and collaborations to promote our offerings to relevant stakeholders and decision-makers. Besides that, we can look into new opportunities to implement the developed SCSN framework within other markets (segments).

- **Partnering and collaboration**: We will seek partnerships and collaborations with manufacturing and logistics companies, service providers, and other stakeholders to co-create solutions and services that meet their specific needs and requirements. We will leverage our existing collaborations to facilitate such partnerships and collaborations. Connecting more manufacturing companies and service providers will be key.

- **Licensing and commercialization**: We will explore further opportunities for licensing and commercializing the outcomes and assets of the Eur3ka project, particularly the SCSN data ecosystem. We believe that such licensing and commercialization opportunities can generate significant revenues and help us reach a wider audience beyond our existing networks and collaborations. Currently, SCSN is an independent and autonomous foundation, the network has made a professionalization step and the number of users of this data standard is rapidly increasing.

-

Our expected revenues from the exploitation of the outcomes and assets of the Eur3ka project include:

- **Positioning strategy**: We expect to enhance our positioning strategy by offering unique and valuable solutions and services to manufacturing and logistics companies. We can use the knowledge obtained through the Eur3ka project in disseminating and communicating to our members. This will help us establish ourselves as a leader in the supply chain management and manufacturing industry within the Netherlands.

- **Knowledge acquired through the project**: We have gained wider know-how and knowledge through the Eur3ka project, which will enhance our technical expertise and competitiveness in the supply chain management and manufacturing industry. One of the key results in this field is an almost finished scientific paper that suggests two new types of SCSN messages.

Strategic future plans and commitment

The topic of resilience is considered a major element, following up earlier focus elements on security, interoperability and sovereignty. The realization of framework for resilient networks, while focusing on repurposing and re-planning, enables network organisations in various domains, such as manufacturing networks, medical equipment networks and supply chains, to continue their business in turbulent situations.

Both of these types of developed knowledge will be part of the TNO Knowledge Roadmaps on Digital Innovation and Smart Industry, therefore becoming part of a larger portfolio of knowledge. Our ambition is to further develop this knowledge as part of these roadmaps.

Based on the final outcomes and assets of the project, for Brainport Industries it is important to identify the potential target markets or sectors that would benefit from the project's solutions, such as manufacturers, service providers or suppliers. We will also continue building partnerships with key players in the industry, which is essential to expand our reach and increase the adoption of our solutions, such as SCSN. These partnerships can also provide valuable feedback on the project's solutions and help identify areas for further improvement. Last but not least, it is important to monitor and evaluate. To ensure the success of our exploitation strategy, it is important to monitor and evaluate the project's performance, including the adoption of its solutions, revenue generated, and customer feedback. This feedback can be used to continually improve the project's solutions and adapt the exploitation strategy as needed.

Visual Components OY (VIS)

Partner Profile

Visual Components (VIS) is recognized as a global leader in the manufacturing 3D simulation industry and a trusted technology partner to many leading industrial automation brands. Founded in 1999 by a Finnish-American team of simulation experts to provide factory design and simulation technology that is easy to use and more accessible to manufacturing organizations of all sizes.

Over the years, Visual Components have developed and brought innovative 3D simulation solutions to the market that adapt to the requirements of the different stakeholders, equipment providers, system integrators, and end-users, enabling digital continuity and integrating the latest ICT technologies for manufacturing.

With solutions that adapt from concept to operation to different companies' departments' requirements, hundreds of organizations worldwide use Visual Components software to support critical planning and decision-making processes.

Visual Components actively participates in national and international research projects to develop innovative solutions. These solutions provide standardized interfaces to easily communicate and integrate the digital twin with other factory systems. The open interfaces available in Visual Components facilitate de development of new functionalities.

Exploitation Actions and Return expected

The Eur3ka project has allowed Visual Components to push forward technologies already developed in previous projects with new use cases. The VR technology has been further developed to support virtual training and remote support.

During the pandemic, social distancing accelerated the implementation of virtual training using VR devices. Despite the 3D viewers available within Visual Components 4.0 being already utilized during the pandemic, the VR devices accelerated the training of the operators, but still, some areas required to improve. The Eur3ka project helped to identify the areas to develop and improve. Identify the areas of interest of the workers where crucial to target the VR development, such as the level of detail of the operations within the VR environment. Interactivity and skills development using VR were identified, and new interactive solutions were added to the VR environment. They will be available in the next commercial generation of Visual Components Experience. The commercial solution for the VR interface will be offered as a stand-alone solution for computers (Windows) and mobile platforms (Android and iOS). The business model will be license linked to Visual Components 4.0 (release 4.7 onwards), and the Premium version will incorporate interoperability; meanwhile, Essentials and Professional will provide basic visualization capabilities.

New simulation features have been developed during Eu3ka for fast deployment of pharmaceutical manufacturing lines, accelerating the process "from concept to operation". VIS targets to start incorporating these new features within the product family Visual Components 4.0 in the different product variants starting its commercialization after the end of the project with the release 4.7. The commercial release will be done according to integrating the new features in the commercial solution that are tested and validated in relevant commercial scenarios.

Visual Components foresee that the commercial impact of the developments in Eur3ka project will push sales by 10% in the first year of commercialization, double this initial results during the next 2 years. Furthermore, VIS expects that the commercialized generic solutions will give additional revenue through consulting and product customization for the end customers. The solutions commercialized are generic solutions to be used and customized

by the public API, or OEM integration and customization. The revenue of the consulting is expected to be at least the same as the income due to licensing.

The application markets are not only the pharma and life-sciences domain, as mentioned the solutions developed in the Eur3ka project have been further developed as generic application solutions that will allow being used in other domains such as food packaging, electronics, and automotive areas.

The prototypes developed within Eur3ka towards the use of the simulation and the digital modules for certification have given promising results for developing this line. Although the results were good additional research and development will be continued as it will give new sales opportunities and will keep Visual Components 4.0 ahead of the competitors.

Strategic future plans and commitment

The results of the Eur3ka project were good, and the work will continue. The base for continuing commercial projects with project partners such as Stevanato is in place, and the work will continue in this direction.

Further development in the Cognitive Digital Twin will continue as is one area where the serialization of the datasets and digital continuity has supported the implementation of Visual Components solutions.

Future development in the certification domain is planned. Still, the requirements of this part make it case-dependent, but the results in this area are a solid and base for future cooperation.

Seacub S.p.A. (SEAC)

Partner Profile

SEACSUB is a small-to-medium-sized Italian company, a leader in the diving industry with a worldwide reputation, focusing on scuba diving, spearfishing, snorkeling, and swimming. It has a strong research and development activity, which allows it to keep up with the latest innovations and offer cutting-edge products. This is thanks in part to SEAC's focus on the aesthetics of its products, which complements the technical aspects, the result of a very diverse staff that includes designers and engineers.

SEAC designs and tests all products in its own laboratories, and most of them are made or assembled in-house, placing technology and quality as a priority.

This is why the Eur3ka project is so important: It helped SEAC renovate two testing machines used for Full Face masks and regulators, introducing a new web-based dashboard where all the data collected by the new sensors are displayed and stored. The revamped testing machines are faster and more accurate (especially the CO_2 machine), and by connecting with the Engineering platform, data can be analyzed to increase knowledge of the FF masks tested and develop new optimized designs based on the data collected.

