RE4DY

MANUFACTURING DATA NETWORKS

Title	D6.3 Skills development, knowledge transfer and communication
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Contributors	ENG, POLIMI, CORE, IDSA
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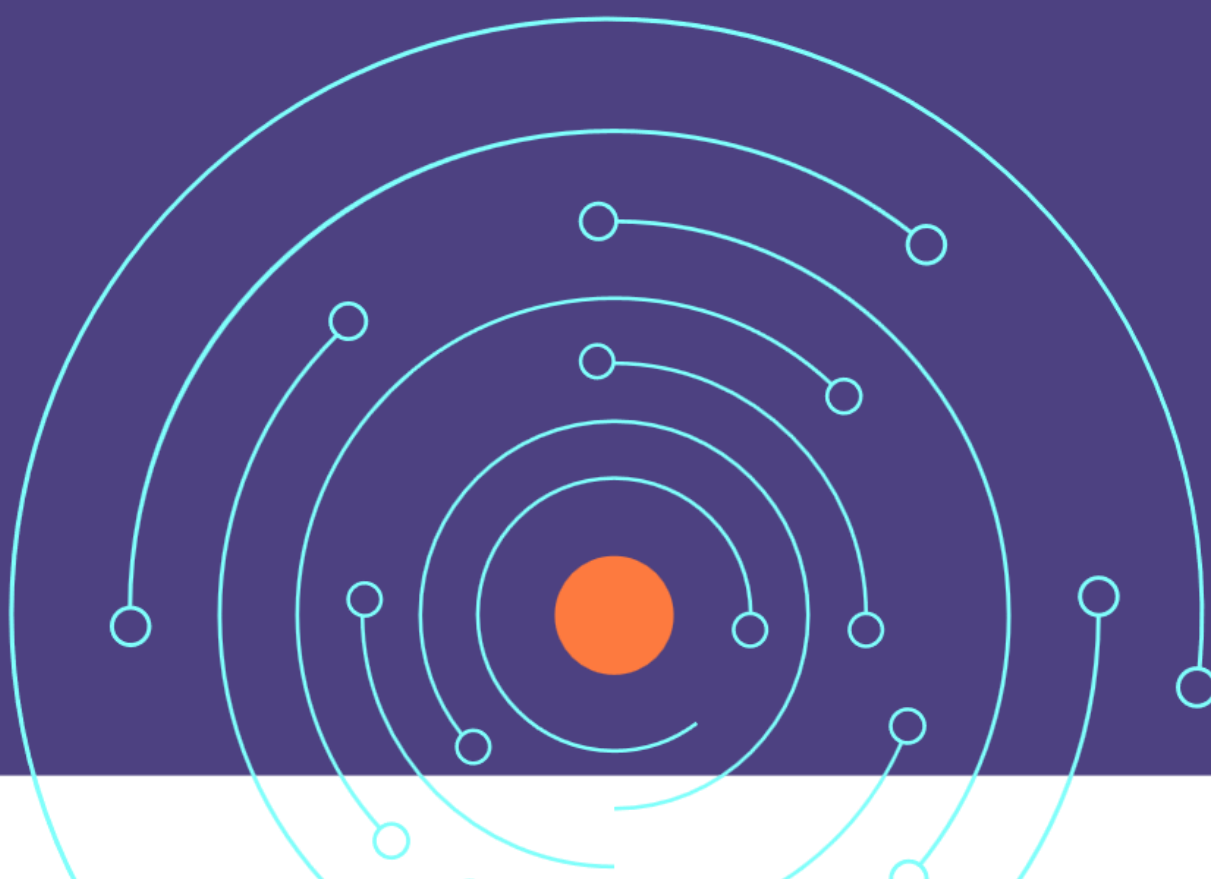
Version history

DATE	VERSION NAME	VERSION NUMBER
10/05/2024	Deliverable Structure / ToC (INNO)	V0
24/05/2024	Contributions: IDSA	V0.1
18/06/2024	Contributions INNO + CORE	V1
20/06/2024	Contributions POLIMI	V2
25/06/2024	Internal Review VIS & UIO	V3
09/07/2024	Final Version	V4

Acronyms List

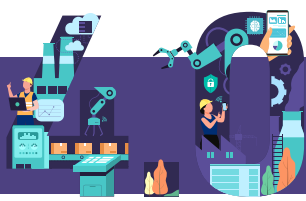| ACRONYM	Meaning
AI	Artificial Intelligence
AIDA	Attention, Interest, Desire, Action
AIOTI	Alliance for IoT and Edge Computing Innovation
AMRS	Asset Management Reporting System
BDVA	Big Data Value Association
CECIMO	European Association of Manufacturing Technologies
CPPS	Cyber Physical Production Systems
D&C	Dissemination and Communication
DFA	Digital Factory Alliance
DIH	Digital Innovation Hub
EFFRA	European Factories of the Future Research Association
EFNMS	European Federation of National Maintenance Societies
EU	European Union
EUDDIC	EU Data-driven Distributed Industrial Cluster
I4MS	ICT Innovation for Manufacturing SMEs
IDSA	International Data Spaces Association
IOT	Internet of Things
IPR	Intellectual Property Rights
KPI	Key Performance Indicator
P&R	Plug & Response
PR	Public Relations
TEF	Testing & Experimentation Facility
UPV	Universitat Politècnica de València
WEF	World Economic Forum
ZDM	Zero-Defect Manufacturing

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EXECUTIVE SUMMARY

The present document stands for Deliverable 6.3 (D6.3) on Skills Development, Knowledge Transfer and Communication Plan. This deliverable is the Final Version and Second Iteration of this type of deliverables and is the third deliverable of WP6. D6.3 is set to achieve two main objectives of RE4DY. On the one hand, those objectives related to the communication, dissemination and exploitation of the project, its results and partner contributions by putting together all the Dissemination and Communication (D&C) activities hitherto developed and implemented to maximize project visibility, partner mobilization, project and result replication potential and potential, real and future impact in business and standardization from month 1 to month 24 (M1-M24). On the other hand, those objectives related with the skills development by elaborating a training plan which fulfils the European Commission standards, gathering all the advances in the skills development task of WP6 executed from month 1 to month 24 (M1-M24).

In D6.1, the First Version of Skills Development, Knowledge Transfer and Communication Plan deliverables, it was specified that, to ensure the implementation of this strategy, the project consortium set up a professional PR office led by the DFA (Digital Factory Alliance – digitalfactoryalliance.eu), identified six target audiences' groups, and put in place multiple communication channels and training tools. Within this structure, concrete communication actions were planned., and in the present deliverable D6.3 those concrete and planned communication actions are reviewed. Overall, the D&C plan defined in D6.1. This plan began with the development of RE4DY project Visual Communication actions e.g. branding, communication materials, website, etc. That were properly showcased in D6.1 and used throughout the first 24 months of the RE4DY project D&C. Following with the D&C plan, the RE4DY D&C team together with the PR Office led by the DFA, not only they have encouraged collaboration with similar EU Initiatives and projects as compromised in D6.1, but they have also implemented several project clustering activities to adequately orchestrate the symphony of retaining European manufacturing competitiveness in the era of Industry 4.0. These communication activities have been executed in three main levels as the present D6.3 document will showcase: General Project Communication, Online Project Communication and Offline Project Communication, together with Project Clustering Activities.

At the same time, the Plan put the focus on the development of new digital skills which were initially expected to provide a high value to the companies, moving them towards a more technological and connected environment. Consequently, the outlined digital skills and profiles will be deepened in the present document.
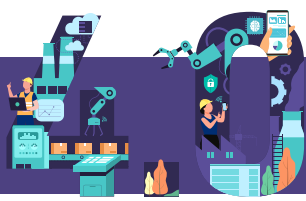
1 Introduction

One of the RE4DY objectives is to keep internal and external audiences, including media and the public, informed in a strategic and effective manner. The main activities executed to achieve this objective are dissemination and communication activities. These activities help promote the creation of communities and interest groups, while also contributing to the propagation and multiplication of RE4DY project awareness and knowledge.

The D&C of the RE4DY project is crucial for several reasons. First, dissemination and communication activities enhance the visibility and impact of the project's outcomes, ensuring that the knowledge generated reaches a broad audience, including stakeholders, policymakers, and the public.

This not only promotes transparency but also encourages the adoption of new innovations and practices. At the same time, effective project communication helps demonstrating the value and relevance of the work achieved and the results developed within the project and among the project partners.

Additionally, dissemination and communication activities foster collaboration and knowledge exchange, leading to enhanced collective expertise and the potential for further advancements.

Ultimately, well-executed dissemination and communication strategies amplify the societal and scientific benefits of a project, maximizing its overall effectiveness and success.

1.1 Purpose & Scope

Deliverable 6.3 is the third and final report of WP6 "Skills development, knowledge transfer and communication plans", due on month 24 of the project. This deliverable reports on the communication strategy and action plans, presenting an overarching three-phase strategy to communicate the plan and actions that feed into future achievements and results of the tasks:

- 6.1: Awareness raising, industrial demonstrations, communication and PR office.
- 6.2: Didactic & Learning Factory Network Academy and European Network of DIHs.
- 6.3: Impact analysis & commercial exploitation.
- 6.4: Value network & data space business development

2 Dissemination & Communication actions

RE4DY addresses the full range of potential users and uses along with the related issues concerning the dissemination, exploitation and management of intellectual property rights (IPR), by proactive planning and agreements. The following sections describe in detail the communication actions and tools of the dissemination used in the RE4DY Communication strategy.

As it was mentioned in the D6.1, the **Communication objectives are**:

(i) To reach to the public and raise awareness about the projects, its expected results, outcomes and impacts within defined target groups,

(ii) to make the project a valid source of information and,

(iii) to create synergies and exchange experience with projects and groups active in the field, to join efforts and maximize common potential.

On the other hand, the **Dissemination objectives** are:

(i) to create public awareness and generate scientific interest;

(ii) to directly involve stakeholders that could help bridging the gap between RE4DY and its market application;

(iii) to maximise the impacts of the project achievements;

(iv) to diffuse acquired knowledge, methodologies and technologies developed and tested during the project, and

(v) to facilitate cooperation with other projects.

Following with the among mentioned D&C objectives, the RE4DY project has worked following an overall **project timeline** to structure the D&C Actions in four stages following the AIDA model (Awareness, Interest, Desire, Action). Below the AIDA model-based D&C Strategy can be visually viewed as of D6.2, the second version of the Skills development, knowledge transfer and communication plan deliverable:
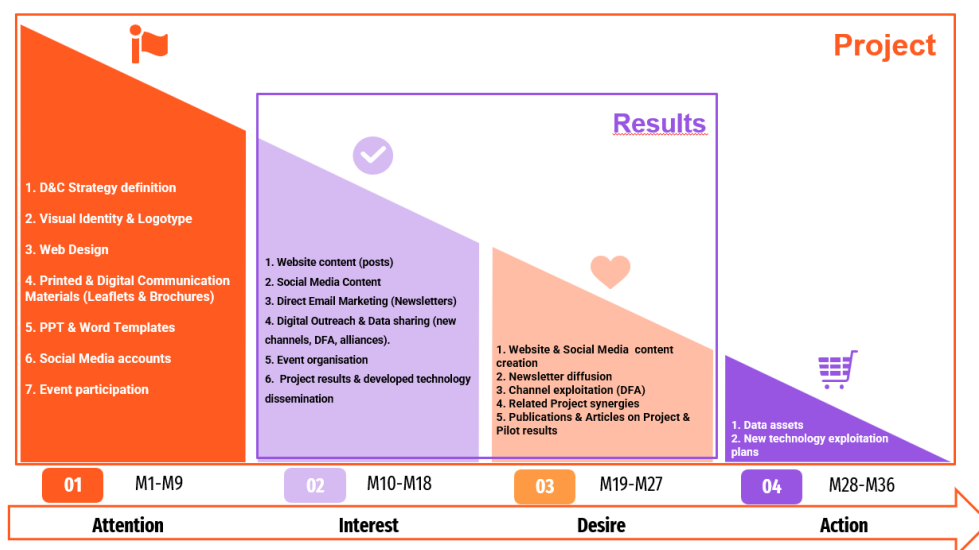
Figure 1. AIDA model-based RE4DY project D&C Strategy
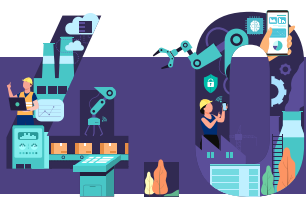
Until month 24, the stages that the RE4DY project D&C strategy has followed are:

1. **Awareness / Initial Phase / M1-M9:** to build awareness for RE4DY, making the project visible and recognisable, sharing its objectives, values and technological innovation(s). Visual identity and logotype, templates website and social media accounts have been set. Channels & Tools: Website and social media.

2. **Interest / 1st Intermediate Phase / M10-M18:** the early results have been disseminated via publications and scientific papers to journals, to increase the interest to researchers and scientific communities, presenting in conferences and events. Communication actions have continued leveraging the potentials of social media, website and newsletters. Partnering with other projects is another important pursue during this phase. Channels & Tools: website, newsletters, social media, networks, publications.

At month 24, the RE4DY project is at the third D&C Strategy stage, as shown below:

3. **Desire / 2nd Intermediate Phase / M19-M27:** this phase is focusing on further engagement of the targeted audiences with the project. Dissemination of evolving results through events and publications are creating additional interest in RE4DY. Informing target markets about the technological breakthroughs and business benefits of RE4DY is also an important part of this phase that works as a preparatory stage for the final mature phase. <u>Channels & Tools</u>: website, newsletters, social media, networks, publications.

Finally, the pending stage of the D&C Strategy is the fourth stage, as explained below:

4. **Action / Mature-Final Phase / M28-M36:** this phase will focus on maximizing target market and industry awareness about RE4DY's exploitable results. All the results will be disseminated through the aforementioned channels. Communications and dissemination efforts will support the project's sustainability and its effective exploitation and market replication. All the efforts made in the previous phases will be leveraged in this final stage. <u>Channels & Tools</u>: website, newsletters, social media, events/conferences, videos, publications, articles, data

The D&C activities that correspond to the fourth and final stage of the D&C activities will be detailed in the final deliverable of WP6, D6.5.

For the present document, deliverable D6.3, the D&C Actions executed or planned throughout the RE4DY project have been categorized in three levels based on the channels and purpose of the D&C Action Category. Each D&C Action will include the following sub-sections: Activity Description, Timeline & Duration of the activity, Message Delivered, Audiences Targeted, D&C Strategy Stages impacted, D&C KPI benefited,
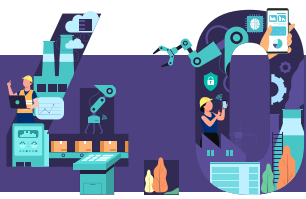
2.1. General Communication

The first D&C Action Category is "General Communication". This category is transversal as the results of General Communication actions are present in both online and offline D&C activities.

2.1.1. Branding

<u>Activity Description</u>

As part of the project D&C actions from the first-year hammer to disseminate project concepts, ideas and expected results, the RE4DY D&C team worked on a branding kit that included project logos, colours, document templates (for deliverables and presentations), newsletter templates, and Social Media resources. A set of logos and designs items has been created to be used for website, social media accounts, leaflets, rollups, events setting and other occasions. By the first month into the project, the following communication materials are generated: Logo kit, social network resources (headers and avatars), PowerPoint Presentation template, Word template and Newsletter template.

First, the RE4DY logo kit:

Figure 2. RE4DY Logo kit

Secondly, the RE4DY Power Point Template:
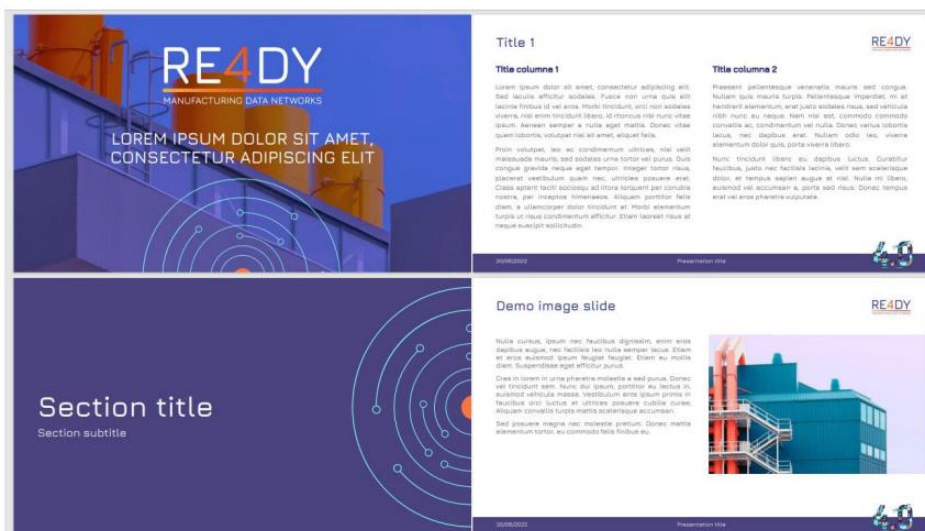
Figure 3. RE4DY Power Point Template

Third, the RE4DY Word document template:
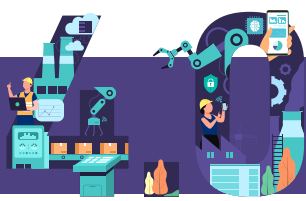
Figure 4. RE4DY Word Template

Fourth, the RE4DY newsletter template:
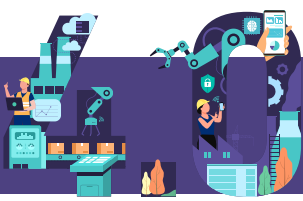
Figure 5. RE4DY Newsletter Template

And finally, the RE4DY project social media resources, for LinkedIn:
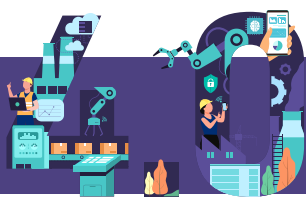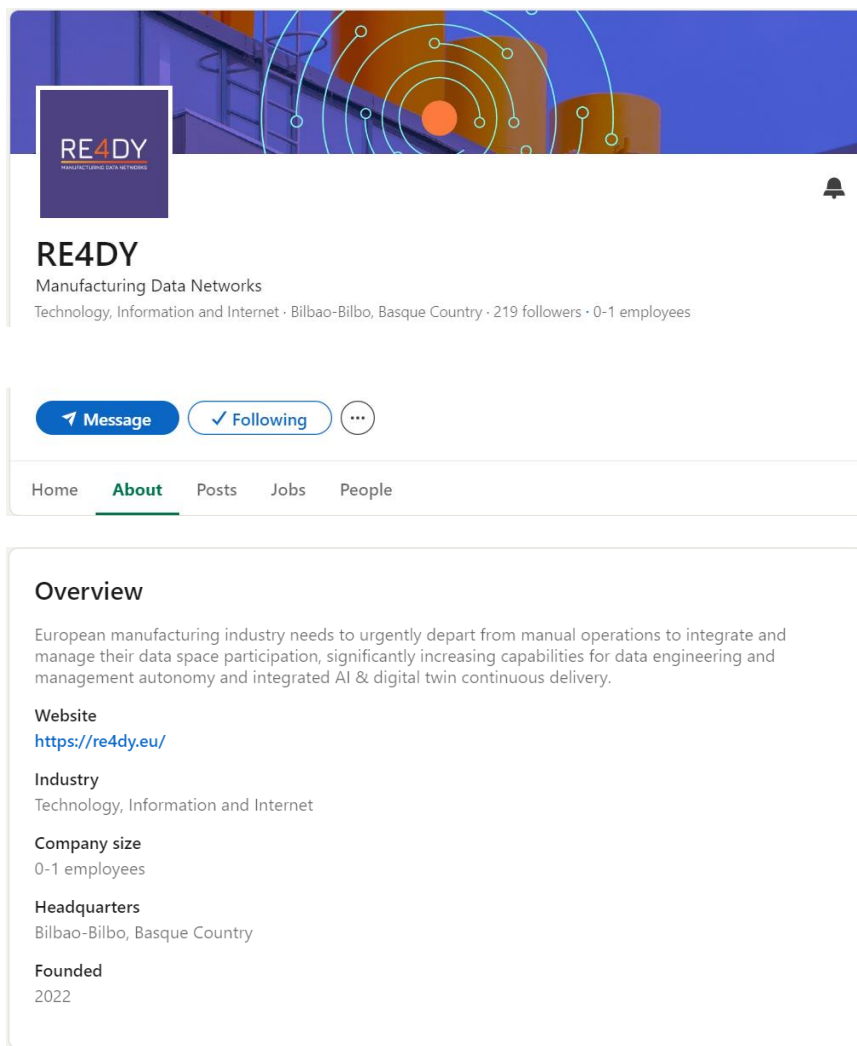
Figure 6. RE4DY project LinkedIn Branding

On the other hand, for Twitter / X:
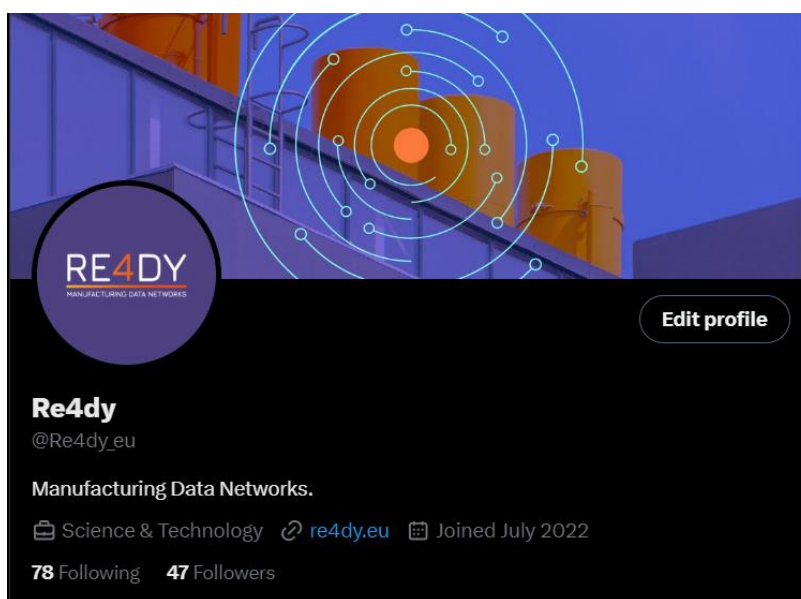
Figure 7. RE4DY project Twitter / X
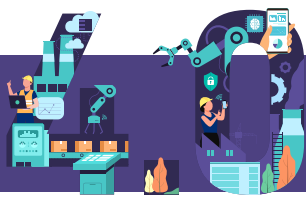
Timeline & Duration of the activity.

