Welcome to the First DOME 4.0 Newsletter!

DOME 4.0

We are pleased to announce the publication of the first issue of the DOME 4.0 newsletter. If you are interested in industrial data and digital marketplaces, you are at the right place!

DOME 4.0 is a 4-year Research and Innovation Action (RIA) from 2020 to 2024 funded under Horizon 2020 focusing on developing a comprehensive industrial data ecosystem aligned with the Open Science and Open Innovation objectives to enable sharing of business-to-business (B2B) data for the purpose of value generation and creation of new or enhanced products, processes, and services.

DOME 4.0 will be open to all providers and users of data, and aims to facilitate maximum knowledge

extraction with the help of ontology-driven semantic data interoperability and modern data processing technologies adopted from the fields of Machine Learning (ML) and Artificial Intelligence (AI). These features are crucial to scale and advance the proposed ecosystem to any sector of the economy. Given the significant contribution of the materials and manufacturing sectors to the European economy, DOME 4.0 focuses on data-driven knowledge generation within these key sectors.

STAY TUNED

Stay updated on all our latest news, developments, research and general information regarding the DOME 4.0 project.

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PROJECT INFORMATION

Digital Open Marketplace Ecosystem (DOME) 4.0
Grant Agreement ID: **953163**
Start Date: **December 1st, 2020**
End Date: **November 30th, 2024**
Coordinator: **COMPUTATIONAL MODELLING CAMBRIDGE LIMITED (CMCL)**

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DOME 4.0

Overview

DOME 4.0 intends to offer an intelligent semantic industrial data ecosystem for knowledge creation across the entire materials to manufacturing value chains. The ecosystem provides a sustainable solution to the information silos problem related to the past efforts and puts forward a formal, ontology-based documentation for open and confidential data spaces applicable to future and current projects thereby delivering added value. Furthermore, the flexibility of the proposed semantic architecture of DOME 4.0 naturally adapts to the emerging Industry Commons developments and the scale-up of the ecosystem to large amounts of data, tools and services applicable to wider sectors of the European economy.

The unique offerings of DOME 4.0 are twofold. Primarily, to instigate wider market impact, stakeholder adoption and engagement, while aggregating a critical mass community in the DOME 4.0 ecosystem than the individual-encompassed showcases would ever achieve alone. In parallel, the DOME 4.0 exemplified, novel business models cross cutting the individual marketplaces, complemented with transparent and fair compensation schemes will augment the operations and effectiveness by adding value to the individual marketplaces, data repositories and platforms.

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

Ecosystem

The key aim of DOME 4.0 is to deliver a multi-sided, secure marketplace ecosystem open to everyone and that facilitates B2B data transactions and enables data users/consumers, data owners/providers and digital service providers to trigger data-based innovation and create new or improved products, processes and services. DOME 4.0 also aims at transforming data into knowledge and intelligence assets, while ensuring that the sovereignty, security and provenance of the industrial data are managed optimally. For example, DOME 4.0 will be expected to produce guidance on aspects of data provenance capture, its associated spatial and temporal costs, and granularity. The adoption of widely agreed standardised data documentation for semantic interoperability using consensual ontology and taxonomy-based data representations in close cooperation with OntoCommons and related initiatives is anticipated to yield a consistent information system that can be adopted by third parties. DOME 4.0's focus on detailed business process models entails a) the technical aspects of the ecosystem including its running and maintenance and b) the transaction experience with its customers (data providers, data consumers and service providers). Thus, one anticipated result will be the business model for the sustainability of the open marketplace ecosystem beyond the funding period.

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Showcases

The nine B2B showcases of DOME 4.0 will offer quantitative measures for assessing the in-project exploitation of the project. These showcases will be gauged in terms of the improved effectiveness of decision making, improved quality by design and reduction of cost and time to market. The targeted B2B showcases are given in the table below.