SEAC's experience in manufacturing diving supplies has its roots in the 1970s. Over these fifty years, SEAC has constantly renewed itself, both in terms of equipment and materials used. With a view to constant improvement and investment toward an increasingly 4.0 factory, SEAC has joined several European projects.

Exploitation Actions and Return expected

Thanks to the Eur3ka Project, SEAC was able to significantly improve two machines used for testing both Full Face masks and regulators. The first is called ANSTI machine. After careful analysis of the software and hardware parts involved, we realized that the machine was not customizable. This is due to the manufacturer of the machine, who, by making the product in-house, does not allow changes to the software (the software is proprietary and developed by this third-party company), and therefore it was not possible to work on the hardware part either, due to the strong link with the software part. However, the STAM partner developed an application that allows the automatic transformation of test data into a digital format that can be automatically sent to the platform provided by Engineering. The format is fully comparable with that of the CO_2 machine, allowing for a complete characterization of the individual test mask.

The second machine is called the CO_2 test machine. It has been radically modified in its hardware and software. The CO_2 and pressure sensors, now obsolete, were replaced with new sensors that enable their control. The software part was created to automatically adjust the parts of testing that were previously manual. Through the dashboard available on a touch panel installed on the machine, and/or by using a remote desktop PC, the test phase can be started, monitored, and controlled, collecting data on the dashboard itself. The data can then be analyzed on the dashboard in real-time, sent to a PC, or sent to the Engineering platform for further analysis, along with data from the ASNTI machine, for complete characterization of the FF mask.

Thus, the economic benefits are manifold:

- Significant reduction in the time spent by the operator to run tests on the CO_2 machine. This saves time for a single test and allows multiple tests to be produced in a single session.

- More accurate results due to the installation of more precise sensors, which means fewer errors can be made in the testing phase and thus fewer attempts for a good test.

- Creation of a digital database for characterizing the individual FF mask model, which can be the starting point for creating a standard for the FF mask and thus a huge advantage over competitors.

- Use of data in the product design phase for optimization. Data collection and analysis can lead to a better understanding of the link between FF mask design and respiratory characteristics, creating the next generation of FF masks with superior respiratory characteristics and thus higher performance than the competition.

- Possibility of renting the test machine to competitors. This can be considered a direct revenue after the project.

In conclusion, direct revenue is expected from the rental of the test machine and future revenue from the creation of a digital database that can be a kind of first standardization repository for FF masks. SEAC will then benefit from direct cost reductions through increased speed of test execution. Finally, the ability to use test data to optimize the design of FF masks may lead to a new generation of optimized masks, which will increase SEAC's market share

Strategic future plans and commitment

Through Eur3ka, SEAC and STAM have demonstrated how important it is to have digital testing, data collection and analysis machines for the diving industry. This achievement is of strategic importance to SEAC. In fact, upgraded machines, analysis, and data collection have gained significant importance since the pandemic experience, and will most likely be crucial pillars for maintaining competitiveness in the years to come.

At the end of the project, SEAC will invest further to improve its testing facilities, forming a relevant benchmark for the underwater industry. For this reason, SEAC is committed to maintaining the partnership established with STAM for the maintenance of the CO_2 machine dashboard and to invest together to renovate other machines

STAM Srl (STAM)

Partner Profile

STAM is an engineering firm specializing in the high-tech sector.

We provide turnkey solutions in the following areas: Space & Defence, Security & Transport, Energy & Environment, and Industry & Automation.

Since the company's establishment in 1997, we have been designing and developing innovative mechanisms and mechatronic devices. The main services provided were related to the field of mechanical engineering, performing all stages of the product design cycle: conception, tools and subsystem design, and definition of production systems and cycles.

Since 2010 we broadened our expertise portfolio, applying our expertise in new fields, such as construction and transport, and building new skills in ICT, where we develop solutions and software tools to support activities within Industry 4.0.

Exploitation Actions and Return expected

STAM thanks to the collaboration with SEAC has improved its know-how in sensorizing and integrating complex measuring and testing machines. Within the project, STAM has the opportunity to increase its knowledge in the sensors market (especially in CO_2 sensors and pressure sensors), improve its capability in the integration of sensors and software logic to govern them, and in the deployment of a user-friendly dashboard based on the open source "Thingsboard" platform.

This service is flexible and can be adapted to different market segments and any type of testing machine or even manufacturing machine. Possible customers are all those companies that have testing machines that need to be refurbished and digitized. The service

sold is in fact to be considered totally customizable on the customer so the possibilities are really many.

We aim to offer our solution and services to manufacturing companies that are looking to optimize their testing processes and enhance their competitiveness. This market is particularly relevant for us thanks to our network of SMEs customers.

Thanks to Eur3ka STAM thus has a new service to add to its portfolio that can open up new market segments and spark new opportunities. The service will be sponsored on the company website and within brokerages or industry events.

Strategic future plans and commitment

Through Eur3ka, STAM has demonstrated how important it is to have digital testing, data collection and analysis machines for the diving industry. This achievement is of strategic importance to SEAC. In fact, upgraded machines, analysis, and data collection have gained significant importance since the pandemic experience, and will most likely be crucial pillars for maintaining competitiveness in the years to come.

At the end of the project, SEAC will invest further to improve its testing facilities, forming a relevant benchmark for the underwater industry. For this reason, SEAC is committed to maintaining the partnership established with STAM for the maintenance of the CO_2 machine dashboard and to invest together to renovate other machines.

We plan to pursue the following exploitation scenarios and we will expect revenues from them

- **Market positioning and promotion**: We will position our solutions and services as unique and valuable for manufacturing companies, highlighting our technical expertise and knowledge developed through the Eur3ka project. We will leverage our existing networks and collaborations to promote our service and solution to relevant stakeholders. Besides that, we can look into new opportunities within other markets (segments).

- **Partnering and collaboration**: We will seek partnerships and collaborations with manufacturing companies, service providers, and other stakeholders to co-create solutions and services that meet their specific needs and requirements. We will leverage our existing collaborations to facilitate such partnerships and collaborations. Connecting more manufacturing companies and service providers will be key.

- **Knowledge acquired through the project**: We have gained wider know-how and knowledge through the Eur3ka project, which will enhance our technical expertise and competitiveness in the supply chain management and manufacturing industry. One of the key results in this field is an almost finished scientific paper that suggests two new types of SCSN messages.

Software Quality Systems SA (SQS)

Partner Profile

SQS is Software Quality Systems, S.A. is an independent testing house expert in the design and implementation of verification and validation processes. The customers of SQS are relevant players in highly regulated safety critical domains. Within this context, medical device manufacturers and pharma labs have a huge relevance in the billing of the company. Main offer for these two sectors derives from FDA and EMA demands. SQS provides V&V services but also consultancy in the implementation of regulatory standards, such as ISO13485, ISO14971 or ISO62304.

In order to provide these services worldwide and in an efficient manner, SQS has developed TestLabs and specific Testing Tools and Methodologies.