All the Branding actions and activities (logo kit, Power Point & Word Templates, Newsletter Template and Social Media Resources) will be used throughout the entire RE4DY project and beyond,

Message Delivered

The logos and set of communication materials are the fundamentals for all present and future communication activities. Partners regard them as communication standards set by the Work Package 1 leader and comply with the visual identity guidelines for all relevant dissemination activities. In addition, as established in D6.1, all the messages are delivered using the results of the hereby mentioned branding activities:

- ✓ Emphasize the developed new concepts, the circular chains and sustainability by design and AI in manufacturing for future research in the Academia and access to Open data repositories.
- ✓ Show RE4DY objectives and key results, technologies developed and validated, with respective benefits from Connected Factories and Digital 4.0 Continuum.
- ✓ Common ground, interests and actions in the fields of IoT, AI, Intelligent Manufacturing, Industrial Informatics.
- ✓ Value for them of the results and knowledge for benefits of being applicable to many sectors.
- ✓ Create awareness for the project's benefits for the society on sustainably designed products.
- ✓ Diffuse the knowledge and how the results can be used and enabling them to build their own RE4DY value networks.
- ✓ Scientific discoveries, knowledge on toolkits and Data as a Service and Federated Learning for resilient manufacturing and Supply Chain.
- ✓ Diffusion of knowledge and benefits of usage of the Action plan and adaptation of Industry 5.0 principles.

Audiences Targeted

As of D6.1, seven (7) different Target Groups may be impacted by D&C activities. The Branding activities impact and target all of them:

- ✓ Research & scientific community: Universities and Research Institutes (fields on AI, IoT, CPPS, Sustainable production, etc).
- ✓ Manufacturing EU sectors linked to RE4DY pilots: machine and cutting tool industries, automotive sector, mega factories and eBattery industries, aeronautics sector.
- ✓ Related Projects with similar research activity and values as RE4DY.
- ✓ EU Organisations, Financial Actors & Policy Makers: representatives of national bodies/ministries, EC and other Institutions.
- ✓ General Public & Media: EU citizens, online and offline Media, NGOs and other that have general interest in technology, innovation and engineering.
- ✓ Associations, alliances & DIHs as DARIO, I4MS, EFNMS, EFFRA, AIOTI, ZDM, DFA, CECIMO, BDVA, IDSA, DIHs.
- ✓ Manufacturing community, DFA network & DIHs to use AI toolkits and achieve Zero-X processes.
- ✓ Sustainable manufacturing platforms, DIHs & Research Organizations on Resilient, Sustainable and Human-Centric manufacturing.

D&C Strategy Stages impacted

All the D&C Strategy Stages are impacted by Branding activities, however, the D&C Strategy Stage where branding activities have a bigger relevance is Awareness, from Month 1 to Month 9, as branding activities help identify the RE4DY project and its early results.

D&C KPI benefited

From the D&C KPIs established in D6.1 and D6.2, branding activities benefit the consecution of the Dissemination Materials, Website, Newsletters, Twitter, LinkedIn, and Videos.
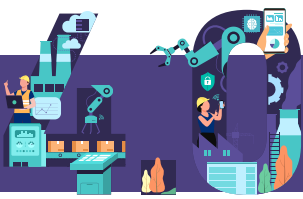
2.1.2. Communication materials

Activity Description

According to the D&C KPIs, the RE4DY project has been committed to develop a logo branding set, presentation template, project factsheet, project poster, project roll up and project infographic design. These communication materials have been developed as shown below:

First, the logo kit and branding set as shown in the previous section:

Figure 8. RE4DY Logo kit

Secondly, the RE4DY Power Point Template:
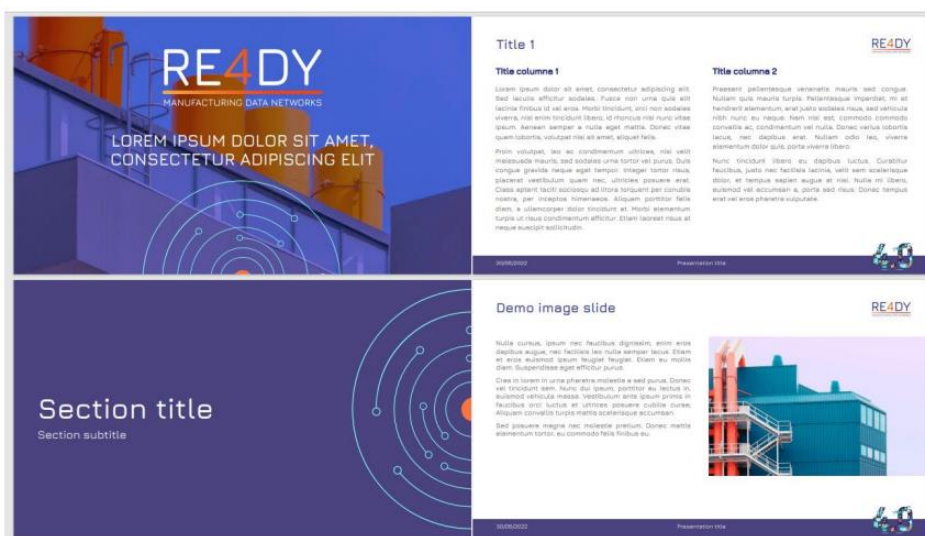
Figure 9. RE4DY Power Point Template

Third, the RE4DY Word document template:
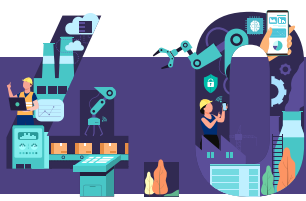
Figure 10. RE4DY Word Template

Fourth, the RE4DY project infographic design:
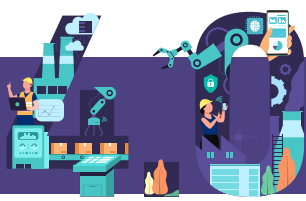
Figure 11. RE4DY project infographic design

Fifth and last, the RE4DY project factsheet:
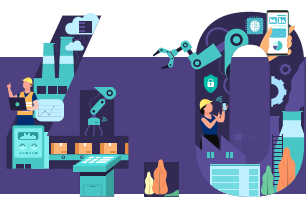
RE4DY
MANUFACTURING DATA NETWORKS

About RE4DY

European manufacturing industry needs to urgently depart from manual operations to integrate and manage their data space participation, significantly increasing capabilities for data engineering and management autonomy and integrated **AI & Digital Twin** continuous delivery.

RE4DY, European "Data as a Product" Value Ecosystems for Resilient Factory 4.0 Product and

Production Continuity and Sustainability program funded by Horizon Europe as a part of the green, circular, and digital transformation of the European manufacturing community will set foundation for integrating active resiliency strategies as part of **Zero-X sustainable manufacturing** processes respecting European digital values (excellence, privacy, trust) to improve individual and value chain flexibility.

12	**3**	**4**	**30**	**13**	**3**
M€	TESTING FACILITIES	PILOTS	PARTNERS	COUNTRIES	YEARS

Capabilities

- Data as Product and Digital Twin **Legal Framework & Value Chain Agreement Model (IPR)**

- **Open Digital 4.0 Continuum Toolkit & Marketplace** for Digital Thread & Cognitive Twin Fabrics

- **Standardized Engineering Framework** for Resilient Connected Factories 4.0 (Smart Manufacturing Processes)

- SME Friendly Resilient **Industrial Value Ecosystem Trials, Open TEFs & EDIHs**
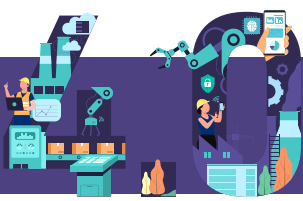
Technical Foundations

Static & dynamic executable cognitive digital twin (xCDT) commissioning tools

Trusted industrial AI & federated data continuous delivery tools

Knowledge quality tools, reusable models, common semantics & vocabularies 4.0

Distributed data fabric FAIRness, quality, sovereignty & compliance tools

Optimised distributed data edge-fog-cloud computation & networking

Pilot Ecosystems & Sectors of Application

1. Automotive
VWAE-CEIT extending current Catena-X automotive data space initiative

2. eBattery
AVL-FILL extending current AT IPCEI battery project

3. Machine tool and consumable
GF+/FAISA extending current Swiss Gaia-X testbed

4. Aeronautics
AVIO

Outcomes

1. Agility
2. Speed to Market
3. Productivity
4. About 1000 new jobs created
5. +84 M€ of Return of Investment

Consortium Partners

SIEMENS | netcompany intrasoft | VISUAL COMPONENTS | ENGINEERING | Atos | CEIT by asseco

JUNTA DE ANDALUCÍA SANDETEL | S21sec | UNIVERSITAT POLITÈCNICA DE VALÈNCIA | Consiglio Nazionale delle Ricerche | UNIVERSITAS Miguel Hernández | CERTH CENTRE FOR RESEARCH & TECHNOLOGY HELLAS

KU LEUVEN | CHALMERS | POLITECNICO MILANO 1863 | UiO University of Oslo | UNINOVA | DATAPIXEL QUALITY CONTROL ENGINEERING

NOVA id FCT | ATLANTIS ENGINEERING | core | Fill | VW | AVL

Avio Aero | +GF+ | fraisa | SWISS SMART FACTORY | INTERNATIONAL DATA SPACES ASSOCIATION | INDUSTRY COMMONS

linkedin.com/company/re4dy/
twitter.com/Re4dy_eu

re4dy.eu

Figure 12. RE4DY project factsheet:

<u>Timeline & Duration of the activity.</u>
All the communication materials will be used throughout the entire RE4DY project and beyond.
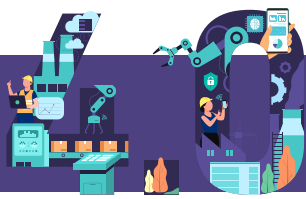
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✓ Create awareness for the project's benefits for the society on sustainably designed products.

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✓ Related Projects with similar research activity and values as RE4DY.

✓ EU Organisations, Financial Actors & Policy Makers: representatives of national bodies/ministries, EC and other Institutions.

✓ General Public & Media: EU citizens, online and offline Media, NGOs and other that have general interest in technology, innovation and engineering.

✓ Associations, alliances & DIHs as DARIO, I4MS, EFNMS, EFFRA, AIOTI, ZDM, DFA, CECIMO, BDVA, IDSA, DIHs.

✓ Manufacturing community, DFA network & DIHs to use AI toolkits and achieve Zero-X processes.

✓ Sustainable manufacturing platforms, DIHs & Research Organizations on Resilient, Sustainable and Human-Centric manufacturing.

D&C Strategy Stages impacted

All the D&C Strategy Stages are impacted by communication materials, however, the D&C Strategy Stage where communication materials have a bigger relevance is Awareness, from Month 1 to Month 9, as communication materials help identify the RE4DY project and its early results.

D&C KPI benefited

From the D&C KPIs established in D6.1 and D6.2, communication materials benefit the consecution of the Dissemination Materials, Website, and Events.
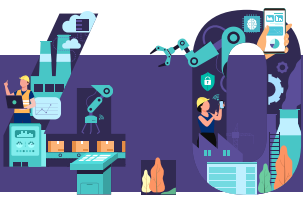
2.1.3. Academic Publications

Activity Description

Scientific community is one of the most important target audience groups in the communication strategy. Research partners have been encouraged to provide infrastructures and learning materials for higher education and training in the industrialists. Scientific essays and publications in scientific journals have been and are expected as the project develops and shows results, until the end of the project and beyond. Up to month 24, there have been 13 RE4DY-related Academic Publications:

Published Academic Publications: 7

Type of publication	Title	Author(s)	Owner Organizations	Issue	DOI	Link	Publication date	Publisher	ISBN
Book Chapter / Conference Paper	A readiness level assessment framework for Zero Defect Manufacturing (ZDM)	Foivos Psarommatis, Gokan May, Victor Azamfirei, Maria Chiara Magnanini, Daryl Powell	University of Oslo (SIRIUS Centre), University of North Florida Malardalen University, Politecnico di Milano, SINTEF Manufacturing AS	FAIM 2023. International Conference on Flexible Automation and Intelligent Manufacturing (pp. 451–459)	https://doi.org/10.1007/978-3-031-38165-2_53	Here	25 August 2023	Cham: Springer Nature Switzerland	Online: 978-3-031-38165-2 | Print: 978-3-031-38164-5
Book Chapter	Secure, Trusted, Privacy-Protected Data Exchange in an Edge-Cloud Continuum Environment	Salvador Cuñat Negueroles, Matilde Julian, Andreu Belsa, Clara I. Valero, Manuel Esteve and Carlos E. Palau	UPV	Book Name "IoT Edge Intelligence"	https://link.springer.com/book/9783031583872#overview	Here	2024	Springer	Electronic ISSN: 2199-1081

Book Chapter / Conference Paper	Human factors in the design of advanced quality inspection systems in the era of Zero-Defect Manufacturing	Victor Azamfirei, Foivos Psarommatis, Yvonne Lagrosen	Mälardalen University University of Oslo (SIRIUS Centre)	FAIM 2023. International Conference on Flexible Automation and Intelligent Manufacturing (pp. 797-804).	https://doi.org/10.1007/978-3-031-38165-2_92	Here	25 August 2023	Cham: Springer Nature Switzerland	Online: 978-3-031-38165-2 | Print: 978-3-031-38164-5
Journal Paper	Ecosystem Integration: the use of ontologies in integrating knowledge accross manufacturing value networks	Michela Magas, Dimitris Kiritsis, María Poveda-Villalón, Lan Yang Sten-Erik Björling, Andreas Rudenå	ICF, UIO	Front. Manuf. Technol. Sec. Digital Manufacturing. Volume 4 - 2024	doi: 10.3389/fmtec.2024.1331197	Here	21 March 2024	Frontiers	Pending
White Paper	White Paper on the Definition of Data Intermediation Services	Tervel Bobev, Vilte Kristina Dessers, Charlotte Ducuing, Michiel Fierens, Andrea Palumbo, Bert Peeters, Leander Stähler	KU Leuven	CiTiP Working Paper Series	NA	Here	31 October 2023	SSRN	NA

Journal Paper	A Systematic Analysis for Mapping Product-Oriented and Process-Oriented Zero-Defect Manufacturing (ZDM) in the industry 4.0 Era	Foivos Psarommatis, Gökan May	University of Oslo (SIRIUS Centre), University of North Florida	Sustainability 2023, 15, 12251	https://doi.org/10.3390/su151612251	Here	10 August 2023	MDPI Sustainability Journal	
Journal Paper	Envisioning maintenance 5.0: Insights from a systematic literature review of Industry 4.0 and a proposed framework	Foivos Psarommatis, Gökan May, Victor Azamfirei	University of Oslo, University of North Florida, Politecnico di Milano	Journal of Manufacturing Systems 68(4):376-399	10.1016/j.jmsy.2023.04.009	Here	may-23	ELSEVIER	

Table 1. RE4DY Published Academic Publications

Submitted Academic Publications: 2

Type of publication	Title	Author(s)	Owner Organizations
Journal Paper	Dynamic Capabilities for manufacturing resilience - a compass and industrial applications	Arpita Chari, Mélanie Despeisse, Björn Johansson, Jon Bokrantz, Sandra Morioka, Claudia Gohr, Johan Stahre	CHALMERS
Conference Paper	Characterizing the relationship between environmental sustainability and resilience in manufacturing	Arpita Chari, Mélanie Despeisse, Björn Johansson, Maria Holgado, Johan Stahre	CHALMERS

Table 2. RE4DY Submitted Academic Publications

In Preparation Academic Publications: 4

Type of publication	Title	Author(s)	Owner Organizations
Journal Paper	Non-supervised decentralized clustering for anomalies detection in manufacturing environments	Mirko Nardi, Lorenzo Valerio, Andrea Passarella	CNR
Conference Paper	Definition and implementation of the 5G UE AAS	Maria del Carmen Lucas Estaño	UMH
Conference Paper	Resilient Smart Connected Factory 4.0 Process Engineering – A RE4DY use-case approach	Luis Lourenço, Ruben Costa, Paulo Figueiras, Diogo Graça, Oscar Lazaro and Ricardo Gonçalves	UNINOVA
Conference Paper	Synthetic Data for Discrete Manufacturing: A Computational Modeling Approach towards Multivariate-Time-Series Analytics	Silvan Marti, Paulo Victor Lopez, Elham Rekabi Bana, Mélanie Déspeisse, Johan Stahre, Björn Johansson	CHALMERS

Table 3. RE4DY Academic Publications in Preparation
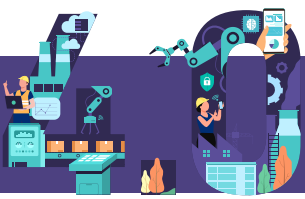
Timeline & Duration of the activity.

Academic Publications of RE4DY results written and developed by RE4DY partners and allies are expected to take place from month 6 during the project to until 12 months after the end of the project. Therefore, RE4DY-related Academic Publication activities last 30 months during the timeline of the project and 12 months more after its end.

Messages Delivered

✓ Emphasize the developed new concepts, the circular chains and sustainability by design and AI in manufacturing for future research in the Academia and access to Open data repositories.
✓ Project's benefits for the society on sustainably designed products, the impact of RE4DY, its news and results.

Audiences Targeted

✓ Research and scientific community: Universities and Research Institutes (fields on AI, IoT, CPPS, Sustainable production, etc).
✓ EU Organisations, Financial Actors and Policy Makers: representatives of national bodies/ministries, EC and other Institutions.
✓ General Public and Media: EU citizens, online and offline Media, NGOs and other that have general interest in technology, innovation & engineering.

D&C Strategy Stages impacted

The D&C Strategy Stages impacted by Academic Publications are:

✓ **Interest / 1st Intermediate Phase / M10-M18:** the early results will be disseminated via publications and scientific papers to journals, to increase the interest to researchers and scientific communities, presenting in conferences and events. Communication actions will continue leveraging the potentials of social media, website and newsletters. Partnering with other projects is another important pursue during this phase. Channels & Tools: website, newsletters, social media, networks, publications.
✓ **Desire / 2nd Intermediate Phase / M19-M27:** this phase will focus on further engagement of the targeted audiences with the project. Dissemination of evolving results through events and publications will create additional interest in RE4DY. Informing target markets about the technological breakthroughs and business benefits of RE4DY is also an important part of this phase that works as a preparatory stage for the final mature phase. Channels & Tools: website, newsletters, social media, networks, publications.

D&C KPI benefited

There is a specific D&C KPI of 10 Academic Publications by the end of the RE4DY project. Considering the Academic Publication activities hereby mentioned as of month 24, the Academic Publications KPI has been achieved with 13 Academic Publications: 7 already published, 2 Submitted for Publication, and 4 Under Preparation.
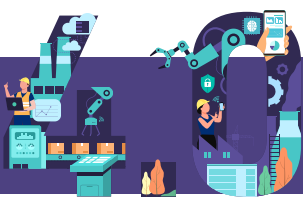
2.1.4. Earned media coverage

Activity Description

The PR office deliberately has planned and organised to work with media, to cover RE4DY and its campaign in regional and national press, magazines and web-based news media. Media coverage lends added to project credibility and its messages communicated, broadening the reach to public audiences and enhancing campaign visibility.

Timeline & Duration of the activity.

Earned media coverage is expected to happen throughout the RE4DY project & beyond.

Message Delivered

As established in D6.1, all the messages are delivered using the results of the hereby mentioned earned media coverage D&C activities:

✓ Emphasize the developed new concepts, the circular chains and sustainability by design and AI in manufacturing for future research in the Academia and access to Open data repositories.
✓ Show RE4DY objectives and key results, technologies developed and validated, with respective benefits from Connected Factories and Digital 4.0 Continuum.
✓ Common ground, interests and actions in the fields of IoT, AI, Intelligent Manufacturing, Industrial Informatics.
✓ Value for them of the results and knowledge for benefits of being applicable to many sectors.
✓ Create awareness for the project's benefits for the society on sustainably designed products.
✓ Diffuse the knowledge and how the results can be used and enabling them to build their own RE4DY value networks.
✓ Scientific discoveries, knowledge on toolkits and Data as a Service and Federated Learning for resilient manufacturing and Supply Chain.
✓ Diffusion of knowledge and benefits of usage of the Action plan and adaptation of Industry 5.0 principles.

Audiences Targeted

As of D6.1, seven (7) different Target Groups may be impacted by D&C activities. Earned media coverage impacts and targets all of them:

✓ Research & scientific community: Universities and Research Institutes (fields on AI, IoT, CPPS, Sustainable production, etc).
✓ Manufacturing EU sectors linked to RE4DY pilots: machine and cutting tool industries, automotive sector, mega factories and eBattery industries, aeronautics sector.
✓ Related Projects with similar research activity and values as RE4DY.
✓ EU Organisations, Financial Actors & Policy Makers: representatives of national bodies/ministries, EC and other Institutions.
✓ General Public & Media: EU citizens, online and offline Media, NGOs and other that have general interest in technology, innovation and engineering.
✓ Associations, alliances & DIHs as DARIO, I4MS, EFNMS, EFFRA, AIOTI, ZDM, DFA, CECIMO, BDVA, IDSA, DIHs.
✓ Manufacturing community, DFA network & DIHs to use AI toolkits and achieve Zero-X processes.
✓ Sustainable manufacturing platforms, DIHs & Research Organizations on Resilient, Sustainable and Human-Centric manufacturing.

D&C Strategy Stages impacted

All the D&C Strategy Stages are impacted by earned media coverage, however, the D&C Strategy Stage where earned media coverage have a bigger relevance is Desire, from month 19 to month 27, where the RE4DY project disseminates evolving results through events and publications, creating additional interest in RE4DY, as well as informing target markets about the technological breakthroughs and business benefits of RE4DY.

D&C KPI benefited

From the D&C KPIs established in D6.1 and D6.2, earned media coverage benefit the consecution of the RE4DY articles KPIs, especially for the "other media articles" concept-based D&C KPI.
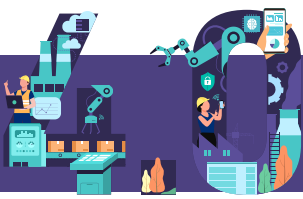
2.2. Online Communication

Online communication refers to exchanging information and ideas through electronic communication technologies, such as the internet, websites, social media platforms, and messaging apps. As a result, the second D&C Action Category is "Online Communication". This category uses digital channels.

