DOME 4.0

Deliverable D6.1 - “Dissemination & Communication”

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Publishable Summary

The DOME 4.0 project aims to revolutionize the industrial data landscape by creating an open, interoperable, and scalable marketplace ecosystem. Over 48 months, the project has driven advancements in data interoperability, ontology-driven solutions, and AI-enabled tools, targeting applications across materials science, manufacturing, and beyond. Through a combination of innovative technologies, collaborative research, and stakeholder engagement, DOME 4.0 has laid the groundwork for a digital ecosystem that fosters seamless data sharing while adhering to FAIR principles. The project has actively disseminated its findings and achievements through events, factsheets, and digital platforms, enhancing visibility and promoting collaboration with industry, academia, and policymakers.

Executive Summary

This report outlines the dissemination and communication activities conducted during the DOME 4.0 project, emphasizing their role in achieving project visibility and engagement goals. The dissemination strategy was designed to communicate project outcomes effectively to a diverse audience, including industry stakeholders, academic institutions, and policymakers. Key tools included a project website, social media channels, factsheets, newsletters, and participation in events.

Throughout the project's lifecycle, significant efforts were made to establish synergies with other EU-funded initiatives and stakeholders, leading to knowledge exchange and the promotion of data-sharing principles. The project met several dissemination KPIs, including the production of five factsheets, participation in over 30 events, and the publication of blogs and press releases. However, some challenges, such as the limitations in publishing on external EU platforms, were encountered. The report evaluates these activities against project goals, offering insights into their impact and lessons learned.

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1. Introduction – Section 1

1.1 Objectives of the Deliverable

The D6.1 "Dissemination & Communication" under the Work Package 6, focusing on Dissemination, Communication, activities within the DOME 4.0 project. This deliverable encompasses a comprehensive horizontal component developed to enhance visibility and engagement as part of the DOME 4.0 project's strategic work plan.

The primary objective of this deliverable is to present the comprehensive outcomes of the **Dissemination and Communication (D&C) strategy** for the **entire 48-month duration** of the DOME 4.0 project. It serves as the **sole, all-encompassing report** detailing the development, execution, and impact of the project's communication plan, stakeholder engagement, and liaison activities from the project's inception to its conclusion. The deliverable provides a thorough overview of all D&C efforts, highlighting key activities, achieved outcomes, and impact metrics throughout the project's lifecycle. By adopting a targeted approach, tailored key messages were crafted to effectively engage diverse stakeholder groups, ensuring maximum outreach and measurable impact. These efforts have been strategically designed to enhance project visibility, foster collaboration, and drive engagement across various sectors, thus ensuring the successful dissemination of DOME 4.0's results and objectives.

We have achieved to disseminate key messages using a range of channels, including multimedia campaigns, workshops, conferences, participation in industry events, online platforms, and collaborative initiatives with research institutions and industry partners. Additionally, we established liaisons with other EU projects and initiatives to maximize measurable impact and knowledge exchange.

The deliverable outlines the expected outcomes, impacts, assessment metrics, and tools utilized to track and evaluate the effectiveness of the dissemination and communication efforts. The implementation of the strategy, as detailed in D6.1, has played a pivotal role in promoting the DOME 4.0 project, fostering collaboration, engaging stakeholders, and facilitating knowledge dissemination.

Additionally, the D6.1 Dissemination & Communication, provides an in-depth analysis of engagement metrics, stakeholder feedback, and the overall effectiveness of the communication strategy in achieving project objectives, enhancing stakeholder engagement, and maximizing the project's impact.

The purpose of this deliverable is to present a holistic dissemination and communication plan, with a particular focus on the following objectives:

- **Detail the strategy** for disseminating and communicating knowledge and results.
- **Define the rules and procedures** for implementing, monitoring, and evaluating all communication and engagement activities.
- **Ensure the dissemination** of project results among partners, facilitating the exploitation of research-derived technologies by industrial stakeholders.
- **Develop tailored dissemination and engagement tools and channels** for each target audience.
- **Outline the methods, tools, and promotional materials** (e.g., project logo, website, print materials, events, publications) that will be used to support the project's communication efforts.

- **Provide a comprehensive overview** of planned communication activities, alongside potential dissemination opportunities to be leveraged throughout the project.
- **Identify targeted audiences**, including industry stakeholders, user communities, experts, related projects and initiatives, policymakers, researchers, and the general public interested in DOME 4.0's outcomes.

1.2 Structure of the Deliverable

The present deliverable is organized into the following sections:

- Overview of the deliverable's purpose and alignment with DOME 4.0's WP6 objectives.
- Outline of communication objectives, project vision, phases, and target audiences.
- Summary of activities and tools used (e.g., social media, website, newsletters).
- Overview of the strategy, including Persona-Canvas per Stakeholder, channels, and outreach tactics.
- Detailed report on planned actions, events, and stakeholder engagement efforts.
- Description of synergies and partnerships to extend DOME 4.0's impact.
- Metrics, KPIs, and evaluation of progress on dissemination effectiveness.
- Summary of key findings, impact assessment.

2. Communication Strategy

2.1 Vision

The current situation within the industrial sector reveals a pressing need for streamlined data sharing and interoperability to drive innovation and enhance competitiveness. Many organizations, particularly in the European materials and manufacturing industries, are constrained by fragmented data ecosystems, limited data access, and siloed infrastructures. This fragmentation hampers collaboration, stifles innovation, and prevents businesses from fully leveraging the potential of their data assets. The lack of unified platforms for secure and open data exchange means that valuable insights and opportunities for optimization remain underutilized.

The DOME 4.0 project seeks to address these challenges by developing a comprehensive, open marketplace ecosystem for industrial data. The project's core objective is to establish a scalable platform that promotes the sharing of B2B data, thereby unlocking value for the creation of new or enhanced products, processes, and services. Central to this effort is the implementation of ontology-driven semantic data interoperability, which will enable seamless integration of diverse data sources. By leveraging advanced technologies like Artificial Intelligence (AI) and Machine Learning (ML), DOME 4.0 aims to facilitate deep knowledge extraction and data-driven decision-making, significantly benefiting the materials and manufacturing sectors.

To achieve its goals, DOME 4.0 proposes an innovative solution that combines cutting-edge technology with a collaborative ecosystem. The project will develop a platform that not only supports semantic data exchange but also integrates connectors to existing marketplaces, simulation environments, and data platforms. This ecosystem will demonstrate its value through nine B2B showcases, focusing on critical sectors such as nanomaterials and lightweight construction. In addition, DOME 4.0 will ensure that data

governance, sovereignty, and compliance with FAIR principles (Findable, Accessible, Interoperable, and Reusable) are maintained, thereby building trust among stakeholders and encouraging broader participation.

Having said these, DOME 4.0 aims to create a sustainable, open digital marketplace ecosystem that empowers European industries to thrive in the digital economy. By fostering collaboration and data sharing across sectors, the project aims to accelerate digital transformation and boost the competitiveness of European enterprises. Ultimately, DOME 4.0 envisions a future where industrial data flows seamlessly between stakeholders, driving innovation, reducing costs, and enabling the rapid development of new solutions. This vision aligns with the broader EU agenda of promoting open science and open innovation, ensuring that the project's impact extends beyond its four-year timeframe to foster lasting change across the industrial landscape.

2.2 Objectives

The main objective of the Dissemination and Communication activities for DOME 4.0 is to effectively convey the project's core achievements, innovations, and benefits to a wide audience, ensuring strong visibility across Europe. These activities are designed to promote a comprehensive understanding of DOME 4.0's contributions to the digital transformation of the industrial sector, especially in materials and manufacturing. By engaging both the general public and targeted professional stakeholders, the project aims to foster awareness and support for its outcomes, driving greater adoption and impact.

To achieve these goals, the communication strategy focuses on building a robust brand presence for DOME 4.0 through the creation of visually appealing materials, such as the project logo, brochures, posters, and other promotional assets. The strategy also includes the proactive development of social media channels, along with participation in high-profile European and international conferences and events, to amplify the project's reach and engagement. These efforts are complemented by the identification of key stakeholders and the establishment of a Special Interest Group, enabling ongoing dialogue and fostering long-term collaboration.

Furthermore, the project emphasizes the importance of scientific dissemination by targeting publications in reputable journals and presenting at academic conferences. By disseminating research findings through these channels, DOME 4.0 seeks to build credibility within the scientific community while also informing industry leaders and policymakers. The strategy also includes publishing articles, white papers, and case studies to demonstrate the tangible benefits of DOME 4.0's solutions in real-world scenarios.

Lastly, networking and partnerships play a critical role in extending the project's impact. By engaging with European networks, research institutions, and industry associations, DOME 4.0 aims to tap into additional resources, expertise, and collaborative opportunities that can enhance the project's reach and sustainability. This integrated approach ensures that the project not only communicates its achievements but also leverages strategic relationships to drive long-term adoption and success across relevant sectors.

2.3 Communication Strategy

2.3.1 Targeted audience

The DOME 4.0 project strategically targeted a diverse range of stakeholders to ensure maximum impact and adoption of its innovative solution. The primary audiences include academic and research institutions, industry stakeholders, policy makers, and the broader public. Academic institutions were a key focus, as

engaging with universities and research centers helped advance the project's scientific objectives. By promoting the use of ontology-driven data interoperability and AI tools, DOME 4.0 aimed to drive further research and collaboration. Additionally, targeting the research community ensured that the project's innovations reached those who could further develop and apply these technologies in scientific domains.

To drive industry adoption, DOME 4.0 focused on engaging with stakeholders from sectors such as materials, manufacturing, and technology providers. This audience includes both large enterprises and SMEs that could benefit from the project's data-sharing capabilities, particularly in areas like nanomaterials and lightweight construction. By collaborating with industry partners and leveraging existing networks, the project was able to foster relationships with companies that could integrate its solutions into their operations. This approach also facilitated knowledge transfer, enabling companies to use DOME 4.0's ecosystem to enhance their own data-driven processes.

On the policy front, the project targeted regulatory bodies and standards organizations to align its outputs with existing frameworks and promote compliance with FAIR data principles. Engaging with policy makers and standardization bodies ensured that the project's solutions were not only scientifically rigorous but also practically applicable within industry standards. This interaction aimed to influence policy development related to data sovereignty and interoperability, helping to shape the regulatory landscape in favor of open data ecosystems.

The consortium also made concerted efforts to engage the broader public and innovation communities. Through digital communication strategies, including social media, newsletters, and blog posts, the project reached a wide audience beyond just industry and academia. These efforts were complemented by establishing Special Interest Groups (SIGs) and fostering liaisons with external partners to maintain ongoing dialogue. By leveraging these diverse channels, the project ensured that its messages were disseminated widely, fostering a community around the DOME 4.0 ecosystem and promoting the benefits of open, interoperable data platforms for the digital transformation of European industries.

The target groups that have been identified as potential stakeholders of DOME 4.0 can be classified into the following major categories:

1. **Academic and Research Institutions**

    - **Universities**: Engaging with academic researchers and students to promote knowledge exchange.
    - **Research Centers**: Fostering collaborations to leverage scientific expertise in data interoperability and AI.
    - **Relevant Research Projects and Initiatives**: Aligning with other EU-funded projects to enhance synergies and share best practices.
    - **2. Industry Stakeholders**
    - **Technology Providers**: Companies specializing in AI, data analytics, software development, and digital solutions.
    - **Manufacturing and Materials Sector**: Industries focused on advanced materials, nanotechnology, and smart manufacturing processes.

- **Large Corporations and SMEs**: Businesses seeking to implement data-driven strategies for improved efficiency and innovation.

2. **Policy Makers and EU Entities**
   - **Regulatory Bodies and Policy Makers**: Engaging with entities responsible for shaping data governance and digital transformation policies.
   - **EU Entities**: Collaborating with European Commission initiatives and frameworks to align with EU strategies.
   - **Standardization Authorities and Certification Bodies**: Ensuring compliance with international data standards and promoting interoperability.
3. **Innovation Communities and Industry Networks**
   - **Industry Associations and Innovation Hubs**: Building networks to drive adoption of DOME 4.0 solutions in various sectors.
   - **Non-Profit Organizations and NGOs**: Fostering engagement with entities focused on digital innovation and open science initiatives.
4. **General Public and Wider Community**
   - **General Public**: Raising awareness about the benefits of open data ecosystems through accessible communication channels.
   - **Public Engagement**: Utilizing social media, blogs, and infographics to reach non-specialist audiences and encourage societal uptake of project outcomes.

2.3.2 Persona-Canvas Analysis per stakeholder

The DOME 4.0 project engages with a diverse set of stakeholders, each playing a crucial role in achieving the project's objectives of advancing data interoperability and digital innovation in materials science and manufacturing. To ensure targeted and effective engagement, a Persona-Canvas Analysis has been conducted for key stakeholder groups, including industrial users, researchers, policymakers, technology providers, and external industry networks. The following tables provide a detailed breakdown of each group's goals, challenges, and interaction touchpoints with DOME 4.0, highlighting how the project addresses their specific needs through its platform, showcases, and collaborative activities. This structured analysis serves as a guide to understanding the project's stakeholder landscape and tailoring communication and dissemination strategies accordingly.

2.3.2.1 Industrial Users (e.g., Manufacturing, Smart Cities, etc.)

Table 1 - Persona Canva for Industrial Users

Attribute	Details
Persona Name	The Forward-Thinking Industrial Manager
Goals	Improve operational efficiency through data-driven decision-making.
	Access reliable and interoperable data sources.
	Implement advanced manufacturing and predictive maintenance techniques.
Challenges	Fragmented data systems and lack of interoperability.

	High costs and time-to-market pressures.
	Limited knowledge about semantic tools and platforms.
How DOME 4.0 Helps	Provides an interoperable, FAIR-compliant platform for data sharing.
	Offers tailored tools like digital twins and semantic modeling for optimization.
	Facilitates networking and collaboration opportunities through events.
Touchpoints	Participation in workshops, hackathons, and events.
	Access to use cases and success stories via the website.
	Engagement through social media and targeted communications.

2.3.2.2 Researchers and Academia

Table 2 - Persona Canva for Researchers & Academia

Attribute	Details
Persona Name	The Academic Innovator
Goals	Collaborate on cutting-edge research in materials and manufacturing.
	Access structured, interoperable datasets for academic studies.
	Publish impactful research and contribute to standardization efforts.
Challenges	Difficulty accessing high-quality, interoperable data.
	Lack of tools bridging academic insights and industrial needs.
	Navigating complex FAIR principles for data management.
How DOME 4.0 Helps	Provides a user-friendly platform for FAIR data management and sharing.
	Supports ontology-driven semantic modeling and collaboration.
	Enables knowledge-sharing through workshops and events.
Touchpoints	Educational materials, webinars, and hackathons.
	Collaborative research opportunities in DOME 4.0 showcases.
	Dissemination of findings via factsheets and publications.

2.3.2.3 Policy Makers and Funding Bodies

Table 3 - Persona Canva for Policy Makers

Attribute	Details
Persona Name	The Strategic Decision-Maker
Goals	Drive digital transformation and sustainability within the EU.
	Support policies aligned with FAIR principles and open data sharing.
	Assess socio-economic impacts of funded projects like DOME 4.0.
Challenges	Limited visibility into project applications and outcomes.
	Bridging policy objectives and real-world industrial applications.
	Encouraging adoption of standards and practices at scale.
How DOME 4.0 Helps	Demonstrates measurable progress through KPIs and showcases.
	Aligns with EU priorities, such as Industry 4.0 and data sovereignty.
	Provides insights into innovation and collaborative achievements.
Touchpoints	Reports like D6.0 showcasing outcomes and impact.
	EU-level conferences and forums.
	Updates via the project website and press releases.

2.3.2.4 Technology Providers and Developers

Table 4 - Persona Canva for Technology Providers

Attribute	Details
Persona Name	The Agile Tech Innovator
Goals	Develop innovative technologies integrating with semantic platforms.
	Identify new business opportunities through collaborations.
	Stay ahead in the Industry 4.0 technology landscape.
	Understanding specific needs of industries and academia.
	Ensuring interoperability with existing systems.
	Limited awareness of ontology-based platforms.
How DOME 4.0 Helps	Provides a scalable, ontology-driven platform for integration

	Encourages innovation through hackathons and workshops.
	Facilitates networking with potential collaborators and clients.
Touchpoints	APIs, documentation, and technical resources.
	Participation in hackathons and co-creation events.
	Direct communication through newsletters and social media.

2.3.2.5 External Industry Networks and Communities

Table 5 - Persona Canva for External Industry Networks & Communities

Attribute	Details
Persona Name	**The Collaborative Ecosystem Builder**
Goals	Create synergies between projects and industries for mutual benefit.
	Access insights and best practices from large-scale initiatives.
	Enhance visibility and value of their networks through partnerships.
Challenges	Fragmentation of information and lack of standardized approaches.
	Limited knowledge of ongoing EU-funded projects.
	Establishing measurable and impactful collaborations.
How DOME 4.0 Helps	Facilitates collaboration through cross-industry events.
	Shares findings via newsletters, factsheets, and social media.
	Demonstrates best practices in semantic data-sharing ecosystems.
Touchpoints	Joint activities like CODEX Cluster collaborations.
	Networking at conferences, webinars, and open days.
	Dissemination via the website and press releases.

The Persona-Canvas Analysis demonstrates that the DOME 4.0 project has developed a solid approach to stakeholder engagement, ensuring alignment between the project's offerings and the unique needs of each group. By addressing their goals and challenges, providing tailored solutions, and fostering collaboration, DOME 4.0 creates significant value for its stakeholders. This structured engagement not only maximizes the project's impact but also ensures its relevance and scalability across diverse industrial and academic ecosystems.

2.3.3 List of Communication Targeted Activities

The DOME 4.0 project utilized a comprehensive communication strategy to build a strong brand and public presence, ensuring effective dissemination of its achievements. Central to this strategy was a multi-channel approach aimed at engaging stakeholders, increasing awareness, and fostering participation. The project website served as the main information hub, complemented by active social media channels to maintain continuous engagement. Regular updates and multimedia content helped reach both professional and general audiences, while e-newsletters and publications targeted specific stakeholders to deepen relationships. Additionally, leveraging third-party platforms extended the project's visibility in industry and academic circles. By using audiovisual materials like infographics and videos, DOME 4.0 effectively communicated complex concepts in an accessible manner, ensuring its key messages reached a broad audience.

The dissemination and communication means that are going to be used in the project under each category of activities are as follows:

- Project Website
- Social Media (LinkedIn, Twitter)
- E-newsletters
- E-publications (third-party platforms)
- Press Releases
- Factsheets
- Blogs
- Audiovisual content (videos, multimedia)

3. Communication Activities

3.1 Visual Identity and Branding

The DOME 4.0 project established a strong visual identity from the outset to ensure consistent and impactful communication across all channels. This cohesive branding is essential for maximizing the project's visibility and engagement with its target audiences. The visual identity includes a distinct project logo, a carefully chosen color palette, and a unified design style that reflects the project's mission and technological focus. The **DOME 4.0 logo** encapsulates the project's vision of creating an open, digital marketplace ecosystem for industrial data. The design combines modern, clean lines with a color palette that reflects technological innovation and digital transformation. The logo symbolizes interconnectedness and data flow, capturing the essence of DOME 4.0's mission to foster seamless data sharing across industries. By integrating elements that represent collaboration and openness, the logo serves as a visual anchor for the project, ensuring immediate recognition and reinforcing its commitment to advancing data-driven innovation in Europe.

Figure 1 - DOME 4.0 Logo

The red and grey colors chosen for the DOME 4.0 logo represent a deliberate and meaningful design decision to reflect the project's objectives and values. **Red**, with its vibrant and dynamic tone, symbolizes innovation, energy, and the transformative impact that DOME 4.0 aims to bring to materials science and manufacturing. **Grey**, on the other hand, conveys a sense of stability, professionalism, and technical sophistication. It represents the foundational nature of the DOME 4.0 platform as a robust and reliable industrial data-sharing ecosystem. Together, the combination of red and grey ensures a balanced visual identity—combining dynamism and trustworthiness—which aligns with the project's mission to innovate while providing dependable solutions.

Figure 2 - Logo Colours

To ensure flexibility and adaptability across various media and use cases, two alternative logo variations have been developed. The first variant features the logo in **grey on a transparent background**, making it

suitable for digital or print materials with lighter-colored backdrops. This version maintains a clean and professional appearance while blending seamlessly into its environment. The second variant displays the logo in **white on a grey background**, offering a strong contrast ideal for dark-themed presentations, banners, or promotional materials. This version emphasizes readability and retains the logo's impact, ensuring consistent branding across diverse platforms.

Figure 3 - Different Variations of Project's Logo

A comprehensive communication pack was developed early on, featuring templates for brochures, PowerPoint presentations, Microsoft Word documents, posters, roll-ups, and press releases. These templates ensure that all project materials maintain a consistent appearance and align with the DOME 4.0 brand.

To enhance recognition and create a sense of continuity, the project's branding extends to all promotional materials, which prominently feature the project name, website, and social media handles. Additionally, all materials include the Horizon Europe funding acknowledgement, adhering to the European Commission's guidelines. This approach not only strengthens the DOME 4.0 identity but also ensures that each event or activity under the project umbrella retains a visual link to the overarching brand while allowing for sub-branding when necessary.

3.1.1.1 Digital Communication Channels

The communication approach has been incorporated into the project's online activities in order DOME 4.0 to diffuse key messages with the highest impact to different communication channels to increase the traffic to the website and are presented below [1].

We are utilizing the following online means:

- Project website, with the attractive content regularly updated and promoted via the projects and partners' social media.
- Social media accounts (LinkedIn and Twitter) and active posting/re-posting.
- e-Newsletter (every 6 months).
- e-Publications in third-party websites, portals, intranets, blogs.
- Factsheets
- Visuals and multimedia (video(s), photos).

3.2 Project Website

The **DOME 4.0 website** serves as the primary gateway for disseminating the project's results, updates, and activities to stakeholders and the general public interested in learning more about its progress and is accessible through the following link: (https://dome40.eu/) [2]. Moreover, it is used as a central hub for the dissemination and communication activities of the project as every information emanates from the project's website, playing a significant role in reaching a diverse audience and sharing project activities, updates, results, and outcomes.

The DOME 4.0 website has been developed during the initial months of the project and works as a central hub that provides information about the project's objectives, achievements, and future plans [2]. We have applied different web-based techniques and approaches for the communication and dissemination of the project results and outcomes which are related with the traffic on the project website. These techniques are designed to strength and increase the organic reach and improve the natural growth. As search engines consist of the main getaway to reach a website, are particularly valuable as well, to increase the chances of engaging visitors through them and drive the to the project's website. Hence, to maximize its reach and ensure high visibility, a robust **Search Engine Optimization (SEO)** strategy was implemented. This includes optimizing content with targeted keywords, meta tags, and descriptions to improve the website's ranking on Search Engine Results Pages (SERPs). Additionally, regular updates through blogs, news sections, and downloadable resources enhance the site's relevance and encourage return visits. To further boost visibility, backlinking strategies and the integration of analytics tools are used to monitor traffic and engagement, ensuring that the website remains an effective tool for communicating DOME 4.0's impact and fostering stakeholder engagement.

The **DOME 4.0 homepage** is designed to offer visitors a user-friendly experience, effectively conveying the project's mission and activities. Each section is strategically structured to provide clear and accessible information, facilitating engagement and fostering a deeper understanding of DOME 4.0's initiatives. From intuitive navigation menus to detailed overviews of objectives and resources, the homepage serves as a central hub for stakeholders and the general public to explore and connect with the project's endeavors.