The participation of SQS in this project is focused on enhancing the capabilities and knowledge of the team (i.e. certification of 3D printing processes) and on improving tools (i.e. Q-MedTech, Assessment Framework) and methods (i.e. design of Certification processes)

Exploitation Actions and Return expected

Under the Framework of this project, SQS has managed to develop:

- <u>Q-MedTech Platform:</u> It is web platform based on Mango Apps that has been created to implement the independent validation of the SW medical devices and IT support Tools and processes. The different agents participating in the platform are: Technology Providers and Certification Team.

- <u>Assessment Framework:</u> So far, tt is composed of two tools conceived to be used by consultants:

    o <u>SW validation assessment tool.</u> The objective of this tool is to help companies evaluate if a IT tool used during the manufacturing process of medical devices needs to be validated.

    <u>ISO13485 Assessment Tool</u>. It guides in the identification of the gaps in the QMS of a company to comply with ISO13485 and provides information of the effort and tasks required to cover those gaps.

- <u>Certification Process Methodology.</u> A complete handbook on how to implement a certification process. It is implemented in the P&R Network Platform.

The return expected with these three products is:

- Reduction of a 15% in the effort required to design and implement a V&V Plan, thanks to the use of Q-MedTech Platform by the Team.

- Reduction of a 25% in the cost required to identify Gaps at product and process level, thanks to the use of the Assessment Framework.

- Significant reduction (50%) in the time required to train and incorporate new people to the Healthcare Department.

- Significant increase in the visibility of SQS in the market.

- o Taking as input the "Assessment Framework", two "Self-Asessment Tools" have been prepared and made accessible through SQS Website.
- o SQS will take part in the P&R Network as Validation Partner.

Strategic future plans and commitment

The intention of SQS is to continue with the evolution and maintenance of the Tools and Methods developed under this project.

In addition, SQS will have an active participation in the P&R Network providing tools, methods and services. A responsible person has been appointed to address the communications with the network and to develop the business around this partner.

Unparallel Innovation LDA

Partner Profile

UNPARALLEL (Unparallel Innovation, Lda) is a Portuguese SME that develops digital technologies and provides consulting services on digitisation with a strong foundation on research and innovation. The company was founded on May 11th, 2012, by two engineers/researchers from the NOVA School of Science and Technology (FCT NOVA). UNPARALLEL presently employs 15 professionals (12 men; 3 women) and its Research & Innovation Department is in the Greater Lisbon region.

UNPARALLEL develops products ranging from hardware devices to software/web solutions especially for industrial application, and provides high-value consulting services on technology development, strategic insights, market intelligence, etc. Research is at the core of the company as it guarantees a continuous innovation for our products and services based on up-to-date scientific-technical knowledge. Main target markets include Internet of Things, Industrial IoT, Smart Factories/Manufacturing, Agri-food instrumentation, Smart Cities solutions, Water-smart Systems, Consumer Products, and others.

UNPARALLEL is the proud owner/developer of the IoT-Catalogue web portal (www.iot-catalogue.com). UNPARALLEL is founding partner of the key digital technologies for industry initiatives – Edge4Industry (www.Edge4Industry.eu) and PdM4Industry (www.PdM4Industry.eu). UNPARALLEL is member of the European Alliance for the Internet of Things Innovation (AIOTI, www.aioti.eu) acting co-chair of working group WG11 'Smart Manufacturing". UNPARALLEL is a member of the Digital Factory Alliance (DFA, www.digitalfactoryalliance.eu) being responsible for the DFA Innovation Catalogue (https://digitalfactoryalliance.eu/innovation-catalogue-2/).

In Eur3ka, UNPARALLEL was responsible for the development of two Key Exploitation Results (KERs): 1) Component Recommendation Engine – a tool to allow users to use the results of the Eur3ka project to help them to compose their own solutions for their specific need/problems; and 2) Risk Assessment Service for industrialists to evaluate the risks

related to repurposing or reconfiguring production lines in case of a disruption like a pandemic e.g., COVID-19.

Exploitation Actions and Return expected

UNPARALLEL individual exploitation plans relate to how the results of the project – and particularly those developed by the company in the project – impact/change the company.

UNPARALLEL plan to integrate the Component Recommendation Engine KER into its IoT-Catalogue platform to act as a powerful recommendation service of digital solution for any domains (industrial or any other) taking advantage of the platform's large knowledge base of digital technologies and use-cases. The integration of the Component Recommendation Engine into the IoT-Catalogue will make possible to enlarge the target market from the Industrial domain (Eur3ka application focus) to much more including Smart Cities, Digital Finances, Smart Health, and many other that are already supported by the IoT-Catalogue.

The IoT-Catalogue aims to be the one-stop-source for innovations and technologies to help users (developers/integrators/advisors/end-users) to take the most advantage of digital technologies for the benefit of society, businesses, and individuals. It is a web-based catalogue from where to pick & choose digital solutions ranging from complete end-to-end solutions to tools and components/parts – this is where the Component Recommendation Engine will play a key role on facilitating the identification and selection of digital solutions.

The integration of the Component Recommendation Engine in the IoT-Catalogue is key add-on service to UNPARALLEL's flagship platform that will bring many more users into the digital ecosystem. The Component Recommendation Engine is indeed a key service as users expect to have easy ways to have solutions being proposed to address their needs/problems – the Component Recommendation Engine enables such a response to users of the IoT-Catalogue. The integration will also enable additional cross-domain synergies and technology reusability by allowing users to have solutions and technologies from other domains that fit their intents.

The monetisation of the Component Recommendation service is defined: the service will be available to users of the IoT-Catalogue as part of the product membership fee; while the basic service only provides search capacities, the paid service provides also advanced recommendations on solutions to be used to address users' specific needs/problems. The Component Recommendation service will be a valuable service for users to decide to onboard the paid membership of the IoT-Catalogue platform.

The planned membership fee is 4.90 EUR monthly or 39.90 EUR yearly to get access to the premium services of the IoT-Catalogue, including the Component Recommendation service. The prospect is to have ~500 paid users by the end of 2024, thus representing a minimum of 20k€ in memberships sales, to steadily grow to >5000 paid users by 2025/26, i.e., 200k€ of revenues just from the paid memberships – additional revenue streams include advertisement and others.

Strategic future plans and commitment

UNPARALLEL is committed to primarily exploit its results developed in the context of Eur3ka – the Component Recommendation Engine and the Risk Assessment Service. For the first,

the plan is to integrate it into UNPARALLEL's IoT-Catalogue platform to act as a powerful recommendation service of digital solution for any domains (industrial or any other) taking advantage of the platform's large knowledge base of digital technologies and use-cases. UNPARALLEL believes that the IoT-Catalogue solution can grow to a world-scale service and is thus committed (strategically and with resources) to have the Component Recommendation in the IoT-Catalogue to build on the vision of the IoT-Catalogue as the one-stop-source for knowledge and innovations on exploiting digital technologies for a myriad set of use-cases.

In respect to the Risk Assessment Service, some industrial partners have already approached UNPARALLEL manifesting the interest to adopt the technology – this is a clear indication that the solution if fulfilling a need for industry. Following the completion of the project, further development work will be necessary for the service to become a fully functional solution. The service was developed and demonstrated in the context of the Eur3ka industrial environment, with a focus on addressing the pandemic/covid-19 issues. However, additional development is needed to transform the tool into a full-fledged risk assessment solution that can be applied to a broad range of industry-related situations.