2.2.1. Website

Activity description

In month 6, the first version of the RE4DY website was already available. The RE4DY website includes a responsive design and therefore the display adapts to all devices. The website serves as the information hub and ultimate reference for all the project activities updates, playing a key role in the online campaign and for communicating online performance evaluation.

The home page is structured to demonstrate the mission statement, project basic information, RE4DY network map, events and news items, an interactive part to attract webpage visitors to subscribe to newsletters and contact information. The initial RE4DY project website included the following sections: Scope, Mission, Objectives and Partners, together with a footer that includes direct access to LinkedIn, Twitter / X, Privacy Policy and Cookies.

Figure 13. RE4DY Website. Version 1

Initially from M1 to M9 the project website included the following sections: Scope, Mission, Objectives and Partners. After the M9 Review, some changes were applied into the website: By month 12, the D&C team incorporated more sections. First, the website added a contact email into the RE4DY website footer. Secondly, the website added 2 more sections: News (including project Articles) and Results (for project results). In fact, the Results section at M24 includes two subsections with Academic Publications and (public) Deliverables. Before M36, the D&C team plans to add Videos and Toolkit subsections into the Results section.

Regarding the impact of the RE4DY website, the website has received more than 1.1K visitors:
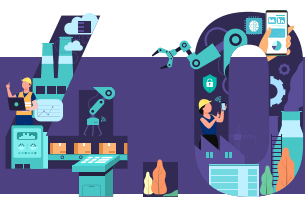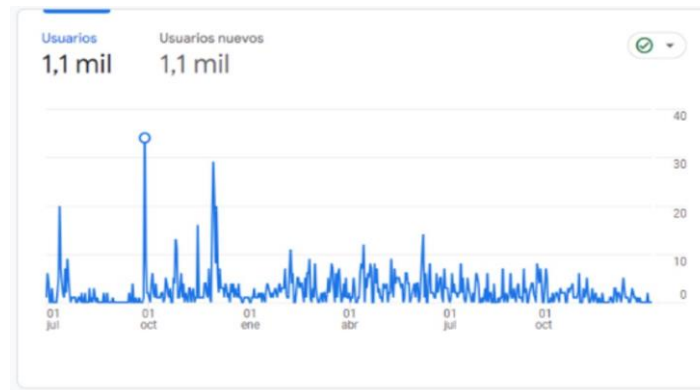
Figure 14. RE4DY website visits

In the News section, the D&C team has included the RE4DY   articles, some of them below:

Date	Title	Link
25/09/2023	Some facts about RE4DY	Here
25/09/2023	What is RE4DY?	Here
25/09/2023	Know more about the RE4DY Pilots and use cases!	Here
25/09/2023	HORIZON Projects unite and spark innovation in European Industries	Here
25/09/2023	The #GeneralAssembly of the RE4DY project is here!	Here
25/09/2023	Thank you to all our project partners for your participation and assistance in the July 2023 General Assembly in Biel!	Here
25/09/2023	A Readiness Level Assessment Framework for Zero Defect Manufacturing (ZDM)	Here
26/09/2023	RE4DY has been present in 2023 EFFRA hosted Manufacturing Partnership Day	Here
09/11/2023	RE4DY To Talk about Industry Challenges on IP, Taxonomies & Ontologies? Check our video out!	Here
10/06/2024	🔺🔻 LATEST RE4DY NEWS 🔺🔻 General Assembly in Gurten, Austria	Here

Figure 15. RE4DY Website Articles & News

Therefore, there has been a total of **10 RE4DY website articles** published. In addition, in the RE4DY Results section, at the [Publications](#) sub-section some RE4DY-related published and public Academic Publications can be found (4):

- [A readiness level assessment framework for Zero Defect Manufacturing (ZDM)](#)
- [Human factors in the design of advanced quality inspection systems in the era of Zero-Defect Manufacturing.](#)
- [A Systematic Analysis for Mapping Product-Oriented and Process-Oriented Zero-Defect Manufacturing (ZDM) in the Industry 4.0 Era](#).
- [White Paper on the Definition of Data Intermediation Services.](#)

Timeline & Duration of the activity.

The RE4DY project website is expected to be used as a D&C activity throughout the RE4DY project & beyond.

Message Delivered

As established in D6.1, all the messages are delivered using the results of the hereby mentioned RE4DY project website D&C activities:

- ✓ Emphasize the developed new concepts, the circular chains and sustainability by design and AI in manufacturing for future research in the Academia and access to Open data repositories.
- ✓ Show RE4DY objectives and key results, technologies developed and validated, with respective benefits from Connected Factories and Digital 4.0 Continuum.
- ✓ Common ground, interests and actions in the fields of IoT, AI, Intelligent Manufacturing, Industrial Informatics.
- ✓ Value for them of the results and knowledge for benefits of being applicable to many sectors.
- ✓ Create awareness for the project's benefits for the society on sustainably designed products.
- ✓ Diffuse the knowledge and how the results can be used and enabling them to build their own RE4DY value networks.
- ✓ Scientific discoveries, knowledge on toolkits and Data as a Service and Federated Learning for resilient manufacturing and Supply Chain.
- ✓ Diffusion of knowledge and benefits of usage of the Action plan and adaptation of Industry 5.0 principles.

Audiences Targeted

As of D6.1, seven (7) different Target Groups may be impacted by D&C activities. The RE4DY project website impacts and targets all of them:

- ✓ Research & scientific community: Universities and Research Institutes (fields on AI, IoT, CPPS, Sustainable production, etc).
- ✓ Manufacturing EU sectors linked to RE4DY pilots: machine and cutting tool industries, automotive sector, mega factories and eBattery industries, aeronautics sector.
- ✓ Related Projects with similar research activity and values as RE4DY.
- ✓ EU Organisations, Financial Actors & Policy Makers: representatives of national bodies/ministries, EC and other Institutions.
- ✓ General Public & Media: EU citizens, online and offline Media, NGOs and other that have general interest in technology, innovation and engineering.
- ✓ Associations, alliances & DIHs as DARIO, I4MS, EFNMS, EFFRA, AIOTI, ZDM, DFA, CECIMO, BDVA, IDSA, DIHs.
- ✓ Manufacturing community, DFA network & DIHs to use AI toolkits and achieve Zero-X processes.
- ✓ Sustainable manufacturing platforms, DIHs & Research Organizations on Resilient, Sustainable and Human-Centric manufacturing.

D&C Strategy Stages impacted

All the D&C Strategy Stages are impacted by the RE4DY project website, however, the D&C Strategy Stage where the RE4DY project website has a bigger relevance are Awareness and Desire, from month 1 to month 6, contributing to project branding; and from month 19 to month 27, where the RE4DY project disseminates evolving results through news, academic publications and deliverables, creating additional interest in RE4DY, as well as informing target markets about the technological breakthroughs and business benefits of RE4DY.

D&C KPI benefited

From the D&C KPIs established in D6.1 and D6.2, the RE4DY project website benefits the consecution of the RE4DY articles KPIs, especially for website KPI, the RE4DY articles KPI and the Academic Publications KPI.

2.2.2. Project Social Media Content

<u>**Activity description**</u>

The PR office has designed and implemented an integrated social media strategy to maximise the performance and engagement from the target audience, where Twitter (now X) and a LinkedIn Page, actively contribute to the RE4DY project visibility throughout and beyond the project lifecycle.

All actions in social media seek to generate synergies to bridge the gaps of communication as to connect the values of the project and related stakeholders on line with the values of target audience specified in the former chapter. As a result, social media actions aim to lay the groundwork for a future "RE4DY online community" that engage enough to move the project forward, dynamic enough to keep the conversations going among key stakeholders and effective enough to have its members stay in the upfront of the trend of big data in factories, smart engineering, big data pipelines, fog computing and other hot topics in Industry 4.0, etc. In addition, the social media networks also serve as an extension of the reach of the website. Each news published on the website are and will be re-referenced to social media accounts, attracting more traffic back to the website, thus generating more project visibility.

The RE4DY project uses project social media and the DFA social media for Project communication and result dissemination. In this section, the RE4DY project social media are analysed:

LinkedIn Page

The RE4DY project LinkedIn Page is established as a "Company Page". As of May 2024, it has 223 followers, as shown below:
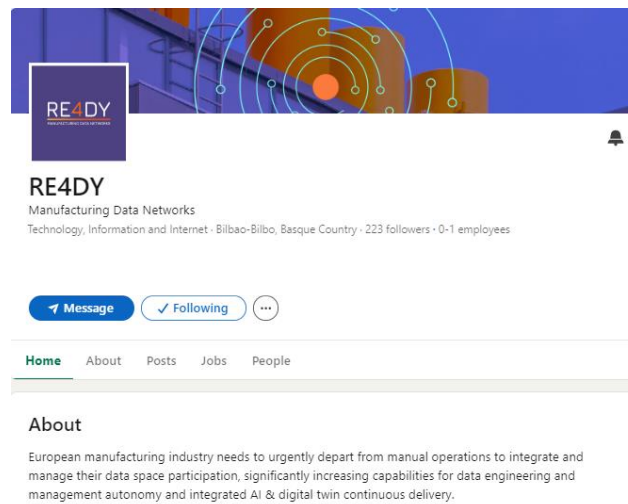
Figure 16. RE4DY Project LinkedIn Page

In this LinkedIn Page the RE4DY consortium is disseminating all types of content. First, in July 2023 the RE4DY project inaugurated the LinkedIn page with a post on the **General Assembly that took place in Biel,** Switzerland:
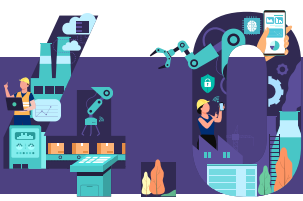
Figure 17. RE4DY LinkedIn Post about a General Assembly in Biel

Secondly, from August to December 2023, the entire RE4DY Project consortium has collaborated in the creation, generation and dissemination of the **Meet the Partners social media campaign** from the RE4DY social media (LinkedIn & Twitter) creating content (posts and tweets) and disseminating it into the RE4DY & DFA Social Media channels with over **11.000 impressions**.
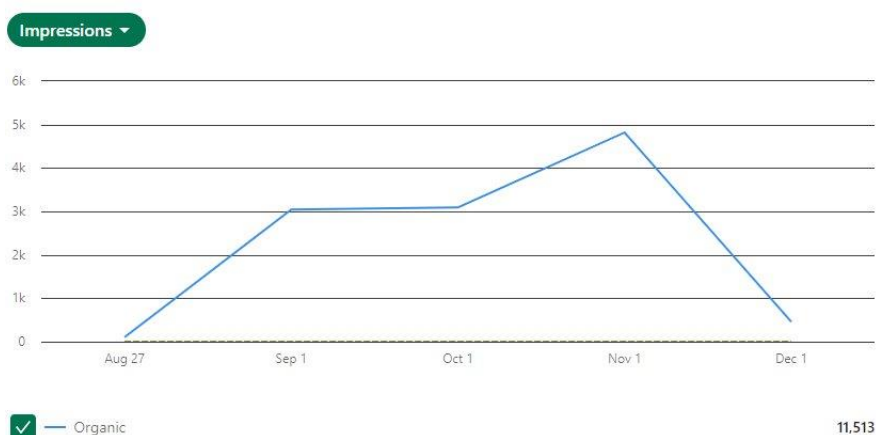
Figure 18. RE4DY LinkedIn Meet the Partners Campaign Impressions

Third, the RE4DY LinkedIn account re-posted about the **Horizon project clustering** activities:
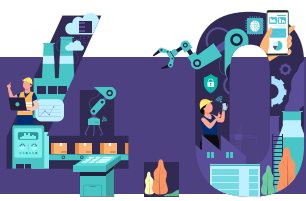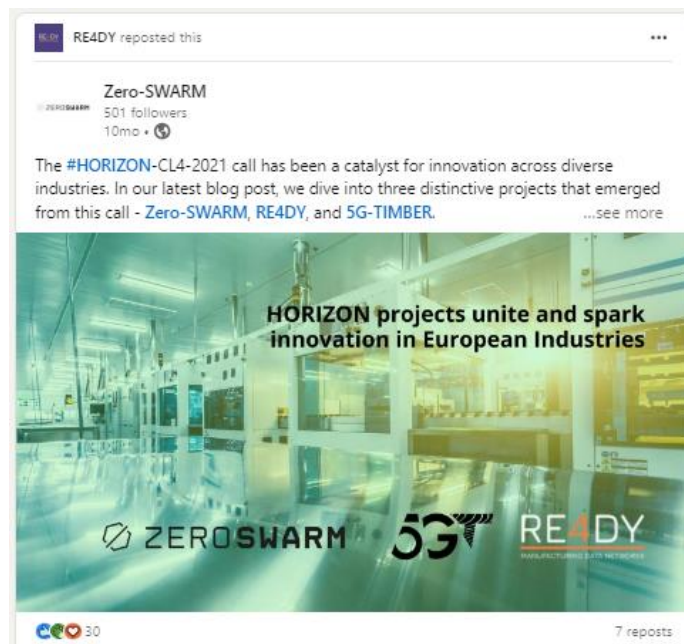
Figure 19. RE4DY LinkedIn Post about Project Clustering activities

Fourth, in October 2023, the RE4DY LinkedIn account re-posted about the **RE4DY-TO-TALK event** organized together with the DFA, Industry Commons Foundation and KU Leuven:
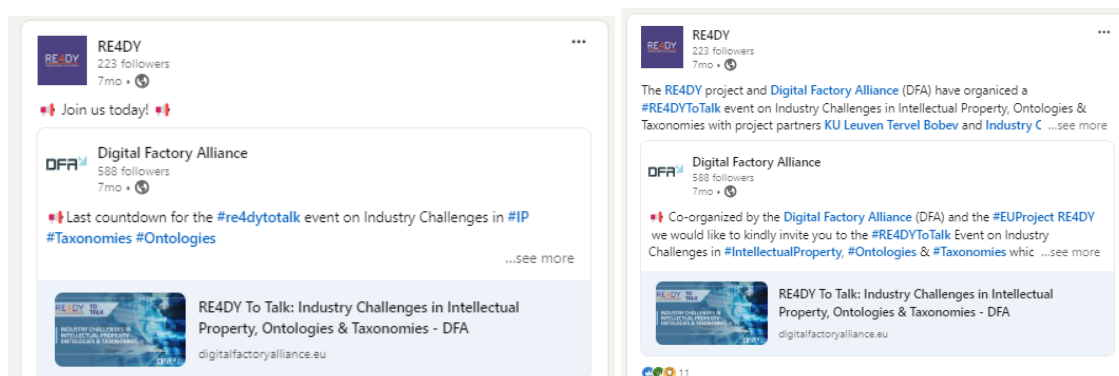
Figure 20. RE4DY LinkedIn Post RE4DY event

As well as several posts about RE4DY-related [interviews](#), [events](#), partner and project [presence in key partnership days](#), [academic publications](#) and [General Assembly](#) meetings.

Therefore, the RE4DY LinkedIn account has received over 814 page views, 310 unique visitors, and over 16.140 organic impressions in content posts, with a **total impact of project D&C activities on over 17000 people.**

X Account

The [RE4DY project Twitter / X Page](#), as of May 2024, it has 48 followers and 56 posts, as shown below:
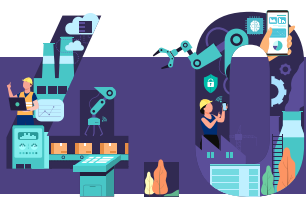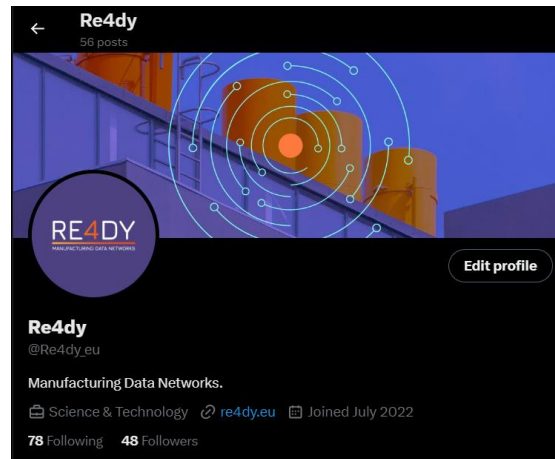
Figure 21. RE4DY X Account

The content posted in the RE4DY X Account goes very in line with the above-mentioned content in the RE4DY LinkedIn Page, with the X limitation of 28 characters, some examples:
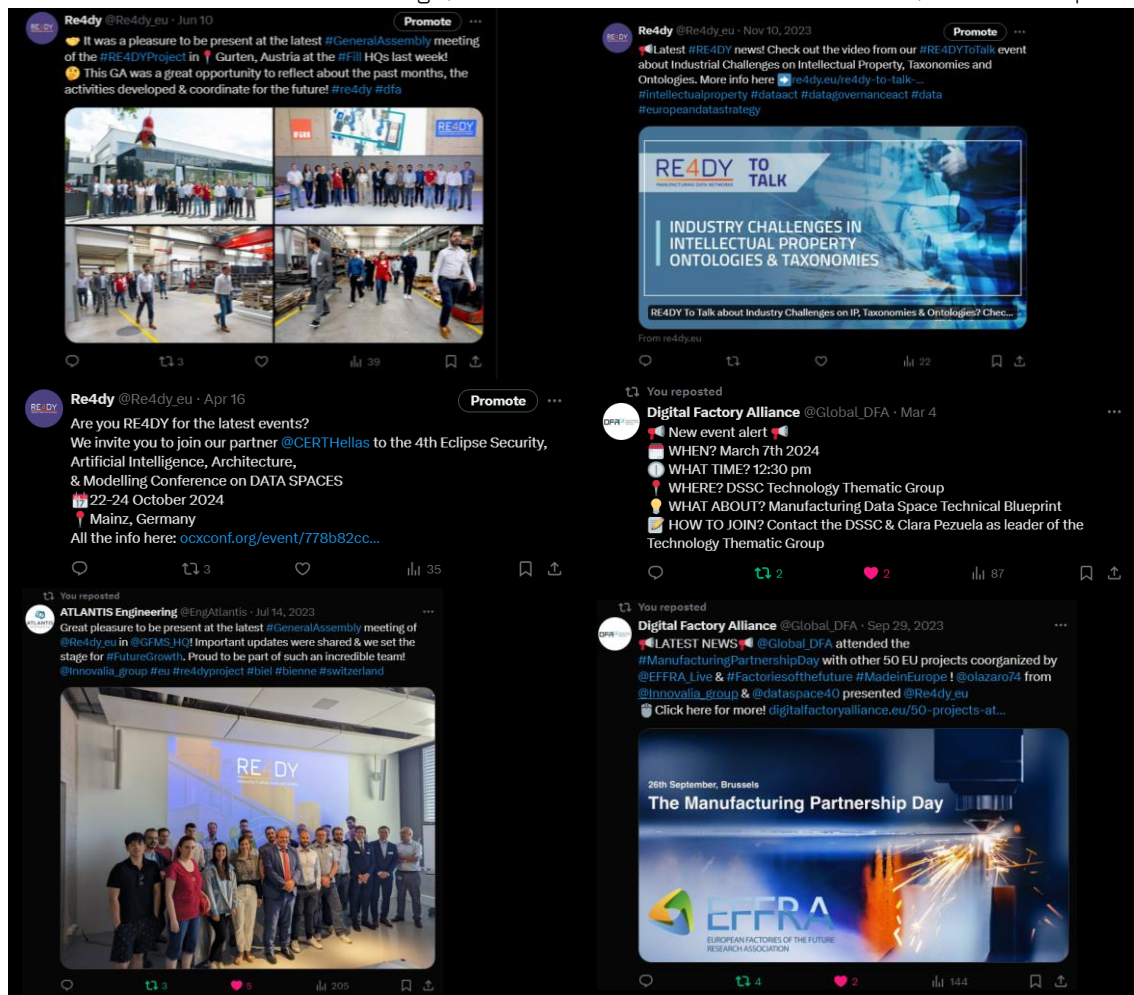
Figure 22. RE4DY X post examples

The average impressions of the RE4DY posts goes from 16 to 255, therefore, with an **average impact of 135 impressions per post in X.**

Timeline & Duration of the activity.

The RE4DY project social media are expected to be used as a D&C activity throughout the RE4DY project & beyond.
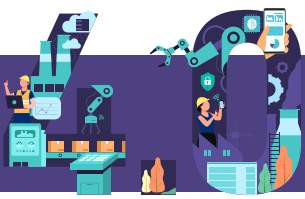
Message Delivered

As established in D6.1, all the messages are delivered using the results of the hereby mentioned RE4DY project social media D&C activities:

✓ Emphasize the developed new concepts, the circular chains and sustainability by design and AI in manufacturing for future research in the Academia and access to Open data repositories.

✓ Show RE4DY objectives and key results, technologies developed and validated, with respective benefits from Connected Factories and Digital 4.0 Continuum.

✓ Common ground, interests and actions in the fields of IoT, AI, Intelligent Manufacturing, Industrial Informatics.

✓ Value for them of the results and knowledge for benefits of being applicable to many sectors.

✓ Create awareness for the project's benefits for the society on sustainably designed products.

✓ Diffuse the knowledge and how the results can be used and enabling them to build their own RE4DY value networks.

✓ Scientific discoveries, knowledge on toolkits and Data as a Service and Federated Learning for resilient manufacturing and Supply Chain.

✓ Diffusion of knowledge and benefits of usage of the Action plan and adaptation of Industry 5.0 principles.

Audiences Targeted

As of D6.1, seven (7) different Target Groups may be impacted by D&C activities. The RE4DY project social media impacts and targets all of them:

✓ Research & scientific community: Universities and Research Institutes (fields on AI, IoT, CPPS, Sustainable production, etc).

✓ Manufacturing EU sectors linked to RE4DY pilots: machine and cutting tool industries, automotive sector, mega factories and eBattery industries, aeronautics sector.

✓ Related Projects with similar research activity and values as RE4DY.

✓ EU Organisations, Financial Actors & Policy Makers: representatives of national bodies/ministries, EC and other Institutions.

✓ General Public & Media: EU citizens, online and offline Media, NGOs and other that have general interest in technology, innovation and engineering.

✓ Associations, alliances & DIHs as DARIO, I4MS, EFNMS, EFFRA, AIOTI, ZDM, DFA, CECIMO, BDVA, IDSA, DIHs.

✓ Manufacturing community, DFA network & DIHs to use AI toolkits and achieve Zero-X processes.

✓ Sustainable manufacturing platforms, DIHs & Research Organizations on Resilient, Sustainable and Human-Centric manufacturing.