The **DOME 4.0 homepage** has been structured to provide visitors as follows:

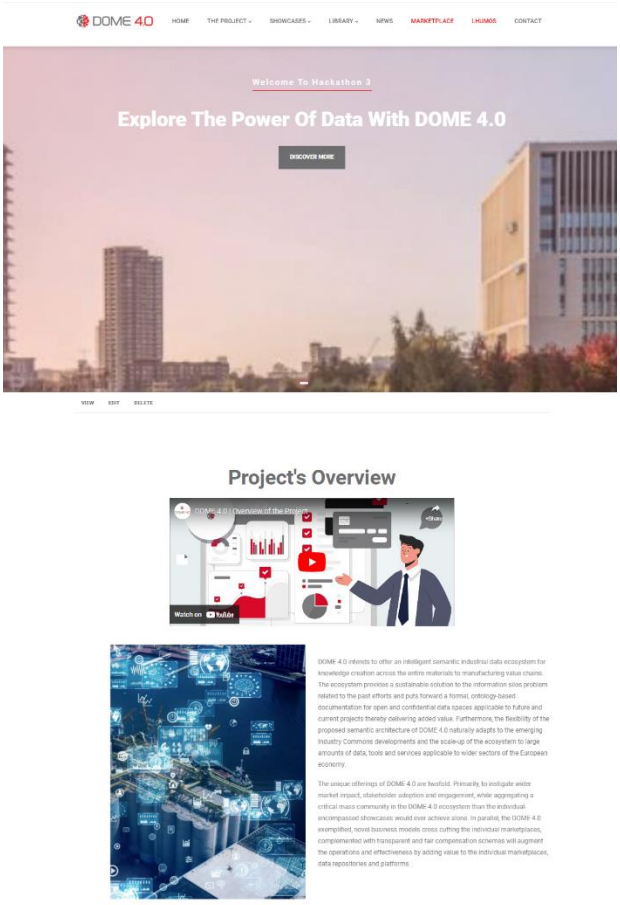


Figure 4 - DOEM 4.0 Hompage 1

1. **Header Navigation**: This section includes the main menu with links to key areas such as 'Home,' 'About Us,' 'Objectives,' 'News & Events,' and 'Contact.' It facilitates easy navigation across the website, allowing users to access information efficiently.

2. **Hero Section**: Prominently features the DOME 4.0 logo and a concise tagline that encapsulates the project's mission. This area often includes a call-to-action button directing users to learn more about the project or participate in upcoming events.

3. **About Us**: Provides an overview of DOME 4.0, detailing its purpose, vision, and the consortium behind it. This section aims to inform visitors about the project's background and its significance in the industrial data ecosystem.

4. **Objectives**: Outlines the main goals of DOME 4.0, highlighting its commitment to developing an intelligent semantic industrial data ecosystem. It explains how the project intends to facilitate knowledge creation across materials and manufacturing value chains.

5. **News & Events**: Showcases the latest updates, press releases, and information about upcoming events related to DOME 4.0. This section keeps stakeholders informed about the project's progress and opportunities for engagement.

6. **Resources**: Offers access to various materials such as publications, reports, and multimedia content. It serves as a repository for stakeholders seeking in-depth information about the project's findings and outputs.

7. **Footer**: Contains additional navigation links, contact information, and social media icons. It ensures users can easily connect with the project team and stay updated through various channels. The **design** is aligned with the **branding of the European Commission** (EC) and Horizon Europe, while also adhering to the visual identity of the DOEM 4.0 project.

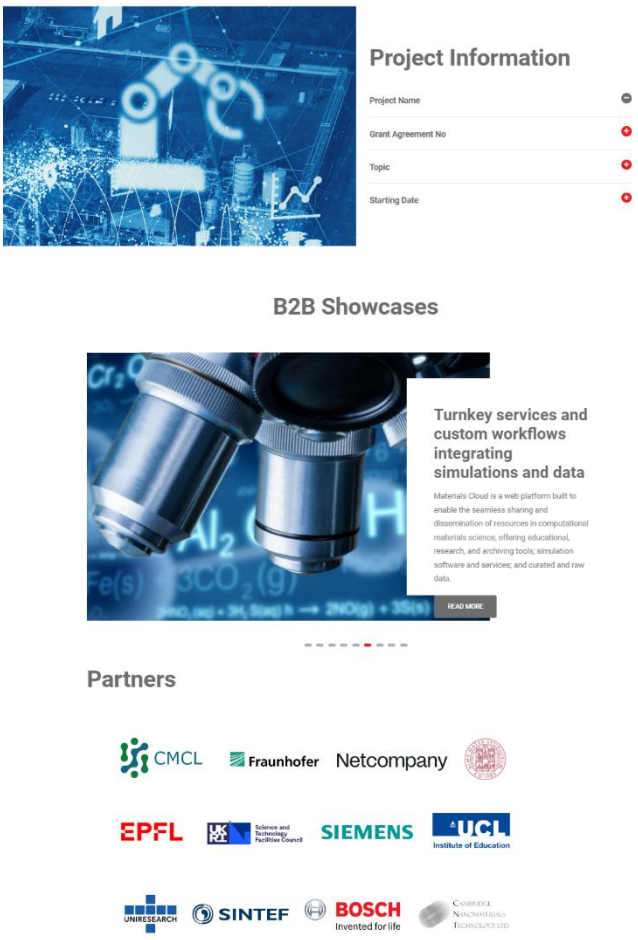


Figure 5 - DOEM 4.0 Hompage 2

3.2.1 Website Report

Throughout the duration of the **DOME 4.0 project**, the website's performance has been continuously monitored using **Google Analytics** to assess the effectiveness of our established communication strategy. Periodic collection and analysis of metrics, such as website traffic, user engagement, page views, and referral sources, allowed the consortium to gain valuable insights into how the target audiences were interacting with the site. This enabled us to follow a data-driven approach to identify which content resonated most with stakeholders, optimize pages for better engagement, and refine SEO strategies to increase visibility. Additionally, we tracked measures such as session duration, bounce rates, and user demographics, to adapt its outreach efforts end enhance the reach and impact of the project's website.

Due to Google's transition from **Universal Analytics** to the new **GA4 Analytics** platform, all previously collected metrics under the classic analytics system were unfortunately removed, resulting in a loss of historical data from the initial period of the DOME 4.0 website. This shift by Google impacted our ability to fully analyze performance trends over the entire project duration using consistent metrics. However, to provide an overview of our website's performance, you will see the **last recorded metrics from** the **latest data from GA4 Analytics**.

The information and statistics presented below are obtained from the Google Analytics Platform, which tracks the traffic on the DOME 4.0 website. These statistics cover the period from M1 to M48.

- Number of unique visitors on the site (the number of distinct individuals visiting a page or multiple pages on a website): **14,348**
- Number of sessions (the period of time that a user is actively engaged with the website): **17,283**
- Number of page views (the total number of pages viewed): **24,118**
- Avg. Session Duration (how long users spend interacting with the website): **00:01:40**

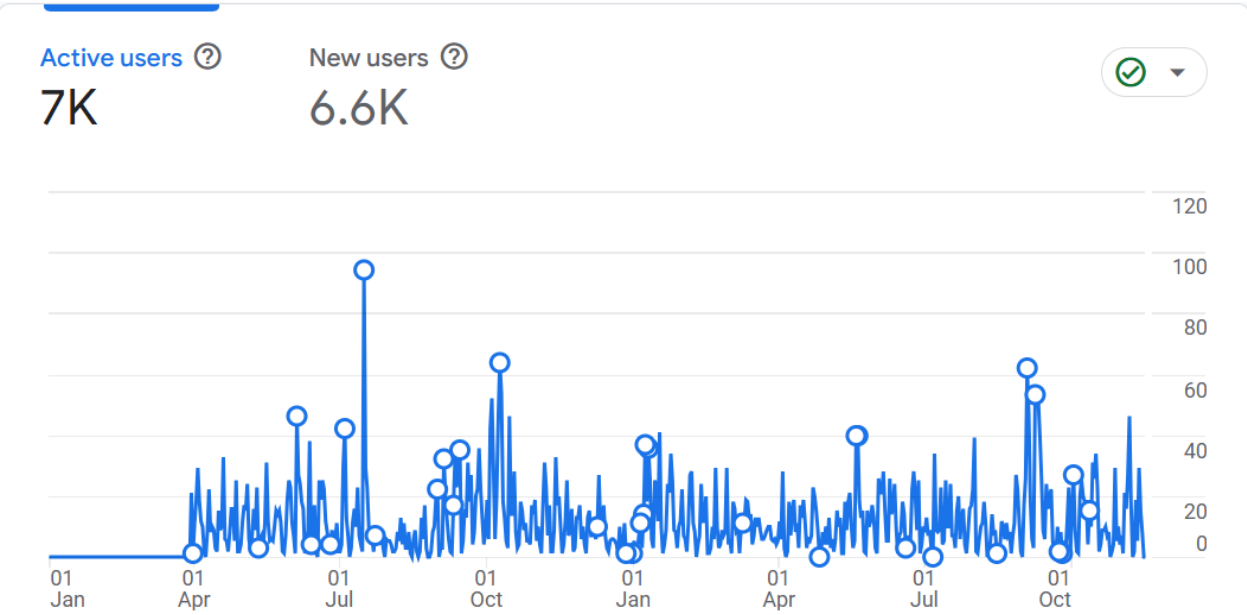


Figure 6 - Google Analytics Active Users

Figure 7 - Google Analytics

Considering the significant changes observed in the website traffic metrics, these fluctuations are closely linked to the various **activities and updates on the DOME 4.0 website**. This engagement reflects the active interest of users responding to dynamic content, such as announcements of project events, the release of newsletters, and the sharing of factsheets. For example, the **DOME 4.0 website experienced a noticeable increase in traffic** during the announcement of its participation in key events, the publication of several factsheets, and the release of newsletters. Additionally, there was a substantial spike in user engagement around the announcements of the three hackathons organized by the project. These activities not only attracted visitors but also encouraged deeper interaction with the project's content, highlighting the effectiveness of our dissemination strategy.

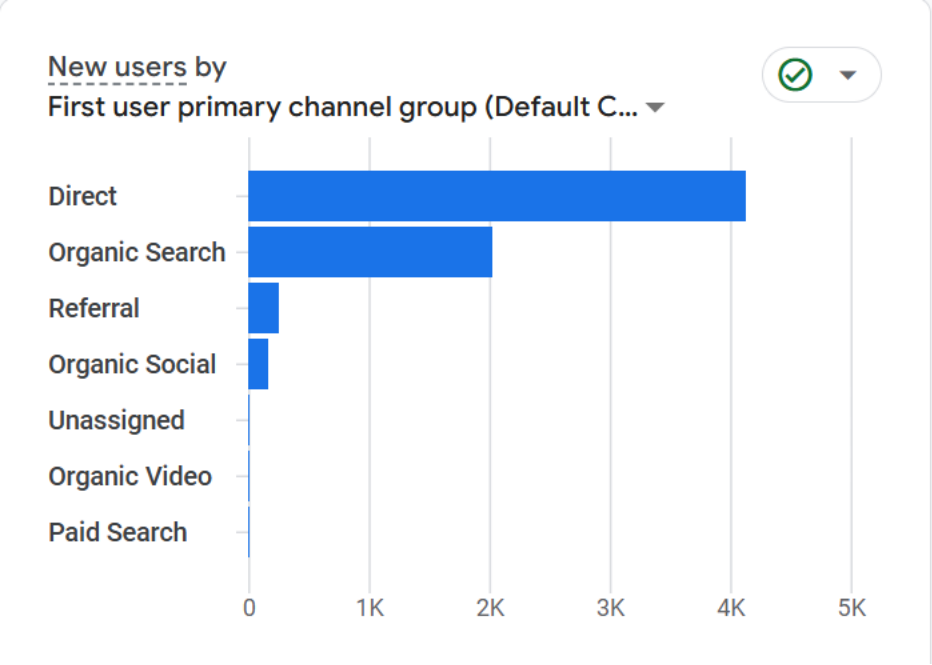


Figure 8 - Google Analytics Channel Group

The majority of visitors to the DOME 4.0 website access it by directly typing the URL into their browser, indicating strong awareness of the project among its stakeholders and a high level of engagement from returning users who actively seek out updates. This is followed by traffic driven through search engines, showcasing the effectiveness of our SEO strategy in ensuring that the website appears prominently in search results. Additionally, a significant portion of users arrives via referral links from partner websites and related EU project websites (CODEX Cluster), reflecting successful collaborative outreach efforts. Lastly, a steady stream of visitors comes through organic social media, demonstrating the impact of our targeted social media strategy in reaching wider audiences and fostering interest in the project through platforms like LinkedIn and Twitter.

		Page path and screen class	↓ Views	Active users
☑		Total	11,281 100% of total	6,952 100% of total
☑	1	/	4,106	3,046
☑	2	/home	767	652
☑	3	/overview	553	489
☑	4	/news-events	478	303
☑	5	/welcome-hackathon-3-explore-power-data-dome-40	463	317

Figure 9 - DOME 4.0 Google Analytics Page Viewed

Based on the analysis of the traffic data reflected in the above diagram, it is clear that the **homepage** is the most frequently visited page on the **DOME 4.0 website**, underscoring its role as the central entry point for users seeking to learn more about the project. Following closely is the **"Overview" page**, which provides a succinct summary of DOME 4.0's objectives, vision, and key focus areas. This page serves as a critical resource for first-time visitors looking for a quick understanding of the project's mission. Next in popularity is the **"News & Events" section**, which acts as one of the primary communication channels for disseminating updates, activities, and project milestones. The high engagement in this section reflects the audience's interest in staying informed about the project's latest developments. Notably, the page dedicated to **Hackathon 3**, held at UCL's premises in September 2024, also garnered significant attention, indicating strong interest in DOME 4.0's hands-on, collaborative events. This pattern of user engagement highlights the effectiveness of our content strategy in driving traffic to key areas of the website, ensuring that stakeholders remain actively informed and engaged with the project's progress and activities.

Regarding the KPIs of the website, we successfully achieved the **KPI for unique visitors**, with a total of **14,348 unique users** visiting the DOME 4.0 website. This demonstrates strong interest in the project's content and outreach efforts, particularly given the specialized focus of the project's thematic area, which naturally targets a more niche audience. However, due to the specific nature of our audience, we observed that achieving the targeted **average session duration and pages viewed per user** proved challenging. Additionally, with the recent transition in how Google Analytics tracks these metrics, there were shifts in the measurement approach that affected our ability to meet these specific targets. Despite these adjustments, the overall engagement levels indicate a positive response from our core stakeholders, reflecting the value of our communication and dissemination strategies within the constraints of a specialized sector.

3.3 Social Media

The **DOME 4.0 project** leverages a strategic presence on social media to enhance its visibility, engage stakeholders, and disseminate key updates and results [3]. The project actively utilizes **X (Twitter)** and **LinkedIn** as its primary channels for reaching both the broader public and industry professionals. These platforms enable DOME 4.0 to share real-time updates, promote events, and foster dialogue with its followers.

In addition, the project maintains a **YouTube channel**, which serves as a repository for multimedia content, including event recordings, project presentations, and informative videos. By utilizing these social media channels, DOME 4.0 ensures that its communication efforts are accessible, engaging, and aligned with the preferences of its diverse audience.

The DOME 4.0 approach involves the measurement of the aforementioned social accounts impact as an instrument to increase to strengthen its strategy by foreseen the following:

- Careful definition and selection of goals and their associated metrics. This can enable indicators to indicate whether progress is being made, and how cost-effectively, in order to improve performance.
- Metrics tied to goals and audiences.
- Metrics tide to "so what" rule i.e. will a change in that indicator lead to a change in activity or strategy?

- Use of different indicators for different channels to the degree possible and applicable (LinkedIn, Twitter).
- Monitoring of individual channels and accounts to evaluate and improve their cost-effectiveness.
- Use of different monitoring tools to process the same data and derive different results.

Different indicators were used for the different social media accounts and each one is monitored in order to measure the effectiveness and improve the response of the audience. The established social media accounts are presented below and reflect the overall impact until M48.

3.3.1 X (Twitter)

The DOME 4.0 project has an active X (Twitter) account https://twitter.com/DOME40_H2020 **@DOME40_H2020,** aiming to enhance its presence in social media by sharing the project's results, progress, content that is related with the project, recent developments, news, events etc. The chosen hashtag #DOME40 is used for its tweets. By following other relevant users and accounts as well as re-tweeting, DOME 4.0 not only gets access to more relevant content and updates, but also acquires more followers.

The hashtags **#industrialdata**, **#interoperability**, **#digitalmarketplace**, **#industry40**, **#manufacturing**, **#machinelearning**, **#artificialintelligence**, **#H2020**, and **#EUresearch** are strategically utilized across DOME 4.0's social media posts to enhance discoverability, engage relevant audiences, and align with trending conversations in the fields of industrial data and digital transformation.

Since the DOEM 4.0 account was established in January 2021, has a total number of **230** tweets/re-tweets and this has led to **273** followers (many of the followers are followed by thousands), **272 followed** accounts and **25,958 impressions**.

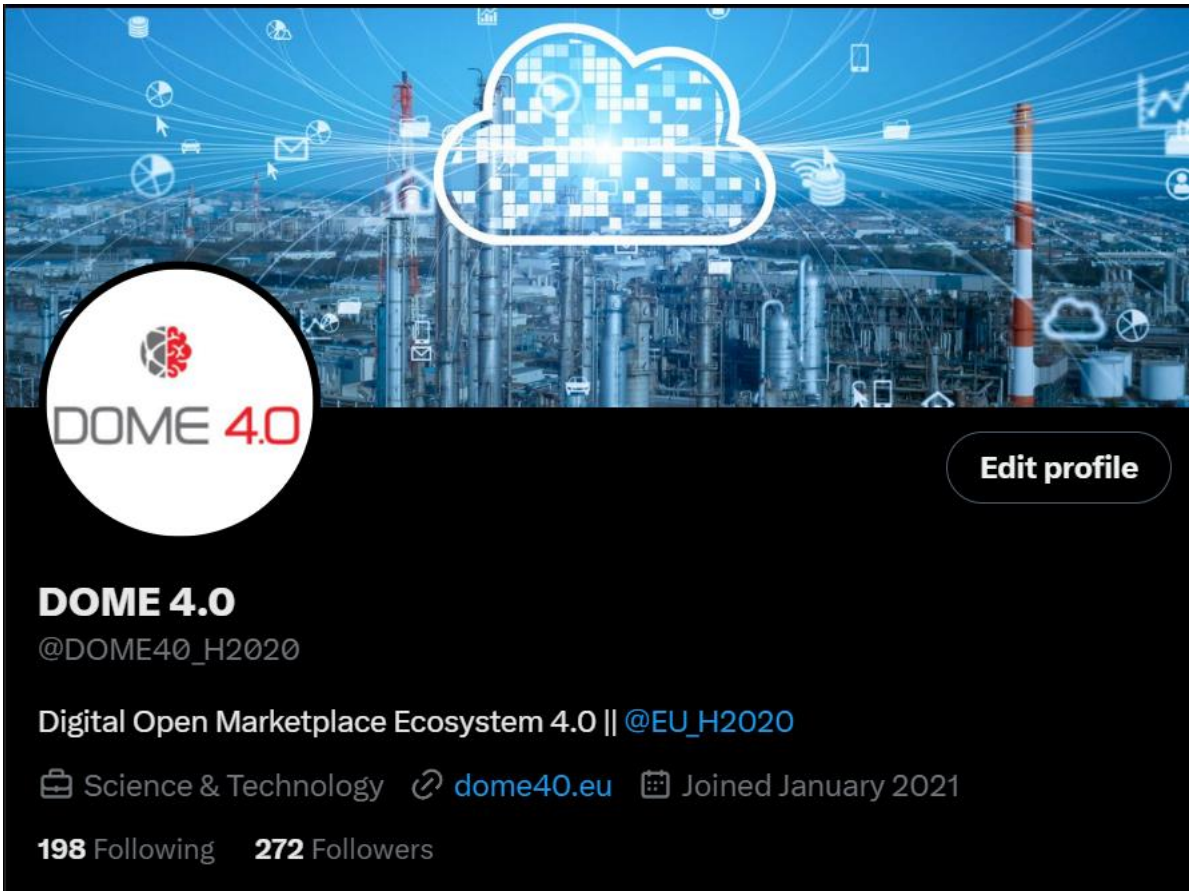


Figure 10 - Twitter Account

3.3.2 LinkedIn

The DOEM 4.0 holds a LinkedIn account (https://www.linkedin.com/company/dome40/) as it used as a business-focussed professional platform for networking. Hence, a strong presence is required to promote the progress and results of the project. LinkedIn platform serves as a source of knowledge and inspiration providing fertile soil for conversations among experts. Moreover, it serves as a median by engaging stakeholders as well as connections with LinkedIn accounts that are relevant to the project.

DOME 4.0 by holding a LinkedIn account and sharing the most important information contributes to interact with highly relevant experts. Additionally, DOEME 4.0 through the LinkedIn account can interact with relevant to the project, groups from the same industry and the interested can follow and stay updated with the resent news and activities and since the establishment of the DOEME 4.0 LinkedIn account has **227 posts** on which has led to **515 followers**.

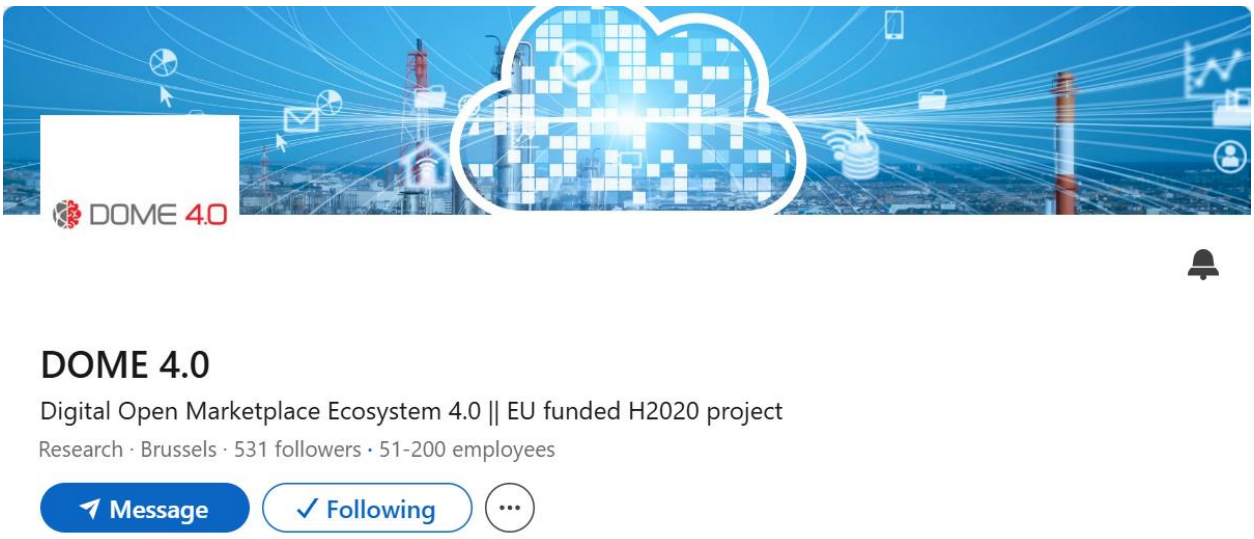


Figure 11 - LinkedIn Account

While we made significant efforts to grow our social media presence throughout the duration of the DOME 4.0 project, we acknowledge that we did not fully meet the targeted **KPI for accumulative social media followers**. This outcome can be attributed to the project's specialized focus within the niche field of industrial data interoperability and digital marketplaces, which naturally limits the pool of potential followers. Additionally, the evolving nature of social media algorithms and engagement patterns posed challenges in sustaining consistent follower growth. Despite this, our channels have been effective in reaching and engaging a highly relevant and targeted audience, leading to meaningful interactions and successful dissemination of project updates.