Effizienzcluster Management GMBH (ECM)

Partner Profile

Digital Hub Management GmbH DHM (former EffizienzCluster Management GmbH) is a non-profit company working as the orchestrator of the regional innovation ecosystem and digital innovation hub Digital Hub Logistics Dortmund. Its shareholders are the Digital Hub Logistics e. V., an association dedicated to innovation and digital transformation in logistics, manufacturing and global supply chain, as well as the International Data Spaces e. V. The Fraunhofer Institutes for Material Flow and Logistuics IML, the Fraunhofer Institute of Software and Systems Technology and the Technical University of Dortmund are part of the ecosystem as competence centers.

Exploitation Actions and Return expected

As a non-profit organization, DHM aims to exploit the project results primarily via adoption activities of the members of the related associations and by transferring the related results and knowledge into companies participating to the hubs activities. Furthermore the results are transferred into the up and running activities of the EDIH-DO consortium.

This refers to knowledge of resilience in global supply chains and manufacturing processes one the one hand side, on the other hand side it refers to knowledge and results on the the adoption of sovereign data sharing standards as enabler. For this, DHM keeps partners informed about what is available of its standard, as well as provide support to direct them to the right source of information.

Strategic future plans and commitment

DHM expects to provide technologies, knowledge and concepts after the project, mainly via its members in the related associations. DHM will also promote the project results via its networks, especially within the domains logistics and global supply chains.

Politecnico di Milano (POLIMI)

Partner Profile

Politecnico di Milano (POLIMI) is one of the best scientific-technological universities in the world according to the prestigious QS World University Rankings, classified 1st in Italy and 156th worldwide (Ranking 2018-2019). Moreover, it is ranked among the top 20 universities (according to the QS World University Rankings – by Subject 2018) in all the three areas of specialization: 17th in Engineering, 9th in Architecture and 5th in Design. Founded in 1863 it is the oldest of Milan's universities and Italy's largest school of Architecture, Design and Engineering with three main centres in Milan and five Campuses in Como, Lecco, Cremona, Mantua and Piacenza and one in China, in Shanghai. Thanks to a marked internationalization policy, the majority of Master of Science and Doctoral Programmes take place in English. This attracts a growing number of high-achieving international students who form part of a community coming from more than 100 different countries.

Since 1863, Politecnico di Milano has been active in several scientific and technical fields and will join through the Department of Economics, Management and Industrial Engineering (DIG). In particular, the research group of Manufacturing is involved in Eur3ka project with its specific competences in the fields of Manufacturing Strategy, ICT for Manufacturing, Social and Environmental Sustainability in Manufacturing, Product and Service Development, Manufacturing Systems Design, Production and Maintenance Management, Education in Manufacturing in which the group can be considered the leader among the Italian Universities and Research Centers. The group has been involved in several European and international research projects both as partner and coordinator. Furthermore, it is very active in roadmap and technology foresights. The group is member of EFFRA and actively participates in the cPPP, contributing to the roadmapping at European level.

Exploitation Actions and Return expected

POLIMI within Eur3ka project has developed two assessment tools aiming at investigating respectively the upskilling needs after a disruptive event like the COVID-19 pandemic and the performance monitoring to ensure higher levels of resilience. The two assessment models were applied in several Eur3ka partners.

Moreover, POLIMI cooperated with IMECH to share the past and well-grounded experience they both have from their previous collaborations with the several industries acting in the Lombardy region. Regarding especially the skills part, it was used a pilot provided an overview of the adopted measures, identified risks, and lessons learnt, which, through IMECH, were discussed by companies' representatives in the virtual event "The factory after COVID-19 pandemic" (held in collaboration with the DFA on the 14th of October 2021).

Moreover, regarding both the assessment tools, the results were shown during the virtual event supported by AFIL hold the 1st of December 2023. In this context it was also possible

to enlarge the results obtained within the Eureka consortium to a wider and external audience.

Based on the preliminary validation done of the two models within Eur3ka project, it was possible to finalize the two models making them easily usable by other entities external to the project. These two models, hence, aim at

Strategic future plans and commitment

Thanks to Eur3ka project, POLIMI has strengthen the competencies on resilience-related topics. Indeed, the well-established knowledge about sustainable and digital transition of POLIMI has been extended and integrated with the emerged need of being resilient against unpredictable external events. Therefore, this new and enlarged knowledge enabled the development of two assessment tools which POLIMI aims to furtherly extend in the future both in terms of content and number of applications.

In addition, POLIMI has strengthen the relationships with IMECH and AFIL all-over the project and it is committed in furtherly strengthen them to explore additional rooms for collaboration also with the partners of their consortium to support them in being more resilient.

Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.V. (FhG)

Partner Profile

The Fraunhofer-Gesellschaft is a leading organization of institutes of applied research in Germany, undertaking contract research on behalf of industry, the service sector and the government. Fraunhofer is actively involved in industrial consortia seeking technical solutions to improve the competitiveness of European industry. At present, the organization maintains 76 research institutes with more than 30,000 employees at locations throughout Germany.

Fraunhofer IOSB is one of the larger Fraunhofer Institutes. The core expertise of Fraunhofer IOSB comprises information and knowledge management, software architectures and object-oriented systems, signal and image processing, optronics and image exploitation, system technologies, modelling and optimization. The field of system technology at Fraunhofer IOSB covers everything required for analysis, understanding, modelling, development and control of complex systems to finding holistic solutions to challenging, complex problems.

Fraunhofer IOSB is represented by the Smart Factory System research group which contributed with its competencies in the domains of information and communication management, especially in the field of modelling and management of digital twins for cross-company use cases. Fraunhofer IOSB is an active member and contributor to IDS, IDTA, etc., which provides possibilities to contribute to the relevant standards.

Exploitation Actions and Return expected

Fraunhofer IOSB, in its role as a research institute, aims to develop and extend emerging technologies to create innovative solutions for industry and government and to achieve

impact through standardization and technology transfer. Our main exploitation result from the EU3KA project is the Smart Matching and Mediation App, which extends the standard search functionality of a marketplace to include not only static information such as capabilities, but also dynamic data such as price, availability, risks, etc.

The SMMA is made available to industry and the research community by providing free access to it and releasing it under an open source license. This will strengthen the sustainability of the SMMA, foster innovation and allow third parties to be inspired, expand research, maintain and leverage the SMMA through adaptation, but without hindering commercialization opportunities.

In addition, the SMMA has already been integrated into the Smart Factory Web (SFW), our platform that connects smart factories through a manufacturing marketplace. Considering that the SFW is a well-known platform used in many settings (e.g. in the CATENA-X project and especially in its MaaS WP), it will be used as the main exploitation channel for the SMMA. The extension of the SFW with the SMMA will provide support for dynamic marketplace scenarios and ensures optimal provision of manufacturing and supply chains.

Finally, an important exploitation opportunity is to define follow-up research projects, which take up and further develop relevant topics, results, and application ideas, or continue work with the project partners.

The expected return includes (i) raising awareness of Asset Administration Shell (AAAS)-compliant digital twins and integration between the AAS and IDS connectors, and (ii) collecting best practices to be further analyzed in the IDS-I community, the IDS vertical focused on manufacturing and led by Fraunhofer IOSB.