D&C Strategy Stages impacted

All the D&C Strategy Stages are impacted by the RE4DY project social media, however, the D&C Strategy Stage where the RE4DY project social media has a bigger relevance are Interest (M10-M18) and Desire (M19-M27), as they imply content creation, digital outreach and data sharing, event organization and dissemination, project result dissemination and related project synergy creation as well as the publication of project and pilot results.

D&C KPI benefited

From the D&C KPIs established in D6.1 and D6.2, the RE4DY project social media benefit the consecution of the planned KPI of 600 Twitter followers and 800 LinkedIn followers.
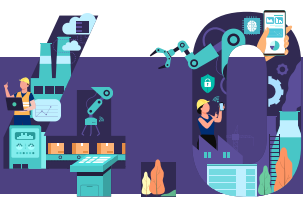
2.2.3. DFA

Activity description

RE4DY's Communication Strategy focuses on utilizing digital and physical communities as communication channels. The key reason to use communities as communication channels is that communities are longer lasting and have larger audiences than project communication channels. The Digital Factory Alliance (DFA) acts as the Public Relations and Communication Office (the PR office) established to be responsible for organising and conducting communication activities. The activities related with communication are being carried out through the Digital Factory Alliance (DFA) channels. The PR Office is led by DFA (https://digitalfactoryalliance.eu/), who are responsible for all the online presence, including website, social media networks, coordinates among partners, organises webinars and teleconferences, and newsletters.

The DFA constructed a mailing list used in internal communication for reporting as well as coordination activities. It also motivates advisory board to become ambassadors for the project, generating word of mouth effect. Through the DFA channels, RE4DY can have a direct impact open innovation and market driven innovation sectors, companies and developers. Industry is slowly learning that Industrial Internet, AI and big data can bring business value to factory operations. However, the replication of such pilots to other factories is still a very limited, complex, time consuming and expensive process. Initiatives like BOOST 4.0 and Qu4lity evidenced that Industry 4.0 lacks from a common global knowledge platform which facilitates the community to learn from and with the best, accelerating digital transformation leverage. As a result, the mission of the DFA is to take care that such community is nurtured, that such common foundations for data-driven factory transformations are set, shared and maintained and that successful big data driven pilots can leverage higher profits to industry in much shorter time scales. The four main pillars of the DFA are:

- Search of knowledge (Body of knowledge): Practical digital blackbelt guidance, 4ZeroX, 4Resilience, 4SMEs.
- Search for Solutions (Flagships initiatives): Large scale trials catalogue, digital factory network.
- Be part of a community (Innovation campus): Hands-on digital experimentation, Innovation catalogues.
- Search for services (Business network): Business development, Digital alliances, Digital product & solutions marketplace.

Figure 23. DFA Pillars

One of the DFA most important pillars is the communication throughout the individual factories, the intention is to maintain a data-driven network to support the digital development of its members. The main activities to be carried out search to fulfil the following DFA main objectives:

- Boosting, or accelerating, the innovation and commercial exploitation of digital products that could develop and unfold the paradigms of Zero-Defect Manufacturing and Autonomous Quality, according to the scope and objectives of the RE4DY Project.
- Involving as many European companies as possible, being these both big and small and medium, who perform competitive processes., to advance towards the abovementioned paradigms.
- Pursuing a fast Return on Investment in today's digital investments, without compromising any future decisions, needs and processes regarding digital transformation.
- Advancing towards specific Networking and International Ecosystem-building activities, such as, for example:
  - Having common certification processes of digital components and systems.
  - Hosting a common vision and shared architectures.
  - Promoting the use of Open Standards and common and open data models.

With this approach, the DFA serves as a multiplier for the project's dissemination and (pre)marketing activities being the only and unique communication and dissemination channel of results and information. The results obtained will be shown in the DFA marketplace. The DFA portal interacts with a wide variety of profiles like Testing and Experimentation Facilities (TEFs), Digital Innovation Hubs (DIHs), small or large manufacturing companies (SMEs), developers, researchers, and even other data or manufacturing-related EU projects. This portal attracts all these profiles due to its wide variety of services and open innovation vs. market-driven innovation approach. RE4DY can benefit from DFA's portal for News dissemination, Event participation for project communication, participation in DFA's Digital Corner and Vimeo channel for project dissemination videos, spread of RE4DY's results in DFA's newsletter among many other advantages. In addition, the DFA gives access to all RE4DY partners to some resources such as:

- its Innovation Catalogue with Use cases and Components,
- the ZX Marketplace to showcase innovative solutions to the worldwide digital manufacturing community,
- the Plug & Respond Network (P&R Network) for flexible adaptation of supply chain and distributed manufacturing capabilities to give fast response to crisis scenarios.

However, since M12 (May 2023) the audience numbers have increased, as shown in the table below:

Channel	DFA	RE4DY	TOTAL
Website	1800	1100	2900
Twitter / X followers	1212	48	1260
LinkedIn Page followers	588	223	811
LinkedIn Profile connections	997	NA	997
Newsletter subscribers	1100	174	1274
TOTAL AUDIENCE			7.242

Table 4. Total DFA 6 RE4DY Digital channel audiences

Therefore, the **total online audience reached combining the DFA and RE4DY digital channels reaches a total audience of over 7.200 people.**
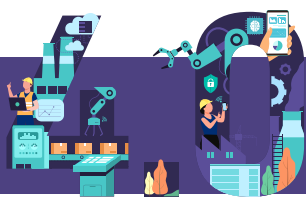
Timeline & Duration of the activity.
The DFA is expected to be used as a D&C activity throughout the RE4DY project & beyond.

Message Delivered
As established in D6.1, all the messages are delivered using the results of the hereby mentioned DFA D&C activities:
- ✓ Emphasize the developed new concepts, the circular chains and sustainability by design and AI in manufacturing for future research in the Academia and access to Open data repositories.
- ✓ Show RE4DY objectives and key results, technologies developed and validated, with respective benefits from Connected Factories and Digital 4.0 Continuum.
- ✓ Common ground, interests and actions in the fields of IoT, AI, Intelligent Manufacturing, Industrial Informatics.
- ✓ Value for them of the results and knowledge for benefits of being applicable to many sectors.
- ✓ Create awareness for the project's benefits for the society on sustainably designed products.
- ✓ Diffuse the knowledge and how the results can be used and enabling them to build their own RE4DY value networks.
- ✓ Scientific discoveries, knowledge on toolkits and Data as a Service and Federated Learning for resilient manufacturing and Supply Chain.
- ✓ Diffusion of knowledge and benefits of usage of the Action plan and adaptation of Industry 5.0 principles.

Audiences Targeted
As of D6.1, seven (7) different Target Groups may be impacted by D&C activities. The DFA impacts and targets:
- ✓ Research & scientific community: Universities and Research Institutes (fields on AI, IoT, CPPS, Sustainable production, etc).
- ✓ Manufacturing EU sectors linked to RE4DY pilots: machine and cutting tool industries, automotive sector, mega factories and eBattery industries, aeronautics sector.
- ✓ Related Projects with similar research activity and values as RE4DY.
- ✓ EU Organisations, Financial Actors & Policy Makers: representatives of national bodies/ministries, EC and other Institutions.
- ✓ General Public & Media: EU citizens, online and offline Media, NGOs and other that have general interest in technology, innovation and engineering.
- ✓ Associations, alliances & DIHs as DARIO, I4MS, EFNMS, EFFRA, AIOTI, ZDM, DFA, CECIMO, BDVA, IDSA, DIHs.
- ✓ Manufacturing community, DFA network & DIHs to use AI toolkits and achieve Zero-X processes.
- ✓ Sustainable manufacturing platforms, DIHs & Research Organizations on Resilient, Sustainable and Human-Centric manufacturing.

D&C Strategy Stages impacted
The D&C Strategy Stage where the DFA has a bigger relevance are Interest (M10-M18) and Desire (M19-M27), as they imply content creation, digital outreach and data sharing, event organization and dissemination, project result dissemination and related project synergy creation as well as the publication of project and pilot results.

In addition, the DFA has a big impact in the Action stage as the DFA is planned to be part of the RE4DY result exploitation process for asset exploitation.
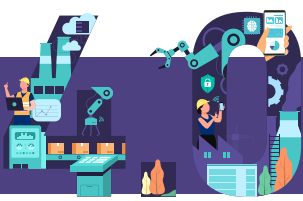
D&C KPI benefited

From the D&C KPIs established in D6.1 and D6.2, the DFA benefits the consecution of the planned KPI of 600 Twitter followers, 800 LinkedIn followers, the Other Media Articles KPI of 5, the Newsletter Campaigns KPI of 9, the Newsletter Subscriber KPI of 1000 subscribers, the RE4DY-organized Event KPI of 3 and the 8 video KPI.
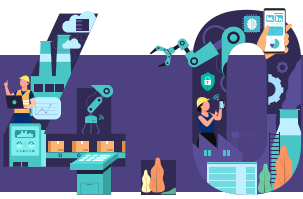
2.2.4. Newsletter

Activity description

A newsletter is a bulletin issues periodically to the members of a society or organization. In the case of the RE4DY project, the D&C Team has used 2 main communities: the DFA Newsletter subscribers and the RE4DY consortia mailing list. As a result, as of M24 of the project, the number of subscribers reaches 1.274 subscribers.

Channel	DFA	RE4DY	TOTAL
Newsletter subscribers	1100	174	1274

Table 5. RE4DY & DFA Subscribers

Regarding the content and number of Newsletter campaigns / posts, the RE4DY D&C Team, has delivered a total number of 4 Newsletters:

Figure 24. RE4DY & DFA October Newsletter
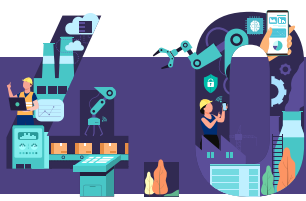
Figure 25. RE4DY & DFA November Newsletter

Figure 26. RE4DY Event Newsletter

And one final RE4DY Event Newsletter in May 2024 about the DATA SPACE 4.0 Final Event in Brussels, Belgium.

Timeline & Duration of the activity.
The RE4DY newsletter is expected to happen throughout the RE4DY project and end by M36 of the project.
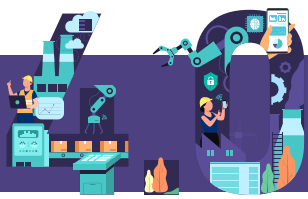
Message Delivered

As established in D6.1, all the messages are delivered using the results of the hereby mentioned RE4DY newsletter D&C activities:

- ✓ Emphasize the developed new concepts, the circular chains and sustainability by design and AI in manufacturing for future research in the Academia and access to Open data repositories.
- ✓ Value for them of the results and knowledge for benefits of being applicable to many sectors.
- ✓ Diffuse the knowledge and how the results can be used and enabling them to build their own RE4DY value networks.
- ✓ Scientific discoveries, knowledge on toolkits and Data as a Service and Federated Learning for resilient manufacturing and Supply Chain.
- ✓ Diffusion of knowledge and benefits of usage of the Action plan and adaptation of Industry 5.0 principles.

Audiences Targeted

As of D6.1, seven (7) different Target Groups may be impacted by D&C activities. The RE4DY newsletter impacts and targets:

- ✓ Research & scientific community: Universities and Research Institutes (fields on AI, IoT, CPPS, Sustainable production, etc).
- ✓ Manufacturing EU sectors linked to RE4DY pilots: machine and cutting tool industries, automotive sector, mega factories and eBattery industries, aeronautics sector.
- ✓ Related Projects with similar research activity and values as RE4DY.
- ✓ General Public & Media: EU citizens, online and offline Media, NGOs and other that have general interest in technology, innovation and engineering.
- ✓ Associations, alliances & DIHs as DARIO, I4MS, EFNMS, EFFRA, AIOTI, ZDM, DFA, CECIMO, BDVA, IDSA, DIHs.
- ✓ Manufacturing community, DFA network & DIHs to use AI toolkits and achieve Zero-X processes.

D&C Strategy Stages impacted

All the D&C Strategy Stages are impacted by the RE4DY newsletter, however, the D&C Strategy Stage where the RE4DY newsletter has a bigger relevance is Desire, from month 19 to month 27, where the RE4DY project disseminates evolving results through events and publications, creating additional interest in RE4DY, as well as informing target markets about the technological breakthroughs and business benefits of RE4DY.

D&C KPI benefited

From the D&C KPIs established in D6.1 and D6.2, the RE4DY newsletter mainly impacts Newsletter campaigns/post (9) and Newsletter subscribers (1000) KPIs.
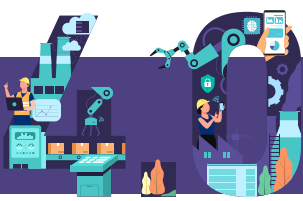
2.2.5. Video content

Activity description
Video content is any video format meant to entertain, educate, or inform an audience. By the same token, video content marketing is a strategy that involves producing useful and helpful video content to attract, nurture, and convert that audience.

In the case of RE4DY, there has been one published video (published at the DFA Vimeo channel and available here) up to M24. However, the RE4DY D&C Team has been working on the gathering of Pilot videos and there are a now a total number of 4 Pilot videos pending for its publication in the DFA Vimeo Channel, the RE4DY Results Website and RE4DY Social Media channels. In the future, the RE4DY D&C Team has also planned 2 more videos by the end of 2024. As a result, there will be by M30 a total of 7 videos published, when the Video KPI is of 8. Regarding the video views or impressions, the available video above mentioned and linked has up to 140 impressions.

Timeline & Duration of the activity
The RE4DY video content is expected to only take place during the RE4DY project and end by M36 of the project.

Message Delivered
As established in D6.1, all the messages are delivered using the results of the hereby mentioned RE4DY video content D&C activities:
- ✓ Emphasize the developed new concepts, the circular chains and sustainability by design and AI in manufacturing for future research in the Academia and access to Open data repositories.
- ✓ Common ground, interests and actions in the fields of IoT, AI, Intelligent Manufacturing, Industrial Informatics.
- ✓ Value for them of the results and knowledge for benefits of being applicable to many sectors.
- ✓ Diffuse the knowledge and how the results can be used and enabling them to build their own RE4DY value networks.
- ✓ Scientific discoveries, knowledge on toolkits and Data as a Service and Federated Learning for resilient manufacturing and Supply Chain.
- ✓ Diffusion of knowledge and benefits of usage of the Action plan and adaptation of Industry 5.0 principles.

Audiences Targeted
As of D6.1, seven (7) different Target Groups may be impacted by D&C activities. RE4DY video content impacts and targets:
- ✓ Research & scientific community: Universities and Research Institutes (fields on AI, IoT, CPPS, Sustainable production, etc).
- ✓ Manufacturing EU sectors linked to RE4DY pilots: machine and cutting tool industries, automotive sector, mega factories and eBattery industries, aeronautics sector.
- ✓ Related Projects with similar research activity and values as RE4DY.
- ✓ General Public & Media: EU citizens, online and offline Media, NGOs and other that have general interest in technology, innovation and engineering.
- ✓ Associations, alliances & DIHs as DARIO, I4MS, EFNMS, EFFRA, AIOTI, ZDM, DFA, CECIMO, BDVA, IDSA, DIHs.
- ✓ Manufacturing community, DFA network & DIHs to use AI toolkits and achieve Zero-X processes.

D&C Strategy Stages impacted

The main D&C Strategy Stages impacted by the RE4DY video content are Interest (M10-M18) and Desire (M19-M27) as video content shows project results and pilots.

D&C KPI benefited

From the D&C KPIs established in D6.1 and D6.2, the RE4DY video content mainly impacts the Video KPIs: 9 Videos posted and 50 views per video.
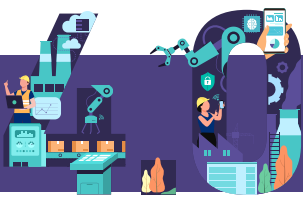
2.2.5. Datasets

Activity description

A data set (or dataset) is a collection of data. In the case of tabular data, a data set corresponds to one or more database tables, where every column of a table represents a particular variable, and each row corresponds to a given record of the data set in question. The data set lists values for each of the variables, such as for example height and weight of an object, for each member of the data set. Data sets can also consist of a collection of documents or files. In the open data discipline, data set is the unit to measure the information released in a public open data repository. The European data.europa.eu portal aggregates more than a million datasets. In the case of RE4DY, the list of datasets achieved by M24 are 10:

Dataset Name	Dataset Owner	Description of Dataset
Insights Hub Energy data	SSF	1 set of energy data combining CO2 footprint cumulated, current and Power cumulated and current
Insights Hub Environmental data	SSF	1 set of environmental data combining atmospheric pressure, humidity, temperature and vibration
POLIMI LAB4.0 Assembly Line Dataset	POLIMI TEF	5 sets of data collected from several station of Industry 4.0 Lab assembly line in ".csv" format including MES, energy and operational signals as well as sensors data
UR5e robot Controller	POLIMI TEF	1 set of data collected from ur5e RTDE controller in ".csv" format
ROSbag of UR5e robot movement and joint states	POLIMI TEF	1 set of ur5e simple pick and place task in as a ROSbag in ". bag" format including robot parameters and joint states
AAS Packages of POLIMI LAB4.0 Assembly Line stations	POLIMI TEF	The Asset Administration Shell package of the assembly line stations and ur5e robot in ".aasx" format
VW Logistics Knowledge Graph	VWAE	We are building the VW Logistics Knowledge Graph – this is data that maps the logistics dependencies on the manufacturing shop floor that can be also used in other use case scenarios and therefore works very well for the data marketplace
Supply Chain Reference Ontology (SCRO)	ICF	We will use the novel elements of this knowledge graph to amplify the Supply Chain Reference Ontology (SCRO) which is developed by the Industrial Ontologies Foundry and the IOF Core ontology and take those beyond the state of the art. These will be provided as reference data for use by all industry.
Legal Ontology of IP Rights	ICF	The Legal Ontology of IP Rights is another evolving data set that is applicable to any industrial scenario that requires legal aspects.
Resilience Ontology	CHALMERS+ICF	The Resilience Ontology is another one that applies for all industry.

Table 6. RE4DY Datasets

Timeline & Duration of the activity

The RE4DY dataset D&C activities are expected to only take place during the RE4DY project and end by M36 of the project.
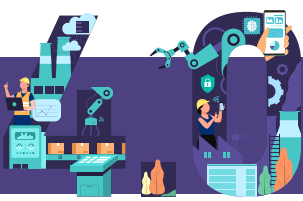
Message Delivered

As established in D6.1, all the messages are delivered using the results of the hereby mentioned RE4DY dataset D&C activities:

- ✓ Emphasize the developed new concepts, the circular chains and sustainability by design and AI in manufacturing for future research in the Academia and access to Open data repositories.
- ✓ Common ground, interests and actions in the fields of IoT, AI, Intelligent Manufacturing, Industrial Informatics.
- ✓ Value for them of the results and knowledge for benefits of being applicable to many sectors.
- ✓ Diffuse the knowledge and how the results can be used and enabling them to build their own RE4DY value networks.
- ✓ Scientific discoveries, knowledge on toolkits and Data as a Service and Federated Learning for resilient manufacturing and Supply Chain.
- ✓ Diffusion of knowledge and benefits of usage of the Action plan and adaptation of Industry 5.0 principles.

Audiences Targeted

As of D6.1, seven (7) different Target Groups may be impacted by D&C activities. RE4DY dataset D&C activities impacts and targets:

- ✓ Research & scientific community: Universities and Research Institutes (fields on AI, IoT, CPPS, Sustainable production, etc).
- ✓ Manufacturing EU sectors linked to RE4DY pilots: machine and cutting tool industries, automotive sector, mega factories and eBattery industries, aeronautics sector.
- ✓ Related Projects with similar research activity and values as RE4DY.
- ✓ General Public & Media: EU citizens, online and offline Media, NGOs and other that have general interest in technology, innovation and engineering.
- ✓ Associations, alliances & DIHs as DARIO, I4MS, EFNMS, EFFRA, AIOTI, ZDM, DFA, CECIMO, BDVA, IDSA, DIHs.
- ✓ Manufacturing community, DFA network & DIHs to use AI toolkits and achieve Zero-X processes.

D&C Strategy Stages impacted

The main D&C Strategy Stages impacted by the RE4DY dataset D&C activities are Desire (M19-M27) and Action (M28-M36) as datasets are exploitable project results.

D&C KPI benefited

From the D&C KPIs established in D6.1 and D6.2, the RE4DY dataset D&C activities mainly impacts the 8 Datasets KPI.
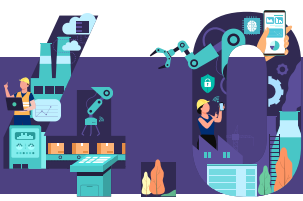
2.3. Hybrid & Offline Communication

Offline communication is quite simply, exactly what it sounds like, communicating offline. This means without the use of the internet. Unfortunately for some, this can mean taking part in human interaction. Hybrid communication combines onsite and online communication.

2.3.1. Event organization

Activity description

The events already organized by the DFA and RE4DY collaboration are all hybrid education events:

- October 31st, 2023. RE4DY To Talk Event about Industry Challenges in Intellectual Property Ontologies and Taxonomies

Figure 27. RE4DY To Talk Event – RE4DY Demonstration Event

- December 1st, 2023. How to drive business value with Digital Product Passports & Data Spaces.

Figure 28. RE4DY Event: How to drive business value with Digital Product Passports & Data Spaces

- December 5th, 2023. 4ZDM Webinar: Transforming Manufacturing Together – Worker-Centric I4.0 Solutions.

Figure 29. RE4DY Event. 4ZDM Webinar: Transforming Manufacturing Together – Worker-Centric I4.0 Solutions.
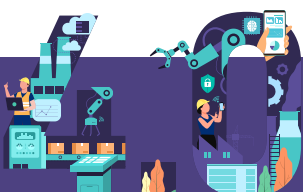
Timeline & Duration of the activity.

RE4DY Event organization D&C activities will only last during the timeline of the project and will end by M36.

Message Delivered

As established in D6.1, all the messages are delivered using the results of the hereby mentioned RE4DY Event organization D&C activities:

✓ Emphasize the developed new concepts, the circular chains and sustainability by design and AI in manufacturing for future research in the Academia and access to Open data repositories.

✓ Common ground, interests and actions in the fields of IoT, AI, Intelligent Manufacturing, Industrial Informatics.

✓ Value for them of the results and knowledge for benefits of being applicable to many sectors.

✓ Diffuse the knowledge and how the results can be used and enabling them to build their own RE4DY value networks.

✓ Scientific discoveries, knowledge on toolkits and Data as a Service and Federated Learning for resilient manufacturing and Supply Chain.

✓ Diffusion of knowledge and benefits of usage of the Action plan and adaptation of Industry 5.0 principles.