NO.	B2B SHOWCASES	DATA SOURCES	PARTNERS	INDUSTRIAL SECTORS
1	**Chemical kinetics Knowledge Graph (KG) – marine, air quality**	Ontokin KB: species, thermodynamics, chemical kinetics, sensors and geolocation data	CMCL	Marine/shipping, environmental, nanoparticles
2	**Light weight construction – fibre reinforced plastics**	Laboratory experiments, multiscale models	FRAUNHOFER, BOSCH	Plastics
3	**Polymeric additives for coatings: anti-corrosion**	Thermodynamic, Laboratory Regulatory, Modelling	FRAUNHOFER, SISW	Polymers
4	**Structural adhesives: Fatigue behaviour**	Experimental data, MatWeb: Materials property data	FRAUNHOFER, SISW	Adhesives
5	**Production equipment tools and service catalogues (metals, plastics, high-tech)**	Semantic data repositories of MARKET4.0	INTRA	Manufacturing
6	**Turnkey services & custom workflows integrating simulations and data**	Materials Cloud (Open Science, FAIR data principles)	EPFL	Materials
7	**Formulated consumer products**	gPROMS (PSE), molecular simulation (UKRI), Cheméo (Céondo), and REFPROP (NIST)	UKRI	Chemical processes and materials
8	**Semantic Analytics of Manufacturing Assets**	Bosch I4.0 Knowledge Graph, manufacturing production data	BOSCH	Smart manufacturing
9	**Virtual development of composite materials**	Experimental data, material data sheets	SISW	Composite materials

The delivery of 9 B2B showcases at TRL 6 will address the call's requirement for at least five success stories. Within the DOME 4.0 project each individual showcase will be assessed in terms of the KPIs that measure the success of DOME 4.0 project from the viewpoint of increased data sharing and trust, data FAIRness, interoperability between marketplaces, and user experience as well as some of the business KPIs (e.g. cost reduction and time-to-market), model KPIs (model predictions and accuracy) and BDSS KPIs (improved decision making). The KPIs will also be selected to form proxy KPIs, in order to inform the ecosystem core developers.

Learn more about our showcases at *https://dome40.eu/dome-40-showcases*

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OntoCommons workshop - Industry Commons Marketplaces

DOME 4.0 was invited by the **OntoCommons** project at the OntoCommons Workshop - Industry Commons Marketplace that was held online on Thursday, 29th April 2021. The workshop aimed to kick-start the communication between OntoCommons and the digital marketplaces. Main discussion points of the workshop were the experiences of the marketplaces so far, the interaction between marketplaces and the marketplaces Knowledge Graph.

Read more

Top-Level And Mid-Level Ontologies Workshop

Dr Adham Hashibon from Materially presented some of the requirements for semantic interoperability that are being considered within DOME 4.0 (an ecosystem of marketplaces), at the online workshop on **Top and mid-level ontologies**, organised (25-29 March/08 April 2021) by the **OntoCommons** project.

Read more

Workshop on Business Models Of Digital Marketplaces Supporting Industrial R&D

DOME 4.0 participated in the workshop on "Business Models of Digital Marketplaces supporting industrial R&D", organised by the VIMMP project. The online event was held on March 25, 2021 and comprised two blocks, the first for established marketplace businesses and the second focusing on European Commission supported H2020 projects developing marketplaces.

Read more

European Materials Modelling Council International Workshop 2021

3rd EMMC International Workshop

A presentation, entitled "DOME 4.0: Enabling interoperability and collaboration in a digital marketplace ecosystem", was given by Dr Amit Bhave, the coordinator of DOME 4.0 at the Digitalisation session of the 3rd European Materials Modelling Council (EEMC) International Workshop, that was held online on March 2-4, 2021. The focus of this presentation was to foster discussion on the challenges and the solutions space in developing a marketplace ecosystem based on FAIR data principles.
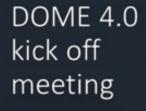
Read more

Discover more events where DOME 4.0 was present at **https://dome40.eu/news-events**

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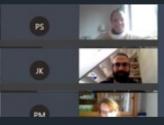Kick off meeting

DOME 4.0

Kick off meeting

Representing a powerful consortium of 11 stakeholders in Europe, the EU funded Horizon 2020 project DOME4.0 will take up the challenge by developing an industrial data ecosystem to enable sharing of B2B data for the purpose of value generation and creation of new or enhanced products, processes, and services. DOME 4.0 ecosystem will be accessible to all providers and users of data, using ontology-driven semantic data interoperability and modern data processing technologies adopted from the fields of machine learning and artificial intelligence to facilitate maximum knowledge extraction. DOME 4.0 will focus on data-driven knowledge generation within the materials and manufacturing sectors, but the proposed ecosystem will be scalable to any sector of the economy.

All partners are really excited for this project and are looking forward for a great collaboration!

For more info about our kick off meeting, visit *https://dome40.eu/dome-40-kick-meeting*

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