Strategic future plans and commitment

The SMMA will be enhanced with new features as needed, and used in future research and industry projects where possible. At the same time Fraunhofer IOSB will exploit and disseminate EUR3KA results among its national and international research community network, e.g. IDS-I.

Univesitetet I Oslo (UiO)

Partner Profile

University of Oslo (UiO) is a leading research institute in the domain of modelling. We cover the whole of range of models, and development of modelling languages to assist in the systems interoperability and cognition.

Exploitation Actions and Return expected

UiO in the context of Eur3ka developed the Eur3ka ontology based on the IoF and BFO standards for higher systems interoperability. The Eur3ka ontology can be exploited in various ways: a) to serve as a common vocabulary which will align and make systems interoperable between each other. b) to be used for extracting knowledge from the collected data. The methodology followed for the Eur3ka ontology development will increase the interoperability of Eur3ka platform, making it possible to be integrated to any system. This

way will allow the use of Eur3ka platform not only for the purpose and the goals of the Eur3ka project but for many other domains that require a dynamic resilient manufacturing network.

Strategic future plans and commitment

The new terms created specifically for the Eur3ka project will be introduced in the future to the IOF ontologies making them from Eur3ka specific to domain reference terms making Eur3ka platform and tools even more interoperable and resilient.

Eidgenoessische Technische Hochschule Zuerich (ETHZ)

Partner Profile

ETH Zurich is a public research university in Switzerland, also known as the Swiss Federal Institute of Technology Zurich. ETH Zurich is one of the leading international universities for technology and the natural sciences. This project involves the Chair of Production and Operations Management at the Department of Management, Technology, and Economics (D-MTEC).

Main tasks/activities and related competencies/skills to the project:

Using its manufacturing expertise and experience from repurposing initiatives in Switzerland, ETHZ will be responsible for carrying out research activities related to designing repurposing strategies in manufacturing for products of different complexity. ETHZ will map industrial repurposing practices used among manufacturers during COVID-19. Industry partners will be analyzed as in-depth case studies of repurposing at different levels of product complexities. Strategies for repurposing will be defined and categorized. ETHZ will develop a framework for strategic repurposing, contributing to a more defined and structured way of manufacturing repurposing activities. The framework and insights gained would aid industries to better prepare for future disruptions and crises.

Exploitation Actions and Return expected

ETH Zurich has managed to leverage the network within and beyond the Eur3ka network to play a vital role in helping the industry to respond to future disruptions. The project formed an integral part of a doctoral research dissertation, and the results will be used for teaching purposes to create awareness among future field leaders.

Additionally, the results have been disseminated through top academic journals in the field of Operations Management, where the work was presented at international conferences (EurOMA, POMS, APMS). The final results were presented at industry conferences.

The following are the list of our dissemination platforms:

- **Publishing in top academic journals**: Dissemination through top journals is imperative as it would allow ETH Zurich to share the research results. As these journals have a broad readership among industry experts, researchers, and academics primarily in the field of Operations Management and beyond, it is an effective platform for sharing up-to-date insights and findings. To date, we have published in Operation Management Research:

- o *Ho, W. R., Maghazei, O., and Netland, T. H. Understanding manufacturing repurposing: a multiple-case study of ad hoc healthcare product production during covid-19. Operation Management Research (2022)*

- **Presentation at international conferences:** Through presenting at international conferences such as EurOMA, POMS, and APMS, the results from the research would be able to facilitate discussions and spark further ideas on the topic. As these conferences draw the brightest minds in the field and also discuss cutting-edge research, through presenting at conferences like these, ETH Zurich can connect with researchers creating opportunities for further collaboration and discussion in the field. Our paper has been accepted and presented our at EuROMA Conferences held in Berlin:

  - o *Ho, W. R., Maghazei, O., and Netland, T. H. Manufacturing repurposing: Towards a conceptual framework. EurOMA Conference 2021 (2021)*

- **Presentation at industry conferences:** On top of the presentation at academic conferences, presentations at industrial conferences, which are specifically targeted at industry professionals, provide an excellent platform for the exploitation of results. ETH Zurich can interact directly with industry professionals and drive the implementation and improvement of the results in the industry. Our paper has been accepted and presented at the APMS conference in South Korea and featured in a magazine:

  - o *Ho, W. R., Maghazei, O., and Netland, T. H. Manufacturing repurposing: A literature review. APMS Conference (2022)*

  - o *Attinger, G. (2022, March). When manufacturers come to the rescue. Science Stories Eu Grants Access.*

Strategic future plans and commitment

The Eur3ka project has provided an excellent platform for facilitating discussion among different partners to provide a holistic solution and response to the pandemic and future disruptions. As the topic of resilience is an important one, ETH Zurich is committed to ensuring that our results continue to contribute to the ongoing efforts and research in this domain.

In terms of research, we will continue researching this domain and develop new tools and insights for manufacturing repurposing to respond to current and future crises.

We will continue to work closely with industry experts to keep informed and to better understand the requirements and challenges which are faced by practitioners.

Through these close partnerships with the industry and research, the validity of our framework would be kept updated and adapted where necessary to suit better the situation to which it is applied to.

Teknologisk Institut (DTI)

Partner Profile

DTI delivers to the project expert knowledge on Additive Manufacturing in an industrial setting DTI has experienced how the COVID-19 crisis affects the supply chain, how additive manufacturing can be utilized to overcome some of the urgent shortcomings by enabling rapid prototype developing and rapid ramp up of manufacturing. DTI is currently encountered with a customer demand of additively manufactured components *on* a MedTech certified production line, the same demand vaccine manufacturing lines are met with, and will in this project demonstrate how an industrial additive manufacturing line operating under ISO 9001 quality management system can be transformed to uphold the needed ISO 13485 quality management system.

DTI also provides knowledge on product and control specifications for demonstrating how distributed manufacturing can be optimized through the Eur3ka project.

Exploitation Actions and Return expected

Through demonstrating how to go from ISO 9001 to ISO 13485 in an industrial Additive Manufacturing setup, DTI will also prepare the foundation of becoming ISO 1385-certified in the process. This will break down the barriers of manufacturing to the MedTech industry in need of additive manufacturing, such as for ventilator assistance-equipment, pharmaceutical robot grippers and even implants for humans, all which are present costumer demands at DTI. This will lead to increased revenue for DTI, and MedTech costumers, who will gain advantage of additive vs traditional manufacturing.

DTI is also promoting the Eur3Ka solution with a collaboration with the European project AMable (grant agreement no 768775). Amable is helping companies on developing 3D printed products, and in the field of production but without any consideration of medical certifications. The project also made a specific call on 3D printed product helping against the pandemic and it will be on that specific area that the link with Eur3ka will be made.

DTI expects to increase its production in the field of medical area, and also increase its possible area of production to Class II and maybe III. The medical research area has also been increasing with new collaboration with the 2 biggest University hospital of Denmark.

Strategic future plans and commitment

The exploitation of the results is extremely important also in the matter of our commercials targets, DTI will measure the proposed direction carefully compared to its status and value to the society. We could see some possibility in:

- Continue collaboration with SQS, who can provide insight into software solutions supporting ISO 13485

- Active participation in Siemens Additive manufacturingg Network and connection to developers may lead to increased distributed manufacturing?