Audiences Targeted

As of D6.1, seven (7) different Target Groups may be impacted by D&C activities. RE4DY Event organization impacts and targets:

✓ Research & scientific community: Universities and Research Institutes (fields on AI, IoT, CPPS, Sustainable production, etc).

✓ Related Projects with similar research activity and values as RE4DY.

✓ General Public & Media: EU citizens, online and offline Media, NGOs and other that have general interest in technology, innovation and engineering.

✓ Associations, alliances & DIHs as DARIO, I4MS, EFNMS, EFFRA, AIOTI, ZDM, DFA, CECIMO, BDVA, IDSA, DIHs.

✓ Manufacturing community, DFA network & DIHs to use AI toolkits and achieve Zero-X processes.

D&C Strategy Stages impacted

The main D&C Strategy Stages impacted by RE4DY Event organization are Interest (M10-M18) and Desire (M19-M27) as video content shows project results and pilots.

D&C KPI benefited

From the D&C KPIs established in D6.1 and D6.2, the RE4DY Event organization mainly impacts the Event-related KPIs such as: RE4DY demonstrations (1) and RE4DY Innovation Events (2).
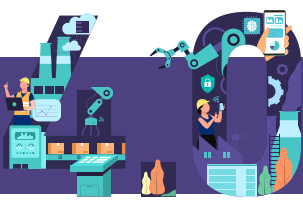
2.3.2. Event presence

Events are gatherings with a start and end date/time, where people come together in one location for entertainment or business. In this line of thought, the RE4DY project and consortia partners have been present, attending several programmes of industrial demonstrations at major events and fairs worldwide. The objective for event presence is to reach to concrete audiences based on the topics and specialization of each event. In fact, the event types that RE4DY partners have attended are:

- **Conferences:** formal academic meetings of people with a shared interest, typically takes place over several days.
- **Exhibitions and Trade Shows**: exhibitions at which businesses in a particular industry promote their products and services.
- **EU Networking Events**: organised gatherings that encourage professionals to meet and engage with one another to build valuable connections.

These events are especially relevant for the European manufacturing industry as attendees have taken advantage of networking and disseminating the RE4DY project results with major European industrial and research associations while communicating and demonstrating the key results obtained in RE4DY and its pilots.
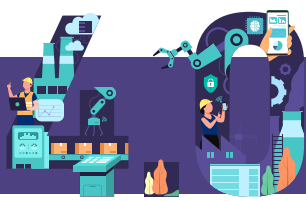
Type of event	Name of the Event	Date and duration	City/Country	Estimated participant No.	Attending Partners
Conference	IOT Solutions World Congress	31/01/2023 - 02/02/2023 (3 days)	Barcelona, Spain	12.000	INNO
Exhibition / Trade Shows	Mobile World Congress Barcelona	27/02/2023 - 02/03/2023 (4 days)	Barcelona, Spain	88.500	INNO
Conference	Data Spaces Symposium	21-23/03/2023 (3 days)	The Hague, Netherlands	700+	INNO, POLIMI, IDSA
Exhibition / Trade Shows	Hannover Messe	17-21/04/2023 (5 days)	Hannover, Germany	225.000	INNO, IDSA
Conference	METROMEET 2023	19-20/04/2023 (2 days)	Bilbao, Spain	80	INNO, DATAPIXEL
Conference	Digital Manufacturing Industrial Summit	25-27/04/2023 (3 days)	Valencia Spain	400+	UIO, INNO
Conference	Technarte	19/05/2023 (1 day)	Bilbao, Spain	80	INNO
Exhibition / Trade Shows	FIWARE Global Summit	12-13/06/2023 (2 days)	Vienna, Austria	420+	INNO
Conference	Baidata Forum 2023	14/06/2023 (1 day)	Bilbao, Spain	100+	INNO, IDSA
Conference	FAIM2023	18-22/06/2023 (5 days)	Porto, Portugal	400+	UIO
Conference	APMS 2023	18-21/09/2023 (4 days)	Trondheim, Norway	400+	UIO
Conference	Data Sharing in Europe: DA / DGA	19/09/2023 (1 day)	Paris-Dauphine, France	80+	INNO
EU Networking Event	EOSC Symposium 2023	20-22/09/2023 (3 days)	Madrid, Spain	470+	INNO
EU Networking Event	EFFRA Manufacturing Partnership Day	25-26/09/2023 (2 days)	Brussels, Belgium	200+	INNO, IDSA
Conference	EU Industry Days	04-06/10/2023 (3 days)	Málaga, Spain	200+	INNO
Conference	Data Spaces Discovery Days Napoli	5-6/10/2023 (2 days)	Naples, Italy	200+	IDSA, ENG, POLIMI
EU Networking Event	IDSA Ecosystem Building Calls	09/10/2023 (1 day)	Online	50	IDSA, INNO
Conference	QA Test	18-20/10/2023 (3 days)	Bilbao, Spain	80	INNO, DATA
Conference	Data Spaces Discovery Day in Vienna	19/10/2023 (1 day)	Vienna, Austria	200	IDSA
Conference	CIRP CMS2023	24-26/10/2023 (3 days)	Cape Town, South Africa	400+	UIO
Exhibition / Trade Shows	EBDVF	25-27/10/2023 (3 days)	Prague, Czech Republic	400	INNO
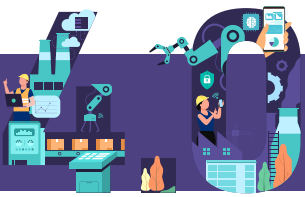
RE4DY EVENT	RE4DY TO TALK EVENT	31/10/2023 (1 day)	Online	45	INNO, KU LEUVEN, ICF
Exhibition / Trade Shows	16th Maintenance Forum	08-09/11/2023 (2 days)	Athens, Greece	Unavailable	ATLANTIS ENG
Conference	Smart Machining Event 2023	22/11/2023	Bellach, Switzerland	100+	GF, Fraisa, Siemens
Conference	ISM2023	22-24/11/2023 (3 days)	Valencia Spain	400+	UIO
Exhibition / Trade Shows	Industry Tec	24-26/11/2023 (3 days)	Peania, Greece		ATLANTIS ENGI
RE4DY EVENT	Digital Product Passports and Data Spaces Workshop	01/12/2023 (1 day)	Online	30	INNO, IDSA
RE4DY EVENT	Transforming Manufacturing Together – Worker-Centric I4.0 Solutions	05/12/2023 (1 day)	Online	30	INNO
Conference	Robot Revolution & Industrial IoT Initiative RE4DY Project display Conference	07/12/2023 (1 day)	Online / Japan	20+	INNO
Conference	METROMEET 2024	10-12/04/2024 (3 days)	Bilbao, Spain	50	INNO, UIO
Conference	11th Technology Forum	25/04/2024 (1 day)	Thessaloniki, Greece	300	ATLANTIS ENG
Conference	Baidata Forum 2024: WHERE DATA ECONOMY HAPPENS	08/05/2024 (1 day)	Bilbao, Spain	400	INNO, IDSA,
Conference	Data Space 4.0 Final Event	31/05/2024 (1 day)	Brussels, Belgium	100	INNO, UIO, ENG, POLIMI, SIE
Conference	Madeira Digital Transformation Week 2024	20-28/06/2024 (8 days)	Madeira Island, Portugal	NA	UNINOVA
Conference	Digital Transformation Summit 2024	20-28/06/2024 (8 days)	Madeira Island, Portugal	NA	UNINOVA
Conference	LAILEC 2024 – Beyond the Rules: Regulatory Frontiers of AI and Data	06-07/06/2024	Leuven, Belgium	NA	KUL, ICF
Conference	Eclipse Foundation Conference - OCX 2024 ESAAM 2024	22-24/10/2024 (3 days)	Mainz, Germany	NA	CERTH
Conference	Winter Simulation Conference - WSC 2024	13-15/12/2024 (2 days)	Orlando, USA	600+	CHALMERS

Table 7. RE4DY Event Presence list
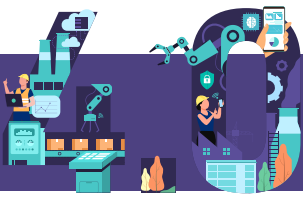
The **RE4DY project has been present worldwide** as shown in the map in Austria, Belgium, Czech Republic, France, Germany, Greece, Italy, Japan, Netherlands, Norway, Portugal, South Africa, Spain, Switzerland, and USA.

In conclusion, there has been a total number of 26 conferences, 6 Exhibitions / Trade Shows, 3 EU Networking Events and 3 RE4DY-organized Events (1 demonstration event and 2 Educational events). Therefore, a **total number of 35 events where RE4DY was present that benefited a total number of 332.435 people with RE4DY Project D&C activities** in international events.

<u>**Timeline & Duration of the activity**</u>
RE4DY Event presence D&C activities will mainly last during the timeline of the project and maybe will extend some more months for final result dissemination up to 12 months after the end of the project.

Message Delivered

As established in D6.1, all the messages are delivered using the results of the hereby mentioned RE4DY Event presence D&C activities:

Figure 30. RE4DY Event map

- ✓ Emphasize the developed new concepts, the circular chains and sustainability by design and AI in manufacturing for future research in the Academia and access to Open data repositories.
- ✓ Common ground, interests and actions in the fields of IoT, AI, Intelligent Manufacturing, Industrial Informatics.
- ✓ Value for them of the results and knowledge for benefits of being applicable to many sectors.
- ✓ Diffuse the knowledge and how the results can be used and enabling them to build their own RE4DY value networks.
- ✓ Scientific discoveries, knowledge on toolkits and Data as a Service and Federated Learning for resilient manufacturing and Supply Chain.
- ✓ Diffusion of knowledge and benefits of usage of the Action plan and adaptation of Industry 5.0 principles.

Audiences Targeted

As of D6.1, seven (7) different Target Groups may be impacted by D&C activities. RE4DY Event presence impacts and targets all of them:
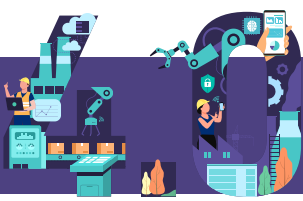
- ✓ Research & scientific community: Universities and Research Institutes (fields on AI, IoT, CPPS, Sustainable production, etc).
- ✓ Related Projects with similar research activity and values as RE4DY.
- ✓ General Public & Media: EU citizens, online and offline Media, NGOs and other that have general interest in technology, innovation and engineering.
- ✓ Associations, alliances & DIHs as DARIO, I4MS, EFNMS, EFFRA, AIOTI, ZDM, DFA, CECIMO, BDVA, IDSA, DIHs.
- ✓ Manufacturing community, DFA network & DIHs to use AI toolkits and achieve Zero-X processes.

D&C Strategy Stages impacted

The main D&C Strategy Stages impacted by RE4DY Event presence are Interest (M10-M18) and Desire (M19-M27) as video content shows project results and pilots.

D&C KPI benefited

From the D&C KPIs established in D6.1 and D6.2, RE4DY Event presence mainly impacts the Event-related KPIs such as: Industry Events (3), EU Networking Events (2) and Conferences (20).

2.4. Project Clustering activities

One of the Target Audiences identified in D6.1 is "Related Projects with similar research activity and values as RE4DY", to reach this Target Audience, the RE4DY D&C team has developed Project Clustering activities to find common grounds, interests and actions in the fields of IoT, AI, Intelligent Manufacturing, Industrial Informatics.

2.4.1. ZDMP Cluster

The ZDM Manufacture sub-platform is an open EU platform for ZDM projects. The platform has a long-term vision to develop a ZDM culture and ecosystem in Europe. Together we influence future R&D programmes. The platform has multiple long-term goals:

A. **Publish scientific papers**: We publish white papers and position papers on latest trends in industry.
B. **Host ZDM events**: There will be two officially hosted ZDM events per year. There are more open [ZDM events here](#).
C. **Build a ZDM ecosystem**: We wish all European ZDM projects welcome to our sub-platform. [Register your project.](#)

The 4ZDM cluster is composed of completed and running projects at FP7 or H2020, as well as the new projects under Horizon Europe. These project teams have come together to identify technical cross-cutting issues such as: intelligent, autonomous, and self-adaptive systems for process monitoring, control and quality management; system approaches for monitoring and data processing of dimensional fluctuations; efficient simulation tools and methods to predict machining system behaviour. As well as defining the current state-of-the-art in ZDM, the 4ZDM cluster has also enabled us to carry out a bibliographic review and highlight the most promising future research topics that will show the way towards the achieving the ZDM paradigm. The ZDMP Cluster includes the next EU projects:

[DAT4.ZERO](#) is a project supported by the European Union. The project has [20 European partners](#) who will work to improve quality in European factories. Innovative technologies will gather and analyse data from manufacturing processes and give businesses greater control of what happens during production. More in https://dat4zero.eu/

[OPTIMAI](#) aims to create a new European industry ecosystem focused on innovative solutions to optimise production, reduce defects and improve quality to safeguard European industry for generations to come. More in https://optimai.eu/

[i4Q](#) (Industrial Data Services for Quality Control in Smart Manufacturing) is a Horizon 2020 project that aims to assist manufacturing enterprises (small, medium, or micro) with moving towards Industry 4.0 while overcoming the hurdles preventing them to do so. More in https://www.i4q-project.eu/

[PENELOPE](#) is a flagship project for the implementation of Pilot lines for large-part high-precision manufacturing, involving a consortium of 31 Partners from 10 EU countries. PENELOPE aims the development of a novel methodology linking product-centric data management and production planning and scheduling in a closed-loop digital pipeline by ensuring an accurate and precise manufacturability from the initial product design. More in https://penelope-project.eu/

The [InterQ](#) project aims to measure, predict, control and manage the quality of the manufactured products, manufacturing processes and gathered data to assure Zero-
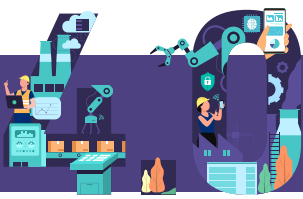
Defect-Manufacturing through all the value chain. It proposes a new generation of digital solutions based on intelligent systems, hybrid digital twins and AI-driven optimization tools, powered with meaningful and reliable data, to assure the quality in smart factories in a holistic manner. More in https://interq-project.eu/

ZDZW develops digital non-destructive inspection (NDI) services as a set of strategic technologies to improve production efficiency, zero-defect, and sustainable manufacturing of European industries. More in https://www.zdzw-project.eu/

FLASH-COMP: The aim of the project is to bring novel digital technologies to the liquid resin infusion process (LRI), one of the most widely used manufacturing processes using composite materials. By bringing advanced automated controls and in-line defect monitoring and detection to the LRI process, FLASH-COMP will allow industry to cut material waste significantly, while also improving efficiencies in the process and the quality of products produced. More in https://flashcomp.eu.com/

ENGINE: The overall goal of the ENGINE project is to reduce the environmental impact and improve competitiveness of metal product manufacturers by developing a novel metal product design and manufacturing system, which integrates life-cycle analysis and business decisions, reduces defects, waste, and shrinks product time-to-market. The project will develop a first time-right and zero-defect metal product design and manufacturing system, which will be applied on marine engine supply chain. More in http://www.theengineproject.eu/

In conclusion, the Zero Defects Manufacturing Platform (ZDMP) – is a multi-partner project that aims at providing an open platform to support factories to reach a zero defects goal. In this context, ZDMP will allow end-users to interconnect their systems (e.g. shop floor and ERP Systems) through ZDMP Applications (zApps), to improve product and process quality assurance.

2.4.1. EUDDIC Cluster

The EU Data-driven Distributed Industrial Cluster (EUDDIC) is a recently created cluster comprising three Horizon Europe projects (5G-TIMBER, RE4DY, and Zero-Swarm). Together our projects will develop toolkits incorporating open hardware, software, and tool ware, aiming to assist SMEs in automating and digitising manufacturing processes while adhering to cybersecurity standards. European companies need to effectively utilise deep industrial data by striking a balance between centralised cloud storage and local edge storage within industrial networks. This balance should consider efficiency, real-time requirements, cybersecurity, and the ability to integrate and upgrade operational technologies for flexible industrial digital development.

The goal of these clustering projects is to enable distributed control and modular manufacturing while maintaining reliability and safety. The advancement of computing, storage, and networking technologies is crucial for fostering new business models based on sharing deep industrial data with agreed data governance.

Our projects will develop toolkits incorporating open hardware, software, and tool ware, aiming to assist SMEs in automating and digitising manufacturing processes while adhering to cybersecurity standards.

The Projects in the EUDDIC are 5G-TIMBER, ZEROSWARM and RE4DY
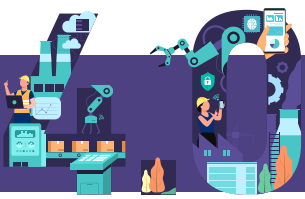
5G-TIMBER: The project will develop 5G-enabled UCs and implement field trials for different small and medium-sized manufacturing industries: small-volume machinery, hand-assembled elements production, and construction focusing on the wood value chain (WVC). The project will demonstrate key innovations in the field of timber material models; open standards for production data, and secure exchange thereof; data analytics at the edge; precise indoor localization; Digital Twin (DT) and augmented reality (AR); and industrial IoT. Learn more *5g-timber.eu*

ZERO-SWARM: Zero Swarm aims to achieve climate-neutral and digitized production through a human-centric approach resulting in an 5G open swarm framework. Zero-enabling smart networked control framework for agile cyber physical production systems of systems (Zero-SWARM), is a project with a total public private investment of almost €10 million launched on June 1st, 2022, aiming to accelerate the uptake of advanced 5G technologies by European manufacturing sector. The project mission is to achieve climate neutral and digitized production via a multidisciplinary, human centric, objective oriented innovative approach resulting in technical solutions for open swarm framework, non-public 5G network, active information continuum and digital twin. In essence, it establishes a unique forum where separately maturing technologies of 5G and cloud-edge continuum, data technologies and analysis (including data spaces and GAIA-X) and operational technology (automation and agility) break their siloes to co-design and co-create through 10 trials. Learn more: https://zero-swarm.eu/

RE4DY: The project RE4DY is working on setting the foundation for the integration of active resiliency strategies into Zero-X or Xero Defect and Sustainable Manufacturing processes to improve individual and value chain flexibility. As part of the project, several partners are participating in Pilot Ecosystems, applying the project-driven new frameworks, toolkits and services in real manufacturing sectors of application (Automotive, eBattery, Aeronautics and Machine Tool & Consumables) so as to generate a SME friendly Industrial Value Ecosystem for TEFs and DIHs to provide support and improve manufacturing processes with a clear impact on manufacturing agility, speed to market resources, productivity improvement, about 1000 new jobs created and +84 Millions of euros of Return of investment. Learn more *https://re4dy.eu/*

3 Communication KPIs updated M24

The D&C Plan includes relevant Key Performance Indicators (KPIs) as described in the Table below, these KPIs are established as a success criterion of the project communication progress. What was established in the Grant Agreement is taken as a reference of Planned and there is a new column for M24 status.

Type of Dissemination Activities	Key Performance Indicators (KPIs)				
	Total Planned	Description	Planned	M12	M24
Website	1	Created websites	1	1	1
Articles	22	Published in other media	5	0	6
		Published in RE4DY website	7	0	10
		Published in partner websites	10	1	3
Publications	10	# Publications	3	1	13
Newsletter	9	Subscribers	1.000	912	1.100
		# Newsletter posts	9	0	4
Events	28	Industry events / Fairs / Exhibitions	3	2	6
		EU Networking events	2	0	3
		Academic / Scientific events / Conferences	20	4	26
		RE4DY Innovation Events	2	0	4
		RE4DY Demonstrations	1	0	1
Datasets	8	# of Datasets	8	0	10
Twitter	600	Twitter followers	600	1.239	1.260
		Average month impressions	100	NA	307
LinkedIn Page	800	LinkedIn followers	800	410	811
		Average impressions per post	100	33	658
Video channel	9	# of Videos	9	0	7
		Views per video	50	0	140+

Table 8. Dissemination & Communication KPIs M24 Status

As it can be seen in the table above, **16 out of 19 D&C KPIs have been achieved as of M24,** leaving only 3 more D&C KPIs to be achieved in the last 12 months of the project.
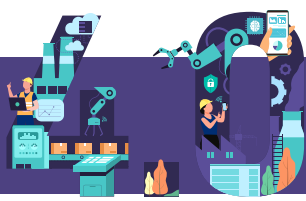
4 Skills developed

Organizations must conduct a thorough evaluation of their current skills, capabilities, and resources to identify deficiencies and address skill gaps through targeted training activities. Maturity analysis models are effective tools for this purpose, as they assess an organization's present state by examining processes, competencies, technologies, and strategies, while considering future industry trends. These models provide a comprehensive view of where the organization stands in relation to its goals and industry standards, identifying gaps between the current and desired future state. They offer tailored recommendations for programs and initiatives to bridge these gaps. By following these recommendations, organizations can develop and implement training programs that enhance workforce skills and competencies, preparing employees for current and future job demands.

As outlined in D6.2, the POLIMI team used the 6P method (Digital Transformation Analysis tool – Maturity Model Tool), with a primary focus on the people dimension, to evaluate the current digital maturity levels of companies and organizations (AS-IS), quantify the desired maturity levels they aim to achieve (TO-BE), and develop a specific action plan to bridge the identified gaps. The emphasis on the People dimension includes a comprehensive analysis of current jobs and professions to identify potential skill gaps. This process involves organizing workshops and surveys to gather feedback from partners during the project's development stage. A structured, survey-based approach will be employed to analyze and discuss needed and possessed skills, identifying the most suitable training programs to bridge these gaps. The first step is to identify new roles, professions, and relevant skills based on the project's content. In relation to these new roles and skills, two main questionnaires have been administered to project partners, and the first round of surveys has already been completed.

In the context of the RE4DY project analyses, two primary categories have been identified: "Resilient Internal Logistics, Product-System Integration, Multi-Plant Predictive Zero-Defect Manufacturing (ZDM), and Performance Self-Optimization" and the "Data Science and AI Management" category encompasses jobs and skills that are not yet prevalent in industrial and other sectors but are anticipated to become necessary due to emerging technological trends and demands. Some businesses have already begun to recognize the importance of these skills and are taking steps to implement them. The category of, "Resilient Internal Logistics, Product-System Integration, Multi-Plant Predictive Zero-Defect Manufacturing (ZDM), and Performance Self-Optimization," encompasses roles that companies are already familiar with but need to enhance and improve considering emerging technologies. Additionally, we will also review soft skills at three levels: Managerial, Professional, and Non-technical Employees, in addition to technical skills.