DOME 4.0 Activity Tracker

SOCIAL MEDIA ROTATION PLAN		
Partner	DEADLINE*	STATUS
Fraunhofer	Jan 24	COMPLETED
UKRI	Feb 24	PENDING
BOSCH	Mar 24	PENDING
SINTEF	Apr 24	PENDING
EPFL	May 24	COMPLETED
UNR	Jun 24	COMPLETED
SISW	Jul 24	COMPLETED
UKRI	Aug 24	PENDING
INTRA	Sep 24	PENDING
CNT	Oct 24	PENDING
CMCL	Nov 24	PENDING

*Content to be delivered until the last week of each month

Figure 12 - DOME 4.0 Social Media Rotation Plan

Throughout the **DOME 4.0 project**, we implemented a **social media rotation plan** where each partner was responsible for providing content for the project's official social media channels. This collaborative approach ensured that new, diverse, and engaging content was consistently shared, aligning with the

project's overarching communication strategy. By assigning responsibility on a rotational basis, each partner contributed their unique perspective, updates, and insights related to their specific Work Package or activities. This not only diversified the content but also increased the project's visibility across various sectors by leveraging each partner's expertise and networks.

The rotation plan, combined with the active sharing of partner activities, project results, outcomes, and progress on the project's website and social media channels, proved highly effective. We successfully exceeded the **KPI of 300 cumulative posts**, achieving over **457 posts** on the project's channels, which generated more than **2,500 interactions**—significantly surpassing the KPI of **600 interactions**. This accomplishment highlights the effectiveness of the collaborative and strategic approach to social media management. Unfortunately, due to the discontinuation of the **Klout platform**, we were unable to measure an overall Klout score for website and social media performance. Nonetheless, the significant engagement metrics demonstrate the success and impact of our efforts in creating a strong and consistent online presence.

3.3.3 YouTube

Since the launch of the **DOME 4.0** **YouTube channel**, the project has successfully published a total of **15 videos** on its official account, showcasing various project activities, insights, and highlights. These videos were strategically developed to engage our stakeholders and provide in-depth visual content that complements our dissemination efforts across other channels. The published content includes event recordings, project presentations, tutorials, and interviews with key experts, aimed at making the project's developments more accessible and engaging for our audience.

As part of the **DOME 4.0 project's communication strategy**, we have produced two versions of the official project video: one **short** and one **extended** version. The shorter video is optimized for quick engagement on digital platforms, social media, and promotional events, where brevity and impact are key. Meanwhile, the longer version is tailored for deeper engagement at conferences, workshops, and stakeholder meetings, providing a comprehensive overview of the project's objectives and vision. In addition to the official videos, we have created a series of **semi-professional videos** focusing on the project's showcases. These videos explain the purpose, functionality, and added value of each showcase, highlighting their real-world applications and impact.

Beyond these, the **DOME 4.0 YouTube channel** serves as a rich repository of content, where users can find not only the official project videos and showcase explanations but also recordings of key events, such as General Assembly (GA) Meetings, and interviews from project activities like the hackathons. This diverse collection of videos is designed to enhance stakeholder engagement, provide insights into the project's progress, and demonstrate its tangible outcomes.

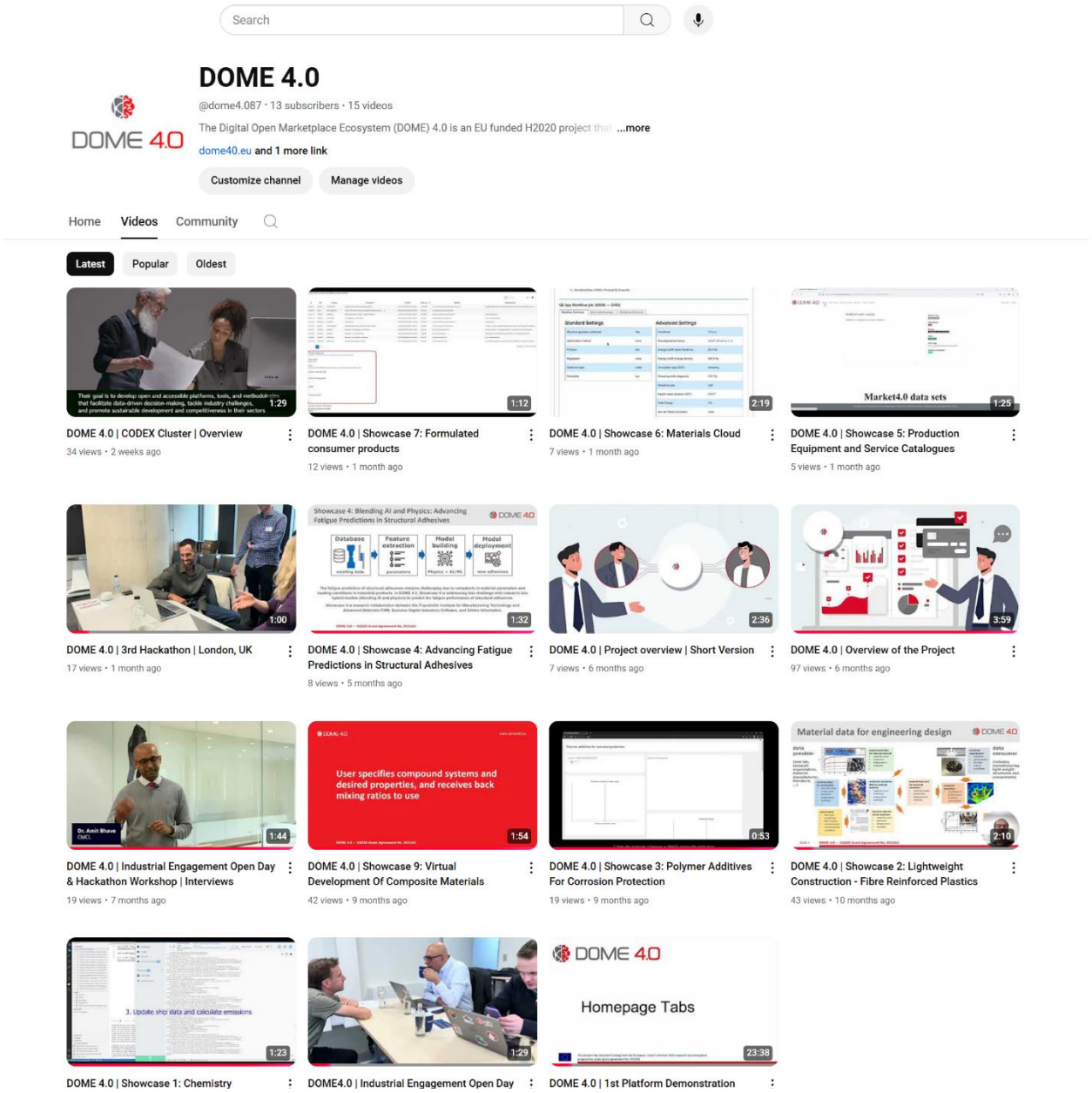


Figure 13 - YouTube Account

In terms of performance, the channel has garnered a cumulative **502 views** across all the videos. While this number reflects a modest reach, it is important to consider that the channel is focused on a specialized audience interested in industrial data, digital marketplaces, and advanced manufacturing technologies. The views accumulated demonstrate that the content is reaching a targeted, relevant audience that is genuinely interested in the project's outcomes.

3.4 Development of Visual Identity

3.4.1 Presentation Template

We have developed the presentation template for the DOME 4.0 project, designed on PowerPoint by INTRA. The template has been uploaded to the project's online repository and shared with the

consortium members. It is intended to be used for all presentations at external and internal events, meetings, and related activities, ensuring a cohesive and consistent look and feel across all project communications.

Figure 15 - Presentation Template 1

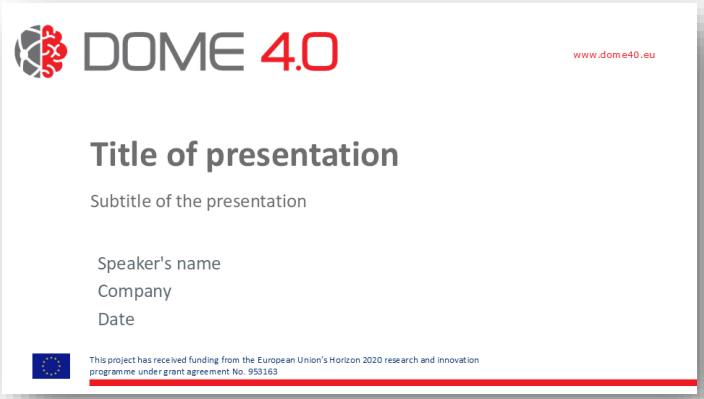


Figure 14 - Presentation Template 2

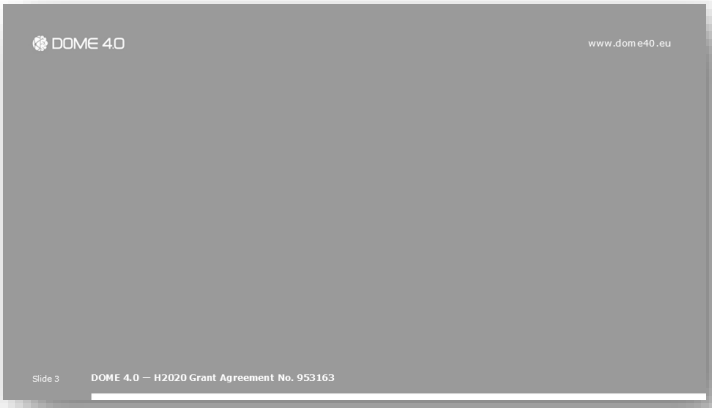


Figure 17 - Presentation Template 3

Figure 16 - Presentation Template 4

Figure 18 - Presentation Template 5

Figure 19 - Presentation Template 6

INTRA has created standardized document templates for the DOME 4.0 project's deliverables. These templates have been designed to ensure uniformity and professionalism across all project documentation.

They have been shared with the consortium to facilitate consistent formatting and presentation in all project reports and records.

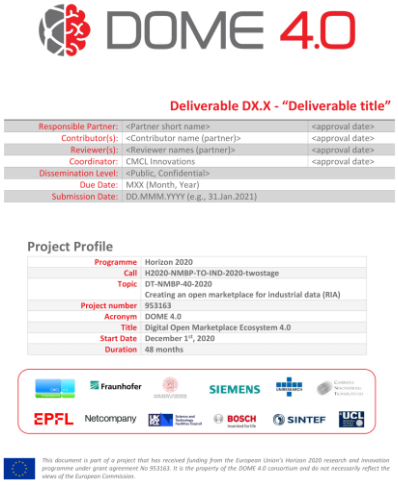


Figure 22 - Deliverable Template 1

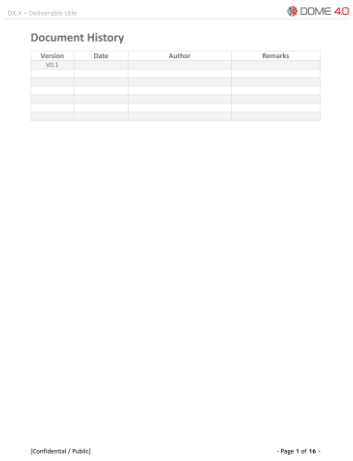


Figure 21 - Deliverable Template 2

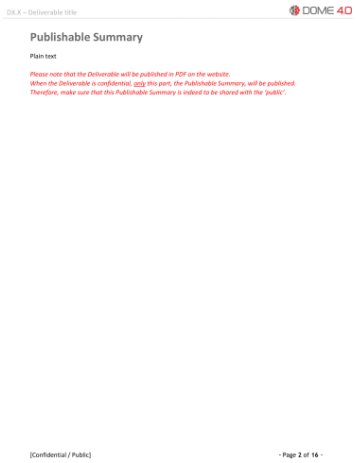


Figure 20 - Deliverable Template 3

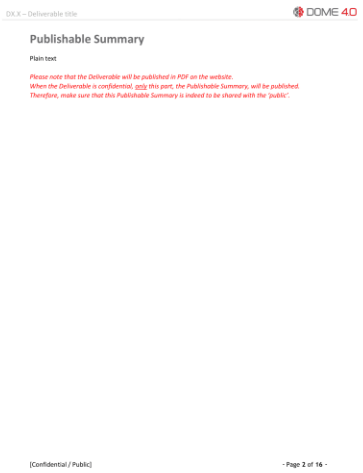


Figure 25 - Deliverable Template 4

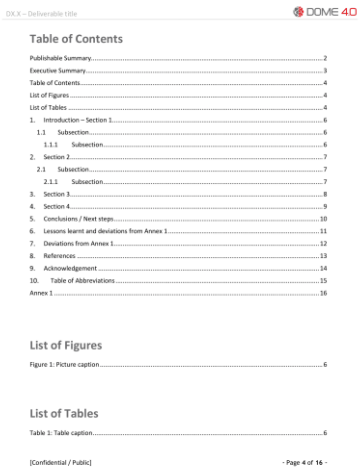


Figure 24 - Deliverable Template 5

Figure 23 - Deliverable Template 6

Figure 26 - Deliverable Template 7

Figure 27 - Deliverable Template 8

Figure 28 - Deliverable Template 9

Figure 31 - Deliverable Template 10

Figure 30 - Deliverable Template 11

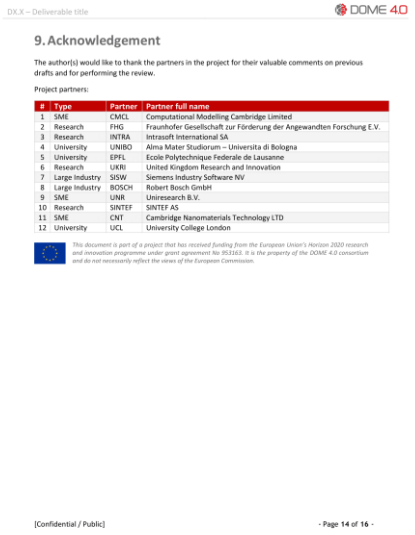
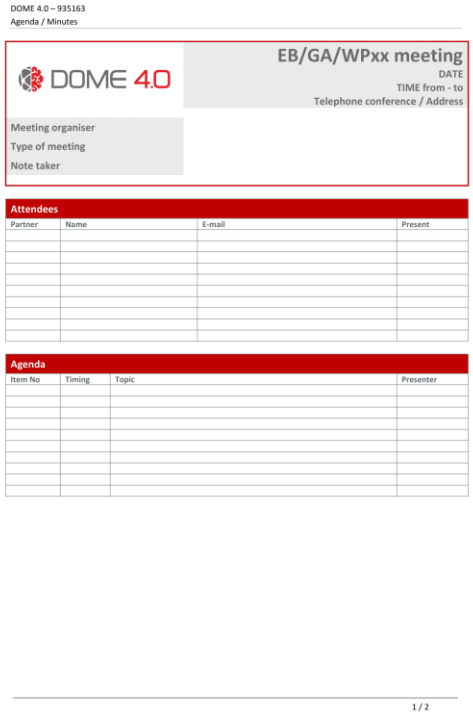


Figure 29 - Deliverable Template 12

3.4.3 Meeting Minutes Template

INTRA has created standardized document templates for the DOME 4.0 project's meeting minutes. These templates have been designed to ensure uniformity and professionalism across all project documentation. They have been shared with the consortium to facilitate consistent formatting and presentation in all project reports and records.


DOME 4.0 – 935163
Agenda / Minutes

DOME 4.0

EB/GA/WPxx meeting
DATE
TIME from - to
Telephone conference / Address

Meeting organiser
Type of meeting
Note taker

Attendees

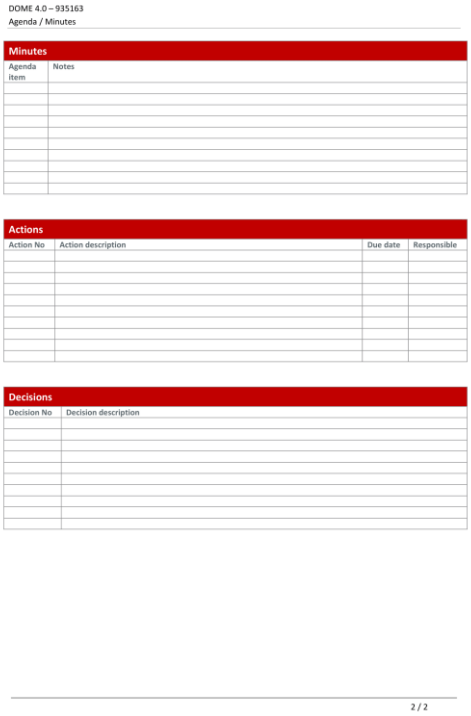
Partner	Name	E-mail	Present

Agenda

Item No	Timing	Topic	Presenter

1 / 2

Figure 32 - Meeting Minutes Template 1


DOME 4.0 – 935163
Agenda / Minutes

Minutes

Agenda item	Notes

Actions

Action No	Action description	Due date	Responsible

Decisions

Decision No	Decision description

2 / 2

Figure 33 - Meeting Minutes Template 2

3.4.4 E-Newsletters

As the leader of WP6, INTRA has taken on the responsibility for the design, editing, and layout of the DOME 4.0 e-newsletters, ensuring that they are visually engaging and aligned with the project's branding. The partners have actively contributed by providing relevant content, case studies, and updates, making each newsletter a collaborative effort. To maximize the impact and effectiveness of our dissemination strategy, it was collectively agreed during WP6 meetings that each issue of the e-newsletter would strategically combine content from both a specific Work Packages (WPs) and a related Showcases (SCs) rather publish separately issues for each WP and SC. This approach not only highlights the progress made in each WP but also demonstrates the practical application of DOME 4.0's innovations through real-world showcases, offering readers a comprehensive view of the project's outcomes.

As a result of this strategy, we successfully produced 8 targeted newsletters, each focusing on a different WP and its associated Showcase, along with 3 additional complementary newsletters, thereby fulfilling the project's KPIs. These newsletters have been systematically uploaded to the DOME 4.0 website and promoted across social media platforms to broaden their reach. Additionally, partners have distributed the newsletters within their networks, ensuring extensive dissemination and engagement with stakeholders. This coordinated approach has proven effective in keeping our audience informed and engaged with the project's ongoing developments.

Please find the project's newsletters here.

Figure 34 - DOME 4.0 Newsletter

3.4.5 Factsheets

The **DOME 4.0 project** has produced five factsheets to communicate its objectives, innovations, and benefits effectively. These factsheets are accessible on the project's website and collectively highlight key aspects of the project:

1. **Factsheet #1: Overview**
   This factsheet introduces DOME 4.0, its mission to create a secure, semantic industrial data ecosystem, and its vision for driving Europe into the Industry 4.0 era. It outlines objectives such as fostering a collaborative network, implementing AI technologies, and showcasing nine B2B use cases that span diverse sectors like smart manufacturing, lightweight construction, and polymer additives.

Figure 35 - DOME 4.0 1st Factsheet

2. **Factsheet #2: Objectives and Innovation Focus**
   It emphasizes the project's focus on advancing digital manufacturing, establishing robust data governance, and implementing AI-driven tools. It also highlights efforts to engage with innovators through hackathons and to develop sustainable business models for long-term impact.

Figure 36 - DOME 4.0 2nd Factsheet

3. **Factsheet #3: Platform Development**
   This factsheet details the platform's architecture, highlighting user-friendly onboarding, scalable design, and integration with existing systems like MarketPlace and MARKET4.0. The use of Agile and DevOps practices ensures continuous improvement, while FAIR principles guide the platform's development.

Figure 37 - DOME 4.0 3rd Factsheet

4. **Factsheet #4: Data Tools and Services**
   The tools and services are designed to streamline data transformation, analytics, and simulation while ensuring data compliance with FAIR principles. Key features include blockchain-based data sovereignty, comprehensive transaction tracking, and advanced simulation workflows for predictive modeling.

FACT SHEET#4

Data Tools and Services

Objectives

- **Facilitate data retrieval, transformation, and integration:** The primary goal is to streamline the process of accessing, transforming, and integrating various data sets from different sources. This is crucial for enabling data-driven workflows in manufacturing and materials science. By providing tools that simplify these operations, the platform aims to make it easier for users to combine and utilize data effectively.
- **Ensure data compliance with FAIR principles:** Ensuring that all data used and shared through the platform adheres to the FAIR principles (Findable, Accessible, Interoperable, Reusable) is vital for transparency and long-term usability. This objective underpins the platform's commitment to open data practices and maximizing the value of shared data across sectors.
- **Provide comprehensive logging, tracing, and reporting of data transactions:** Comprehensive tracking and auditing of all data transactions are essential for accountability and governance. This ensures that all data interactions can be traced, supporting both regulatory compliance and the security of sensitive data.
- **Develop tools for data analytics, simulation, and modeling:** The project seeks to provide powerful tools that enable users to perform advanced data analytics, simulation, and modeling. These tools are designed to help users derive meaningful insights from data and develop predictive models, contributing to more informed decision-making processes.

Key features

- **FAIR Data Monitoring:** The project will develop a scoring system that measures how well the data complies with the FAIR principles. This feature is critical for ensuring that the data remains usable, shareable, and relevant throughout the project's lifecycle and beyond, offering transparency into how data is managed.
- **Data Sovereignty and Provenance:** By implementing blockchain and other technologies to track the origin, licensing, and ownership of data, the project ensures that data is used appropriately and complies with legal and governance frameworks. This feature protects the rights of data owners and provides transparency in data usage, fostering trust in the platform.
- **Data Transaction Clearing:** The project will automate the clearing and tracking of data transactions. This means that the platform will ensure every data transaction is properly vetted for compliance with governance rules, such as data privacy regulations, thus safeguarding data integrity and regulatory compliance.
- **Data Analytics Tools:** The platform will provide a suite of tools for data mining, translation, and analytics. These tools will support users in analyzing data for patterns, translating data between different formats, and using the data to develop simulations and models. This feature is key for industries that rely heavily on data-driven insights to optimize processes and innovate.
- **Simulation and Modeling Workflows:** These tools will help users construct features, generate knowledge graphs, and execute machine learning algorithms. By providing this capability, the project allows users to create complex models that can predict outcomes and simulate various scenarios, making it particularly useful for R&D and manufacturing applications.

Benefits

- **Improved data interoperability and compliance:** By adhering to FAIR principles and implementing robust data governance measures, the platform enhances the interoperability of data across different systems and industries. This enables easier data sharing and collaboration, fostering innovation across sectors.
- **Enhanced data security and provenance tracking:** With features like blockchain for data sovereignty, the platform offers high levels of security and traceability. Users can be confident that their data is being used appropriately, and data ownership is always clear, which is crucial in industrial environments where data confidentiality is key.
- **Comprehensive tools for data analytics and simulation:** The platform's analytics and simulation tools enable users to derive insights from large data sets, optimize workflows, and develop predictive models. This is a significant advantage for businesses looking to use data to drive innovation and efficiency.
- **Streamlined integration of diverse data sources and services:** The platform supports seamless integration of multiple data sources, making it easier for users to work with a wide range of datasets and applications. This broad compatibility is essential for industries that need to integrate proprietary data with external platforms for improved decision-making.

