



WELCOME to the Eleventh DOME 4.0 Newsletter!



DOME 4.0

Table of Contents

Welcome to the Eleventh DOME 4.0 Newsletter!	1
DOME 4.0: Building the Foundation for a Unified Platform	2
SHOWCASE: Materials informatics accelerates customer tailored composite material design	3
SHOWCASE: Semantic Analytics of Manufacturing Assets	5

We are pleased to announce the publication of the eleventh 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.

Stay tuned @www.dome40.eu!

[SUBSCRIBE here](#) to our newsletter!

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)

✉ @DOME40_H2020 in @DOME40

DOME 4.0: Building the Foundation for a Unified Platform

The DOME 4.0 Platform (WP1) focuses on creating a robust foundation to drive the digital transformation of the industrial landscape. This initiative sets up essential infrastructure and processes that streamline the integration and deployment of software components, ensuring a seamless experience for all users involved. The objective is to develop an accessible, user-friendly, and open marketplace that connects data, tools, and services to support business cases and B2B showcases.

Key efforts include implementing agile and DevOps methodologies to facilitate continuous software updates and integrations, allowing for quick adaptation to emerging needs. By leveraging cloud-based infrastructures, DOME 4.0 ensures scalability and efficiency throughout the project's lifecycle.

A significant part of this initiative is dedicated to understanding user needs, refining platform requirements, and designing a flexible architecture that can evolve over time. This involves gathering input from various industry partners to create a digital ecosystem that is not only technically sound but also optimized for user engagement.

In addition to technical advancements, the project emphasizes onboarding services to lower entry barriers for new users, guiding them through complex data integration processes. This includes providing hands-on support for connecting databases, enhancing data interoperability, and ensuring compliance with FAIR data principles.



SHOWCASE: Materials informatics accelerates customer tailored composite material design

Showcase 9: Materials informatics accelerates customer tailored composite material design



THE
CITRINE
PLATFORM

Next generation
design of experiment



Within the DOME 4.0 project, Showcase 9 is being worked out by Siemens Digital Industries Software, Citrine Informatics and SABIC. The aim is to bring Materials Informatics onto the DOME 4.0 platform, promising to further accelerate the transformation of materials design and product development.

Custom composite materials play a pivotal role in various industries, particularly in the automotive sector. These materials, when tailored to specific requirements, can enhance performance, reduce costs, and meet stringent efficiency standards. However, traditional approaches to designing custom composites have often been slow, expensive, and labor-intensive. The introduction of materials informatics is changing this landscape, making the process faster, more cost-effective, and adaptable.

Within the DOME 4.0 project, Showcase 9 is being worked out by Siemens Digital Industries Software, Citrine Informatics and SABIC. The aim

is to bring Materials Informatics onto the DOME 4.0 platform, promising to further accelerate the transformation of materials design and product development. Materials informatics is a data-driven approach that leverages historical data and predictive models to streamline the design of custom composite materials. Platforms like the Citrine Platform have played a significant role in advancing this technology. By analyzing past material data, these platforms can suggest optimal composite ratios, eliminating the need for extensive and time-consuming experimental trials. Key Advantages: The integration of materials informatics offers several key advantages:

SHOWCASE: Materials informatics accelerates customer tailored composite material design

- 1. Swift and Precise Recommendations:** Customers receive highly accurate suggestions for masterbatch-polymer ratios swiftly, reducing the time required for material selection.
- 2. Adaptability:** When customers alter their application criteria or requirements, materials informatics allows for a seamless adjustment in composite formulation, saving both time and resources.
- 3. Insights into Physical Properties:** Materials informatics provides valuable insights into the physical properties of new composite combinations, offering a preview of performance characteristics before conducting actual lab experiments.

The Future of Custom Composite Design: As materials informatics continues to evolve, it holds immense potential for various industries, which

includes automotive industry and beyond. This technology promises to revolutionize the way we design and develop materials, making it a valuable tool for achieving performance goals, cost optimization, and sustainability objectives across diverse sectors.

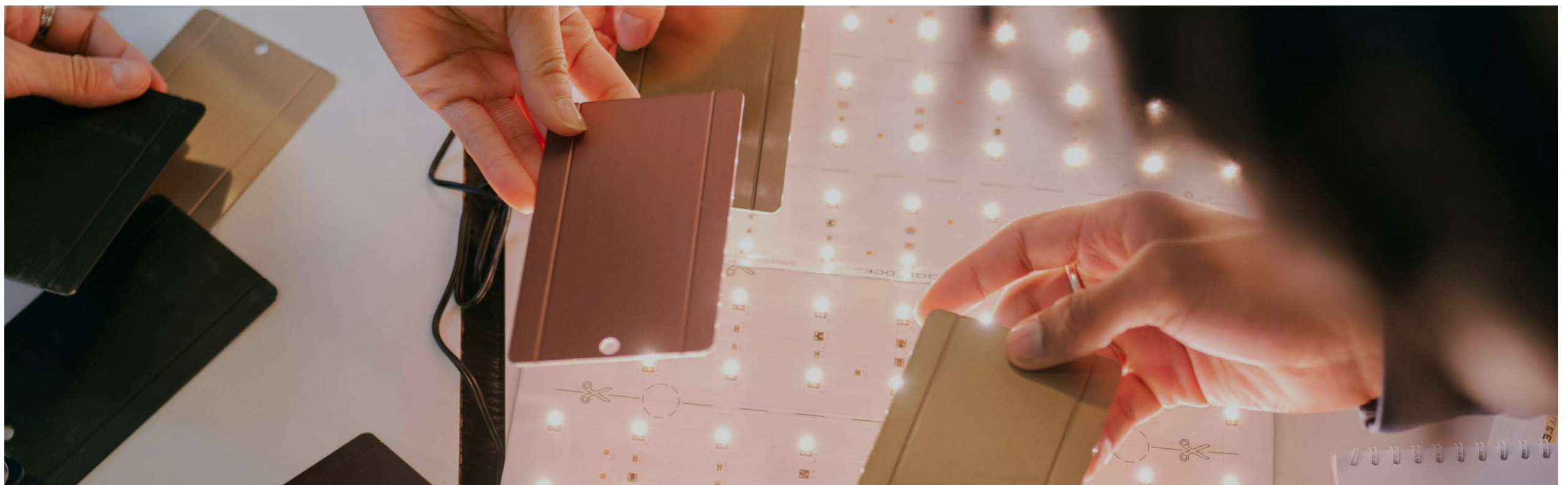
In conclusion, materials informatics is transforming the landscape of custom composite material design, offering speed, precision, and adaptability. As industries seek innovative solutions to meet evolving demands, materials informatics stands as a game-changing approach that can pave the way for more efficient and sustainable materials.