In the subsequent two sections, we will outline the roles and essential skills within two specific categories. The information necessary for detailing these roles has been derived from credible sources, including the annual reports of the World Manufacturing Forum (WMF) and the World Economic Forum (WEF) from 2019 to 2023. Another critical source is the Osservatorio Industriale from Politecnico di Milano[1], which is a comprehensive repository encompassing over 100 technical and managerial skills pertinent to industrial technologies.

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[1] https://www.osservatori.net/it/home

These skills are categorized into five key areas vital for defining industrial strategies and for designing, managing, and enabling industrial processes and business models. The areas include Smart Product-Service Design Management, Smart Hyperconnected Factories Management, Smart Autonomous Factories Management, IT-OT Integration Management, and Data Science and AI Management. These jobs have been organized in alignment with the overall content of the project and the current activities of the project partners.

4.1 Future Connected Resilient Logistics Design Planning

As noted earlier, this category encompasses roles that companies already possess (albeit under different titles) but require upgrading and enhancement in response to emerging technologies.

Resilient Internal Logistics Analyst

This role focuses on analysing and optimizing the resilience of internal logistics networks, particularly those involving Automated Guided Vehicles (AGVs) and Autonomous Mobile Robots (AMRs). The analyst will evaluate current internal logistics operations, identify vulnerabilities within automated transport systems, and develop strategies to enhance resilience against disruptions such as equipment failures or system malfunctions.

Skills:

- Identifies and mitigates risks within internal logistics operations, particularly focusing on the reliability and performance of AGVs and AMRs, using comprehensive analysis to ensure continuity and efficiency.

- Applies advanced analytics and predictive models to optimize the performance of internal transport systems and drive decision-making.

- Develops and tests multiple logistical scenarios using simulation tools specifically designed for automated transport systems, preparing for and managing future operational challenges.

- Designs adaptable and robust internal logistics frameworks that maintain operational integrity under various conditions, with a special focus on automating transport mechanisms.

- Creates intuitive dashboards and reports to communicate complex data related to internal logistics operations, facilitating strategic planning and insights for automated systems.

Smart Logistics Systems Engineer

This engineer specializes in designing and implementing smart logistics solutions using IoT, AI, and other Industry 4.0 technologies. They ensure the seamless integration of smart devices and systems to optimize logistics operations.

Skills:
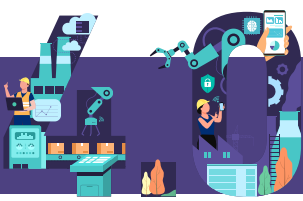
- Integrates and manages IoT devices in logistics operations for enhanced tracking, monitoring, and data exchange.

- Leverages AI and machine learning to automate and optimize logistics processes, improving efficiency and accuracy.

- Implements Industry 4.0 technologies to develop interconnected and automated logistics solutions.

- Designs scalable and reliable logistics systems integrating various technological components for optimal performance.

- Manages technology projects in logistics, ensuring they align with strategic objectives and are delivered effectively.

Product Systems Integration Specialist

This role focuses on the integration of new product technologies into existing production systems, ensuring seamless operation and optimal performance. The specialist will oversee the technical aspects of product system design, implementation, and optimization.

Skills:

- Integrates new product technologies with existing systems, managing interfaces for efficiency and compatibility.

- Facilitates seamless integration of product designs across engineering, manufacturing, and design teams.

- Ensures product systems meet performance and safety standards through comprehensive testing and validation.

- Manages compliance with safety and environmental regulations in product system integration.

- Utilizes innovative approaches and continuous improvement for effective product system integration.

Digital Twin Developer for Battery Manufacturing

This role involves creating and maintaining digital twins of battery manufacturing processes to enhance efficiency, predict performance, and reduce unplanned downtime. The developer will work on simulating the manufacturing environment to optimize production and resource use.

Skills:

- Creates digital twins with 3D simulation tools for analysing and enhancing battery manufacturing processes.

- Integrates real-time data into digital twins for accurate manufacturing process simulation

- Analyses digital twin data to identify and improve inefficiencies in the battery manufacturing process.

- Implements predictive maintenance using digital twins to optimize equipment performance and lifespan.

- Develops platforms for collaborative digital twin access, enhancing teamwork and decision-making across departments.

AI Quality Assurance Engineer

This role focuses on ensuring the accuracy and reliability of AI-driven quality inspection systems in turbine production, using AI/ML tools to identify defects and improve production quality.

Skills:

- Validates AI models' accuracy, detects biases, and ensures reliable defect detection to enhance product quality.

- Optimizes AI-driven inspection processes, reducing manual effort and inspection time while maintaining high accuracy.

- Oversees the AI learning process, integrating operator feedback to improve model performance and accuracy.

- Ensures AI systems comply with industry regulations and internal data security policies.

Predictive Maintenance System Architect

Responsible for designing and implementing predictive maintenance systems across multiple plants to improve equipment efficiency and prevent unplanned downtime using data analytics and machine learning.

Skills:

- Designs and integrates predictive maintenance systems using IoT and machine learning to forecast equipment failures.

- Manages real-time data from various sources to monitor equipment health and predict maintenance needs.

- Ensures system architecture supports scalable, multi-plant integration for consistent predictive analytics.

- Continuously evaluates system performance to drive improvements and incorporates new technologies for enhanced predictive capabilities.

Circular Economy Strategist

Specializes in developing and implementing sustainable business models across various industries, focusing on maximizing product life cycles, promoting recycling, and reducing waste to create a more sustainable future.

Skills:
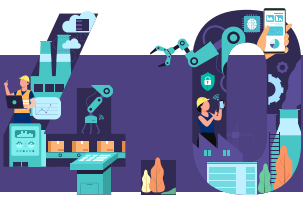
- Designs innovative business models that extend product lifespans, reduce waste, and encourage recycling and reuse across different sectors.

- Analyses and optimizes the entire lifecycle of products, from design to end-of-life, ensuring practices adhere to sustainable principles.

- Implements strategies to decrease the use of raw materials and energy consumption, significantly reducing the environmental footprint.

- Builds collaborative relationships with stakeholders across the supply chain to support circular economy efforts, ensuring goals are harmonized for effective resource utilization.

- Conducts thorough market research to anticipate industry shifts, integrating emerging technologies and consumer insights into sustainable practices and strategic development.

Machine Tool Digital Twin Developer

Focuses on creating and maintaining digital twins of machine tools to enhance performance, predict maintenance needs, and optimize the tool life cycle.

Skills:

- Develops digital twins for machine tools to simulate and optimize their performance throughout their lifecycle.

- Utilizes data from digital twins for predictive maintenance, reducing downtime and extending tool life.

- Ensures digital twins support circular economy goals, such as tool reuse and recycling.

- These roles aim to innovate in the machine tool industry by enhancing sustainability and efficiency through advanced digitalization and circular economy principles.

- Implements real-time monitoring and control systems within digital twins, allowing for immediate adjustments to machine performance and predictive maintenance schedules.

- Integrates sustainability metrics into digital twin models to track and improve the environmental footprint of machine tool usage, focusing on energy efficiency and material conservation.

4.2 Data Science and AI Management

This group includes jobs and skills that have likely not yet become widespread in industrial and other sectors but are expected to become crucial in the coming years due to technological trends and demands. While some businesses may have already acknowledged the importance of these skills and started to implement them, many others are still in the process of adapting to these future requirements.

Data Science Manager
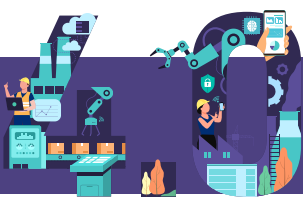
Data Science Managers propose, plan and manage functional and technical evolutions of the data science and AI operations within the relevant domain.

Skills:

- Knowledge about data and AI processes

- Knowledge about business processes

- Communication with domain experts

- Develop and execute the data and AI strategies

- Manage the data science team and resources

- Knowledge about performance indicators

DATA / AI Architect

Data Science /AI Architects design and maintain the architecture of data science / AI applications and facilities.

Skills:

- Ability to integrate data universe

- Select software platforms for big data (Hadoop, Data Lake)

- Knowledge about big data architectural standards

- Select hardware platforms for big data (performances…)
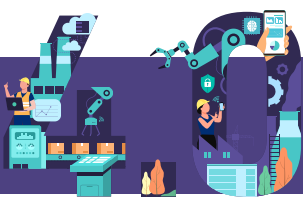
DATA / AI Scientist

Data/AI scientists find, interpret and merge data/AI sources, manage large amounts of data, ensure consistency of datasets, and create visualizations to aid in understanding data/AI.

Skills:

- Identify and interpret relevant data sources

- Use a programming language (R, Python)

- Communicate with domain experts

- Mathematical and statistical models' knowledge

- Knowledge about domain-specific processes

- Use of AI technologies (ex. machine learning)

- Use of Bayes classifier, Deep Learning, OR methods, and optimization algorithms

Visual Data Designer

Visual Data Designers create custom visualizations from complex data sets in a compelling way.

Skills:

- Develop interface & interaction to increase user experience

- Develop vector graphics, scientific illustrations, and icons

- User experience analysis, design, and evaluation

- Understand complex information by integrating AI tools

- Visualize the huge and complex volume of data

- Develop insightful and engaging data analytics view

- create infographics (maps, charts, diagrams)
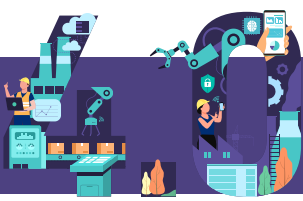
Data / AI Specialist

Data /AI specialists build, manage and maintain data/AI pipelines.

Skills:

- Integrate data and AI technologies into existing systems

- Knowledge about data storage, query languages, and use of machine learning

- Use and interact with collaborative robots, systems, and sensors

- Build AI models from scratch and help the different components of the organization

- Develop data models and workflows

- Maintain security, quality, integrity, safety, and availability of data

- Develop applications from big data /AI & provide operational tools for data and AI analytics

- Knowledge of (OEE) & hardware platforms for big data and Analysis related to AI

- Use cloud computing and AI in industrial control software and applications to monitor and control activities.
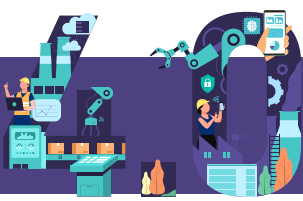
4.3 Soft Skills

This section explores soft skills in addition to the previously discussed technical skills. Soft skills, also known as interpersonal or people skills, encompass a range of non-technical abilities that enable individuals to effectively interact, communicate, and collaborate with others. These skills include emotional intelligence, empathy, teamwork, problem-solving, adaptability, and leadership. Unlike technical skills, which are specific to particular tasks or jobs, soft skills are universally applicable and essential for fostering a productive and harmonious workplace environment. The following list outlines the soft skills relevant to various roles, including managers, professionals, and non-technical employees. In the next section, an analysis of the feedback from project partners concerning these soft skills will be presented. The relevant soft skills include emotional judgment, teamwork, communication, professional ethics, problem-solving, critical thinking, innovation, ethical/legal mindset, proficiency in a second language, time management, interpersonal skills, critical problem-solving, digital literacy, self-management, global perspective, and digital skills.

4.4 Voting Survey (First Iteration)[2]

To examine the perspectives of project partners on the roles and skills discussed in the preceding section, a survey was conducted to collect their opinions on the skills associated with each role. The responses were used to prioritize these skills accordingly. The voting survey targeted all individuals and project partners, whose familiarity with the project's content rendered their input on skill prioritization particularly valuable. The results of this survey, based on 20 votes in the first iteration, are as follows.

Resilient Internal Logistics Analyst

Figure 31. Voting survey result Resilient Internal Logistics Analyst

Based on the survey results for prioritizing skills for a Resilient Internal Logistics Analyst (Figure 31), the two most critical skills, each receiving 22.6% of the votes, are "Identifies and mitigates risks within internal logistics operations" and "Creates intuitive dashboards and reports to communicate complex data." Both skills emphasize the importance of ensuring operational continuity and providing strategic insights. The next important skills, each with 19.4% of the votes, include "Applies advanced analytics and predictive models" and

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[2] https://polimi.eu.qualtrics.com/jfe/form/SV_9ztzLlje1XhlTlI

"Develops and tests multiple logistical scenarios." These skills focus on optimizing performance and preparing for future challenges. Lastly, "Designs adaptable and robust internal logistics frameworks" is considered slightly less critical, with 16.1% of the votes, but still essential for maintaining operational integrity.

Smart Logistics Systems Engineer
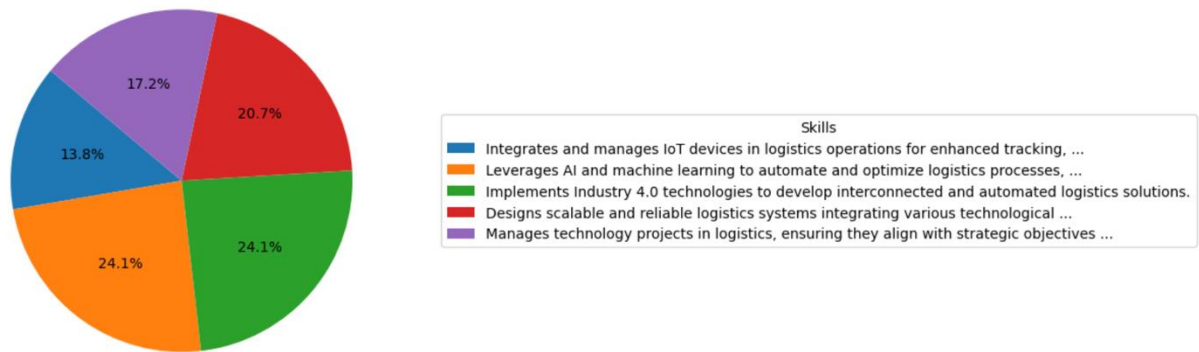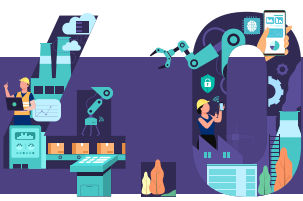
Figure 32. Voting survey result Smart Logistics Systems Engineer

Based on the survey results for prioritizing skills for a Smart Logistics Systems Engineer (Figure 32), the most critical skills, each receiving 24.1% of the votes, are "Leverages AI and machine learning to automate and optimize logistics processes" and "Implements Industry 4.0 technologies to develop interconnected and automated logistics solutions." These skills highlight the importance of automation, optimization, and advanced technological integration. The next important skill, "Designs scalable and reliable logistics systems," received 20.7% of the votes, emphasizing the need for designing robust systems. "Manages technology projects in logistics" is considered slightly less critical, with 17.2% of the votes, but is essential for aligning projects with strategic objectives. Lastly, "Integrates and manages IoT devices in logistics operations" received 13.8% of the votes, indicating its importance for enhanced tracking and data exchange.

Product Systems Integration Specialist

Skills for Product Systems Integration Specialist

Figure 33. Voting survey result Product Systems Integration Specialist

Based on the survey results for prioritizing skills for a Product Systems Integration Specialist (Figure 33), the most critical skill, receiving 30.3% of the votes, is "Integrates new product technologies with existing systems, managing interfaces for efficiency and compatibility." This emphasizes the importance of ensuring seamless integration and compatibility. The next important skill, with 24.2% of the votes, is "Ensures product systems meet performance and safety standards through comprehensive testing and validation," highlighting the need for rigorous testing and adherence to safety standards. "Utilizes innovative approaches and continuous improvement" is also significant, with 21.2% of the votes, indicating the value of innovation and ongoing enhancement. "Facilitates seamless integration of product designs" received 18.2% of the votes, emphasizing collaboration across teams. Lastly, "Manages compliance with safety and environmental regulations" is considered less critical, with 6.1% of the votes, but still necessary for regulatory adherence.

Digital Twin Developer for Battery Manufacturing

Skills for Digital Twin Developer for Battery Manufacturing
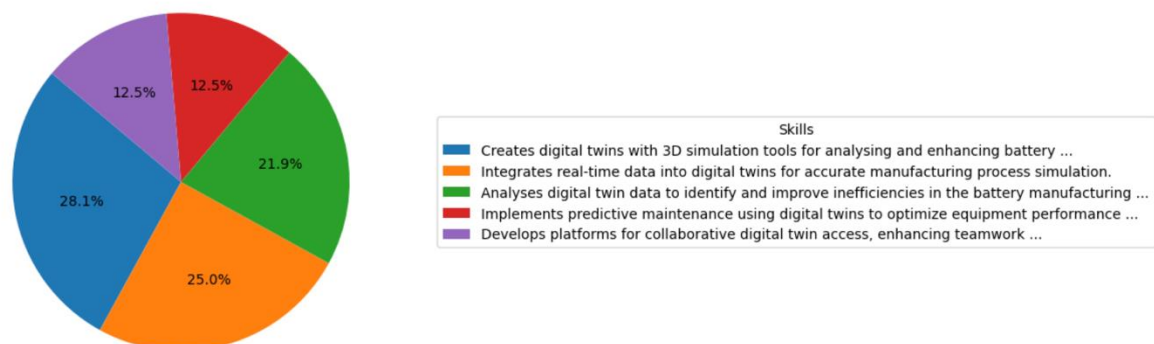
Figure 34. Voting survey result Digital Twin Developer for Battery Manufacturing

Based on the survey results for prioritizing skills for enhancing battery manufacturing processes using digital twins (Figure 34), the most critical skill, receiving 28.1% of the votes, is "Creates digital twins with 3D simulation tools for analysing and enhancing battery manufacturing processes." This highlights the importance of using advanced simulation tools for process improvement. The next important skill, with 25% of the votes, is "Integrates
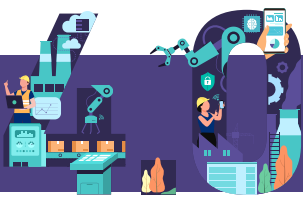
real-time data into digital twins for accurate manufacturing process simulation," emphasizing the need for real-time data integration. "Analyses digital twin data to identify and improve inefficiencies" received 21.9% of the votes, indicating the value of data analysis for process optimization. Both "Implements predictive maintenance using digital twins" and "Develops platforms for collaborative digital twin access" received 12.5% of the votes each, stressing the importance of optimizing equipment performance and enhancing teamwork and decision-making through collaborative platforms.

AI Quality Assurance Engineer

Figure 35. voting survey result AI Quality Assurance Engineer

Based on the survey results for prioritizing skills for AI Quality Assurance Engineer (Figure 35), the most critical skill, receiving 35.5% of the votes, is "Validates AI models' accuracy, detects biases, and ensures reliable defect detection." This emphasizes the importance of maintaining high standards in AI model performance and quality assurance.

The next important skills, each with 25.8% of the votes, are "Oversees the AI learning process, integrating operator feedback to improve model performance and accuracy" and "Ensures AI systems comply with industry regulations and internal data security policies." These highlight the need for continuous improvement and regulatory compliance. Lastly, "Optimizes AI-driven inspection processes" received 12.9% of the votes, indicating its role in reducing manual effort and inspection time while maintaining accuracy.
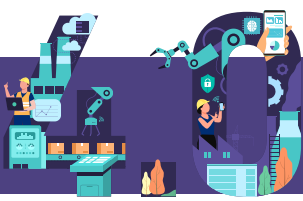
Predictive Maintenance System Architect
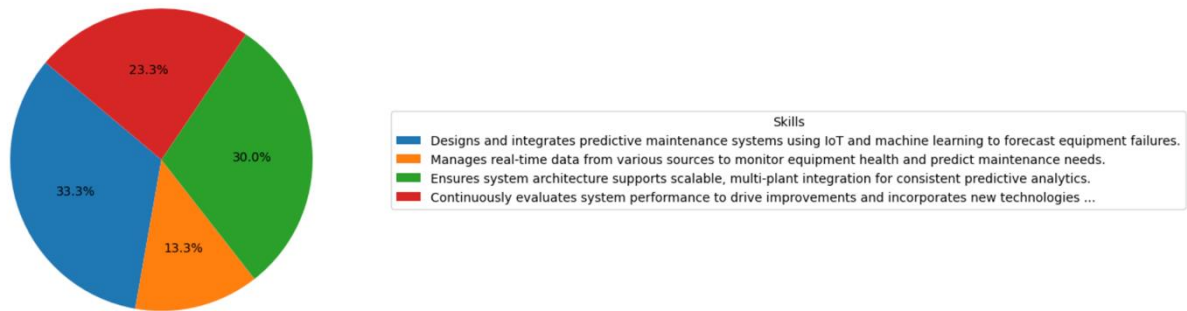
Figure 36. voting survey result Predictive Maintenance System Architect

Based on the survey results for prioritizing skills for a Predictive Maintenance System Architect (Figure 36), the most critical skill, receiving 33.3% of the votes, is "Designs and integrates predictive maintenance systems using IoT and machine learning to forecast equipment failures." This underscores the importance of advanced technologies in predicting failures. The next important skill, with 30% of the votes, is "Ensures system architecture supports scalable, multi-plant integration for consistent predictive analytics," highlighting the need for robust and scalable system design. "Continuously evaluates system performance to drive improvements" received 23.3% of the votes, indicating the value of ongoing performance assessment and technology integration. Lastly, "Manages real-time data from various sources to monitor equipment health and predict maintenance needs" received 13.3% of the votes, stressing the role of real-time data management in predictive maintenance.

