MatCHMaker
Materials Characterisation & Modelling

NEWSLETTER #2

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Open data and industry-driven environment for materials characterisation and modelling combing physics and data-based approaches

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Content

Listen to our Project Coordinator

On the occasion of an in-person meeting, our project coordinator, Ludovic, research director at CEA, answered some questions about the project and his role.

The French Alternative Energies and Atomic Energy Commission (CEA) is responsible for MatCHMaker's scientific and technical coordination and project management. Low-carbon energy and digital technology are among the key fields the CEA focuses on which are also pivotal to the MatCHMaker project. Besides project coordination, CEA brings in the scientific knowledge of materials characterisation, physics-based modelling, data science and ICT. Comprising 9 research centres in France, CEA ISAS and CEA-Liten are participating in various aspects of the project.

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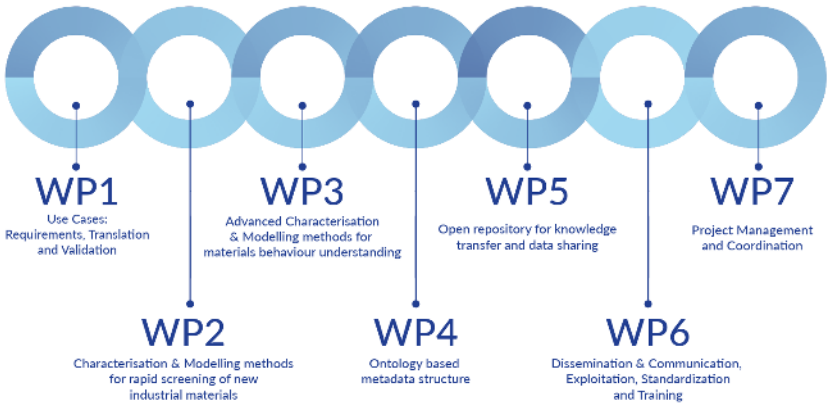
Work Packages



The MatCHMaker project consists of seven Work Packages (WPs) which are intertwined in each other to ensure the successful implementation of the project's objectives.

WP1, dedicated to the use cases, marks both the starting and closing point of the project. It maps the requirements and industry needs, and translates them into characterisation and modelling workflows. Towards the end, it validates the activities to assess the efficiency of the workflows developed in the subsequent two work packages.

WP2 focuses on the characterisation and modelling workflows for the rapid screening of new materials and products. Meanwhile, **WP3** looks at the workflows for a better understanding of the performance and degradation of materials.

WP4 is all about ontologies. A semantic data framework for WP2 and WP3 will be created and existing materials ontologies will be updated with domain and application ontologies more specifically.

WP5 is responsible for the Open Data Repository to connect materials design and manufacturing processes through semantic representation.

WP6 ensures the communication and dissemination of results and the promotion of the project, as well as exploitation, standardisation and training activities.

Last but not least, **WP7** takes care of the various aspects of project coordination, quality assessment and risk management.

From the WPs, 24 deliverables/outputs (of which six will be public) altogether are expected and so far, eight have been submitted.

Deliverables submitted

Work Package	Deliverables
WP1	D1.1 Use cases requirements and KPIs
	D1.2 Design document for semantic data models and outline for ontology development
	D1.3 Requirements for Machine Learning
WP2	D2.3 Parametric model for materials sustainability assessment
WP5	D5.1 Technical specifications of the Open Repository
WP6	D6.1 Dissemination and Communication Strategy and Plan

Event Highlights

Internally and externally, a lot of events related or relevant for the project happened in the course of 2023. Aside from project meetings and webinars, some of our partners attended conferences and workshops to contribute and gain further knowledge in their expertise. Here are some highlights!

First in-person Consortium Meeting

In the last week of November 2023, the MatCHMaker project consortium assembled in the charming province of Pontevedra, Spain. Right in time to marvel at the Christmas lights in Vigo, project partners were able to exchange ideas outside of the meeting room as well.