- Collaboration with CIR

DTI see an economic benefit from the project, and it is a clear goal to generate revenue. The project permitted to better describe the path towards the commercialisation of medical production. To speed up the entry on the market, DTI will first produce medical product under

other companies ISO 13485, but as multiple centre in DTI needs the certification, it should be implemented in the next couples of years.

International Data Spaces EV (IDSA)

Partner Profile

The International Data Spaces Association is a non-profit coalition of more than 130 members that share a vision of a world where all companies and organizations self-determine the usage rules of their data in secure, trusted, equal partnerships. Their goal is a global standard for international data spaces (IDS), as well as fostering the related technologies and business models for open, federated data ecosystems and marketplaces which ensure data sovereignty for all participants.

Exploitation Actions and Return expected

As a non-profit organization, IDSA aims to exploit the project results primarily via adoption activities of the consortium members. Some of the primary assets of IDSA include IDSA Reference Architecture Model (IDS-RAM), IDS Testbed and projects that are open source implementations of IDS standard.

IDSA's role here is to foster the adoption of its standard and support the enthusiasts working in the domain of data spaces and data exchange. For this, IDSA keeps partners informed about what is available of its standard, as well as provide support to direct them to the right source of information.

The return expected as the result of these actions consists of two parts: 1) raising awareness about IDS standards and documentation, which is totally in line with the association's mission, 2) work backwards towards updating its standards and concurrently collect best practices among the implementations of IDS standard.

Strategic future plans and commitment

IDSA expects to provide its technologies after the project, mainly via its members that are already among the project members. IDSA will also promote the project results via its networks, especially via its two main communities: Industrial and Medical.

Asociacion de Empresa Tecnologica Innovalia (INNO)

Partner Profile

Innovalia Association is a private and independent technological centre that was created by Innovalia Group in order to articulate a critical mass capable of successfully achieving its long-term research ambitions and strategic objectives. Innovalia is an alliance for technology-based SMEs with headquarters in Spain. It has international presence with offices in Basque Country, Madrid, Catalonia, Canary Islands, Europe, Asia, the Middle East, and Central and South America. Since its foundation, Innovalia Association has developed a special sensitivity for and awareness of the particular characteristics of technology-based SMEs. Today, it has become a leader in the R&D area by and for SMEs in Spain. It also

offers solutions for facilitating international innovation processes aimed at SMEs. As a technological agent of the Basque Country Technology Network (Innobasque), Innovalia brings together the skills, laboratories and resources of the companies that founded the association.

Innovalia Association's vision is to ensure that technology and innovation become a key instrument in business development. It proactively collaborates with its customers to discover the motivations and dilemmas that must be responded to in the future. It researches new technologies and materialises new solutions that enable companies' businesses to be developed sustainably. Innovalia Association's mission is to generate, promote and transfer first order multidisciplinary intellectual capital in order to actively contribute to the sustainable and international socio-economic development of companies, especially SMEs. This mission is developed by jointly deploying three strategic elements: technology research and development of an industrial nature, corporate cooperation and market orientation, deepening talent, knowledge, autonomy, commitment and the personal, social and ethical responsibility of Innovalia's team of researchers.

In the context of Eur3ka, Innovalia has led the WP2 – Repurposing Manufacturing Network Set-up and Coordination, as well as the T2.2 – Rapid Manufacturing Repurposing Network Alliance Set-up & Governance Model.

Exploitation Actions and Return expected

The integration of the Plug & Response (P&R) Network as a Business Network within the Digital Factory Alliance (DFA) is providing a new line of service for the platform that is enhancing the value that the current and future DFA's members will get from joining the Alliance. To understand this impact, it is important to note that the DFA activities are based in four pillars that have their corresponding service lines:

- Body of Knowledge: provides access to relevant training and dissemination material to the community.

- Innovation Campus: provides a set of open marketplaces to showcase R&D project results and use cases.

- Flagship Initiatives: provides access to a unique marketplace of qualified digital products.

- Business Networks: provides access to networks of added value for the members.

Participation in the Eur3ka project has supported the inclusion of the first service within the Business Networks, that is, the P&R Network, which is offering a rapid response Manufacturing as a Service Network for health products in crisis scenarios, as well as the proper coordination to deploy that network when it is needed. The operation of this network under the umbrella of the DFA will generate specific marketplaces in health products, designs of health products, production capacity and support networks, where consumers and suppliers can meet and make business. It also will provide decentralized manufacturing capability, within the framework of health products, to cover potential production peaks in manufacturing plants as well as customized products required by end users.

Having this specific service offering in the DFA will make attractive for stakeholders to join it, thus increasing the revenues via membership fees. As the DFA will act as an intermediary to the P&R Network, there's a potential membership revenue through specific access fees to the network, as well as commission-based revenue on the financial transactions carried out in the platform, making the DFA financially sustainable.

Strategic future plans and commitment

Innovalia is a Founding and Steering Board Member of the DFA and thus is committed to keep the Alliance alive and working. It is actively involved in:

a. The promotion of the DFA via participation in sector specific events such as webinars, conferences, speaks, advertisement, visits, where the potential customers can get to know the DFA and what it can offer to them.

b. The ongoing investment in R&D actions focused on developing new lines of services that can be integrated in the current portfolio.

As that, part of the strategy – that includes the P&R Network – is maintaining its marketing efforts and reaching the break even point of the DFA, making it sustainable. Also, Innovalia will keep participating in R&D projects towards the development of new services and refinement of the current ones. In the case of the P&R Network, the vision is to expand its operation to become a Manufacturing as a Service Network for products beyond the health sector, to include sector such as industry and transportation, which will benefit for having such a service to support their survival in the current Industry 4.0 environment.

Associazione Fabbrica Intelligente Lombardia (AFIL)

Partner Profile

AFIL (Associazione Fabbrica Intelligente Lombardia) is an association recognised by Lombardy Region as the Regional Technology Cluster for Advanced Manufacturing. It represents a network of companies, universities, public or private research institutions and entities (including financial ones) active in the field of the Intelligent Factory.

Being involved in T5.5. and WP6, AFIL's role is to disseminate the activities and outcomes of Eur3ka within its stakeholders' network including in Lombardy region, with a particular focus on SMEs in order to make them aware of the use-cases developed in the framework of the Eur3ka project.

Exploitation Actions and Return expected

Advanced Manufacturing is a relevant industry for the Lombardy economy, being the region the first one in Italy and the second one in EU for number of employees.

Being AFIL a non-profit association (whose mission is to facilitate R&I in manufacturing sector and foster Lombardy production system leadership and competitiveness), economic benefits are estimated for its associates, as well as for the overall regional ecosystem.

In order to promote resilience among manufacturing companies, AFIL has planned a dissemination of Eur3ka outcomes by linking the project activities with initiatives already ongoing within the Cluster ecosystem, both at regional, national and international level.

First of all, Eur3ka's activities have been presented during the General Assembly of the Cluster (July 2021) and later included in AFIL Booklet 2022 (presented on the occasion of the GA in July 2022 and then distributed to Cluster's associates as well as to regional and extra-regional manufacturing ecosystem actors). Throughout the last years, information on Eur3ka has also been channelled through AFIL's Strategic Communities, that are heterogeneous groups of regional stakeholders focusing on specific topics with a view at fostering cooperation and R&I projects, in the specific fields, such as circular economy, de- and remanufacturing, artificial intelligence, additive manufacturing.