DOME 4.0

Find more info for the project at https://dome40.eu/

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 953163.

Visit our website: www.dome40.eu
Contact us: info@dome40

Figure 38 - DOME 4.0 4th Factsheet

5. **Factsheet #5: Ontology-Driven Interfaces**
   This final factsheet presents the project's semantic data exchange framework. It explains the creation of lightweight ontologies, semantic brokers, and connectors to facilitate interoperability and seamless integration across platforms. These components ensure secure and efficient data sharing within and beyond the DOME 4.0 ecosystem.

FACT SHEET#5

Ontology-driven Interfaces

Objectives

- **Specify and implement ontology-driven interfaces for semantic data exchange:** The main objective is to develop a system that allows for semantic interoperability, enabling data to be exchanged in a meaningful way across various platforms and applications. Ontology-driven interfaces ensure that data can be understood uniformly by all participants, regardless of the system or application they use.
- **Develop a common language for data and service interoperability:** By creating a common ontology or language, the project aims to standardize how data and services interact. This ensures that different systems can easily share and use data, removing barriers caused by proprietary formats or mismatched data structures.
- **Create connectors, APIs, and ecosystem components for seamless integration:** The project will develop the technical infrastructure, such as connectors and APIs, to ensure that different platforms can integrate seamlessly with the DOME 4.0 ecosystem. This will allow for easier data exchange and collaboration between businesses, industries, and research institutes.

Key features

- **Semantic Data Exchange Ontology:** A lightweight ontology will be developed, using established standards like IDS (International Data Spaces) and EMMO (European Materials Modelling Ontology). This ontology will define the rules for how data should be represented and exchanged, ensuring that it can be understood and used across different platforms. This feature is crucial for enabling semantic data exchange between various parties in the ecosystem.
- **Ecosystem Information Model:** This model will provide a structure for data sovereignty, identity, and brokering. It will act as the backbone of the data exchange system, allowing for the secure and traceable transfer of data. By integrating this model, the platform ensures that data exchanges are governed properly, maintaining the integrity and ownership of data.
- **Semantic Broker Service:** A broker service will be implemented to facilitate semantic matching between data consumers, providers, and service providers. This service will automate the process of finding compatible data or services, making it easier for users to discover resources and partners in the ecosystem. The semantic broker service acts as a key component for efficient data exchange.
- **Ecosystem Connectors:** Connectors will be developed to link the DOME 4.0 platform with external data and service platforms. This will extend the platform's reach and allow users to interact with other marketplaces or data platforms. The connectors will enable seamless data flow between different ecosystems, enhancing the platform's interoperability.
- **Reference Data Connector:** This connector will support the B2B showcases by enabling semantic data exchange. It provides a standardized way to connect various data sources and consumers, ensuring smooth data flow within the business use cases being demonstrated by DOME 4.0. The reference data connector is key to ensuring that the project's outcomes can be replicated and scaled across industries.

Benefits

- **Enhanced semantic interoperability across the ecosystem:** The ontology-driven approach ensures that all data exchanges within the ecosystem are semantically interoperable, meaning that data can be easily understood and used by different platforms and systems. This significantly improves collaboration and reduces the time spent on data translation or conversion.
- **Robust architecture for data and service integration:** With features like blockchain for data sovereignty, the platform offers high levels of security and traceability. Users can be confident that their data is being used appropriately, and data ownership is always clear, which is crucial in industrial environments where data confidentiality is key.
- **Streamlined data exchange and brokering capabilities:** With the semantic broker service, data exchanges become more efficient, allowing users to quickly find compatible data sources or services. This improves the overall usability of the platform and enables faster collaboration between different participants in the ecosystem.
- **Improved collaboration and data sharing across diverse platforms:** By creating a common language and developing the necessary connectors, the platform enhances collaboration across different industries and sectors. This leads to better data sharing practices, fostering innovation and enabling more complex, cross-domain projects.

DOME 4.0

Find more info for the project at https://dome40.eu/

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 953163.

Visit our website: www.dome40.eu
Contact us: info@dome40

Figure 39 - DOME 4.0 5th Factsheet

Together, these factsheets comprehensively communicate DOME 4.0's objectives, technical achievements, and broader impact, achieving the KPI of producing five high-quality dissemination materials.

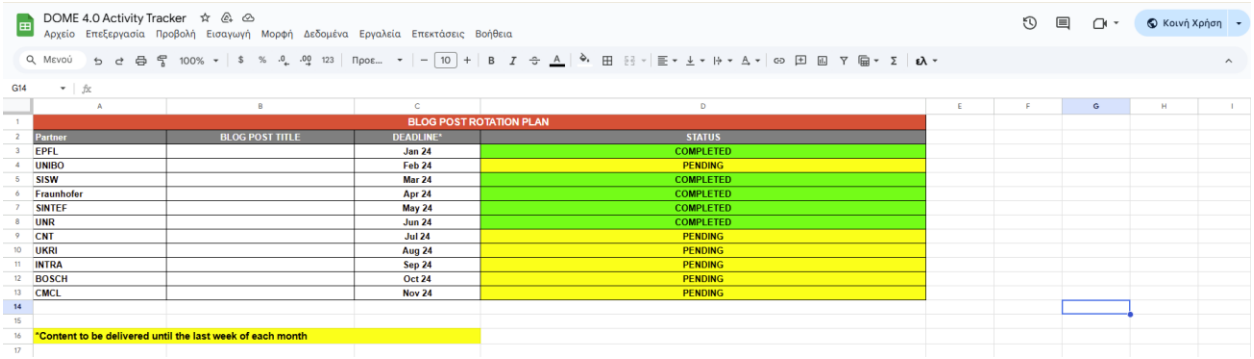
3.4.6 Blog Posts

The blog posts published on the DOME 4.0 website played a pivotal role in enhancing the project's digital presence, raising awareness, and driving engagement with our targeted audiences. These posts served as a key content strategy to share insights, project updates, showcase achievements, and highlight significant milestones, effectively communicating the value of DOME 4.0's efforts in the fields of industrial data and digital transformation. By the end of the project, a total of **14 blog posts** were published, each strategically shared across the project's social media channels to maximize reach and visibility.

While we were unable to capture direct metrics from the website due to limitations in tracking user interactions specifically tied to blog content, we were able to gauge the impact indirectly through social media engagement. The likes, shares, and comments on these posts indicated strong interest and positive reception from our audience. This feedback loop on social platforms provided a valuable measure of how effectively the blog posts resonated with stakeholders. Ultimately, this approach not only increased the project's visibility but also contributed to fostering a deeper connection with the community, amplifying DOME 4.0's impact across the digital landscape.

Please find the blog posts that have been released below:

- DOME 4.0: A Collaborative Approach to Advanced Materials and Manufacturing
- The DOME 4.0 Approach: Leveraging Open Collaborative Networks
- DOME 4.0: Revolutionizing Data-Driven Knowledge in European Manufacturing and Materials Sectors
- DOME 4.0: A Powerful Platform for Data Sharing and Discovery
- Using Cheminformatics and Data driven approaches for accelerated Development of polymeric additives using DOME 4.0
- Connecting Industrial Marketplaces with DOME 4.0: A Path to Data-Driven Collaboration
- DOME 4.0: Advancements in Predicting the Fatigue Lifetime of Structural Adhesive Joints
- DOME 4.0: Launching Lhumos, a powerful tool for showcases and tutorials
- DOME 4.0: Enabling Data Interoperability in Maritime air Quality
- DOME4.0 on KGA - Knowledge Graph Alliance ASBL in Brussels: A Step Forward for Semantic Knowledge Graphs and Collaboration in Data Handling
- Efficiency and Focus: Navigating Project Challenges in DOME 4.0
- Developing a Data Marketplace: Discovering Data in Distributed Databases
- Improved products by enhanced data bases for material simulation using DOME 4.0
- Digitalizing Knowledge for Industry 5.0: The Role of Ontologies in DOME 4.0



DOME 4.0 Activity Tracker

BLOG POST ROTATION PLAN			
Partner	BLOG POST TITLE	DEADLINE*	STATUS
EPFL		Jan 24	COMPLETED
UNIBO		Feb 24	PENDING
SISW		Mar 24	COMPLETED
Fraunhofer		Apr 24	COMPLETED
SINTEF		May 24	COMPLETED
UNR		Jun 24	COMPLETED
CNT		Jul 24	PENDING
UKRI		Aug 24	PENDING
INTRA		Sep 24	PENDING
BOSCH		Oct 24	PENDING
CMCL		Nov 24	PENDING

*Content to be delivered until the last week of each month

Figure 40 - DOME 4.0 Blog Post Rotation Plan

Despite our efforts to prepare blog posts for publication on various EU dissemination mechanisms, we encountered unforeseen challenges. Some platforms informed us that they had ceased publishing updates of this nature, while others either did not respond to our submissions or indicated they would only consider publishing results after the project's conclusion. However, to ensure visibility and outreach, we have published these articles on the project's website and actively shared them across our social media channels. This approach has allowed us to maintain engagement with our audience and promote the project's progress effectively through alternative dissemination strategies.

3.4.7 Other Dissemination & Communication Activities

The **DOME 4.0 consortium** has made significant efforts in promoting the project across various digital platforms, achieving a total of **12 promotional crosslinks** by the end of the project (M48). While this number reflects the proactive engagement of our partners in disseminating project information through external channels, we acknowledge that it falls short of the initial target KPI of 22 crosslinks contributed by each partner. The specialized nature of the project, coupled with the niche focus of its thematic area, presented challenges in identifying additional relevant platforms for effective cross-promotion. Nevertheless, the crosslinks established were highly targeted and contributed to raising awareness within key communities, aligning with our strategic objectives.

Table 6 - Promotiona Crosslinks Table

Promotional Crosslinks										
CMCL	Fraunhofer	INTRA	UNIBO	EPFL	UKRI	SISW	BOSCH	UNR	SINTEF	CNT
		https://www.netcompany-intrasoft.com/news/intrasoft-international-participates-dome-40-eu-				https://www.linkedin.com/posts/jmamelvin_materials-informatics-accelerates-customer-activity-6990609346384519168-5fcV/?utm_source=share&utm_medium=member_desktop	https://www.bosch-ai.com/research/publicly-funded-projects/		https://gemini.no/2022/12/filosofer-og-teknologer-gir-datamaskinene-felles-sprak-det-kan-knekke-	

		funded-project							uloste-gater/	
						https://citrine.io/materials-informatics-accelerates-customer-tailored-composite-material-design/				
						https://blogs.sw.siemens.com/simcenter/material-informatics-accelerates-customer-tailored-composite-material-design/				
						https://blogs.sw.siemens.com/simcenter/advancements-in-predicting-the-fatigue-lifetime-of-structural-adhesive-joints/ (Joint research with Fraunhofer IFAM. Published 2x (by SISW and by Citrine Informatics), also on LinkedIn, see "Promotional Crosslinks" tab)				
						https://citrine.io/advancements-in-predicting-the-fatigue-lifetime-of-structural-adhesive-joints/				
						https://www.linkedin.com/feed/update/urn%3Ali%3Aactivity%3A7150969962751221760/?midToken=AQGZTMBpySqUDw&midSig=2Zhp1mDMCIBr41&trk=eml-email_notification_single_mention				

						ed_you_in_this_01-notifications-1-hero~card~feed&trkEmail=eml-email_notification_single_mentioned_you_in_this_01-notifications-1-hero~card~feed-null-4uyd9~lr8bwa1u~at-null-voyagerOffline				
						https://www.linkedin.com/feed/update/urn:li:activity:7151147383874101250/?updateEntityUrn=urn%3Ali%3Afs_feedUpdate%3A%28V2%2Curn%3Ali%3Aactivity%3A7151147383874101250%29				
						https://blogs.sw.siemens.com/simcenter/the-daunting-task-of-big-data-management/				
						https://www.linkedin.com/posts/jennifer-schlegel-a204a6_the-daunting-task-of-big-data-management-activity-7252292768507604994-2gZy?utm_source=share&utm_medium=member_desktop				
						https://www.linkedin.com/feed/update/urn:li:activity:7118249745575280640/				

The **consortium DOME 4.0 project** has exceeded its target for publishing articles in industry-related magazines, with a total of **7 articles** published against the initial **KPI of 6**. This achievement reflects the

consortium's dedication to raising the visibility of the project within the industry and engaging with stakeholders through authoritative channels. By strategically selecting reputable industry magazines for these publications, we ensured that the content reached the intended audiences, thereby amplifying the project's impact and showcasing its innovations. This accomplishment highlights the effectiveness of our dissemination efforts, demonstrating our commitment to surpassing expectations and maximizing outreach within the relevant industrial sectors.

The table below provides a comprehensive overview of the **Articles in Magazines** published as part of the DOME 4.0 project's dissemination efforts. These articles highlight key project achievements, innovations, and their relevance to the industrial and research communities.

Table 7 - Articles in Related Industry Magazines Table

Articles in Related Industry Magazines						
Partner	**Title**	**Media**	**Date**	**Media website**	**Scope**	**Comments**
CMCL	Digital Twins: Laboratory and Materials - as part of the World Avatar	The Magazine: Hughes Hall	June 2022	https://www.hughes.cam.ac.uk/wp-content/uploads/2022/06/Hughes-Magazine-Issue-34-web.pdf	**SC1**	Page 26-27. A 2-page interview and feature on digitalisation.
SISW, Fraunhofer	Advancements in predicting the fatigue lifetime of structural adhesive joints	Engineer Innovation	March 2024	https://ebooks.sw.siemens.com/engineer-innovation-issue-13/advancements-in-predicting-the-fatigue-lifetime-of-structural-adhesive-joints	**SC4**	Issue 13, article 17, a Simcenter publication, by Siemens
SISW	Materials informatics accelerates customer tailored composite material design	Siemens Simcenter	September 2022	https://blogs.sw.siemens.com/simcenter/material-informatics-accelerates-customer-tailored-composite-material-design/	**SC9**	Blogpost on Showcase 9, published 2x (by SISW and by Citrine Informatics), also on LinkedIn, see "Promotional Crosslinks" tab)
SINTEF	Developing a Data Marketplace: Discovering Data in Distributed Databases	#SINTEFblog	July 2023	https://blog.sintef.com/digital-en/developing-a-data-marketplace-discovering-data-in-distributed-databases/	**Platform**	
SINTEF	Industrial data marketplace	#SINTEFblog	July 2024	https://blog.sintef.com/sintefocean/industrial-data-marketplace/	**Platform**	
SISW	The daunting task of Big Data management (Why EU R&D projects like DOME 4.0 are so mission-critical in our new world of AI-enhanced digitalization and our collective movement towards a more sustainable circular economy)	Siemens Simcenter	October 2024	https://blogs.sw.siemens.com/simcenter/the-daunting-task-of-big-data-management/	**Platform**	

Fraunhofer	Big Data for improved prognosis - Efficient identification of material data by recombining different data sources	CU reports (CU -> Composites United e.V., German association for composite materials)	October 2024	https://www.carbon-connected.de/Group/CU.reports/Dokumente/File/Embedded/0F2CAAD229A6914093CFE087859FA106	**SC2**	Issue 2/2024, Page 52-53, German and English version

Considering that the links associated with the **Magazines KPI** can also be classified as **promotional crosslinks**, we can reasonably assume that the consortium has achieved a total of **17 promotional crosslinks** by the end of the project. This perspective reflects the interconnected nature of our dissemination efforts, where content published in industry magazines inherently serves as a crosslink by promoting the project on external platforms. Similarly, entries from the **Promotional Crosslinks KPI**, which include content shared on official partners' websites, can also be viewed as contributing to the **Magazines KPI**. This dual categorization highlights the strategic overlap between our dissemination activities and demonstrates the consortium's efforts to maximize visibility across various channels, ensuring the project's outcomes reached a wide and relevant audience.

While we may not have fully achieved the KPI for promotional crosslinks in its traditional definition, we have made substantial efforts to promote the DOME 4.0 project through alternative means. Specifically, we have published **457 posts** across the project's social media channels, which almost all of them are including links to the project website and other relevant activities where DOME 4.0 was showcased. These posts effectively serve as promotional crosslinks, as they drive traffic to the project's resources and highlight its participation in key events. By leveraging social media as a powerful dissemination tool, we have ensured consistent visibility and engagement, broadening the project's reach and impact. Thus, these efforts significantly contribute to the spirit of the KPI, even if not aligning perfectly with its initial intent.

4. Dissemination Strategy

4.1 Dissemination of targeted audience

- Events
  - Participation in events
  - Events organisation
- Promotional material
  - Online/printed dissemination material (brochures, posters, factsheets)
  - Light-weight exhibition material
- Press-based communication
  - Press releases
- Scientific publications

- Scientific papers and publications

- Collaboration with other projects and initiatives
  - EU, national and international initiatives
  - Synergies with other relevant projects

A matrix of the dissemination mechanisms/activities used in DOME 4.0, associated with the respective objectives, and targeted groups, is presented in the following table.

Table 8 - Dissemination Mechanisms/Activities Used in DOME 4.0

Dissemination mechanisms/activities	Objective	Targeted stakeholders	Timeline
Events			
Participation in events (e.g. conferences, workshops)	Awareness creation, engagement of user groups, experts, and the wider academic and industrial community. Methodology presentation and validation. Networking and collaboration with relevant stakeholders and other initiatives/projects.	Relevant stakeholders (research and academic communities, adopters, users and experts, industry players, policymakers, and other relevant projects and initiatives).	Continuously, based on the project's developments
Events organisation (e.g. workshops, webinars, conference)	Consultation, brainstorming, discussion, and validation of DOME 4.0 results and achievements. Dissemination of knowledge acquired during the project.	Relevant stakeholders (researchers and academia, industry specialists, students)	As appropriate
Participation in exhibitions / trade fairs	Awareness creation. Engagement of a wider industrial community. Demonstration of DOME 4.0 solutions.	Relevant stakeholders (industry players, public authorities, industry associations, policymakers).	Continuously, primarily in the second half of the project
Promotional material			
Online and printed dissemination material (brochures, factsheets)	Awareness creation Knowledge diffusion Results presentation	Relevant stakeholders, all interested stakeholders	As appropriate, based on project

			developments and results
Light-weight exhibition material			
Posters/Roll-up	Awareness creation Knowledge diffusion Results presentation	Relevant stakeholders and all interested stakeholders.	As appropriate, based on project developments and results
Press-based communication			
Press releases	Awareness creation Media and other relevant "multipliers" engagement	All interested stakeholders, depending on the topic of the Press Release and the media coverage	Periodically based on the project developments and results
Scientific publications			
Scientific papers and publications	Knowledge diffusion to the relevant scientific community Results presentation	Research and academic community Other research projects/initiatives	As appropriate, based on project phases and results
Liaising and collaborations with other projects and initiatives			
Joint dissemination activities with **OntoCommons, SimDOME, VIMMP, OntoTrans, OpenModel project, WeldGalaxy, NanoMeCommons**	Ensure effective collaboration and knowledge exchange across projects.	Relevant stakeholders including research and academic communities, ontology and data interoperability experts, and industry players in materials and manufacturing sectors.	As appropriate
Joint dissemination activities with **Charisma, Musicode, MatCHMaker**	Facilitate collaboration and mutual sharing of advancements in data-driven materials science and manufacturing processes.	Communities focused on digital manufacturing, researchers, industry players, and other initiatives working on data sharing and knowledge integration in manufacturing.	As appropriate
Joint dissemination activities with **Trusts, DataPorts,**	Promote integration and collaboration among projects working	Stakeholders from data security, privacy, interoperability, and	As appropriate

OpertusMundi, SafeDeed, Mosaicrown, i3Market	on secure, interoperable, and federated data marketplaces.	federated marketplace domains, including industry associations, policymakers, and technology innovators.	
Liaising with and contributions to Clusters and Associations	To integrate DOME 4.0 into global manufacturing and digital ecosystems to federate communities of innovators and experts.	Core communities, users and experts in manufacturing, data sharing, and AI-driven technologies.	As appropriate
Liaising with relevant standardization groups	Exchange information and align results with standardization objectives to enhance interoperability and compliance.	Relevant standardization bodies/groups, industry leaders, and policymakers.	As appropriate
Collaboration with other projects in digital manufacturing and AI	Align activities, exchange knowledge, and collaborate in dissemination efforts.	EC-funded projects, research institutions, academic communities, and industry players in the digital manufacturing and AI domains.	Continuously, as appropriate
Other collaborations (business networks of the manufacturing leaders – AI solutions integrators)	To engage with relevant stakeholders' developing/integrating AI components and solutions To reach to the future innovators in CPS manufacturing in general and AI solutions for manufacturing	Relevant stakeholders (core communities, AI solutions integrators)	As appropriate

4.2 Dissemination Activities

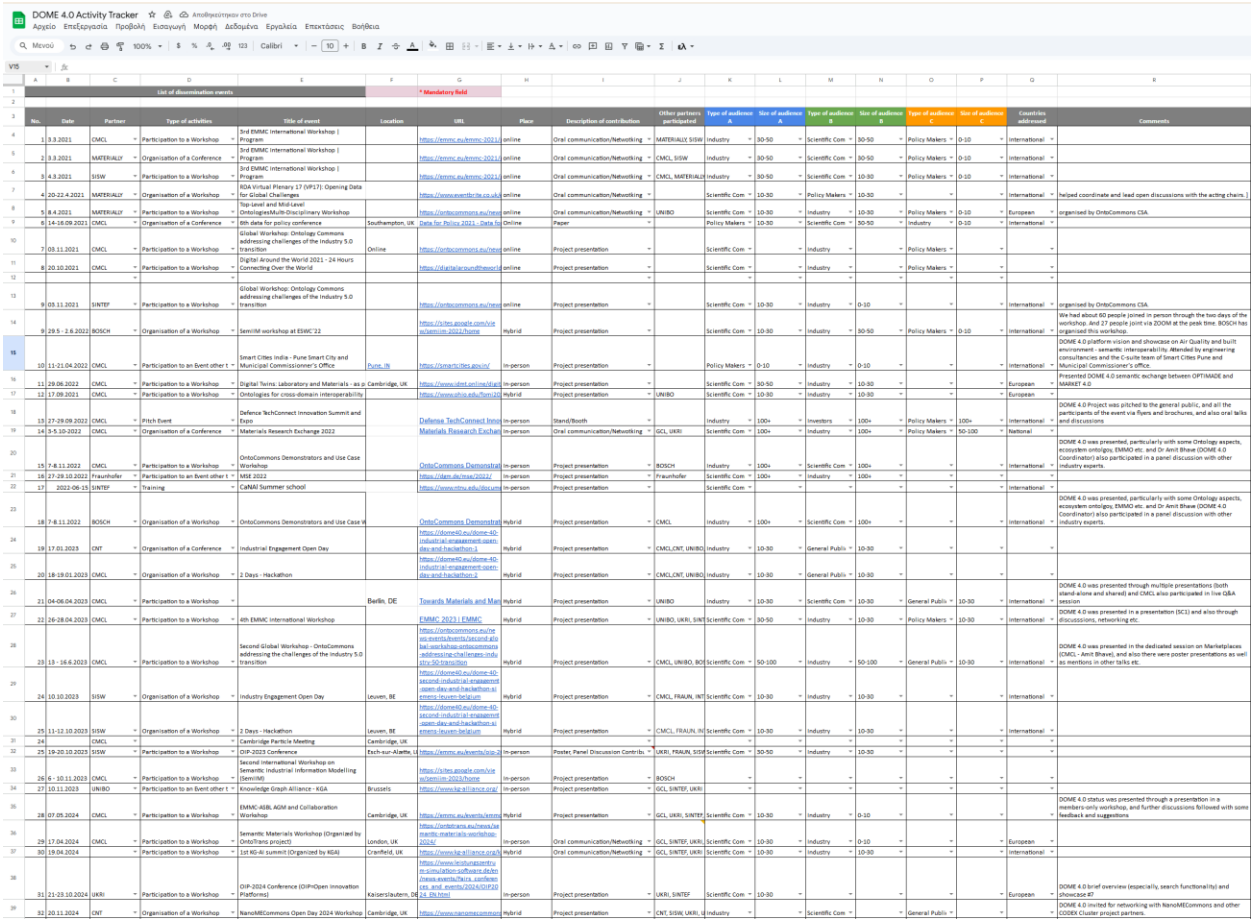
4.2.1 Events

As the DOME 4.0 project approaches its conclusion in its 48th and final month, participation in relevant events has proven to be a cornerstone of its dissemination strategy, significantly increasing awareness

and engagement with stakeholders. Events have served as vital platforms for communicating the project's concepts, developments, and outcomes to a diverse audience, enabling DOME 4.0 to showcase its innovations and establish meaningful collaborations within its specialized field.