Circular Economy Strategist

Figure 37. Voting survey result Circular Economy Strategist
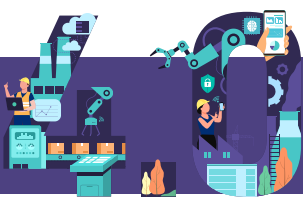
Based on the survey results for prioritizing skills for a Circular Economy Strategist (Figure 37), the most critical skill, receiving 23.1% of the votes, is "Designs innovative business models that extend product lifespans, reduce waste, and encourage recycling and reuse across different sectors." This emphasizes the importance of innovative and sustainable business models. The next important skills, each with 20.5% of the votes, are "Analyses and optimizes the entire lifecycle of products" and "Implements strategies to decrease the use of raw materials and energy consumption," highlighting the need for lifecycle optimization and reducing environmental impact. Both "Builds collaborative relationships with stakeholders across the supply chain" and "Conducts thorough market research to anticipate industry shifts" received 17.9% of the votes each, indicating the importance of stakeholder collaboration and market research for effective resource utilization and strategic development

Machine Tool Digital Twin Developer
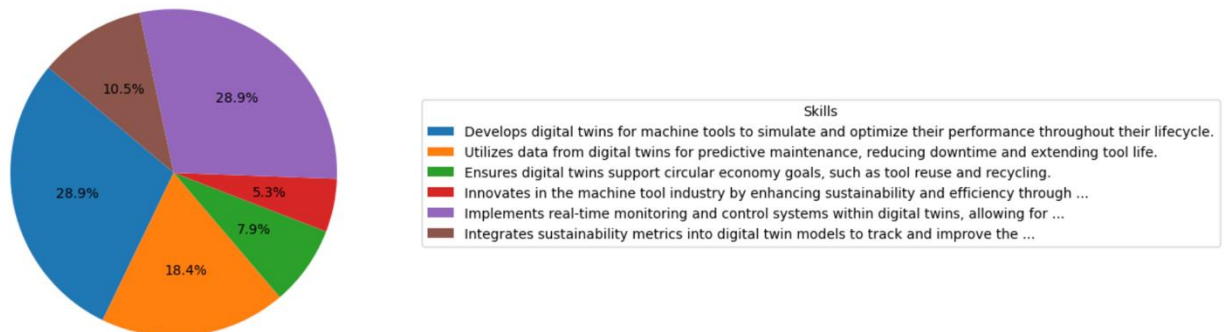
Figure 38 voting survey result Machine Tool Digital Twin Developer

Based on the survey results for prioritizing skills for a Machine Tool Digital Twin Developer (Figure 38), the most critical skills, each receiving 28.9% of the votes, are "Develops digital twins for machine tools to simulate and optimize their performance throughout their lifecycle" and "Implements real-time monitoring and control systems within digital twins, allowing for immediate adjustments to machine performance and predictive maintenance schedules." These highlight the importance of performance optimization and real-time monitoring. The next important skill, with 18.4% of the votes, is "Utilizes data from digital twins for predictive maintenance, reducing downtime and extending tool life," emphasizing the role of predictive maintenance. "Integrates sustainability metrics into digital twin models" received 10.5% of the votes, indicating the value of tracking and improving environmental impact. "Ensures digital twins support circular economy goals" received 7.9% of the votes, stressing the importance of sustainability goals. Lastly, "Innovates in the machine tool industry by enhancing sustainability and efficiency through advanced digitalization and circular economy principles" received 5.3% of the votes, highlighting the role of innovation in this field.

Data Science Manager
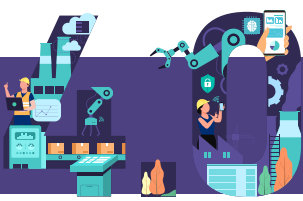
Skills for Data Science Manager
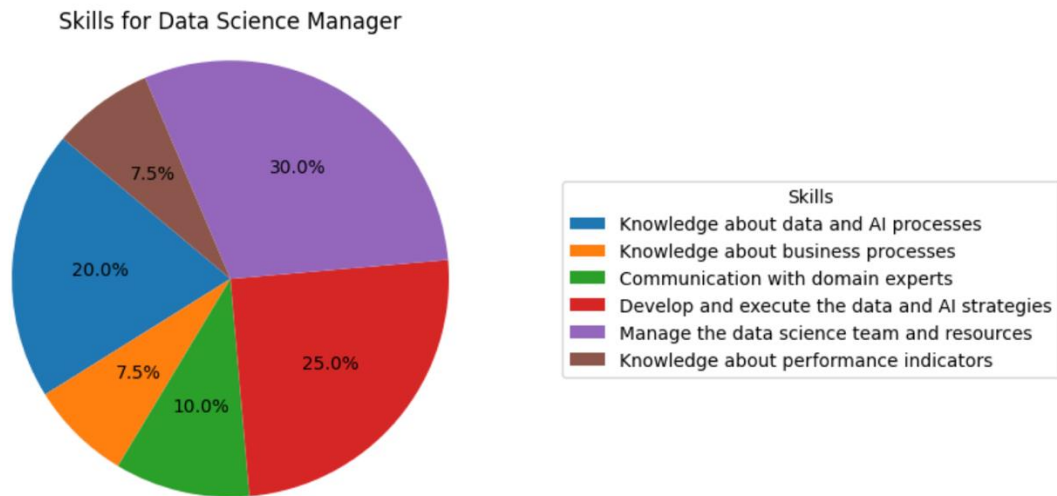
Figure 39 voting survey result Data Science Manager

Based on the survey results for prioritizing skills for a Data Science Manager (Figure 39), the most critical skill, receiving 30% of the votes, is "Manage the data science team and resources." This highlights the importance of team and resource management. The next important skill, with 25% of the votes, is "Develop and execute the data and AI strategies," emphasizing strategic development and implementation. "Knowledge about data and AI processes" is also significant, with 20% of the votes, indicating the necessity of technical expertise. "Communication with domain experts" received 10% of the votes, showing the value of effective communication with specialists. Both "Knowledge about business processes" and "Knowledge about performance indicators" received 7.5% of the votes each, indicating their importance for business understanding and performance measurement.

DATA / AI Architect

Skills for DATA / AI Architect

Figure 40 voting survey result DATA / AI Architect

Based on the survey results for prioritizing skills for a Data/AI Architect (Figure 40), the most critical skill, receiving 34.5% of the votes, is "Knowledge about big data architectural standards." This highlights the importance of understanding architectural standards in big

data. The next important skill, with 27.6% of the votes, is "Ability to integrate data universe," emphasizing the need for effective data integration. "Select software platforms for big data (Hadoop, Data Lake)" is also significant, with 24.1% of the votes, indicating the necessity of selecting appropriate software platforms. Lastly, "Select hardware platforms for big data (performances…)" received 13.8% of the votes, showing its importance for hardware selection to ensure performance.

DATA / AI Scientist

Figure 41 voting survey result DATA / AI Scientist

Based on the survey results for prioritizing skills for a Data/AI Scientist (Figure 41), the most critical skill, receiving 22.9% of the votes, is "Mathematical and statistical models' knowledge." This underscores the importance of a strong foundation in mathematical and statistical models. The next important skills, each with 18.8% of the votes, are "Identify and interpret relevant data sources," "Use of AI technologies (ex. machine learning)," and "Use of Bayes classifier, Deep Learning, OR methods, and optimization algorithms," highlighting the need for data interpretation, AI technology application, and advanced algorithm usage. "Use a programming language (R, Python)" received 14.6% of the votes, emphasizing the importance of programming skills. "Communicate with domain experts" received 4.2% of the votes, and "Knowledge about domain-specific processes" received 2.1% of the votes, indicating their lesser but still relevant importance in the overall skill set.
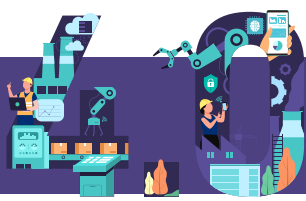
Visual Data Designer
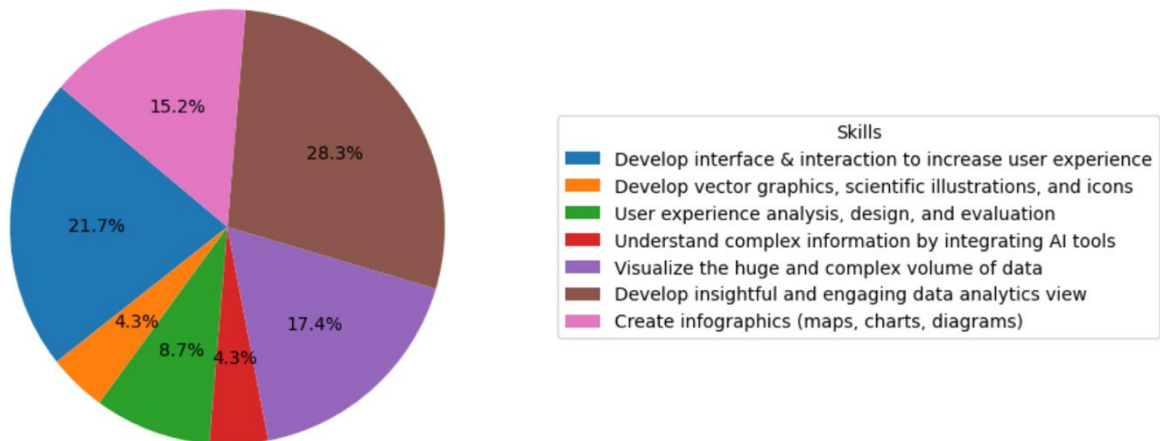
Figure 42 voting survey result Visual Data Designer

Based on the survey results for prioritizing skills for a Visual Data Designer (Figure 42), the most critical skill, receiving 28.3% of the votes, is "Develop insightful and engaging data analytics view." This emphasizes the importance of creating compelling data visualizations. The next important skill, with 21.7% of the votes, is "Develop interface & interaction to increase user experience," highlighting the need for enhancing user interaction and experience. "Visualize the huge and complex volume of data" received 17.4% of the votes, indicating the value of handling large datasets. "Create infographics (maps, charts, diagrams)" received 15.2% of the votes, showing the significance of creating visual representations of data. "User experience analysis, design, and evaluation" received 8.7% of the votes, and both "Develop vector graphics, scientific illustrations, and icons" and "Understand complex information by integrating AI tools" received 4.3% of the votes each, highlighting their relevance but lower priority compared to the other skills.
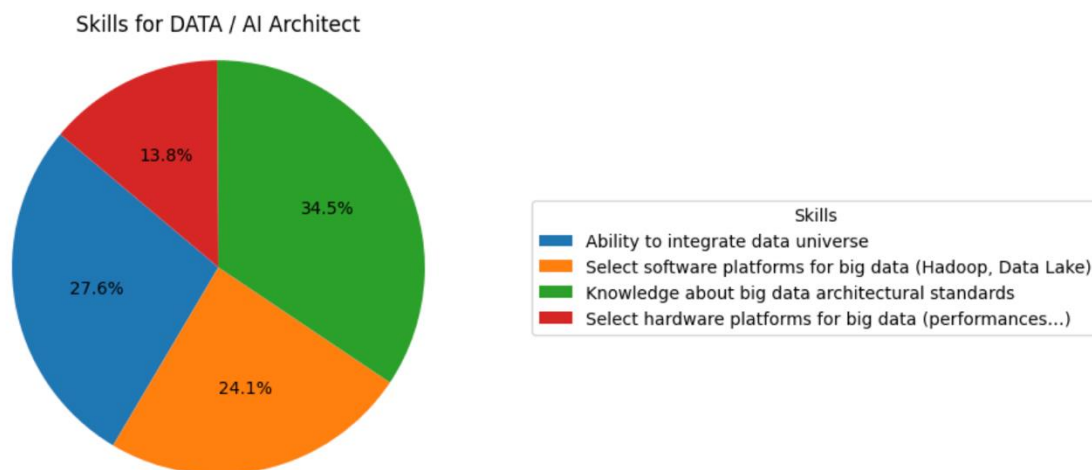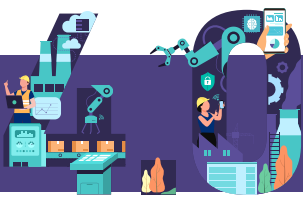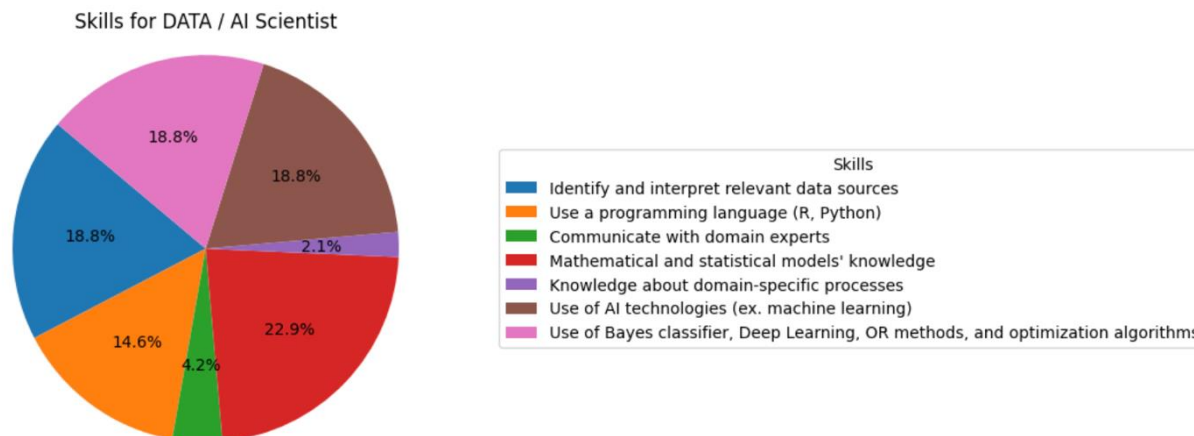
Data / AI Specialist
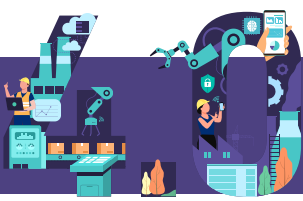

Figure 43 voting survey result Data / AI Specialist

Based on the survey results for prioritizing skills for a Data/AI Specialist (Figure 43), the most critical skill, receiving 21.6% of the votes, is "Develop applications from big data /AI & provide operational tools for data and AI analytics." This highlights the importance of developing practical applications and tools. The next important skills, each with 17.6% of the votes, are "Integrate data and AI technologies into existing systems" and "Build AI models from scratch and help the different components of the organization," emphasizing integration and model building. "Knowledge about data storage, query languages, and use of machine learning" received 13.7% of the votes, indicating the necessity of technical knowledge. "Develop data models and workflows" received 9.8% of the votes, highlighting the importance of data modelling. Both "Knowledge of (OEE) & hardware platforms for big data and Analysis related to AI" and "Use cloud computing and AI in industrial control software and applications to monitor and control activities" received 7.8% of the votes each, showing their relevance. "Maintain security, quality, integrity, safety, and availability of data" received 3.9% of the votes, and "Use and interact with collaborative robots, systems, and sensors" received no votes, indicating these are lower priorities.
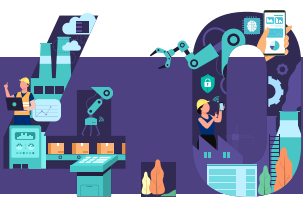
4.5 Analysis of Soft Skills

As previously mentioned, we assessed soft skills across three distinct levels: management, professional, and non-technical employees. The survey findings from project partners for these categories are presented.

Management Level:
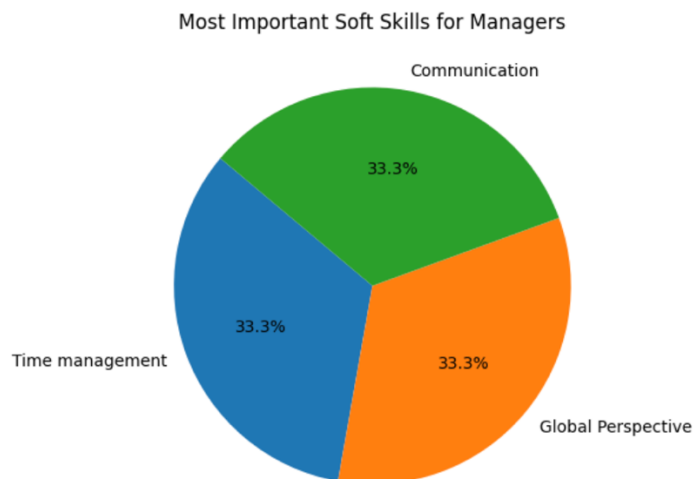
Figure 44 Soft Skills - Management Level

The Figure 44 indicates that the most important soft skills for managers, each receiving 33.3% of the votes, are time management, global perspective, and communication. Time management is essential for efficiently allocating time to various tasks and ensuring deadlines are met. A global perspective enables managers to navigate international markets and cultural differences, crucial for strategic decision-making. Effective communication is vital for conveying information clearly, building strong teams, and fostering collaboration. These skills collectively highlight the diverse and essential competencies required for effective management.

Professional Level:
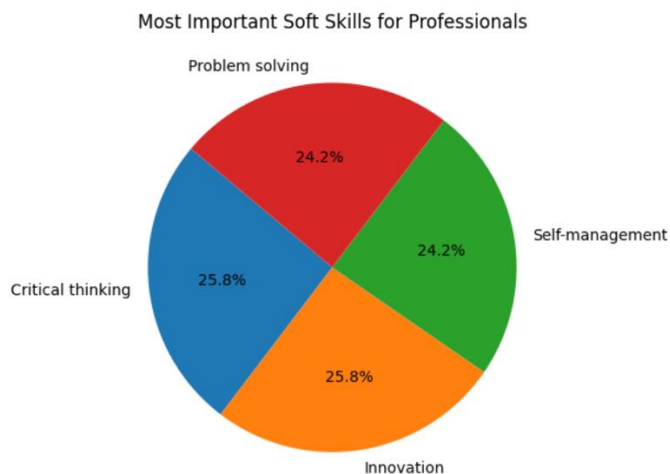
Figure 45 Soft Skills - Professional Level
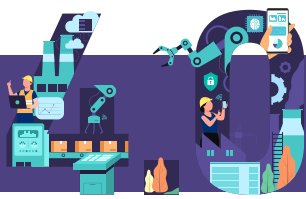
The Figure 45 for professionals highlights the most important soft skills, as identified by the survey, each receiving significant votes. Critical thinking and innovation both received 25.8% of the votes, indicating their importance in analyzing complex problems and generating creative solutions. Self-management and problem solving, each with 24.2% of the votes, emphasize the need for professionals to effectively regulate their own work and tackle issues as they arise. This distribution suggests that critical thinking, innovation, self-management, and problem solving are equally valued for professionals, reflecting the diverse skill set necessary for their roles.

Non-technical employees Level:

Most Important Soft Skills for non-technical employees
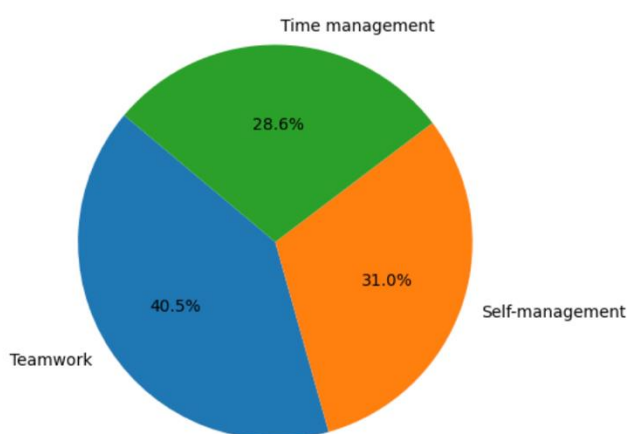
Figure 46 Soft Skills - non-technical employees

The Figure 46 for non-technical employees shows the distribution of the most important soft skills based on the survey results. Teamwork is the most highly valued skill, receiving 40.5% of the votes, indicating the importance of collaboration and working effectively with others. Self-management, with 31.0% of the votes, emphasizes the need for workers to independently regulate their tasks and responsibilities. Time management, receiving 28.6% of the votes, highlights the importance of efficiently organizing and prioritizing tasks to meet deadlines. This distribution underscores that teamwork, self-management, and time management are crucial for the success of non-technical employees.
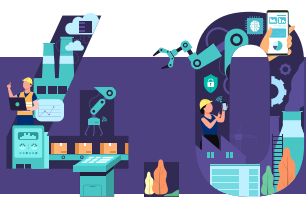
4.6 Possessed and Needed Survey Analysis (First Iteration) [3]

To assess the current status of the project pilots and their future expectations regarding the roles previously discussed, a second survey titled "Possessed and Needed" was conducted. This survey asked participants to indicate whether certain skills were required in their company or were currently being used. Responses were measured on a numerical scale from 1 to 5, with 1 indicating a "basic level required" and 5 indicating an "expert level required." The primary objective of this survey is to compare the current AS-IS situation with their desired target conditions, identifying any gaps and potential partner activities to address these gaps. The survey targeted project pilots, and the outcomes based on the first iteration are as follows.

Resilient Internal Logistics Analyst

The survey results for the Resilient Internal Logistics Analyst role indicate a range of skill levels within companies, with ratings generally spanning from intermediate to expert. Specifically, skills such as identifying and mitigating risks, developing logistical scenarios, and designing robust frameworks were rated higher, suggesting a stronger existing capability in these areas. Skills in applying advanced analytics and creating dashboards were slightly less developed but still rated at an intermediate to upper intermediate level. This distribution highlights a solid foundation but also areas needing improvement.

To address these gaps, companies plan to leverage a combination of internal development and external collaboration. While some skills are possessed by the current workforce, more complex competencies, particularly in programming and development, often require partnerships with other organizations. Strategies to enhance these capabilities include offering training courses, upskilling and reskilling existing employees, hiring new personnel, and opening new collaborations. This multifaceted approach aims to build a comprehensive skill set essential for optimizing and ensuring the resilience of internal logistics operations, especially those involving automated systems.

Smart Logistics Systems Engineer

The survey results for the Smart Logistics Systems Engineer role indicate that companies possess varying levels of skills related to integrating IoT devices, leveraging AI, implementing Industry 4.0 technologies, and designing scalable logistics systems, with most ratings falling between upper intermediate and expert levels.

To address skill gaps, companies emphasize the importance of training courses, upskilling, and reskilling initiatives. There is a strong focus on developing these capabilities further through collaborating with external partners and service providers. Additionally, companies plan to hire new personnel and open new collaborations to ensure they meet future technological demands and optimize logistics operations effectively. This approach aims to build a comprehensive skill set necessary for the seamless integration of smart devices and systems in logistics.

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[3] https://polimi.eu.qualtrics.com/jfe/form/SV_cvCfsjsbMVIkL0G

Product Systems Integration Specialist

The survey results for the Product Systems Integration Specialist role indicate that companies possess intermediate to expert levels of skills necessary for integrating new product technologies, facilitating seamless integration across teams, ensuring performance and safety standards, managing compliance with regulations, and utilizing innovative approaches for continuous improvement.

To address skill gaps, companies emphasize the importance of training courses, upskilling, and reskilling initiatives. There is also a focus on leveraging external collaborations, particularly for complex tasks related to programming and development. Companies plan to hire new personnel and open new collaborations to ensure they can adapt to new technologies effectively. This multifaceted approach aims to enhance existing capabilities and ensure the seamless integration of new product technologies into existing production systems, maintaining optimal performance and compliance with safety and environmental regulations.

## Digital Twin Developer for Battery Manufacturing

The survey results for the Digital Twin Developer for Battery Manufacturing role indicate that companies generally possess upper intermediate to expert levels of skills necessary for creating and maintaining digital twins of battery manufacturing processes. Key skills such as creating digital twins with 3D simulation tools, integrating real-time data, analyzing digital twin data to improve inefficiencies, implementing predictive maintenance, and developing platforms for collaborative access are highly valued meaning higher level of maturity. These skills are essential for enhancing efficiency, predicting performance, and reducing unplanned downtime in battery manufacturing.