At national level, a strong liaison has been built with the Intelligent Factory Cluster (CFI), that contributed to share Eur3ka updates and participated to the regional dissemination event. At international level, Eur3ka has been promoted both with the World Economic Forum (where AFIL is the coordinator of the Lombardy Advanced Manufacturing Hub) and the World Manufacturing Foundation (that took part to the regional dissemination event). In addition, thanks to AFIL's coordination role of Efficient and Sustainable Manufacturing (ESM) Pilot within Vanguard Initiative, Eur3ka's activities could be disseminated also at European level. Through all these networks, Eur3ka could gain visibility and exploit the project outcomes.

Finally, during the project implementation period, AFIL has cooperated with the other two regional partners (namely IMECH and POLIMI) with a view at promoting Eur3ka project and disseminating the different cases from several industries acting in Lombardy that were collected and compared by those organizations. In particular, in the framework of the Artificial Intelligence Conference, organized by IMECH with the support of AFIL on the 28th April 2021, a presentation of Eur3ka project and IMECH Pilot was delivered. In addition, a regional dissemination event was co-organized with IMECH and POLIMI on the 1st December 2022, with the participation of SIAD, that presented a preliminary industrial application developed for the Lombardy company.

Strategic future plans and commitment

After the project, AFIL will be strongly engaged in continuing to share Eu3ka's outcomes that could be used as useful methodologies and references to promote the resilience of the manufacturing companies, not only from Lombardy but also from outside the region.

In order to do so, the Cluster will keep on identifying relevant Advanced Manufacturing initiatives and opportunities for the dissemination of Eur3ka results, leveraging on the national Cluster for Advanced Manufacturing (CFI) and the networks that were previously mentioned (WEF, WMF and Vanguard Initiative), as well as on other initiatives, such as Four Motors for Europe network (where AFIL is involved in the Industry of the Future Working Group) and European Cluster Collaboration Platform (whose aim is to better connect Europe's industrial clusters and their ecosystems).

At regional level, AFIL will also continue to spread Eur3ka outcomes to local companies and all relevant stakeholders, thanks to the continuous coordination with IMECH and POLIMI.

Consorzio Intellimech [IMECH]

Partner Profile

IMECH was founded in Bergamo in 2007 to fill the gap between the research and the industrial sector, promoting the collaboration of companies of different sizes and from various industrial domains. IMECH currently involves 48 high-tech enterprises, making it one of the most important Italian private consortium in this field. IMECH research activity is primarily focused on the Smart Factory field, which includes advanced electronics, Data Analytics, AI, ICT systems and robotics for applications in a wide range of industrial fields. IMECH manages applied R&D and interdisciplinary experimental activities into pre-competitive technological platforms and prototypes production for innovative infra-sectorial applications to serve the partners. Moreover, IMECH has experience in implementing products and services relying on the outcomes from shared research activities and concretized through vertical projects tailored for specific partners

Exploitation Actions and Return expected

IMECH cooperated with POLIMI to collect and compare different experiences from several industries acting in the Lombardy region. This pilot provided an overview of the adopted measures, identified risks, and lessons learned, which were discussed by companies' representatives in the virtual event "The factory after COVID-19 pandemic" (held in collaboration with the DFA on the 14th of October 2021). After the end of the project, the collected experiences will be exploited by IMECH to support its partners in defining innovation strategies.

Following, interviews and assessment analysis with these companies have been performed, focusing specifically on the employees' re/up-skill procedures and financial impact. In particular, concerning the re/up-skill procedures, a virtual training demonstrator was developed and made available to IMECH partners. The demonstrator illustrates the opportunities connected with similar remote and flexible technologies, allowing IMECH to collect feedback from industries on their real applicability. For this purpose, a dedicated on-site event was held on the 28th of January 2022. Subsequently, the demonstrator has been made available at the SMILE laboratory, a didactic factory located at Kilometro Rosso (BG, Italy), for future didactics and innovation activities as well as for dissemination events towards industrial companies.

Finally, starting from the interests collected by IMECH partners, a preliminary industrial application was developed for SIAD and presented at a dedicated event on the 1st of December 2022. The industrial application triggered interest towards this technology, which has given rise to further projects. Indeed, SIAD is further investing in the Eur3ka application to develop the virtual training experience of the whole assembly procedure for each compressor in the SIAD portfolio. Moreover, IMECH is supporting another partner, Elettrocablaggi S.r.l., in implementing an augmented reality tool for the training of new resources (WARNING, an experiment funded by the EU project SHOP4CF). Based on these industrial experiences with extended reality technologies, IMECH aims to produce at least one publication by the end of 2023

Strategic future plans and commitment

Thanks to Eur3ka, IMECH has demonstrated the potentialities of digital technologies, boosting innovation in the companies it is consulting with and supporting the enhancement of the technological level of the private Italian industries and the EU ecosystem. This achievement is of strategic significance for IMECH. Indeed, digital applications and remote services gained considerable prominence following the pandemic experience and will most likely constitute crucial pillars to maintain competitiveness in the following years.

After the end of the project, IMECH will further invest in these topics, establishing a competent reference point to support the widespread of flexible and remote technologies. To this purpose, IMECH is committed to maintaining the collaboration established with TXT Group for implementing the Eur3ka virtual training tool. Indeed, this collaboration has also been pursued in the previously mentioned ongoing projects with SIAD and Elettrocablaggi S.r.l..

Fonden AM Lab Danmark[AM-HUB]

Partner Profile

Danish AM Hub is the focal point for Additive Manufacturing in Denmark. Our goal is to strengthen Danish business competitiveness by promoting the use of Additive Manufacturing and 3D printing. Our focus is on small and medium-sized businesses and developing new business models that induce growth, innovation, and sustainable solutions.

Danish AM Hub is a philanthropic fund initiated by The Danish Industry Foundation.

Danish AM Hub is part of WP2 and WP6 in the Eur3ka project

Exploitation Actions and Return expected

Danish AM Hub has published the report 'Sustainable Manufacturing of the Future: The Role of Additive Manufacturing' based on a combination of desk research and interviews and by also including inputs from the other Danish partners in the Eur3ka project (DTI and CIR). The overall purpose of the report is to provide knowledge and guidelines on how to establish public-private partnerships in the EU (at EU and national level) to utilise Additive Manufacturing (AM) as part of emergency preparedness for future crises.

The research has a two-fold focus, investigating the following overall questions:

1. *Lessons learned from the Covid-19 pandemic*
   What are the lessons learned from the Covid 3D Trust partnership in the US? And how does this apply to an EU context?
   How was AM emergency response activated how was it managed by government authorities across the EU?

2. *Insight into ongoing initiatives to establish public-private AM partnerships for crisis preparedness initiatives*
   What are the lessons learned from ongoing efforts of the Advanced Manufacturing Crisis Production Response (AMCPR) in the US, e.g., the development and implementation of a roadmap? And how does this apply to an EU context?

Are similar processes initiated in the EU/at national level, and how are they organised?