Over the course of the project, the consortium has actively participated in a variety of events to maximize visibility and ensure broad knowledge dissemination. These engagements have included paper presentations, project showcases, poster presentations, workshops, Hackathons and participation for showcasing projects results, outcomes, networking and liaising purposes. Additionally, promotional materials such as brochures, posters, and roll-ups have been effectively utilized to enhance the impact of these events, reinforcing the project's messaging and fostering interest among participants.

To maintain a systematic approach, a dedicated worksheet was created at the project's outset to track event participation. This tool has enabled the consortium to monitor its activities, document their outcomes, and evaluate their impact on the project's dissemination objectives. Regular updates on these activities have been reported in dissemination deliverables and shared on the DOME 4.0 project website, ensuring transparency and alignment with the project's goals. As the project concludes, the significant achievements in event participation reflect the consortium's commitment to engaging its target audience and amplifying the impact of DOME 4.0.



DOME 4.0 Activity Tracker

List of dissemination events

No.	Date	Partner	Type of activities	Title of event	Location	URL	Place	Description of contribution	Other partners participated	Type of audience A	Size of audience A	Type of audience B	Size of audience B	Type of audience C	Size of audience C	Countries addressed	Comments
1	3.3.2021	CMCL	Participation to a Workshop	3rd EMMC International Workshop | Program		https://emmc.eu/emmc-2021/	online	Oral communication/Networking	MATERIALY, SISW	Industry	30-50	Scientific Com	30-50	Policy Makers	0-10	International	
2	3.3.2021	MATERIALY	Organisation of a Conference	3rd EMMC International Workshop | Program		https://emmc.eu/emmc-2021/	online	Oral communication/Networking	CMCL, SISW	Industry	30-50	Scientific Com	30-50	Policy Makers	0-10	International	
3	4.3.2021	SISW	Participation to a Workshop	3rd EMMC International Workshop | Program		https://emmc.eu/emmc-2021/	online	Oral communication/Networking	CMCL, MATERIALY	Industry	30-50	Scientific Com	10-30	Policy Makers	0-10	International	
4	20-22.4.2021	MATERIALY	Organisation of a Workshop	KDA Virtual Plenary 17 (VP17): Opening Data for Global Challenges		https://www.eventbrite.co.uk/e	online	Oral communication/Networking		Scientific Com	10-30	Policy Makers	10-30			International	helped coordinate and lead open discussions with the acting chairs.
5	8.4.2021	MATERIALY	Participation to a Workshop	Top-Level and Mid-Level Ontologies/Multi-Disciplinary Workshop		https://ontocommons.eu/new	online	Oral communication/Networking	UNIBO	Scientific Com	10-30	Industry	10-30	Policy Makers	0-10	European	organised by OntoCommons CSA.
6	14-16.09.2021	CMCL	Organisation of a Conference	6th data for policy conference	Southampton, UK	Data for Policy 2021 - Data fo	Online	Paper		Policy Makers	10-30	Scientific Com	30-50	Industry	0-10	International	
7	03.11.2021	CMCL	Participation to a Workshop	Global Workshop: Ontology Commons addressing challenges of the Industry 5.0 transition	Online	https://ontocommons.eu/new	online	Project presentation		Scientific Com		Industry		Policy Makers			
8	20.10.2021	CMCL	Participation to a Workshop	Digital Around the World 2021 - 24 Hours Connecting Over the World		https://digitalaroundtheworld	online	Project presentation		Scientific Com		Industry		Policy Makers			
9	03.11.2021	SINTEF	Participation to a Workshop	Global Workshop: Ontology Commons addressing challenges of the Industry 5.0 transition		https://ontocommons.eu/new	online	Project presentation		Scientific Com	10-30	Industry	0-10			International	organised by OntoCommons CSA.
9	29.5 - 2.6.2022	BOSCH	Organisation of a Workshop	SemIM workshop at ESWC'22		https://sites.google.com/view/semim-2022/home	hybrid	Project presentation		Scientific Com	10-30	Industry	30-50	Policy Makers	0-10	International	We had about 60 people joined in person through the two days of the workshop. And 27 people joint via ZOOM at the peak time. BOSCH has organised this workshop.
10	11-21.04.2022	CMCL	Participation to an Event other t	Smart Cities India - Pune Smart City and Municipal Commissioner's Office	Pune, IN	https://smartcities.gov.in/	In-person	Project presentation		Policy Makers	0-10	Industry	0-10			International	DOME 4.0 platform vision and showcase on Air Quality and built environment - semantic interoperability. Attended by engineering consultancies and the C-suite team of Smart Cities Pune and Municipal Commissioner's office.
11	29.06.2022	CMCL	Participation to a Workshop	Digital Twins: Laboratory and Materials - as p	Cambridge, UK	https://www.idot.se/sw/digit	In-person	Project presentation		Scientific Com	30-50	Industry	10-30			European	Presented DOME 4.0 semantic exchange between OPTIMADE and MARKET 4.0
12	17.08.2021	CMCL	Participation to a Workshop	Ontologies for cross-domain interoperability		https://www.ohla.edu/?p=125	Hybrid	Project presentation	UNIBO	Scientific Com	10-30	Industry	10-30			European	
13	27-28.09.2022	CMCL	Pitch Event	Defence TechConnect Innovation Summit and Expo		Defense TechConnect Innov	In-person	Stand/Booth		Industry	100+	Investors	100+	Policy Makers	100+	International	DOME 4.0 Project was pitched to the general public, and all the participants of the event via flyers and brochures, and also oral talks and discussions
14	3-5.10.2022	CMCL	Organisation of a Conference	Materials Research Exchange 2022		Materials Research Exchange	In-person	Oral communication/Networking	GCL, UKRI	Scientific Com	100+	Industry	100+	Policy Makers	50-100	National	
15	7-8.11.2022	CMCL	Participation to a Workshop	OntoCommons Demonstrators and Use Case Workshop		OntoCommons Demonstrat	In-person	Project presentation	BOSCH	Industry	100+	Scientific Com	100+			International	DOME 4.0 was presented, particularly with some Ontology aspects, ecosystem ontology, EMMO etc. and Dr Amit Bhave (DOME 4.0 Coordinator) also participated in a panel discussion with other industry experts.
16	27-28.10.2022	Fraunhofer	Participation to an Event other t	MSE 2022		https://dgm.de/mse/2022/	In-person	Project presentation	Fraunhofer	Scientific Com	100+	Industry	100+			International	
17	2022-06-15	SINTEF	Training	CaNAI Summer school		https://www.ntnu.edu/docum	In-person	Project presentation		Scientific Com						International	
18	7-8.11.2022	BOSCH	Organisation of a Workshop	OntoCommons Demonstrators and Use Case W		OntoCommons Demonstrat	Hybrid	Project presentation	CMCL	Industry	100+	Scientific Com	100+			International	DOME 4.0 was presented, particularly with some Ontology aspects, ecosystem ontology, EMMO etc. and Dr Amit Bhave (DOME 4.0 Coordinator) also participated in a panel discussion with other industry experts.
19	17.01.2023	CNT	Organisation of a Conference	Industrial Engagement Open Day		https://dome40.eu/dome-40-industrial-engagement-open-day-and-hackathon-1	Hybrid	Project presentation	CMCL,CNT, UNIBO,	Industry	10-30	General Public	10-30				
20	18-19.01.2023	CMCL	Organisation of a Workshop	2 Days - Hackathon		https://dome40.eu/dome-40-industrial-engagement-open-day-and-hackathon-2	Hybrid	Project presentation	CMCL,CNT, UNIBO,	Industry	10-30	General Public	10-30				
21	04-06.04.2023	CMCL	Participation to a Workshop		Berlin, DE	Towards Materials and Mac	Hybrid	Project presentation	UNIBO	Industry	10-30	Scientific Com	10-30	General Public	10-30	International	DOME 4.0 was presented through multiple presentations (both stand-alone and shared) and CMCL also participated in live Q&A session
22	26-28.04.2023	CMCL	Participation to a Workshop	4th EMMC International Workshop		EMMC 2023 | EMMC	Hybrid	Project presentation	UNIBO, UKRI, SINT	Scientific Com	30-50	Industry	10-30	Policy Makers	10-30	International	DOME 4.0 was presented in a presentation (SC1) and also through discussions, networking etc.
23	13 - 16.6.2023	CMCL	Participation to a Workshop	Second Global Workshop - OntoCommons addressing the challenges of the industry 5.0 transition		https://ontocommons.eu/news-events/events/second-global-workshop-ontocommons-addressing-challenges-industry-50-transition	Hybrid	Project presentation	CMCL, UNIBO, BO	Scientific Com	50-100	Industry	50-100	General Public	10-30	International	DOME 4.0 was presented in the dedicated session on Marketplaces (CMCL - Amit Bhave), and also there were poster presentations as well as mentions in other talks etc.
24	10.10.2023	SISW	Organisation of a Workshop	Industry Engagement Open Day	Leuven, BE	https://dome40.eu/dome-40-second-industrial-engagement-open-day-and-hackathon-si emens-leuven-belgium	Hybrid	Project presentation	CMCL, FRAUN, INT	Scientific Com	10-30	Industry	10-30			International	
25	11-12.10.2023	SISW	Organisation of a Workshop	2 Days - Hackathon	Leuven, BE	https://dome40.eu/dome-40-second-industrial-engagement-open-day-and-hackathon-si emens-leuven-belgium	Hybrid	Project presentation	CMCL, FRAUN, IN	Scientific Com	10-30	Industry	10-30			International	
26		CMCL		Cambridge Particle Meeting	Cambridge, UK												
27	19-20.10.2023	SISW	Participation to a Workshop	OIP-2023 Conference	Esch-sur-Alzette, L	https://emmc.eu/events/oip-2	In-person	Poster, Panel Discussion Contribu	UKRI, FRAUN, SISW	Scientific Com	30-50	Industry	10-30				
28	6 - 10.11.2023	CMCL	Participation to a Workshop	Second International Workshop on Semantic Industrial Information Modelling (SemIIM)		https://sites.google.com/view/semiim-2023/home	In-person	Project presentation	BOSCH								
29	10.11.2023	UNIBO	Participation to an Event other t	Knowledge Graph Alliance - KGA	Brussels	https://www.kg-alliance.org/	In-person	Project presentation	GCL, SINTEF, UKRI								
30	07.05.2024	CMCL	Participation to a Workshop	EMMC-ASBL AGM and Collaboration Workshop	Cambridge, UK	https://emmc.eu/events/emmc	Hybrid	Project presentation	GCL, UKRI, SINTEF	Scientific Com	10-30	Industry	0-10				DOME 4.0 status was presented through a presentation in a members-only workshop, and further discussions followed with some feedback and suggestions
31	17.04.2024	CMCL	Participation to a Workshop	Semantic Materials Workshop (Organised by OntoTrans project)	London, UK	https://ontotrans.eu/news/se mantic-materials-workshop-2024/	In-person	Oral communication/Networking	GCL, SINTEF, UKRI,	Scientific Com	10-30	Industry	0-10			European	
32	19.04.2024		Participation to a Workshop	1st KG-AI summit (Organized by KGA)	Cranfield, UK	https://www.kg-alliance.org/k	Hybrid	Oral communication/Networking	GCL, SINTEF, UKRI	Scientific Com	10-30	Industry	10-30			International	
33	21-23.10.2024	UKRI	Participation to a Workshop	OIP-2024 Conference (OIP=Open Innovation Platforms)	Kaiserslautern, DE	https://www.leistungszentrum-simulation-software-de/en/news-events/fairs_conferences_and_events/2024/OIP24_EN.html	In-person	Project presentation	UKRI, SINTEF	Scientific Com	10-30					European	DOME 4.0 brief overview (especially, search functionality) and showcase it?
34	20.11.2024	CNT	Participation to a Workshop	NanoMECommons Open Day 2024 Workshop	Cambridge, UK	https://www.nanomecommons	Hybrid	Project presentation	CNT, SISW, UKRI, U	Industry		Scientific Com		General Public			DOME 4.0 invited for networking with NanoMECommons and other CODEX Cluster project partners.

Figure 41 - DOME 4.0 Activity Tracker

By the end of the **DOME 4.0 project's 48-month duration**, the consortium successfully participated in **32 events and activities**, presenting the project's developments, results, outcomes, showcases, and platform to a wide range of stakeholders. These engagements provided invaluable opportunities to raise awareness, share insights, and foster collaboration with diverse audiences. Over the course of the year, the consortium has reached more than **900 people**, achieving an average of **over 28 participants per event** who gained deeper knowledge about the DOME 4.0 project—significantly surpassing the original KPI of **20 participants per event**.

Moreover, the **DOME 4.0 consortium**, and specifically the project partner and coordinator **CMCL**, showcased the project through **two booths at prominent US conferences** held in **September 2022** and **May 2023**, further extending the project's reach to international audiences. Additionally, **UKRI** represented the project through **two booths in Europe**: one featuring **poster at the EMMC Workshop in Vienna** and another during the **OntoCommons meeting in Oslo in July 2023**. These exhibitions provided significant platforms to highlight DOME 4.0's advancements and engage directly with stakeholders, fostering deeper understanding and collaboration within the global research and industry communities. These high-profile participations further exemplify the consortium's proactive approach to dissemination and knowledge sharing throughout the project. These activities collectively **overachieved the KPI of 2 Demo Events-Booths**, with a total of **4 successful demonstrations**.

The **DOME 4.0 consortium** has successfully overachieved its KPI of **15 presentations** by showcasing the **DOME marketplace** at **22 events** out of the total **32 events** participated in throughout the project. A significant contribution to this achievement comes from the project partner and coordinator **CMCL**, which has consistently included the DOME marketplace and its showcases in every presentation. CMCL alone delivered **19 presentations**, including its participation in the **three hackathons organized by the project**. This focused effort ensured that the platform's value and its applications were effectively communicated to a wide range of stakeholders. The majority of the presentations across these events prominently featured the **DOME platform, marketplace, and showcases**, significantly amplifying the project's visibility and impact.

The **DOME 4.0 consortium** has successfully achieved the **KPI of participating in four affiliated demo days**. As an affiliated project, **OntoCommons** provided a valuable platform for DOME 4.0 to share its advancements and engage with a relevant audience. DOME 4.0 was invited to **OntoCommons events**, where the project was presented, including a **live demonstration of the DOME marketplace website and select showcases**. These presentations, delivered by **CMCL**, took place in **Vienna**, **Berlin**, **Oslo**, **Galway**, **and Stuttgart**, offering opportunities to showcase the project's progress and innovations to diverse stakeholders. These affiliated demo days significantly contributed to increasing awareness and visibility of the DOME 4.0 project, highlighting its impact within the digital and industrial ecosystems.

4.2.2 Events – Lessons Learned

The following table presents the events that were either participated in or organized by the consortium, along with the key outcomes derived from each event.

Table 9 - Event - Outcomes Table

Event - Outcomes			
Partner	**Type of activities**	**Title of event**	**What was the purpose of the event and learning/development outcomes taken from each event.**
CMCL	Participation to a Workshop	3rd EMMC International Workshop | Program	Share and exchange materials modeling and simulation advances with the international research and industry community. This presents a relevant early opportunity to inform stakeholders about the DOME 4.0 research project and gather valuable feedback.

MATERIALLY	Organisation of a Workshop	RDA Virtual Plenary 17 (VP17): Opening Data for Global Challenges	Discussed challenges and solutions in opening data for global scientific challenges, advancing FAIR principles, and sharing actionable case studies.
MATERIALLY	Participation to a Workshop	Top-Level and Mid-Level OntologiesMulti-Disciplinary Workshop	Explored the role of top-level and mid-level ontologies in fostering interoperability and alignment across diverse domains.
CMCL	Organisation of a Conference	6th data for policy conference	Share/exchange materials modelling & simulation advances with international research & industry community.
CMCL	Participation to a Workshop	Global Workshop: Ontology Commons addressing challenges of the Industry 5.0 transition	Share/exchange materials modelling & simulation advances as well as the ontology backbones of the project.
CMCL	Participation to a Workshop	Digital Around the World 2021 - 24 Hours Connecting Over the World	Present the overview of the project, and exchange ideas about how to enable interoperability in the Marketplace
BOSCH	Organisation of a Workshop	SemIIM workshop at ESWC'22	Exchanged best practices for semantic modeling in industrial applications, introducing DOME 4.0 tools to ESWC participants.
CMCL	Participation to an Event other than a Conference or a Workshop	Smart Cities India - Pune Smart City and Municipal Commissionner's Office	Present how DOME 4.0 enables interoperability in data as well as the SCs, and how outcomes of DOME 4.0 would help tackle cross-sector challenges

CMCL	Participation to a Workshop	Digital Twins: Laboratory and Materials - as part of the World Avatar	Raise awareness about the DOME 4.0 and its services to a relevant initiative. Also, lay grounds for the onboarding in Hackathon 2.
CMCL	Participation to a Workshop	Ontologies for cross-domain interoperability	Exchange ideas about the ontologies and semantics for the Marketplace and also present the project.
CMCL	Pitch Event	Defence TechConnect Innovation Summit and Expo	Disseminate the project to a totally new audience, and exchange ideas about the data interoperability.
CMCL	Organisation of a Conference	Materials Research Exchange 2022	Exchange ideas with the materials and manufacturing sector on the data interoparbility, also to introduce the project.
CMCL	Participation to a Workshop	OntoCommons Demonstrators and Use Case Workshop	Demonstrate the synergies between the two projects, elaborate on the mutual learnings, and provide latest updates in the semantics and showcases.
Fraunhofer	Participation to an Event other than a Conference or a Workshop	MSE 2022	Updated the audience on FAIR principle compliance initiatives at MSE 2022.
SINTEF	Training	CaNAl Summer school	Update with the recent advancements of DOME 4.0 workflows and future hackathons.
CNT	Organisation of a Conference	Industrial Engagement Open Day	Promoted industry engagement, gathering critical feedback from academic partners and industrial representatives for

			DOME 4.0 Hackathon preparation.
CMCL	Organisation of a Workshop	2 Days - Hackathon	The opportunity of the project to disseminate its development - covered fully in a separate deliverable.
CMCL	Participation to a Workshop	Towards Materials and Manufacturing Commons - the enablers Digital Marketplaces, FAIR Principles and Ontologies	Exchange ideas about the FAIR principles in data interoperability, ontologies and the documentation, also updates on the latest developments in the project and SCs
CMCL	Participation to a Workshop	4th EMMC International Workshop	Present DOME 4.0 and its ambitions to the relevant community within materials and manufacturing sectors, exchange ideas.
CMCL	Participation to a Workshop	Second Global Workshop - OntoCommons addressing the challenges of the Industry 5.0 transition	Ontology, SCs, platform and interoperability backbones were presented and discussed with the partners. Idea exchange with the participants on documentation and ontologies.

SISW	Organisation of a Workshop	Industry Engagement Open Day	Inform & engage actors in industry and academia on the importance of digitalization, show the role DOME 4.0 plays as data sharing and engineering ecosystem, and get important feedback from the community. As such, set the scene for the DOME 4.0 Hackathon (next row item).
SISW	Organisation of a Workshop	2 Days - Hackathon	The meeting provided a 2-day deep dive into the DOME 4.0 platform, looking at onboarding data providers, connector development and onboarding data consumers. This provided important feedback on the DOME 4.0 status, the remaining steps for development and deployment, and the user perception.
CMCL		Cambridge Particle Meeting	introduce DOME 4.0 to a relevant community in Materials field. disseminate the SCs.
SISW	Participation to a Workshop	OIP-2023 Conference	The meeting comprised presentations on open innovation for modelling, design and manufacturing. The meeting was organized by 3 liaison projects (MUSICODE, VIPCOAT and OpenModel), with several DOME 4.0 partners (from SISW, UKRI, FRAUN) contributing. It was good to experience that the DOME 4.0 project activities are in sync with these other projects.
CMCL	Participation to a Workshop	Second International Workshop on Semantic Industrial	Present the latest status of the platform, the showcases as well as the ontologies in the project,

		Information Modelling (SemIIM)	and exchange ideas about the semantics.
UNIBO	Participation to an Event other than a Conference or a Workshop	Knowledge Graph Alliance - KGA	The event provided insights into advancements in knowledge graph technologies and their implementation challenges. It fostered potential collaborations with alliance members and highlighted best practices. These outcomes support the integration of knowledge graphs within the DOME 4.0 platform.
NanoMECommons	Codex Cluster Activity	The NMBP-35 H2020 Projects CHARISMA, NanoMECommons, and EASI-STRESS are hosting their second joint exploitation event in person!	It provided insights into cross-sector challenges and solutions in materials modeling and characterization. These outcomes contribute to refining DOME 4.0's interoperability and exploitation approaches.
CMCL	Participation to a Workshop	EMMC-ASBL AGM and Collaboration Workshop	Introduction of the project, and SCs in the project, and exchange ideas with the relevant materials and manufacturing experts.
CMCL	Participation to a Workshop	Semantic Materials Workshop (Organized by OntoTrans project)	The workshop was about semantic data and knowledge management for chemicals and materials industries. Valuable insight from researches and indsutry representatives on their data/metadata challenges and solutions.

	Participation to a Workshop	1st KG-AI summit (Organized by KGA)	The workshop was centred on knowledge graphs, with industrial representatives from both software vendor and (potential) consumer side. An opportunity to be updated on the ongoing activities in industry and academia and typical challenges.
UKRI	Participation to a Workshop	OIP-2024 Conference (OIP=Open Innovation Platforms)	The event brought together three Open Innovation Platform projects (Musicode, Vipcoat and OpenModel) plus other related national and european projects, overall addressing digitalization in materials and manufacturing. Opportunity to disseminate DOME 4.0 work to possible providers/consumers and learn about technologies used by projects in the area.
CNT	Organisation of a Workshop	NanoMECommons Open Day 2024 Workshop	The workshop fostered collaboration within the CODEX Cluster, highlighting DOME 4.0's contributions to interoperability and data sharing. It provided a platform to exchange knowledge on materials modeling and manufacturing challenges. The outcomes strengthen DOME 4.0's role within the cluster and support future joint initiatives.