To address skill gaps, companies emphasize the importance of training courses, upskilling, and reskilling initiatives. There is a strong focus on leveraging collaborating with external partners and service providers, and hiring new personnel to ensure comprehensive skill coverage. This approach aims to build advanced capabilities and ensure that companies can effectively utilize digital twin technologies to optimize production and resource use, enhancing teamwork and decision-making across departments.

AI Quality Assurance Engineer

The survey results for the AI Quality Assurance Engineer role indicate that companies generally possess upper intermediate levels of skills necessary for validating AI models, optimizing AI-driven inspection processes, and overseeing the AI learning process. These skills are essential for ensuring the accuracy and reliability of AI-driven quality inspection systems in turbine production. However, the ability to ensure compliance with industry regulations and internal data security policies is rated at a lower intermediate level, highlighting a need for improvement in this area.

To address these gaps, companies emphasize the importance of training courses, upskilling, and reskilling initiatives. They plan to enhance their capabilities through external collaborations and hiring new personnel. This approach aims to ensure comprehensive skill coverage, improve the reliability and efficiency of AI-driven quality inspection systems, and ultimately enhance product quality while reducing manual effort and inspection time. The combination of internal development and external resources will help companies meet the demands of advanced AI quality assurance in turbine production.
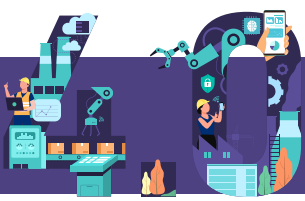
Predictive Maintenance System Architect

The survey results for the Predictive Maintenance System Architect role indicate that companies generally possess upper intermediate to expert levels of skills necessary for designing and implementing predictive maintenance systems across multiple plants. Skills such as designing and integrating predictive maintenance systems using IoT and machine learning to forecast equipment failures, managing real-time data from various sources to monitor equipment health and predict maintenance needs, ensuring system architecture supports scalable, multi-plant integration for consistent predictive analytics, and continuously evaluating system performance to drive improvements are essential for this role. However, there are areas needing further development, particularly in enhancing predictive capabilities and incorporating new technologies.

To address these gaps, companies emphasize the importance of training courses, upskilling, and reskilling initiatives. There is a strong focus on developing these capabilities further through collaborating with external partners and service providers. Additionally, companies plan to hire new personnel and open new collaborations to ensure they meet future technological demands and optimize predictive maintenance operations effectively. This approach aims to build a comprehensive skill set necessary for improving equipment efficiency, preventing unplanned downtime, and ensuring consistent predictive analytics across multiple plants.
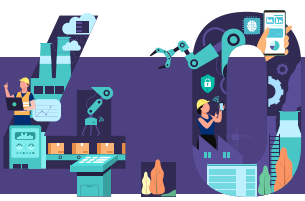
Circular Economy Strategist

The survey results for the Circular Economy Strategist role indicate that companies generally possess intermediate to expert levels of skills necessary for designing innovative business models, analyzing product lifecycles, implementing sustainable strategies, building collaborative relationships, and conducting market research. While these skills are present to some extent within companies, they do not comprehensively cover all aspects needed for future technological demands, indicating a need for further development.

To address these gaps, companies emphasize the importance of training courses, upskilling, and reskilling initiatives. They plan to enhance their capabilities through collaborations with external partners and service providers. This approach aims to ensure comprehensive skill coverage, enabling companies to effectively develop and implement sustainable business models, maximize product life cycles, promote recycling, and reduce waste, thus contributing to a more sustainable future.

Machine Tool Digital Twin Developer

The survey results for the Machine Tool Digital Twin Developer role indicate that companies generally possess upper intermediate to expert levels of skills necessary for developing digital twins, utilizing data for predictive maintenance, and implementing real-time monitoring systems. These skills are crucial for enhancing performance, predicting maintenance needs, and optimizing the lifecycle of machine tools. The ability to support circular economy goals and integrate sustainability metrics into digital twin models is also highly valued meaning higher level of maturity, reflecting a commitment to sustainability and efficiency through advanced digitalization.

To address any skill gaps, companies emphasize the importance of training courses, upskilling, and reskilling initiatives. Existing skills are high, but ongoing development is needed to keep pace with technological advancements. Companies plan to enhance their

capabilities through continuous training, collaborations with RE4DY partners, hiring new personnel, and establishing new collaborations. This multifaceted approach aims to ensure comprehensive skill coverage, maintaining a high level of expertise necessary for developing and maintaining digital twins, ultimately contributing to improved performance and sustainability in the machine tool industry.

Data Science Manager

The survey results for the Data Science Manager role indicate that companies generally possess upper intermediate to expert levels of skills necessary for managing data science and AI operations. Key competencies such as knowledge of data and AI processes, business processes, communication with domain experts, strategy development, and team management are highly valued meaning higher level of maturity. However, there is a recognized need for continuous training and upskilling to maintain and enhance these capabilities, especially in integrating these skills across various departments within the organization.

To address these gaps, companies emphasize the importance of training courses, upskilling, and reskilling initiatives. They plan to enhance their capabilities through recruiting new personnel and establishing new collaborations. This comprehensive approach aims to ensure that the workforce remains adept at managing the evolving landscape of data science and AI operations. By focusing on both internal development and external recruitment, companies aim to maintain a high level of expertise and effectively achieve their strategic goals in data science and AI.
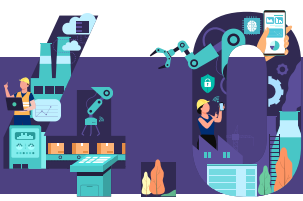
DATA / AI Architect

The survey results for the Data/AI Architect role indicate that companies generally possess upper intermediate to expert levels of skills necessary for integrating data universes, selecting software and hardware platforms for big data, and understanding big data architectural standards. These skills are essential for designing and maintaining robust data science and AI infrastructures. Existing skills are integrated within a matrix project management process and across various departments, ensuring a high level of expertise.

To address any skill gaps, companies emphasize the importance of training courses, upskilling, and reskilling initiatives. They plan to enhance capabilities through continuous training, recruiting new personnel, and collaborating with RE4DY partners and other external entities. This comprehensive approach aims to maintain expertise, adapt to emerging technologies, and ensure effective management and evolution of data science and AI architectures in line with industry standards.

DATA / AI Scientist

The survey results for the Data/AI Scientist role indicate that companies generally possess upper intermediate to expert levels of skills necessary for identifying and interpreting data sources, programming in languages like R and Python, communicating with domain experts, and using AI technologies and algorithms. These competencies are crucial for managing large datasets, ensuring consistency, and creating visualizations to aid in data understanding. While existing skills are integrated within the company's matrix project management process, additional expertise is required to fully cover all necessary areas.

To address these gaps, companies emphasize the importance of training courses, upskilling, and reskilling initiatives. They plan to enhance their capabilities through continuous training and collaborations with RE4DY partners and other external entities. Additionally, recruiting new personnel is essential to ensure comprehensive skill coverage and expertise. This approach aims to maintain a high level of proficiency in data science and AI operations, enabling companies to effectively manage and utilize data for strategic decision-making and operational efficiency.
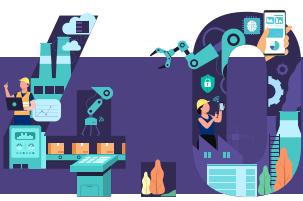
Visual Data Designer

The survey results for the Visual Data Designer role indicate that companies generally possess upper intermediate to expert levels of skills necessary for developing interfaces, creating vector graphics, user experience design, and developing engaging data analytics views. These competencies are crucial for creating compelling visualizations from complex data sets. However, there is a need for further development, particularly in integrating AI tools and visualizing large data volumes.

To address these gaps, companies emphasize the importance of training courses, upskilling, and reskilling initiatives. Continuous training and development are crucial to maintaining high expertise levels and adapting to emerging technologies. By focusing on internal development and leveraging existing skills across different roles, companies aim to enhance their ability to create insightful and engaging visualizations, thereby improving the overall understanding and usability of complex data.

Data / AI Specialist

The survey results for the Data/AI Specialist role indicate that companies generally possess upper intermediate to expert levels of skills necessary for integrating data and AI technologies into existing systems, managing data storage and query languages, interacting with collaborative robots and sensors, building AI models, and developing data models and workflows. These competencies are crucial for building, managing, and maintaining data/AI pipelines. Ensuring the security, quality, and integrity of data is also highly valued. While existing skills are strong, there is a need for continuous development to keep pace with technological advancements.

To address these skill gaps, companies emphasize the importance of training courses, upskilling, and reskilling initiatives. They plan to enhance their capabilities through continuous training, recruiting new personnel, and collaborating with RE4DY partners and other external entities. This comprehensive approach aims to maintain high levels of expertise, enabling companies to effectively manage and utilize data/AI pipelines and achieve their strategic goals. By focusing on internal development and leveraging external resources, companies aim to ensure comprehensive skill coverage and stay current with evolving technologies.

5 Other communication activities

5.1. Project communication for result development and continuity

The overarching aim of the RE4DY project is to showcase the collaborative capacity of the European industry in developing innovative data-driven digital value networks. These networks are designed to maintain competitive advantages by ensuring digital continuity and establishing sovereign data spaces throughout all stages of product and process lifecycles.

A central pillar of the project is the introduction of the "Data as a Product" concept, which seeks to streamline the implementation of digital continuity across various components such as digital threads, data spaces, digital twin workflows, and AI/ML/Data pipelines.

The Consortium, comprising diverse stakeholders, will actively participate in research, development, validation, and implementation of the Digital 4.0 continuity services. The exploitation objective of the project involves designing a strategy to capitalize on the outcomes of RE4DY. The exploitation objective within this context is to provide a detailed strategy for leveraging the RE4DY outcomes, providing value creation opportunities thereby reducing obstacles for manufacturing stakeholders manufacturing and industries to adopt reliable data asset management toolkit and AI lifecycle management services.

In fact, project result exploitation and communication are key for project continuity. In this line of thought, a business model encompasses the core aspects of a business, guiding its strategy and operations. Understanding the components of a business model is crucial for designing a sustainable and successful venture. In the context of RE4DY, a business model will be developed and implemented as tool to interpret the exploitation plan.

The business model will be assessed with the stakeholders from the different phases of the RE4DY chain, to reach the final business plan that will ensure the successful exploitation of RE4DY results and its continuity post-project.

To this end, the examination of existing developments and models within the industrial data space ecosystem will be considered. In essence, this examination will aim to identify the current landscape, serving as the foundation for developing the business model for the RE4DY project. By delving into the existing business models and initiatives within the Industrial Data Spaces domain, the RE4DY project will leverage the collective knowledge and experiences, to develop a robust, effective, and innovative business model that addresses the unique challenges and opportunities in the realm of industrial data exploitation.

A Project Continuity Plan will contribute to prepare for potential disruptions in project exploitation activities, in case of uncontrollable internal or external events. It will detail processes and strategies to help partners respond to operational disruptions, while also communicating the project and results effectively.
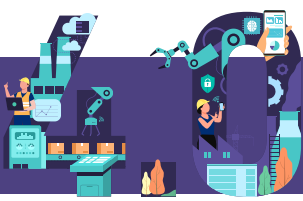
5.2. Potential collaborations & stakeholders

One of the objectives of RE4DY is to ensure continuity after its official funding period has come to an end. For this purpose, several strategies can be implemented, for example:
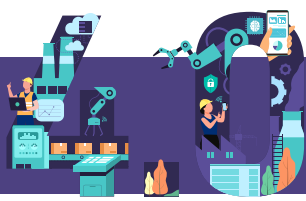
- Securing additional funding: this is crucial and can be achieved by applying for new grants from the European Commission or other programs.
- Getting institutional support: this can be achieved bridging funds or integrating the project's outcomes into a future project or existing programs.
- Commercialization of intellectual property and service provision based on the project's findings: commercializing the project pilots and other findings can generate revenue that will ensure continuity.
- Effective communication and dissemination: this will take place following this communication and dissemination plan.
- Developing a detailed sustainability plan: this will lead the way for continuity and provide guidance for the above-mentioned strategies.
- Participating in standardization activities: By aligning with and contributing to recognized standards, RE4DY's innovations remain relevant and integrated into future industry practices.

Regarding the effective communication and dissemination, it is important to keep stakeholders and potential partnerships well informed, event after the project ends. Since RE4DY's channels (website, LinkedIn and X) will remain after the funding has ended, it is important to clearly communicate that the impact and exploitable assets and results of the project will continue beyond the project's end date. For this, it is necessary to link them to the correct partner that will remain available beyond the project, which will most likely be Innovalia or the Digital Factory Alliance.

In combination with these strategies, it is of utmost importance to maintain and expand partnerships with existing and future projects in the manufacturing domain, as well as industrial clusters and key stakeholders. Not only that, but it is key to involve these stakeholders in the previously mentioned strategies and keep them engaged to contribute to these them. The importance of these partnerships comes to sustaining the research momentum of RE4DY and ensuring long-term impact. These collaborations can provide access to additional resources, such as funding, facilities, and expertise. These partnerships could also enhance the project's credibility and influence.

Moreover, these collaborations endure that the research made in RE4DY addresses real-world problems and meets the various needs of the manufacturing domain. The following is a list of strategic partners and potential collaborations with other projects and what they can do to further sustainability beyond RE4DY:

Stakeholder	Value for project continuity
Innovalia	Innovalia Association is a research center with immense experience in several fields, manufacturing one of them and a crucial one. This, combined with the fact that they lead BOOST4.0 and RE4DY, makes them a crucial partner for next steps after the project is formally over.
VWAE	Strong project partner, with a vast experience in the manufacturing domain and responsible for the "Connected Resilient Logistics Design & Planning in Automotive" RE4DY pilot.

|	
CEIT	Strong project partner, with a vast experience in the manufacturing domain and responsible for the "Connected Resilient Logistics Design & Planning in Automotive" RE4DY pilot.
AVL	Strong project partner, with a vast experience in the manufacturing domain and responsible for the "Collaborative Ecosystem Resilient Product/Production System Engineering" RE4DY pilot.
Fill	Strong project partner, with a vast experience in the manufacturing domain and responsible for the "Collaborative Ecosystem Resilient Product/Production System Engineering" RE4DY pilot.
GF	Strong project partner, with a vast experience in the manufacturing domain and responsible for the "Coordinated Ecosystem Integrated Performance Self-Optimization" RE4DY pilot.
Fraisa	Strong project partner, with a vast experience in the manufacturing domain and responsible for the "Coordinated Ecosystem Integrated Performance Self-Optimization" RE4DY pilot.
Avio Aero	Strong project partner, with a vast experience in the manufacturing domain and responsible for the "Cooperative Multi-Plant Turbine Production with Predictive Quality Chains" RE4DY pilot.
Engineering	Strong project partner, with a vast experience in the manufacturing domain and responsible for the "Cooperative Multi-Plant Turbine Production with Predictive Quality Chains" RE4DY pilot.
IDSA	IDSA is an international non-for-profit association that counts on a vast network of 164 members from 31 countries and almost 900 people contributing to its activities, as well as amounting to over 7.000 followers on LinkedIn. IDSA could be the perfect partner for matchmaking and dissemination after the project is formally over.
EUDDIC Cluster	Manufacturing project cluster conformed by RE4DY, Zero Swarm and Timber 5G. The value of this cluster comes from pooling the partners and audience from all three projects, which will prevail after the funding of RE4DY has concluded.
European Commission	The European Commission plays a significant role in shaping EU policies and funding initiatives to support innovation, science, and technology across member states. They can finance project proposals that could ensure the continuity of RE4DY.
SM4RTENANCE (Project)	SM4RTENANCE is an R&D project, financed by the European Commission and with the aim to facilitate a neutral cross-sectorial data space for the manufacturing industry. The project is led by Innovalia and involves multiple partners like FILL and CORE. The learnings, assets, and results from RE4DY can be incorporated in this project and ensure continuity.
Industry Innovation Cluster	The IIC is manufacturing cluster based in Bratislava, Slovakia. They are the Hub Facilitator for IDSA in Slovakia, count on an important network of industrial partners, an R&D Center and offers co-financing possibilities for industry projects. They have expressed their interest in RE4DY in the past.
Swiss Data Alliance	The SDA is a Swiss independent data policy Think Tank. They are well positioned at national level and have access to a vast network, which includes many players in the Swiss manufacturing domain. They have previously expressed their interest in collaborating with RE4DY, specifically with the "Coordinated Ecosystem Integrated Performance Self-Optimization" RE4DY pilot.
IDS-I Community	The Industrial Community (IDS-I) is an international coalition of industry partners that unites more than 60 organizations from around the world. This community could easily see the value RE4DY brings to the manufacturing sector and adopt and exploit the project results, thus increasing the project's impact.

Table 9. Stakeholders for project continuity
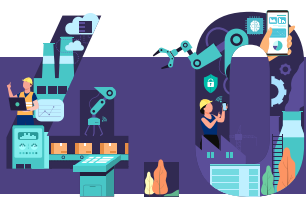
Besides the aforementioned strategies, it is necessary to internally hold a meeting between the project partners, where the continuity of the project will be discussed. This will be planned and arranged by Innovalia and IDSA.

In conclusion, RE4DY aims to ensure its continuity beyond the official conclusion of the project through several strategies. These strategies may be securing funding through new grants, obtaining institutional support via future initiatives and effective communication, dissemination, and exploitation of the project's results.

Additionally, maintaining and expanding partnerships with other projects, industrial clusters and key stakeholders in the manufacturing sector is crucial. These collaborations will sustain RE4DY's research momentum and enhance its credibility. By addressing real-world problems and meeting the diverse needs of the manufacturing sector, these partnerships will ensure the long-term sustainability of the project.
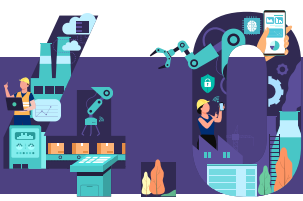
6 Conclusions

As stated in the Executive Summary of this document, Deliverable 6.3, stands for Skills Development, Knowledge Transfer and Communication Plan. This deliverable is the Final Version and Second Iteration of this type of deliverables and is the third deliverable of WP6.

From the two main objectives targeted by this deliverable, the RE4DY project consortia can affirm that both have been achieved:

1. The communication, dissemination and exploitation of the project, its results and partner contributions to maximize project visibility, partner mobilization, project and result replication potential and potential, real and future impact in business and standardization from month 1 to month 24 (M1-M24).
2. The skills development by elaborating a training plan which fulfils the European Commission standards, gathering all the advances in the skills development task of WP6 executed from month 1 to month 24 (M1-M24).

How has the **project, result and partner contributions communication, dissemination and exploitation objective** been achieved?

- With the planification and implementation of the AIDA model-based RE4DY project D&C Strategy.
- With the design, development, usage, implementation and impact accounting of the RE4DY Logo kit, RE4DY Power Point Template, RE4DY Word Template, RE4DY Newsletter Template, RE4DY project LinkedIn Branding, RE4DY project Twitter / X Branding, RE4DY project infographic design, RE4DY project factsheet, RE4DY Website, RE4DY Website Articles & News, RE4DY Project LinkedIn Page, content and social media campaigns, RE4DY Twitter / X Account and posts, the DFA as a PR Office tool, with the DFA Pillars, RE4DY & DFA Newsletters, the RE4DY Event organization and RE4DY project awareness via Event presence, among other Dissemination and Communication Activities.
- With the development, publication, submission and preparation of Academic Publications led by RE4DY consortia partners with RE4DY results or RE4DY-related academic knowledge transfer activities.
- With the advantage of a total online digital audience of 7.242 people.
- With the development of 10 RE4DY Datasets.
- With the development and implementation of project clustering activities.
- With the usage of project exploitation and communication to ensure project continuity.
- With the development of a Stakeholders map for project continuity.

In few words, **achieving 16 out of 19 Dissemination and Communication KPIs while raising awareness about RE4DY and its results among over 340.000 membered total online and offline audiences.**

How has the **skills development objective** been achieved?

The skills development process has identified a range of critical technical and soft skills required for various roles in the project, including Resilient Internal Logistics Analyst, Circular Economy Strategist, Machine Tool Digital Twin Developer, Visual Data Designer, and Data/AI Specialist.

The analysis of the survey results highlights the current skill levels within the project partners' companies and their future skill needs. Companies generally possess upper intermediate to expert levels of skills in areas like predictive maintenance, digital twin development, data management, and visualization. This includes several capabilities in
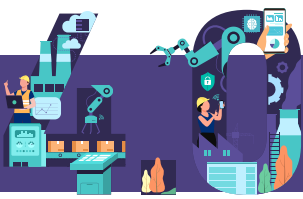
data-driven manufacturing, such as integrating real-time data into digital twins, developing applications from big data and AI, and using cloud computing and AI in industrial control software and applications to monitor and control activities. However, there are still some skill gaps that need to be addressed, particularly in emerging areas like integrating AI tools, handling large data volumes, and supporting circular economy principles. To address these gaps, companies plan to focus on training courses, upskilling, reskilling, and leveraging external collaborations and new hires. In the upcoming activities of this effort , a primarily focus on suggesting suitable training exercises to help the partners closing their gaps and tracking their progress throughout the project will be done.

In conclusion, the RE4DY Skills Development, Knowledge Transfer and Communication Plan is a huge success, with few remaining activities.

In the line of project and result dissemination and communication, the remaining activities for the last 12 months of the RE4DY project involve:

- the organization of 2 RE4DY TO TALK Events on Resiliency Framework with Chalmers (September 2024) and Data as a product with Innovalia (January 2025);
- the activation of 3 new Social Media Campaigns about Testing & Experimentation Facilities & their role in RE4DY pilots, RE4DY Pilot Dissemination and RE4DY Component Toolkit;
- the publication of RE4DY Pilot videos & visual documentation in all online channels;
- the publication of more RE4DY ARTICLES in RE4DY partners websites; and
- the planification of 3-4 more DFA & RE4DY Newsletter campaigns with new content from RE4DY partners.

In the line of skills development activities, the remaining activities for the last 12 months of the RE4DY project involve:

- Implementation of a second iteration of the methodology to analyse the TO-BE conditions and compare them with the AS-IS situations of Pilots.
- Preparation of databases of training activities to recommend tailored training courses to project partners by gathering comprehensive information from project partners through workshops and interviews.
- Conducting an analysis of success stories and approaches employed by Pilots to enhance their digital transformation.