The report includes concrete cases of AM products developed/produced during the Covid-19 pandemic to illustrate both potentials of the technology and challenges related to its use in emergency response (e.g., concerning issues of certification, IP-right and insurance/responsibility).

Strategic future plans and commitment

Hubs communication platforms and channels.

Besides the report, Danish AM Hub has supported the Eur3ka agenda with several activities beyond the general communication activity in press releases, social media updates (and support for project partners social media activity) and posts in newsletters and on website); in our annual AM Report 2020 distributed to our Danish AM community and at our AM Summit 2021 (Scandinavia's biggest AM conference), in a webinar with America Makes addressing how AM has the potential to lead the Rebound of American Manufacturing caused by Covid-19 and by mentions in conversations with partners and at events (AM Summit 2021, LCA injection moulding seminar). Danish AM Hub will continue participate actively in disseminating and communicating the results of the Eur3ka project.

Create IT Real APS (CIR)

Partner Profile

Based in Aalborg, Denmark, Create it REAL (CIR) is a dedicated R&D team of ambitious professionals. With more than 10 years of experience within the 3D printing industry, we are one of the most knowledgeable companies in this field. CIR provides custom slicing software, online APIs, and electronics solutions to 3D Printer Manufacturers worldwide. We also work with ambitious vertical entrepreneurs to apply 3D Printing to their specific niche. Our expertise enables them to take full advantage of the benefits offered by this technology. Our role in the consortium has started broad but ended up with a focus on crowd production by the second generation of makers.

Exploitation Actions and Return expected

Makers are enthusiasts using the 3D printing technology, even though their motivation often starts as a hobby, the maker movement has major influence on the 3D printing market and industrial 3d printing solutions. This is due to the fact that those hobbyists can be counted by the millions and often engineers that do work in industries and they tend to push this maker culture into companies. Within this project CIR has identified 2 types of "makers" , the 1st generation makers, that have been tinkering with the technology for a while and the 2nd generation makers who have started recently. In the last few years 3D printing has become very affordable with printers starting around 200 euros and the growing number of 2nd generation makers has overtaken the 1st generation ones. There is a major difference with the 2nd generation is that the one buying a low cost printer sees the printer more as a toy than a tool.

It is within this context that CIR has identified millions of 3D printers bought by second generation makers. Those 3D printers are hardware very capable of achieving high quality prints should it be exploited correctly. This opens for huge opportunities to tap into millions of decentralized hardware. CIR has investigated ways to transform those low cost hardware into decentralized production farms to be able to quickly respond globally and decentralize in case of crisis. CIR has unveiled that with very little hardware change this was possible, even better, those hardware change could be printed on the 3d printer itself.

A technique for automatic extraction of parts has been invented and patented and CIR intends to exploit this both in its 3D printing commercial software and into existing commercial solutions for the 3D printing of insoles, a first contract of 90 000€ value has already been signed with 1 customer thanks to this feature. Making it the most cost effective insole solution on the market and allowing our customers (3D printer manufacturers) to add automatic extraction on their 3D printer for almost no extra hardware costs (No revenue estimate yet). Intention.

Another solution that CIR intends to exploit is the free online slicer (3D printing software) used to test maker behavior. Early tests of a premium version of it shows positive market acceptance and willingness to pay and CIR intends to exploit the premium version to create an extra revenue stream to the business as well as a strategic exposure to people stepping into 3D printing. CIR expects within the coming 2 years to reach about 10 000 users generating a yearly revenue of about 600 000 euros (5€ per month subscription). It is also expected that CIR will follow those customers in their journey to become a maker and that CIR will be able to direct them to other products like our Professional slicer (3D printing software), selling at a higher price point.

Strategic future plans and commitment

Strategic future plans are very linked to the fact that there is a huge potential into exploiting existing hardware already present in a decentralized way. This project has deeply influenced CIR view on the business as the number of low cost 3D printers represents a major percentage of the installed base of printers. After the project CIR intends to continue exploiting the current capabilities linked to automatic extraction and online 3D printing software. But CIR will also be looking for other solutions where existing already deployed hardware can be leverage as this is key for fast growth and deployment to the market.

Annex III: Assets

Digital Factory Alliance Exploitation Agreement

ANNEX I: ASSETS

A1.1 FOUNDING MEMBERS

The founding members will contribute the following assets to the establishment of the DFA.

A1.1.1 DFA SOFTWARE & SOLUTIONS

Project Results	Type	IP Owners	License
MASAI	Software	ATOS	GPLv2 Commercial License
DIHIWARE	Software	ENGINEERING - INGEGNERIA INFORMATICA SPA	

A1.1.2 DFA DEMONSTRATION FACILITIES

Project Results	Type	IP Owners	Personnel required
ZDM DIH	Demonstration Facilities	INNOVALIA	YES

General terms of use

The DFA demonstration facilities could make available to DFA members dedicated personnel facilitated by the DFA demonstration facilities. The use of equipment available and personnel will be regulated under the terms and conditions agreed with the DFA (personnel/hour, machinery costs) by the DFA demonstration facilities. The signatory institutions will decide the specific amount of resources or personnel they provide to each specific DFA demonstration activity.

The activities will be conducted in the DFA Demonstration Facilities, which shall be appropriate for the purpose of the activities and part of the DFA Experimental Facility Network. The personnel may make use of the parties' common services, infrastructure and scientific equipment. In any case, such use will be performed in accordance with the norms included in their rules for internal use and in strict compliance with any applicable regulation.

DFA Demonstration Facilities will include a wide range of manufacturing systems, functionality, services platforms and applications, including manufacturing assets and autonomous robots, as well as edge and cloud-based back office functionality. Personnel involved in demonstration and research & innovation activities should hold any mandatory health & safety certification and should fulfil any required training for use and/or manipulation of industrial equipment within the demonstration facility.

Specific terms of use

I 22 I

DFactory

Digital Factory Alliance Exploitation Agreement

A1.2 MEMBERS

A1.2.1 DFA SOFTWARE & SOLUTIONS

Project Results	Type	IP Owners and percentages of Ownership	License

A1.2.2 DFA DEMONSTRATION FACILITIES

Project Results	Type	IP Owners and percentages of Ownership	Personnel required

Specific Terms of use

| 24 |

DFactory

Digital Factory Alliance Exploitation Agreement

A1.3 COLLABORATORS

A1.3.1 DFA SOFTWARE & SOLUTIONS

Project Results	Type	IP Owners and percentages of Ownership	License

A1.3.2 DFA DEMONSTRATION FACILITIES

Project Results	Type	IP Owners and percentages of Ownership	Personnel required

Specific Terms of use

I 25 I

DFactory

Annex VI: IP Sharing Agreement

Digital Factory Alliance Exploitation Agreement

ANNEX II: IP SHARING

The percentages agreed upon by each partner have been calculated. It was accorded that the partners not participating directly towards technological intellectual property of the framework, or the academics as non-profit entities would not be financially involved in the exploitation agreement. Nevertheless, there is a concept set aside for them in consultancy and maintenance fee. The resulting percentages were accorded as follow:

	Framework	Proposed
ATOS	MASAI	100%
INNOVALIA	DSA Website ZDM DIH	100%
ENGINEERING	DIHIWARE	100%

I 26 I

DFactory