Figure 42 - Outcomes from Events

The DOME 4.0 project leveraged participation in numerous high-profile events to disseminate its vision, gather feedback, and foster collaboration, which resulted in a rich set of outcomes for its development. At the **3rd EMMC International Workshop**, the project introduced its research objectives to a global

audience of materials modeling experts. This early engagement allowed the team to collect critical feedback, particularly on aligning its goals with industrial needs, which proved essential for guiding subsequent project activities. Similarly, the **4th EMMC International Workshop** built on this by providing a platform to share progress, further reinforcing the project's relevance to the materials and manufacturing sectors.

The project's commitment to addressing interoperability challenges was a recurring theme. For example, during the **Top-Level and Mid-Level Ontologies Multi-Disciplinary Workshop**, DOME 4.0 explored how ontologies can enable seamless data exchange between diverse domains. This event deepened the project's understanding of aligning its ontological frameworks with broader standards, directly benefiting its technical development. In the **Global Workshop on Ontology Commons**, discussions around Industry 5.0 transitions underscored the importance of robust, scalable interoperability solutions, allowing DOME 4.0 to refine its ontology backbones further.

Events focusing on open data and FAIR principles, such as the **RDA Virtual Plenary 17**, provided an opportunity for DOME 4.0 to align with global best practices. Insights gained during discussions on FAIR-compliant data sharing were instrumental in strengthening the project's alignment with FAIR principles and its integration into global research ecosystems.

Hands-on events such as the **DOME 4.0 Hackathons** and **Industrial Engagement Open Days** proved pivotal for user-driven development. The hackathons facilitated live onboarding sessions with data providers and consumers, generating actionable feedback on workflows, platform usability, and data-sharing tools. These sessions also highlighted key areas requiring improvement, such as connector development and documentation, helping the project fine-tune its offerings.

Engagement with the broader academic and industrial community also yielded valuable synergies. For instance, at the **NanoMECommons Open Day 2024 Workshop**, DOME 4.0 collaborated with the CODEX Cluster to showcase its interoperability solutions. The event underscored the importance of cross-sector partnerships, enabling the project to refine its data-sharing strategies and align with complementary initiatives in materials modeling. Similarly, the **OIP Conferences**, which brought together European innovation projects like VIPCOAT and OpenModel, allowed DOME 4.0 to exchange best practices and identify shared challenges, particularly in digitalization and data governance.

Sector-specific events such as the **Materials Research Exchange 2022** and **Cambridge Particle Meeting** provided platforms to present DOME 4.0's relevance to materials science and manufacturing communities. The **Semantic Materials Workshop** and **SemIIM workshops** offered deep dives into semantic technologies, allowing DOME 4.0 to enhance its semantic modeling tools and ontologies based on expert input.

Additionally, the project capitalized on knowledge graph advancements through events like the **Knowledge Graph Alliance Summit**, gaining insights into best practices for integrating knowledge graphs into DOME 4.0 workflows. This knowledge informed the project's approach to data representation and enhanced its interoperability framework.

Lastly, events like the **Towards Materials and Manufacturing Commons Workshop** and the **Defence TechConnect Innovation Summit** broadened DOME 4.0's stakeholder base. These events facilitated

connections with industries and sectors previously unfamiliar with the project, highlighting its potential to address diverse challenges, from defense to smart cities.

Key Learning and Development Outcomes:

1. **Technical Refinement**: Insights from hands-on sessions and hackathons directly informed improvements in connector development, user interfaces, and documentation.
2. **Standards Alignment**: Participation in ontology and FAIR data events ensured that DOME 4.0 adhered to industry standards, enhancing interoperability.
3. **Community Building**: Collaborative workshops and engagement days expanded DOME 4.0's stakeholder network, fostering a vibrant ecosystem of users and contributors.
4. **Strategic Positioning**: Dissemination at sector-specific events positioned DOME 4.0 as a leader in digital marketplaces and semantic modeling for materials and manufacturing.
5. **Cross-Sector Synergies**: Collaboration with related projects (e.g., NanoMECommons, VIPCOAT) helped identify common challenges and fostered joint innovation opportunities.

Each event provided valuable opportunities for DOME 4.0 to test its assumptions, refine its tools, and strengthen its positioning as a leader in data interoperability and FAIR-compliant digital ecosystems for the materials and manufacturing sectors.

4.2.3 Events Organized by DOME 4.0

During month 48, the consortium actively participated in and organized several events to promote the project's objectives, progress, and developments. To date, **the consortium has successfully organized 13 workshops**, focusing on the **project's Showcases**, platform presentations, training sessions, and stakeholder engagement. These events include **nine internal workshops led by our partner SISW**, as well as **three Hackathons combined with two Industrial Open Days events**. With this achievement, the consortium has met the KPI of organizing nine workshops in total per Showcase while also exceeding expectations by organizing three additional events, including the Hackathons and Industrial Open Days, which complemented the Hackathon activities.

Below, you will find detailed information about the internal workshops organized for the Showcases, fulfilling the KPI:

- **2023-02-16 (2.00pm)- Workshop SC1 + DOME core development team**
  DOME core dev team: Bjørn Tore Løvfall (SINTEF); Kristine Wiik (SINTEF); Adham Hashibon (UCL); Guanyu (Mike) Wang (UCL); Martin Uhrin (EPFL)
  WP4 lead: Adrien Scheuer (SISW)
  SC owner(s): Kok Foong Lee (CMCL); Chung Ting Lao (CMCL)

- **2023-03-24 (10.00am) - Workshop SC2 + DOME core development team**
  DOME core dev team: Bjørn Tore Løvfall (SINTEF); Kristine Wiik (SINTEF); Adham Hashibon (UCL); Guanyu (Mike) Wang (UCL); Martin Uhrin (EPFL)
  WP4 lead: Adrien Scheuer (SISW)
  SC owner(s): Jörg Hohe (FRAUN); Natalja Schafet (BOSCH); Evgeny Kharlamov (BOSCH)

- **2023-02-17 (10.00am) - Workshop SC3 + DOME core development team**
  DOME core dev team: Bjørn Tore Løvfall (SINTEF); Kristine Wiik (SINTEF); Adham Hashibon (UCL); Guanyu (Mike) Wang (UCL); Martin Uhrin (EPFL)
  WP4 lead: Adrien Scheuer (SISW)
  SC owner(s): Michael Hoffmann (FRAUN)

- **2023-03-10 (10.00am) - Workshop SC4 + DOME core development team**
  DOME core dev team: Bjørn Tore Løvfall (SINTEF); Kristine Wiik (SINTEF); Adham Hashibon (UCL); Guanyu (Mike) Wang (UCL); Martin Uhrin (EPFL)
  WP4 lead: Adrien Scheuer (SISW)
  SC owner(s): Adrien Scheuer (SISW); Sander Mergan (SISW)

- **2023-02-23 (10.00am) - Workshop SC5 + DOME core development team**
  DOME core dev team: Bjørn Tore Løvfall (SINTEF); Kristine Wiik (SINTEF); Adham Hashibon (UCL); Guanyu (Mike) Wang (UCL); Martin Uhrin (EPFL)
  WP4 lead: Adrien Scheuer (SISW)
  SC owner(s): Konstantinos Sipsas (INTRA)

- **2023-02-23 (11.30am) - Workshop SC6 + DOME core development team**
  DOME core dev team: Bjørn Tore Løvfall (SINTEF); Kristine Wiik (SINTEF); Adham Hashibon (UCL); Guanyu (Mike) Wang (UCL); Martin Uhrin (EPFL)
  WP4 lead: Adrien Scheuer (SISW)
  SC owner(s): Martin Uhrin (EPFL)

- **2023-02-17 (11.30am) - Workshop SC7 + DOME core development team**
  DOME core dev team: Bjørn Tore Løvfall (SINTEF); Kristine Wiik (SINTEF); Adham Hashibon (UCL); Guanyu (Mike) Wang (UCL); Martin Uhrin (EPFL)
  WP4 lead: Adrien Scheuer (SISW)
  SC owner(s): Silvia Chiacchiera (UKRI), Noel Vizcaino (UKRI)

- **2023-04-25 (10.00am) - Workshop SC8 + DOME core development team**
  DOME core dev team: Bjørn Tore Løvfall (SINTEF); Kristine Wiik (SINTEF); Adham Hashibon (UCL); Guanyu (Mike) Wang (UCL); Martin Uhrin (EPFL)
  WP4 lead: Adrien Scheuer (SISW)
  SC owner(s): Evgeny Kharlamov (BOSCH)

- **2023-03-10 (11.30am) - Workshop SC9 + DOME core development team**
  DOME core dev team: Bjørn Tore Løvfall (SINTEF); Kristine Wiik (SINTEF); Adham Hashibon (UCL); Guanyu (Mike) Wang (UCL); Martin Uhrin (EPFL)
  WP4 lead: Adrien Scheuer (SISW)
  SC owner(s): Adrien Scheuer (SISW); Sander Mergan (SISW)

Finally, we have made significant efforts in organizing internal partner events, showcasing our commitment to fostering collaboration and knowledge exchange within the consortium. Out of the target of 20 events, we successfully organized **9 internal workshops** and **three hackathons**, bringing together partners to align on project objectives and advance technical developments. While this represents a partial achievement of the KPI, these events have been highly impactful, contributing to the overall progress of the project. We remain dedicated to building on this foundation and exploring additional opportunities to enhance internal collaboration as we move forward.

4.2.4 Hackathons & Industrial Engagement Open Days

The **1st Hackathon and Industrial Engagement Open Days (IEOD)**, co-organized by the DOME 4.0 project in partnership with the SimDOME project, took place from **January 17 to 19, 2023**, at the BI-REX premises in Bologna, Italy. This hybrid event combined a single-day IEOD and a two-day Hackathon, attracting over 70 participants from diverse sectors, including industry, academia, and research.

The **Industrial Engagement Open Day**, moderated by Dr. Bojan Boskovic from CNT, focused on standard data handling, data management practices, and novel business models for industrial organizations. It provided a platform for presentations, discussions, and interactive sessions to align DOME 4.0's proposed solutions with existing industry practices. Key stakeholders, including representatives from SISW, BOSCH, and CMCL, delivered insightful talks and participated in panel discussions, enriching the dialogue and fostering collaboration.

The **Hackathon** spanned four technical sessions, addressing ontology development, standard vocabularies, data FAIRness (Findable, Accessible, Interoperable, Reusable), and data-sharing practices. Participants engaged in hands-on activities, exploring practical use cases from DOME 4.0 showcases and developing tools and services to facilitate data sharing. Training materials and expert-led presentations underscored the importance of standardization, semantic platforms, and cross-sector interoperability.

This double event not only advanced the technical development of the DOME 4.0 platform but also enhanced engagement with stakeholders, providing critical feedback and innovative ideas for future improvements. The outcomes included greater alignment of DOME 4.0's solutions with industry needs, identification of gaps in knowledge representation and data sharing, and strengthened relationships with industrial and academic partners. Building on this success, the consortium plans to organize two additional events to continue driving progress and stakeholder collaboration.

Figure 43 - 1st Hackathon

Figure 44 - DOME 4.0 1st Hackathon & IEOD

The **2nd Hackathon and Industrial Engagement Open Days (IEOD)** of the DOME 4.0 project took place from **October 10 to 12, 2023**, at the Siemens premises in Leuven, Belgium. This hybrid event built on the success of the inaugural event in Bologna, bringing together over 70 participants, including industry leaders, academic experts, and innovators, to explore the latest advancements in materials digitalization and semantic data ecosystems.

The **Industrial Engagement Open Day** on October 10th set the stage with insightful presentations and discussions. Hosted by Siemens, the day opened with remarks from notable figures such as Laszlo Farkas (Siemens), Amit Bhave (CMCL and DOME 4.0 Coordinator), and Ian McGann (Siemens), highlighting cutting-edge technologies like immersive solutions, AI, and digital twins. The day emphasized identifying industry challenges in data sharing, FAIR practices, and knowledge representation, providing invaluable input for the subsequent Hackathon. Panel discussions moderated by Bojan Boskovic (CNT) fostered meaningful exchanges, offering fresh perspectives and actionable insights for DOME 4.0's ecosystem development.

The **two-day Hackathon** (October 11-12) focused on onboarding data and service providers into the DOME 4.0 platform, enhancing semantic data sharing, and fostering hands-on tool development. Highlights included a presentation by Adham Hashibon on open science and innovation, followed by live demonstrations of the DOME 4.0 platform by Teresa Rose, showcasing seamless integration of external data repositories. Interactive sessions led by Silvia Chiacchiera (UKRI) gathered participant feedback on current and future digital marketplaces. A notable achievement was the onboarding of a chemistry domain data provider, facilitated by Alexei Lapkin (iDMT Cambridge), marking a milestone in cross-disciplinary collaboration.

With its engaging talks, demonstrations, and interactive sessions, the event left a lasting impact on participants, underscoring the transformative potential of the DOME 4.0 ecosystem. The success of this event further solidifies DOME 4.0's role in driving innovation and collaboration within the materials and manufacturing sectors. Plans are already underway for the next Hackathon in 2024, continuing this momentum.

Figure 45 - - DOME 4.0 2nd Hackathon & IEOD

During the **2nd Hackathon and Industrial Engagement Open Days**, held at the Siemens premises in Leuven, Belgium, were conducted interviews with participants and organizers to capture their insights

and experiences. These interviews provided a unique perspective on the event's activities, including the innovative sessions, collaborative discussions, and hands-on workshops. The interviews were later consolidated into a video that showcased the highlights of the event. This video was shared across the project's official **YouTube channel**, website, and social media platforms, further promoting the DOME 4.0 initiative and its progress to a broader audience while engaging stakeholders from various sectors.

The **3rd Hackathon of the DOME 4.0 project**, held from **September 11-12, 2024**, at UCL East in London, exemplified collaboration, innovation, and advancements in data-driven solutions. Hosted in partnership with UCL's Institute for Materials Discovery, this two-day event brought together experts, researchers, and industry leaders from diverse sectors, focusing on data interoperability, ontologies, and the potential of AI and semantic technologies.

Dr. Iker Esnaola-Gonzalez from BASF Digital Solutions delivered the first keynote, sharing BASF's innovative journey in leveraging semantic technologies for enhanced data utilization, sparking lively discussions on industry applications of knowledge graphs and ontologies. **Christoph Mertens** from the International Data Spaces Association followed with insights into global data space protocols and the challenges of secure data sharing, offering a vision for enabling trust and interoperability on a global scale. Additionally, **Kate Lin** from Google highlighted innovative metadata formats and tools for dataset discovery, opening discussions on the future of open data ecosystems.

The hackathon sessions featured hands-on workshops and real-time interaction with the DOME 4.0 platform. Day one introduced participants to the platform's functionalities, including data onboarding, connector registration, and integration with external platforms like VIPCOAT. Teams engaged in their first hacking challenge, exploring data from external sources and testing platform usability, which provided valuable feedback for improving the user interface and workflows.

On day two, participants delved deeper into real-time data integration using UCL's newly developed **Discomat package**. This tool enabled teams to onboard semantic datasets into the DOME 4.0 platform, showcasing the transformation of lab-generated data into interoperable assets. The event concluded with final presentations, reflecting on the collaborative learning, insights from the keynotes, and innovative outcomes achieved during the hackathon.

The 3rd DOME 4.0 Hackathon demonstrated the project's ability to bridge the gap between research and industry, foster collaborations, and drive innovation in data semantics and integration. The success of the event was attributed to the contributions of keynote speakers, moderators, the showcases workshop as well as to the participants, whose collective efforts showcased the transformative potential of the DOME 4.0 platform. This hackathon not only advanced technical development but also reinforced DOME 4.0's position as a leader in data-driven innovation and collaboration.

Figure 46 - DOME 4.0 3rd Hackathon

Based on the aforementioned, the DOME 4.0 consortium has successfully **fulfilled the KPI of organizing three Hackathons**, as outlined in the project's objectives. Furthermore**, considering that each Hackathon included dedicated training sessions** on how to use and interact with the DOME 4.0 platform, we have also **achieved the KPI of organizing three Webinars/Trainings**. These sessions provided hands-on experience and in-depth knowledge to participants, effectively reaching the target of three events while simultaneously enhancing stakeholder engagement and capacity-building efforts.

4.3 Collaborations/Liaisons

During the course of the project, we have established meaningful collaborations and liaisons with various projects and initiatives. These partnerships have been pivotal in enhancing the project's visibility, raising awareness about its objectives, and fostering the exchange of knowledge and expertise. By aligning efforts with complementary initiatives, we have strengthened our impact on targeted audiences and stakeholder groups, ensuring a broader reach and deeper engagement. These collaborations have not only supported mutual learning but have also contribute to fuflfill the KPI of collaborating with 15 projects which the joint

activities amplified the collective influence of the project within the research, industrial, and policy-making communities.

Please find below the list of the 16 projects with which we have collaborated on common activities so far:

- OntoCommons
- SimDOME
- VIMMP
- OntoTrans
- OpenModel Project
- WeldGalaxy
- NanoMECommons
- CHARISMA
- MUSICODE
- MatCHMaker
- TRUSTS
- DataPorts
- OpertusMundi
- Safe-DEED
- MOSAICrOWN
- i3-MARKET

We have made significant progress toward achieving the KPI for joint activities per Showcase, reflecting the collaborative spirit of DOME 4.0. The three showcases selected—air quality sensor digital twins, materials properties from OPTIMADE, and connecting with machining data cataloguing from the MARKET 4.0 marketplace—demonstrate the project's commitment to fostering synergies with EC-supported marketplaces and materials and manufacturing initiatives. While substantial efforts have been made to advance these activities, the KPI has been partially achieved, and we remain dedicated to fully realizing the goals of this initiative through ongoing collaboration and development.

4.3.1 Codex Cluster

The **CODEX Cluster** (Collaborative Open Data Exchange for Advanced R&I) is an initiative uniting several innovative EU-funded projects to advance materials science and manufacturing through innovation, collaboration, digitalization, and standardization. The cluster comprises the **DOME 4.0**, **OntoTrans**, **CHARISMA**, **OpenModel**, **MUSICODE**, **MatCHMaker**, and **NanoMECommons** projects, each addressing unique challenges within their respective domains. To enhance dissemination and exploitation of the cluster's results, the CODEX Cluster leveraged the **Horizon Results Booster (HRB)** service. Through this tailored support, the cluster developed a unified **Portfolio Dissemination Plan**, collaborative dissemination materials such as factsheets and video briefs, and capacity-building activities to strengthen communication with diverse stakeholders, including researchers, policymakers, and industry leaders. This strategic approach ensures the cluster's solutions effectively address key challenges in data interoperability, sustainability, and innovation across Europe.

The **CODEX Cluster** aims to revolutionize materials science and manufacturing by creating open and accessible platforms, tools, and methodologies that enable data-driven decision-making, foster innovation, and promote sustainable development. It focuses on advancing digitalization and standardization to tackle industry challenges such as data interoperability, efficiency, and quality control. By leveraging cutting-edge technologies and fostering collaboration among stakeholders, the cluster seeks to enhance competitiveness, reduce costs, and support climate goals. Its overarching mission is to develop solutions that benefit a wide range of stakeholders, from researchers and academia to large enterprises, start-ups, and SMEs, ultimately driving progress in sustainable and efficient materials and manufacturing processes.

Table 10 - Presentation of the CODEX Cluster

Presentation of the CODEX Cluster	
Project Acronym	**Short Description**
CHARISMA	The CHARISMA Project (Characterisation and HARmonisation for Industrial Standardisation of Advanced MAterials) is set to harmonise Raman Spectroscopy for characterisation across the life cycle of a material, from product design and manufacture to lifetime performance and end-of-life stage. The project will demonstrate the feasibility of its concept in three industry cases. In the long term, it aims to make Raman spectroscopy a widespread technology used within the Industry Commons concept.
DOME 4.0	The EU-funded project DOME 4.0 aims to create an industrial data ecosystem that facilitates business-to-business (B2B) data sharing. By adhering to Open Science and Open Innovation principles, DOME 4.0 enables the generation of value and the development of new or enhanced products, processes, and services. The project showcase real-world examples with industrial relevance in the materials and manufacturing domains on the Digital Open Marketplace Ecosystem, covering a wide range of industry sectors and applications. Its unique offerings include fostering wider market impact, stakeholder engagement, and community aggregation within the DOME 4.0 ecosystem. Its Marketplace allows secure data exchange among stakeholders. Visitors can explore the Lhumos knowledge platform providing educational materials.
MatCHMaker	MatCHMaker is a Horizon Europe project funded by the European Union supporting excellence in research on methods and tools for advanced materials development towards a low-carbon and clean industry. MatCHMaker aims to reduce the time, cost and risks of developing and optimising advanced materials. This contributes to the European Green Deal to decarbonise the industry while enhancing people's quality of life. The ambition of MatCHMaker is to validate project results on three Use Cases: Construction (cement), Energy (SOFC/SOEC) and Mobility (PEMFC).
MUSICODE	The MUSICODE project is creating a unique Open Innovation Platform for Materials Modelling. The application area is Organic Electronics, for which the

	required modelling spans all length scales (electronic to continuum) and physics (quantum to fluid dynamics). The MUSICODE platform is a single-entry point for the industrial non-expert user, linked with data, protocols, editing tools, pre-templated modelling workflows and HPC facilities. It enables insight of how chemical structure, materials formulations, and process (gas/wet phase) conditions affect organic material properties and device performance. The MUSICODE platform offers key innovations on several levels, such as workflow design, data handling, software integration, HPC etc, with the aim to make materials modelling accessible and user-friendly for industry.
NanoMECommons	NanoMECommons will establish a transnational and multidisciplinary research and innovation network to tackle the problem of nanomechanical materials characterisation in multiple industries. The focus of NanoMECommons is to employ innovative nano-scale mechanical testing procedures in real industrial environments, by developing harmonised and widely accepted characterisation methods, with reduced measurement discrepancy, and improved interoperability and traceability of data. To achieve this goal, NanoMECommons will offer protocols for multi-technique, multi-scale characterisations of mechanical properties in a range of industrially relevant sectors, together with novel tools for data sharing and wider applicability across NMBP domain: reference materials, specific ontologies and standardised data documentation.
OntoTrans	OntoTrans provides an intelligent system that uses machine learning and semantic reasoning to enable end users to represent challenges in their manufacturing process in a standard ontological form and to connect them with relevant information sources and materials modelling solutions. This approach optimises materials and process design, making the manufacturing industry more adaptive and competitive. OntoTrans provides smart targeted guidance through the whole translation process: from the initial innovation case specification to actual materials modelling workflows with related validation, verification and uncertainty quantifications to deliver a complete experience to companies. OntoTrans can be fully integrated into existing and emerging developments in materials and manufacturing, including integration with digital materials modelling marketplaces and open simulation platforms. Its footing on the European Materials Modelling Ontology ensures wide interoperability and standardisation.
OpenModel	OpenModel aims to design, create, provide, and maintain a sustainable integrated open platform for innovation which delivers predictable, validated, and traceable simulation workflows integrating seamlessly third-party physics-based models, solvers, post-processors and databases. OpenModel thus bridges the gap from industry challenge via translation to actionable results that enable well informed business decisions. It will be applicable to a

	wide range of materials and their related processing technologies and facilitate setting up experiments, reducing error, enhancing R&D efficiency.