Read more

ICCC 2023, September 18-22, Bangkok, Thailand

The International Congress on the Chemistry of Cement (ICCC) is a global platform to promote scientific discussions and connect academia with the cement industry. It presents the state-of-the-art of cement chemistry research and trends in cement application.

With the very first Congress taking place in 1918, the ICCC has a long history of successful conferences held every four to six years. The next ICCC will take place in December 2027, in New Delhi, India.

Websites: http://iccc2023.org/
https://www.iccc-online.org/about/

Second OntoTrans Open Workshop in Bremen, Germany

OntoTrans is a Horizon 2020 project working on an ontology-based open translation environment which is very relevant for the MatCHMaker project. Project partners TU Wien and SINTEF hold important roles in both projects, facilitating collaborations and synergies. In September 2023, the OntoTrans Second Open Workshop in Bremen, Germany, following a fully online workshop due to COVID-19.

Website: https://ontotrans.eu/ontotrans-2nd-open-workshop/
On a side note, the MatCHMaker project recently contributed to an OntoTrans blog article on science communication and usage of social media platforms. Read the full article here: https://materialsmodelling.com/social-media-survey/#matchmaker

ICIAM 2023, August 20-25, Tokyo, Japan

10th International Congress on Industrial and Applied Mathematics
ICIAM 2023 TOKYO

The International Congress on Industrial and Applied Mathematics was held in person at the Waseda University in Tokyo, Japan. The aim of the congresses is to promote scientific exchanges in industrial and applied mathematics with a bottom-up approach. It offers the individual organizers the freedom to bring in highlights and topics for discussion and meeting proposals. Scientists also have the opportunity to propose mini-symposia concepts.

The first Congress was held in Paris, France, 1987 and continued every four years ever since. The upcoming ICIAM will be held in the Hague, Netherlands, in 2027.

Websites: https://iciam2023.org/; https://iciam.org/about-iciam

Joint EMMC Webinar with Sister Projects

Ontology, its usage and benefits in data management is often featured in diverse projects. To facilitate project partners' understanding of the concept, MatCHMaker and sister projects attended the online webinar by the European Materials Modelling Council (EMMC).

Internal Workshop on Standardisation

In October 2023, our partner ASRO (National Standardisation Body in Romania) gave an internal webinar on Standardisation, introducing the standardisation system and stakeholders, the European and international landscape, legislation and the role of standards in research, innovation and business to our project partners.

New Online Presence

The MatCHMaker project aims to promote science communication through various channels. Alongside the project website and LinkedIn account, the project opened an X (formerly Twitter) account to further connect with the scientific community, other projects and everyone interested in learning more. Furthermore, outreach materials are accessible under:
https://he-matchmaker.eu/results/publications/

New Sister Project and Project Cluster

We are happy to welcome a new sister project to the Advanced Materials Modelling and Characterisation (RIA) call! The AID4GREENEST project aims to develop new rapid AI-based characterisation methods and modelling tools in the steel sector. Together with the other sister projects AddMorePower, D-STANDART, Knowskite-X and CoBRAIN, we are enthusiastic about future collaborations to achieve better results!
Another exciting cluster collaboration together with Horizon 2020 projects from the Industrial Leadership call has kicked off as well! The projects include CHARISMA, DOME 4.0, OntoTrans, MUSICODE and NanoMECommons.
On this note, the MatCHMaker project recently contributed to an OntoTrans blog article on science communication and usage of social media platforms. Read the full blog article here: https://materialsmodelling.com/social-media-survey/

We are looking for long-term partnerships!

Materials' microstructure is fundamental for our understanding of the material's properties. Quantitative characterisation of microstructures is therefore essential for the optimisation of the performance of materials. Machine learning algorithms are promising for image analysis yet are still scarcely applied in our field. In cement research, e.g., clustering algorithms enabled a better understanding of the kinetics of recycled concrete paste carbonation.
We will continue in this direction and are gathering more data to make our codes more robust and transversal, and are looking for partnerships and synergies going beyond the lifecycle of the project.

If you are part of an EU project or know one interested in expanding an image database, building case studies and algorithms on all classes of materials, please contact us!

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