To enhance the visibility and create a strong, unified presence, the CODEX Cluster undertook the development of a distinct **brand identity**. Central to this effort was the design of a dedicated **logo**, representing the collaboration, innovation, and shared goals of the cluster's members. This logo serves as a visual anchor, symbolizing the collective mission of advancing materials science and manufacturing through digitalization and standardization.

Figure 47 - CODEX Cluster Logo

To further promote the cluster and its activities, a **dedicated webpage** was created on the DOME 4.0 project website. This page showcases the CODEX Cluster, providing an overview of its objectives, member projects, and collaborative activities, while also serving as a central hub for stakeholders to explore the cluster's impact.

In addition to these efforts, the cluster members worked together to produce a **joint factsheet** and a **promotional video**, both of which highlight the CODEX Cluster's shared initiatives and achievements. These materials were designed to effectively communicate the cluster's goals, activities, and results to a diverse audience, including researchers, policymakers, and industry stakeholders. The factsheet and video were subsequently uploaded to the DOME 4.0 website, ensuring accessibility for interested parties. Furthermore, the promotional video was shared on the **DOME 4.0 YouTube channel**, leveraging this platform to reach an even wider audience.

The CODEX Cluster's factsheet presents an overview of its mission to advance materials science and manufacturing through innovation, collaboration, digitalization, standardization, and advanced technologies. It highlights the essential role of chemicals and advanced materials, including nanomaterials, in enhancing quality of life and societal standards while emphasizing the importance of adhering to principles of safety, sustainability, and circularity.

The document explains the cluster's goal to develop open and accessible platforms, tools, and methodologies that enable data-driven decision-making, address industry challenges, and promote sustainable development and competitiveness.

The factsheet was produced with the support of the Horizon Results Booster services and acknowledges the funding and contributions of various EU-funded projects such as DOME 4.0, OpenModel, OntoTrans, MUSICODE, NanoMECommons, CHARISMA, and MatCHMaker. It also provides links to the respective

project websites for more information and invites stakeholders to join efforts in revolutionizing materials science and manufacturing. This comprehensive branding and dissemination strategy has not only strengthened the cluster's visibility but also reinforced the collaborative identity of its members, amplifying the impact of their joint activities and ensuring their achievements resonate across their target audiences.

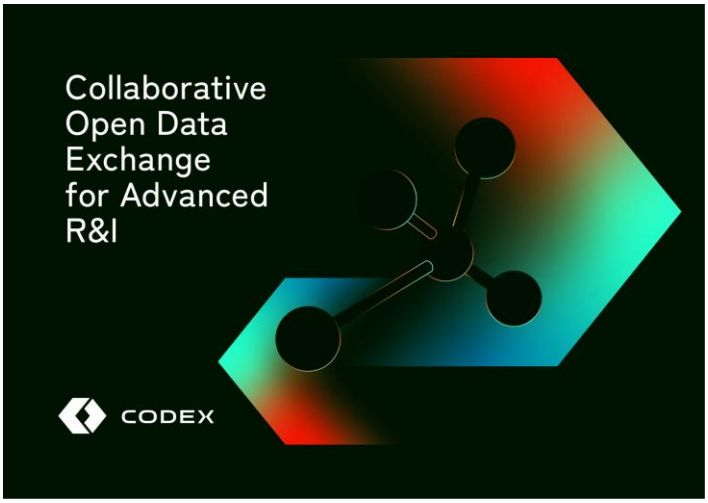


Figure 49 - CODEX Factsheet 1

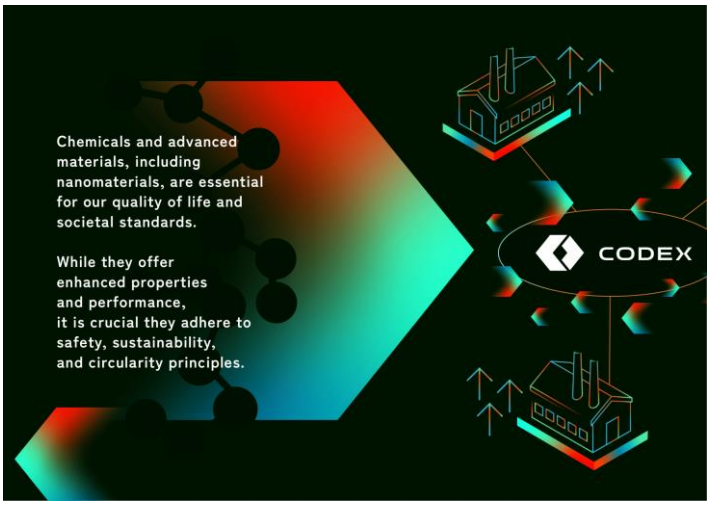


Figure 48 - CODEX Factsheet 2

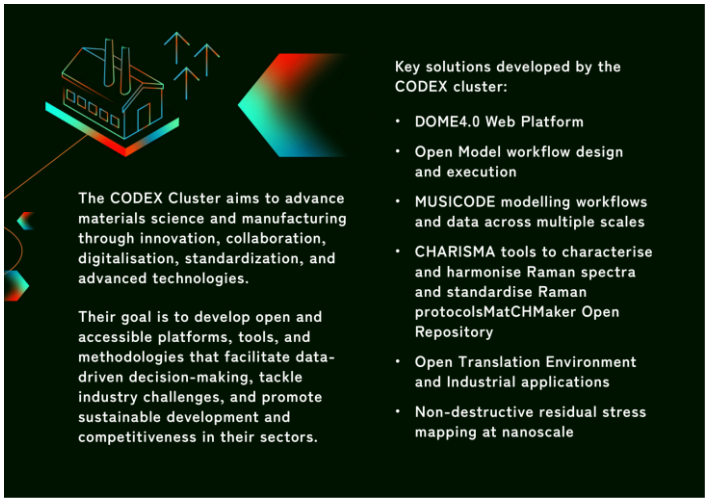
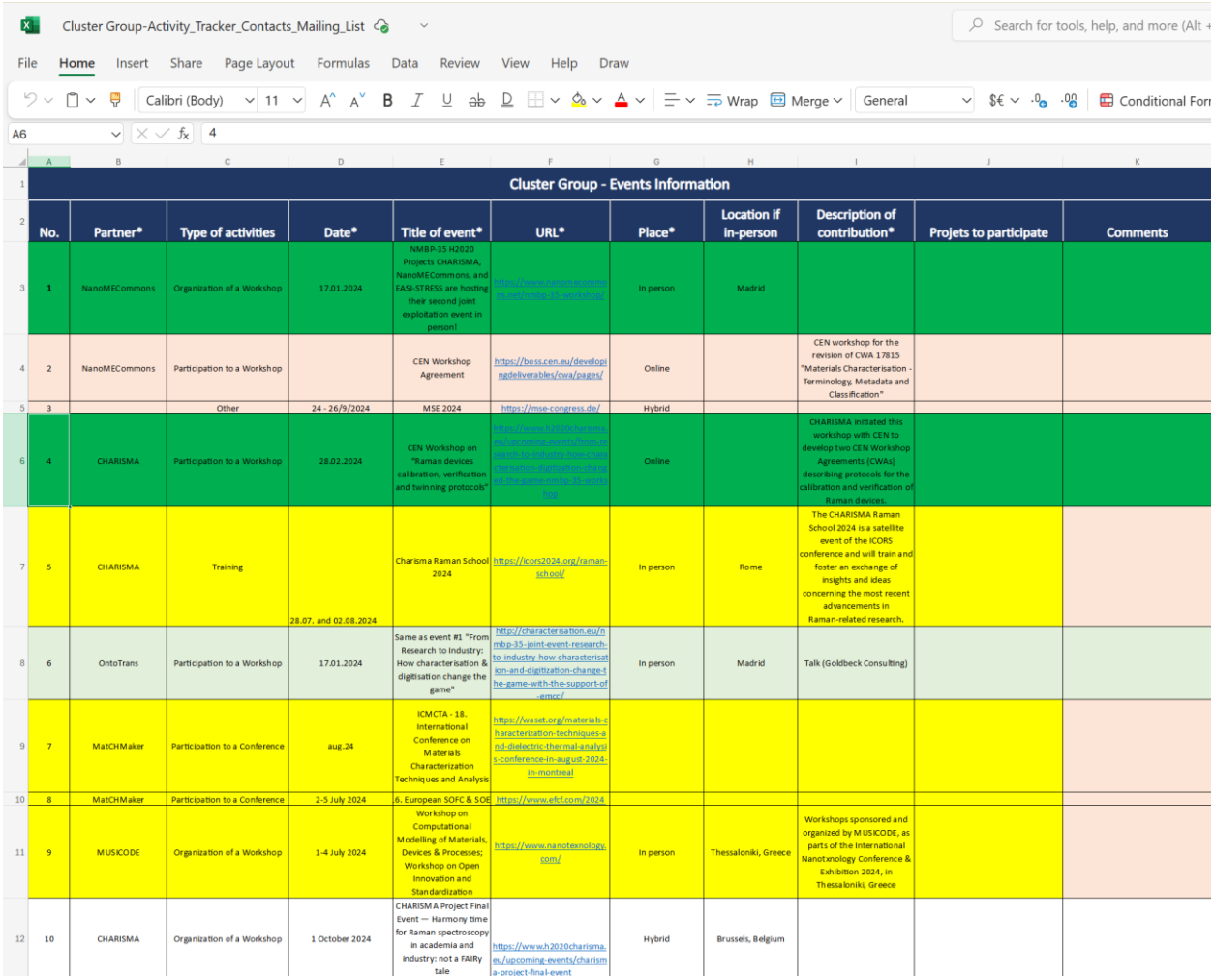


Figure 51 - CODEX Factsheet 3

Figure 50 - CODEX Factsheet 4

Together with the formation of the CODEX Cluster, which was an initiative led by **INTRA**, several measures were implemented to ensure effective coordination and collaboration among the projects. A **common space on SINTEF's repository** was created to facilitate information sharing and document management. To streamline monitoring and reporting, an **Activity Tracker** was developed to track the cluster's joint activities and milestones. Additionally, we established **monthly recurring meetings** to discuss progress, plan upcoming actions, and organize the next steps for the cluster's collaborative efforts.



Cluster Group-Activity_Tracker_Contacts_Mailing_List

Cluster Group - Events Information

No.	Partner*	Type of activities	Date*	Title of event*	URL*	Place*	Location if in-person	Description of contribution*	Projets to participate	Comments
1	NanoMECommons	Organization of a Workshop	17.01.2024	NMBP-35 H2020 Projects CHARISMA, NanoMECommons, and EASI-STRESS are hosting their second joint exploitation event in person!	https://www.nanomecommons.eu/events/nmbp-35-workshop	In person	Madrid			
2	NanoMECommons	Participation to a Workshop		CEN Workshop Agreement	https://boss.cen.eu/developingdeliverables/cwa/pages/	Online		CEN workshop for the revision of CWA 17815 "Materials Characterisation - Terminology, Metadata and Classification"		
3		Other	24 - 26/9/2024	MSE 2024	https://mse-congress.de/	Hybrid				
4	CHARISMA	Participation to a Workshop	28.02.2024	CEN Workshop on "Raman devices calibration, verification and twinning protocols"	https://www.h2020charisma.eu/upcoming-events/from-research-to-industry-how-characterisation-digitisation-change-the-game-nmbp-35-workshop/	Online		CHARISMA initiated this workshop with CEN to develop two CEN Workshop Agreements (CWAs) describing protocols for the calibration and verification of Raman devices.		
5	CHARISMA	Training	28.07. and 02.08.2024	Charisma Raman School 2024	https://icors2024.org/raman-school/	In person	Rome	The CHARISMA Raman School 2024 is a satellite event of the ICORS conference and will train and foster an exchange of insights and ideas concerning the most recent advancements in Raman-related research.		
6	OntoTrans	Participation to a Workshop	17.01.2024	Same as event #1 "From Research to Industry: How characterisation & digitisation change the game"	http://characterisation.eu/nmbp-35-joint-event-research-to-industry-how-characterisation-and-digitization-change-the-game-with-the-support-of-emcc/	In person	Madrid	Talk (Goldbeck Consulting)		
7	MatCHMaker	Participation to a Conference	aug.24	ICMCTA - 18. International Conference on Materials Characterization Techniques and Analysis	https://waset.org/materials-characterization-techniques-and-dielectric-thermal-analysis-conference-in-august-2024-in-montreal					
8	MatCHMaker	Participation to a Conference	2-5 July 2024	6. European SOFC & SOE	https://www.efcf.com/2024					
9	MUSICODE	Organization of a Workshop	1-4 July 2024	Workshop on Computational Modelling of Materials, Devices & Processes; Workshop on Open Innovation and Standardization	https://www.nanoteknology.com/	In person	Thessaloniki, Greece	Workshops sponsored and organized by MUSICODE, as parts of the International Nanotxnology Conference & Exhibition 2024, in Thessaloniki, Greece		
10	CHARISMA	Organization of a Workshop	1 October 2024	CHARISMA Project Final Event – Harmony time for Raman spectroscopy in academia and industry: not a FAIRy tale	https://www.h2020charisma.eu/upcoming-events/charisma-project-final-event	Hybrid	Brussels, Belgium			

Figure 52 - CODEX Activity Tracker

As a result of these measures, the CODEX Cluster has jointly participated in a variety of activities, including:

- **The OIP 2023 workshop**: This event featured presentations on open innovation for modeling, design, and manufacturing. It was organized by three liaison projects (MUSICODE, VIPCOAT, and OpenModel), with contributions from several DOME 4.0 partners, including SISW, UKRI, FRAUN, SINTEF, and UNIBO. The workshop facilitated synchronization with these projects and advanced discussions on collaborative approaches.
- **The Second Industry Open Day at SISW (October 2023)**: This event included participation and presentations from the MUSICODE project consortium, further strengthening ties between the CODEX Cluster projects.

- **The CODEX Cluster joint activity workshop in Madrid (January 17, 2024)**: Supported by the European Materials Characterization Council (EMCC), this workshop enabled the cluster to present its shared objectives and foster deeper engagement within the research community.
- **Materials Week 2024**: This event brought together diverse R&I communities advancing materials innovation across value chains and industrial markets. DOME 4.0's poster at the EMMC booth attracted significant attention, serving as a hub for discussions on how the project's integrated approach addresses challenges in materials development.
- The **CODEX Cluster participated in Materials Week 2024**, held in **Limassol, Cyprus, from June 17 to 21**, showcasing its collaborative efforts and innovative advancements in materials science. At the **EMMC-ASBL booth**, the DOME 4.0 project was prominently featured, highlighting its integrated approach to revolutionizing materials science through advanced computational tools, machine learning algorithms, and high-throughput experimentation. The event provided a platform for the CODEX Cluster to demonstrate how its shared methodologies and technologies facilitate data-driven decision-making and address industry challenges. The DOME 4.0 poster attracted significant attention, sparking discussions on tackling complex materials development challenges. This joint activity not only enhanced the visibility of the cluster but also fostered collaborations and knowledge exchange with a global audience of researchers and industry leaders.
- **NanoMECommons Open Day 2024 in Cambridge (UK) (November 20, 2024)**: Organized by CNT, this event involved several DOME 4.0 partners, including SISW and UNIBO, with Goldbeck Consulting as an invited participant. The event also showcased the **nanoMATexpo virtual platform**, designed to foster community development and support the commercialization of nanomaterial applications. Further collaborations were envisaged with other projects such as OpenModel.

The CODEX Cluster has achieved significant overall impact in dissemination, communication, and knowledge exchange through its joint activities. By collaborating on high-profile workshops, open days, and international events, the cluster effectively increased its visibility and strengthened its network across the research and industrial communities. These activities facilitated the alignment of methodologies, enhanced engagement with key stakeholders, and promoted the cluster's innovative solutions in materials science and manufacturing.

A key outcome was the successful promotion of data-driven approaches, interoperability standards, and sustainable practices, which resonated across diverse audiences, from researchers to policymakers and industry leaders. The introduction of tools like the nanoMATexpo platform and the emphasis on open innovation platforms fostered meaningful collaboration and exchange of expertise. Collectively, these efforts have solidified the CODEX Cluster’s role as a leader in driving digital transformation and innovation, ensuring long-term benefits for materials science and related industries.

4.3.2 Industry Links brought by Project Partners

We have made meaningful progress in fostering industry links as part of our project's objectives. While the KPI aimed for **more than 5 links per partner** (a total of over 55), we have successfully established **16 industry connections** across the consortium, as detailed in the table below. These links represent valuable collaborations that have enriched our activities and contributed to advancing our goals. Although this

represents a partial achievement of the KPI, we remain committed to further strengthening our industry engagement and leveraging these partnerships to enhance the project's impact.

	Industry Links brought by Project Partners										
Consortium	CMCL	Fraunhofer	INTRA	UNIBO	EPFL	UKRI	SISW	BOSCH	UNR	SINTEF	CNT
Keysight	IDMT	Siemens Technology		NIREOS		Volkswagen	Stokbro Invest				
Data River	Caterpillar	BIAS		bi-rex		Materials Design	TOTAL				
Ansys	UKPN	Weber				Intellegens	ThermoCalc				
ESRF	Anglian Water					Johnson Matthey	SABIC				
	BT						Citrine Informatics				
	Hyudai Motors Inc.						Siemens T (Technology)				
	Tata Motors										

4.3.3 Communities informed about the DOEM4.0

Regarding the KPI for "External Industry Communities Informed About the Project," while we may not have fully met the target of informing at least six external industry communities per partner (>=60 total), we have made significant progress through active participation in **32 events**, engaging with a wide range of stakeholders. During these events, we effectively presented the project's objectives, demonstrated the DOME 4.0 platform, and showcased its nine B2B use cases. These interactions informed stakeholders about the project's advancements in semantic data sharing, interoperability, and its role in driving innovation across various industrial domains. These engagements also facilitated meaningful networking and knowledge exchange.

Several external industry communities about the project's vision and developments. These communities include:

- Connected Places Catapult (UK)
- Composites United
- Digital Catapult (UK)
- Fiware (DE)
- APC (UK)
- IDSA
- High Value Manufacturing Catapult (UK)
- Smart Cities - Tech Connect (US)

- New Civil Engineer by Institution of Civil Engineers (UK)

Based on the aforementioned, we have successfully informed several external industry communities, raised awareness and generating interest in the DOME 4.0 project. While we may not have fully met the quantitative KPI, these efforts have significantly enhanced awareness and engagement, ensuring the project's innovations are widely recognized and valued by key industry groups.

4.4 Publications

4.4.1 Publications in Journals

The **DOME 4.0 consortium** is proud to have achieved the **KPI of 4 publications in journals**, thanks to the dedicated efforts of partners **CMCL, BOSCH, and Fraunhofer**. These publications highlight the project's cutting-edge developments, results, and innovations, contributing significantly to knowledge dissemination within the scientific and industrial communities. Importantly, all the publications are **open access** and freely available, ensuring that they can be widely accessed and utilized by researchers, industry professionals, and other stakeholders. The publications are conveniently listed on a dedicated page on the project's website, making them easy to find for interested audiences. Additionally, the publications have been actively promoted through the project's social media channels, further extending their reach and impact. This achievement underscores the consortium's commitment to transparency, collaboration, and the dissemination of knowledge generated by DOME 4.0.

Please find the publications below:

- Akroyd, Jethro, Sebastian Mosbach, Amit Bhave, and Markus Kraft. "Universal digital twin-a dynamic knowledge graph." *Data-Centric Engineering* 2 (2021): e14.
- Zhou, Baifan, Tim Pychynski, Markus Reischl, Evgeny Kharlamov, and Ralf Mikut. "Machine learning with domain knowledge for predictive quality monitoring in resistance spot welding." *Journal of Intelligent Manufacturing* 33, no. 4 (2022): 1139-1163.
- Quek, Hou Yee, Franziska Sielker, Jethro Akroyd, Amit N. Bhave, Aurel von Richthofen, Pieter Herthogs, Claudia van der Laag Yamu et al. "The conundrum in smart city governance: Interoperability and compatibility in an ever-growing ecosystem of digital twins." *Data & Policy* 5 (2023): e6.
- Fernandes, Pedro Henrique Evangelista, Giovanni Corsetti Silva, Diogo Berta Pitz, Matteo Schnelle, Katharina Koschek, Christof Nagel, and Vinicius Carrillo Beber. "Data-Driven, Physics-Based, or Both: Fatigue Prediction of Structural Adhesive Joints by Artificial Intelligence." *Applied Mechanics* 4, no. 1 (2023): 334-355.

4.4.2 Publications in Conferences

The **DOME 4.0 consortium** is pleased to announce the successful achievement of the **KPI of 16 publications in well-known conferences**, showcasing the project's innovations and contributions to the scientific and industrial communities. This milestone was made possible through the dedicated efforts of **BOSCH**, which played a pivotal role in delivering high-quality, impactful conference presentations. These publications have been shared at prestigious conferences, further establishing the visibility and credibility

of the DOME 4.0 project on an international scale. All the conference publications are **open access**, ensuring they are freely available to the broader community. They can be easily accessed on a dedicated page on the project's website, providing stakeholders with a valuable resource for exploring the outcomes and advancements achieved by the project. This accomplishment highlights the consortium's commitment to effective knowledge dissemination and engagement with the global research and industrial ecosystems.

Please find below the submitted publications in conferences:

- Zhou, B., Zhou, D., Chen, J., Svetashova, Y., Cheng, G., & Kharlamov, E. (2021, December). Scaling usability of ML analytics with knowledge graphs: exemplified with a Bosch welding case. In *Proceedings of the 10th International Joint Conference on Knowledge Graphs* (pp. 54-63).
- Zhou, Dongzhuoran, Baifan Zhou, Jieying Chen, Gong Cheng, Egor Kostylev, and Evgeny Kharlamov. "Towards ontology reshaping for KG generation with user-in-the-loop: applied to Bosch welding." In *Proceedings of the 10th International Joint Conference on Knowledge Graphs*, pp. 145-150. 2021.
- Zhou, Dongzhuoran, Baifan Zhou, Zhuoxun Zheng, Egor V. Kostylev, Gong Cheng, Ernesto Jimenez-Ruiz, Ahmet Soylu, and Evgeny Kharlamov. "Enhancing knowledge graph generation with ontology reshaping–Bosch case." In *European Semantic Web Conference*, pp. 299-302. Cham: Springer International Publishing, 2022.
- Zhou, Baifan, Zhuoxun Zheng, Dongzhuoran Zhou, Gong Cheng, Ernesto Jiménez-Ruiz, Trung-Kien Tran, Daria Stepanova et al. "The data value quest: a holistic semantic approach at Bosch." In *European Semantic Web Conference*, pp. 287-290. Cham: Springer International Publishing, 2022.
- Zheng, Zhuoxun, Baifan Zhou, Dongzhuoran Zhou, Gong Cheng, Ernesto Jiménez-Ruiz, Ahmet Soylu, and Evgeny Kharlamov. "Query-based industrial analytics over knowledge graphs with ontology reshaping." In *European Semantic Web Conference*, pp. 123-128. Cham: Springer International Publishing, 2022.
- Yahya, Muhammad, Baifan Zhou, Zhuoxun Zheng, Dongzhuoran Zhou, John G. Breslin, Muhammad Intizar Ali, and Evgeny Kharlamov. "Towards generalized welding ontology in line with ISO and knowledge graph construction." In *European Semantic Web Conference*, pp. 83-88. Cham: Springer International Publishing, 2022.
- Towards a Visualisation Ontology for Machine Learning Analysis in Industrial Applications
- Zhou, Baifan, Zhuoxun Zheng, Dongzhuoran Zhou, Zhipeng Tan, Ognjen Savković, Hui Yang, Yujia Zhang, and Evgeny Kharlamov. "Knowledge graph-based semantic system for visual analytics in automatic manufacturing." ISWC, 2022.
- Zheng, Zhuoxun, Baifan Zhou, Dongzhuoran Zhou, Akif Quddus Khan, Ahmet Soylu, and Evgeny Kharlamov. "Towards a statistic ontology for data analysis in smart manufacturing." In *Proceedings of the ISWC 2022 posters, demos and industry tracks*, vol. 3254. CEUR-WS. org, 2022.

- Zhou, Dongzhuoran, Baifan Zhou, Zhuoxun Zheng, Zhipeng Tan, Egor V. Kostylev, and Evgeny Kharlamov. "Towards executable knowledge graph translation." ISWC, 2022.
- Zhou, Baifan, Zhipeng Tan, Zhuoxun Zheng, Dongzhuoran Zhou, Yunjie He, Yuqicheng Zhu, Muhammad Yahya et al. *Neuro-Symbolic AI at Bosch: Data Foundation, Insights, and Deployment*. Tech. Rep, 2022.
- Zheng, Zhuoxun, Baifan Zhou, Dongzhuoran Zhou, Ahmet Soylu, and Evgeny Kharlamov. "Executable knowledge graph for transparent machine learning in welding monitoring at bosch." In *Proceedings of the 31st ACM International Conference on Information & Knowledge Management*, pp. 5102-5103. 2022.
- Zheng, Zhuoxun, Baifan Zhou, Dongzhuoran Zhou, Xianda Zheng, Gong Cheng, Ahmet Soylu, and Evgeny Kharlamov. "Executable knowledge graphs for machine learning: A Bosch case of welding monitoring." In *International Semantic Web Conference*, pp. 791-809. Cham: Springer International Publishing, 2022.
- Zheng, Zhuoxun, Baifan Zhou, Dongzhuoran Zhou, Ahmet Soylu, and Evgeny Kharlamov. "Exekg: Executable knowledge graph system for user-friendly data analytics." In *Proceedings of the 31st ACM International Conference on Information & Knowledge Management*, pp. 5064-5068. 2022.
- Zhou, Dongzhuoran, Baifan Zhou, Zhuoxun Zheng, Ahmet Soylu, Gong Cheng, Ernesto Jimenez-Ruiz, Egor V. Kostylev, and Evgeny Kharlamov. "Ontology reshaping for knowledge graph construction: Applied on bosch welding case." In *International Semantic Web Conference*, pp. 770-790. Cham: Springer International Publishing, 2022.
- Zhou, Dongzhuoran, Baifan Zhou, Zhuoxun Zheng, Ahmet Soylu, Ognjen Savkovic, Egor V. Kostylev, and Evgeny Kharlamov. "Schere: Schema reshaping for enhancing knowledge graph construction." In *Proceedings of the 31st ACM International Conference on Information & Knowledge Management*, pp. 5074-5078. 2022.

4.4.3 Press Releases

To effectively announce significant news about the project's participation in events, the organization of key activities, or major developments, we have actively created and distributed press releases. This strategic dissemination approach allowed us to amplify awareness of the project's milestones and foster connections with stakeholders. As a result, we have successfully **achieved the KPI of publishing six press releases**, each focused on announcing important events and developments, showcasing the project's progress and reinforcing its impact within the research and industry communities.

Please find below the Press Releases on project's website:

- DOME 4.0 H2020 EU funded project – Digital data marketplace based on FAIR principles
- DOME 4.0: Industrial Engagement Open Day And Hackathon
- DOME 4.0 Project Organizes its Second Hackathon and Industrial Engagement Open Day
- DOME 4.0 - Showcase Dissemination Workshop

- DOME 4.0 - Hackathon 3
- DOME 4.0 - Platform

4.5 Promotional Materials

The consortium in order to promote the DOME 4.0 project at national, European, and international events has produced several promotional materials to support the online and printed communication.

- Project brochure - The first project brochure (online version), aiming to introduce the project and present its scope and objectives, is planned to comprise a two-fold sheet.
- Posters – Briefly presents the concept of the project, the objectives, the pilots and the vision.
- Roll-up – Presents the main concept, the consortium and the full name of the DOME 4.0 project.

4.5.1 Brochure

The DOME 4.0 project's **brochure**, available on the project website, serves as an engaging and informative tool designed to introduce audiences to the project, its vision, and its objectives. Featuring a modern and visually appealing design, the brochure captures attention with the **DOME 4.0 logo**, impactful visuals, and a clear presentation of the full project name. This ensures readers gain a concise yet comprehensive understanding of the project's purpose and expected outcomes. The brochure was designed by **INTRA** with contributions from specific partners to finalize the content and layout collaboratively, ensuring alignment with the consortium's expectations.

Page 1: Challenge

This page introduces the central challenge that the DOME 4.0 project seeks to address: enabling **FAIR (Findable, Accessible, Interoperable, and Reusable)** data sharing across industries. It outlines the need for a user-friendly and standardized data marketplace to support **business-to-business (B2B)** data sharing. The text highlights the barriers to collaboration, such as fragmented datasets and incompatible systems, and emphasizes the project's goal to create a flexible, ontology-based platform that facilitates secure data access and sharing. The page concludes by mentioning the project's funding under the Horizon 2020 program, establishing its credibility and relevance.

Figure 53 - DOME 4.0 Brochure Page 1

Page 2: DOME 4.0 Concept

This section provides an overview of the **DOME 4.0 concept**, describing the project as a robust semantic industrial data ecosystem that transforms fragmented datasets into a cohesive, interoperable marketplace. The unique value of DOME 4.0 is explained in two aspects: its ability to aggregate a critical mass of stakeholders across industries and its capacity to enable novel business models through secure, transparent, and fair data-sharing mechanisms. Additionally, the platform's flexibility to integrate emerging technologies and scale to broader sectors is emphasized, positioning it as a future-proof solution for European industries.

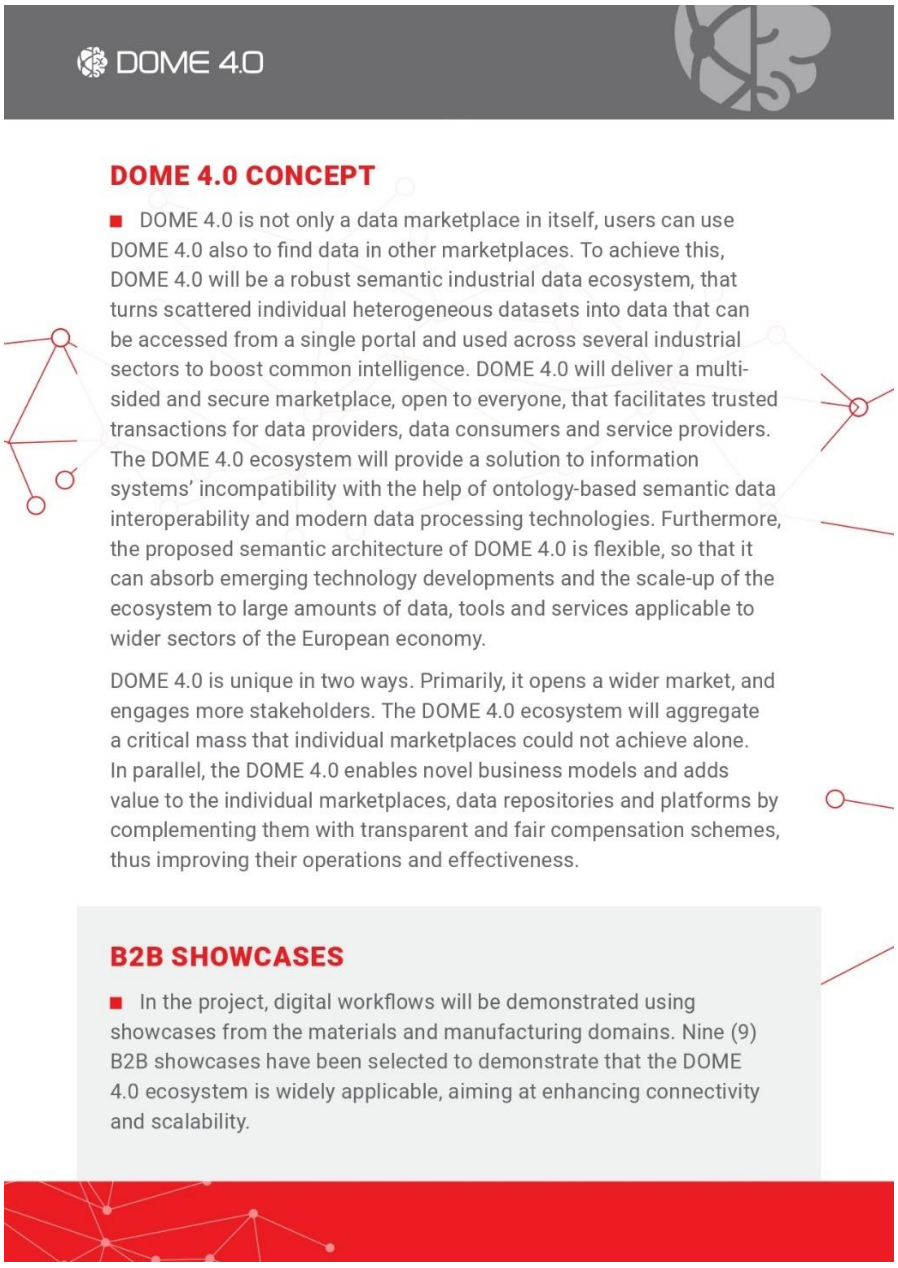


Figure 54 - DOME 4.0 Brochure Page 2

Page 3: B2B Showcases

This page introduces the nine **B2B showcases** selected to demonstrate the platform's versatility and scalability. Each showcase represents a unique application domain, such as environmental monitoring, manufacturing, and composite materials, and provides specific examples of data sources and industrial sectors involved. The showcases are designed to validate DOME 4.0's impact on **decision-making, product quality, and cost/time-to-market reduction**. By addressing real-world use cases, the showcases underline the platform's ability to meet diverse industrial needs effectively.

Figure 55 - DOME 4.0 Brochure Page 3

Page 4: DOME 4.0 Value Offering

The final page summarizes the project's key offerings and benefits to users. It outlines the platform's **user-friendly interface**, secure data-sharing environment, and the ability to access data across multiple platforms through a unified portal. The wide range of data services and the opportunity for stakeholders to engage with various data providers and users are highlighted. Additionally, the page provides contact information, social media handles, and a list of project partners, creating a direct link for stakeholders to connect with the project. The page concludes by reaffirming the project's Horizon 2020 funding and its role in driving innovation.

Figure 56 - DOME 4.0 Brochure Page 4

Overall Design and Purpose:

The brochure is designed to be visually appealing, concise, and highly informative. It effectively communicates the project's mission, concept, and practical applications while providing readers with clear avenues for engagement. The inclusion of showcases and value offerings ensures that stakeholders understand the practical benefits of DOME 4.0, reinforcing its potential impact on materials science and manufacturing industries.

4.5.2 Poster

To convey the project's ideas and meet its unique needs, a poster has been developed in order to reflect the project's concepts and with the intention of raising awareness and generating interest among stakeholders and the public by using succinct textual and graphical information. The poster provides a short description of the project with visual content and text presenting the aspects of the project, the vision, the pilots and the benefits. The DOME 4.0 poster is available on the project's website and can be downloaded by all partners from the project's repository for use at conferences, workshops, trade fairs, exhibitions, and other relevant events.

Figure 57 - DOME 4.0 Poster

4.5.3 Roll-up

To meet the project's requirements, a roll-up design have been developed that reflects the project's concept, showcasing captivating visuals and text that promote the DOME 4.0 project's key idea. The objective of the roll-up is to enhance awareness and interest among stakeholders and the general public. The Partners are recommended to use this resource at events such as conferences, workshops, trade shows, etc. The roll-up can be accessed on the DOME 4.0 website, as well as on the project's online repository in order to use partners at various events.

Figure 58 - DOME 4.0 Roll-up

4.6 Monitoring & Evaluation

The evaluation and close monitoring of the planned and implemented dissemination and communication activities are among the core responsibilities of **WP6** in the DOME 4.0 project. These activities aim to keep track of the performed, ongoing, and future dissemination and communication efforts throughout the project's lifecycle. The results of these activities will be comprehensively reported in the sole deliverable, **D6.0: Final Dissemination and Communication Report**, to be submitted at the conclusion of the project in **M48**.

The evaluation of the communication and dissemination strategy will focus on both qualitative and quantitative indicators. Once measurable objectives are defined, the evaluation process will begin by reviewing the communication and dissemination goals already achieved. This process will examine the progress of the implementation strategy using measurable indicators such as the number of new members joining the project's channels and website, the quantity of distributed material, participation in events, the development and dissemination of messages, media presence, and traffic on social media and the website.

Success in measuring and controlling the promotional strategy is primarily reflected in its resonance with target audiences. To meet the project's expectations, the strategy will be designed using **SMART** principles—specific, measurable, attainable, relevant, and time-bound. The evaluation process will be continuous or incremental depending on the nature of the activity, with particular attention given to non-repetitive actions.

The evaluation of various actions will provide comparative insights, helping measure their impact and cost-effectiveness. This evaluation will focus on both the processes and the outcomes of dissemination and communication efforts.

To ensure the effectiveness of the strategy, the project will implement a **five-step measurement cycle model**:

1. **Identification of core objectives**, such as raising awareness or increasing engagement (e.g., acquiring more participants for project events).
2. **Setting goals for promotional tactics**, focusing on how to achieve the objectives (e.g., website content to inform visitors or intensified event promotion).
3. **Defining Key Performance Indicators (KPIs)** to measure the success of dissemination and communication tactics, setting achievable qualitative and quantitative targets.
4. **Measuring progress and impact** of conducted activities based on these metrics on a regular basis, ensuring a constant view of the scope and effectiveness of efforts.
5. **Optimizing and adjusting** the communication and dissemination strategy to achieve expected outcomes and maximize visibility.

The tools, products, and activities outlined in this strategy will be continuously monitored, measured, evaluated, and adjusted to ensure alignment with project objectives and maximize the impact of the DOME 4.0 dissemination and communication efforts.

4.7 Selected Key Performance Indicators

A selection of the expected impact of the Communication and Dissemination activities and the main Key Performance Indicators (KPIs) are defined in the following table for each action/means and presented below.

Table 11 - Dissemination and Communication KPIs and Metrics

Dissemination and Communication KPIs and Metrics			
Relevant Activities	**Impact Metric – KPI**	**Target**	**Current Status (Actual Numbers)**
Organisation of Events in Scientific Conferences, Industry Events & Fairs, Demo-days & Hackathons	Workshops organized	1 per showcase (9 total)	Achieved (9 SISW internal Workshops + 3 Hackathons)
	Hackathons organized	3	Achieved (3)
	Demo Events - Booths	2	Achieved (4)
Participation and Representation in Events	Attended events (wider audience)	20	Achieved (20)
	Events with project's Marketplace presentation	15	Achieved (22)
	Affiliated Project's demo days	4	Achieved (4)
Scientific Publications, Knowledge Dissemination	Conference publications	6	Achieved (16)
	Journal papers	4	Achieved (4)
	Articles in Related Industry Magazines	6	Achieved (7)
Community Building, Engagement with Stakeholders, Industry Links	Industry contact points from individual Marketplaces	150	Due to GDPR regulations, this information cannot be shared.
	Active stakeholders from aggregated Marketplaces	150	DOME 4.0 engaged with several stakeholders, although this KPI was partially achieved due to challenges in aligning stakeholders across diverse platforms and the ambitious nature of the

			target. Despite this, the project successfully established meaningful collaborations, emphasizing quality over quantity in stakeholder engagement to ensure impactful outcomes.
	External Industry communities informed about the project	6 per partner (>=60)	Partially Achieved (9)
	Webinars/Trainings	2	3 (Considering Hackathons)
Collaborations, Synergies, Liaisons with projects clusters and initiatives	Synergies with Projects	15	Achieved (16)
	Joint Activities, Joint Dissemination, Joint presence in Events	1 per showcase (9 total)	Partially Achieved (3 joint events with SC1 and SC2, with a total of nine events presenting the same or other SCs).
Internal dissemination in partner networks, sites, social media, newsletter, events, premises	Internal partners' events	1 per showcase (9 total) + 1 per partner (11 total) = 20	Partially Achieved (9/20)
	Links of projects to integrated marketplace	1 per showcase (9 total) + 8 external projects = 17	Not Achieved (The KPI for linking projects to the integrated marketplace was not fully achieved due to the ambitious scope and technical challenges in aligning diverse projects, but significant

			progress was made in establishing a scalable foundation for future integrations.)
	Promotional crosslinks	2 per partner (22 total)	Partially Achieved (17)
	Industry Links brought by Project Partners	> 5 per partner (>55 total)	Partially Achieved (16)
	Newsletters	1 per WP (7 total) + 1 per showcase (9 total) = 16	Achieved (11 - To maximize the impact and effectiveness of the dissemination strategy, it was collectively agreed during WP6 meetings to strategically combine content from specific Work Packages (WPs) and related Showcases (SCs) within each issue of the e-newsletter, rather than publishing separate issues, thereby highlighting both the progress of each WP and the practical application of DOME 4.0's innovations through real-world examples for a comprehensive presentation of

			the project's outcomes.)
Standardisation Contributions	Liaison with working groups	3	Not Achieved (The KPI for liaison with working groups was not fully achieved due to scheduling and resource alignment challenges, but efforts focused on establishing collaborations that will support future standardization initiatives.)
	Presentation in standardisation meetings	2	Achieved (2)
Project/Marketplace Portal	Unique visitors	5000	Achieved (14,348)
	Average duration of visits	~2 min	Partially Achieved (Information lost due to the transition on GA4 - 0:01:03)
	Page Views	>2.5 per visit	Partially Achieved ((Information lost due to the transition on GA4 - 1.58)
Project/Marketplace Social Media	Social Media Accumulative followers	1000	Partially Achieved (708)
	Social Media Instantiations (LinkedIn, Twitter, YouTube, ResearchGate)	6	Partially Achieved (4 – ResearchGate has stopped to support its services to projects as DOME 4.0)
	Social Media Accumulative posts	300	Achieved (457)

	Social Media Interactions	600	Achieved (1,723)
	Klout score	35	Not Supported (Has stopped to support its services)
Other Community Building Activities	Dedicated Ecosystem Expansion and Community Building Workshops	3	Not Achieved (due to resource limitations and overlapping priorities with other high-impact activities; however, significant ecosystem-building efforts were integrated into broader events and collaborative initiatives.)
	Blog Post Interactions	100	Not Achieved (Due to the lack of direct support for tracking interactions on the blog itself; however, if we consider the substantial engagement generated through the sharing of blog posts on social media platforms, this KPI can be regarded as effectively met).
Communication Material	Press Releases	6	Achieved (6)
	Number of project factsheets/brochures/banners/rollups	5+1+1+1	Achieved (5, 1, 1, 1)
	Production of teaser Marketing Items	1 set	Achieved (1)

	Videos /YouTube	1 promo + 1 per showcase (9 total) = 10	Partially Achieved (2 DOME Videos, 5 other related videos, 8 SC – 15 total)
	Blog posts in EC Mechanisms	3	Not Achieved (Negative Responses – Articles Shared on Social Media Channels as Suggested)
Engagement Strategies	Personae Analysis per Stakeholder	4	Achieved (5)
	Community Building and Registrant Engagement "Online Trackers" (incl. Reporting in master Marketplace)	2	Partially Achieved (1 Cluster Tracker - due to technical and logistical challenges in implementing a unified tracking system; however, significant efforts were made to engage the community through alternative platforms, ensuring meaningful interactions and visibility.)

While the DOME 4.0 project has successfully achieved many of its KPIs, with some even being overachieved, certain others were only partially met or not achieved due to a combination of ambitious initial targets and unforeseen challenges during implementation. The consortium has made significant efforts throughout the project to fulfill these objectives, dedicating resources and adapting strategies to maximize impact.

However, it is important to recognize that some KPIs were, from the outset, highly ambitious, and their overpromising nature became evident as the project progressed. External factors, such as platform-specific limitations, GDPR constraints, and the evolving landscape of stakeholder engagement, added complexity to achieving these goals. Despite this, the project consistently prioritized quality over quantity,

ensuring meaningful collaborations, robust dissemination activities, and substantial progress in areas critical to the project's long-term success.

5. Conclusion

This document, D6.1, provides a comprehensive overview of the DOME 4.0 project's Dissemination and Communication strategy and implementation plan, serving as the sole deliverable for this activity in the project's 48-month duration. It offers a detailed report on the communication and dissemination activities undertaken throughout the project and is intended as a strategic guide for all partners. The primary objective of this strategy is to effectively disseminate the technical and knowledge outcomes of DOME 4.0, ensuring its achievements are sustained while addressing diverse local conditions and target audiences.

The document outlines the tools, channels, and activities used to achieve the project's goals, including online promotion, participation in events, organization of hackathons and workshops, and publication of materials such as factsheets and press releases. To assess the effectiveness of the strategy, a monitoring and evaluation framework with predefined KPIs has been established, enabling systematic tracking of progress and impact.

The consortium recognizes dissemination, communication, and stakeholder engagement as essential and cross-cutting activities integrated across all project work packages. This plan details the rationale behind the strategy and provides a roadmap for utilizing all necessary tools to comprehensively and effectively convey the project's core messages, outcomes, and benefits to targeted audiences.

This document is a living resource that has been updated continuously throughout the project's duration to capture the latest developments, reflect on progress, and adapt to evolving needs. It serves as a practical handbook for all project partners to align their efforts in maximizing visibility, ensuring engagement, and sustaining the outcomes of DOME 4.0. The monitoring framework ensures alignment with the KPIs and offers insights into the strategy's effectiveness. This comprehensive and evolving approach has enabled the project to communicate its core objectives and achieve its desired impact across the industrial and academic landscapes.

6. References

[1] E. Commission. [Online]. Available: https://rea.ec.europa.eu/communicating-about-your-eu-funded-project_en.

[2] "DOME 4.0 Website," [Online]. Available: https://dome40.eu/.

[3] E. Commission, "Dissemination and exploitation," [Online]. Available: https://rea.ec.europa.eu/dissemination-and-exploitation_en.

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2	Research	FHG	Fraunhofer Gesellschaft zur Förderung der Angewandten Forschung E.V.
3	Research	INTRA	Intrasoft International SA
4	University	UNIBO	Alma Mater Studiorum – Universita di Bologna
5	University	EPFL	Ecole Polytechnique Federale de Lausanne
6	Research	UKRI	United Kingdom Research and Innovation
7	Large Industry	SISW	Siemens Industry Software NV
8	Large Industry	BOSCH	Robert Bosch GmbH
9	SME	UNR	Uniresearch B.V.
10	Research	SINTEF	SINTEF AS
11	SME	CNT	Cambridge Nanomaterials Technology LTD
12	University	UCL	University College London

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8. Table of Abbreviations

Abbreviation	Explanation
B2B	Business-to-Business
CODEX	Collaborative Open Data Exchange for Advanced R&I
FAIR	Findable, Accessible, Interoperable, and Reusable
SC	Showcase
SME	Small and Medium-sized Enterprise
WP	Work Package