Link of the video:

<https://youtu.be/69msMwKi1-o>

Learn more about our showcases at

<https://dome40.eu/dome-40-showcases>



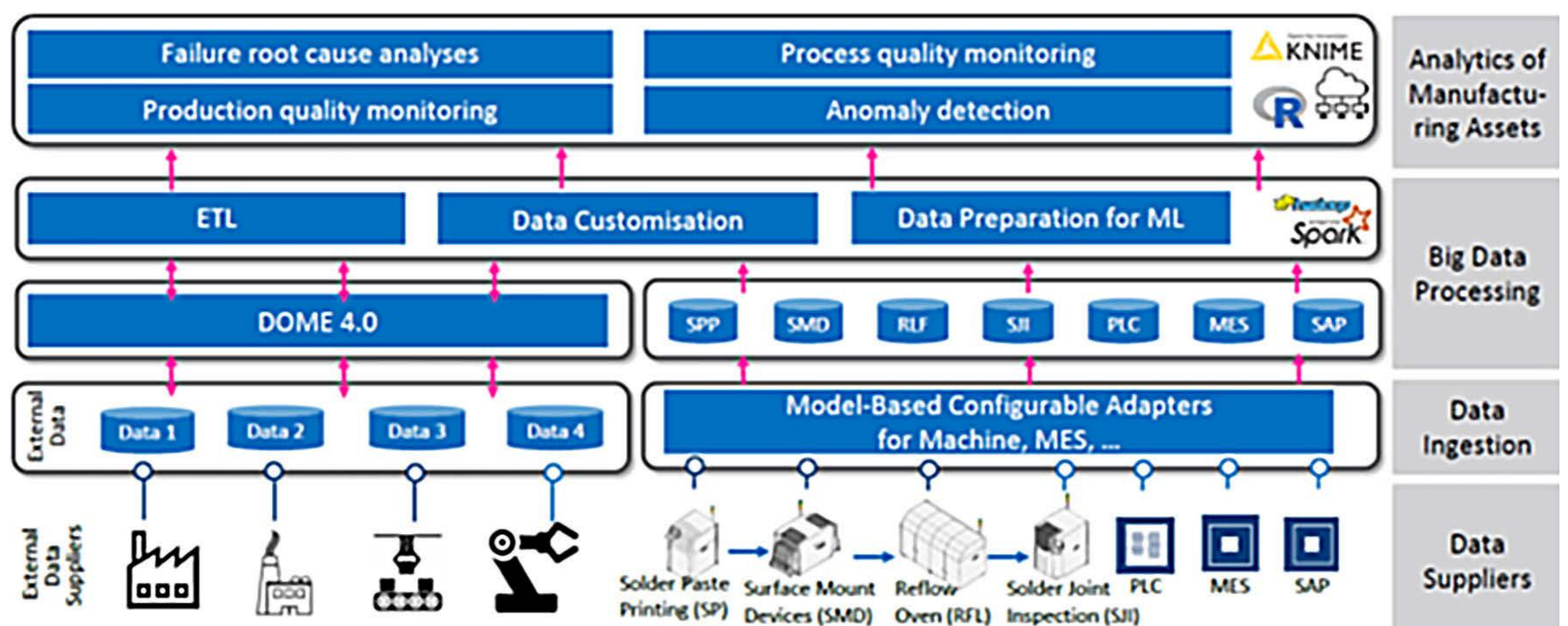
SHOWCASE: Semantic Analytics of Manufacturing Assets

Smart manufacturing aims at plants with fully computerised and automated production processes. Such degree of automation requires constant analytics manufacturing assets that includes monitoring, diagnostics, and optimisation of production assets such as assembly lines and manufacturing robots. Reliability of analytics results heavily correlates with the completeness of data used for analytics thus the information integration becomes one of the key challenges. The proposed showcase will show how this can be addressed by relying on the DOME 4.0 data marketplace.

state, and errors in operation with assets' master data capturing engineering specifications and descriptions of manufacturing processes partially acquired via the DOME 4.0 platform. This data acquisition will cut the time for preparing such data onsite and improve the quality and reliability of analytics results.

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

This will be achieved by combining BOSCH industrial data that include data from sensors deployed in production assets and reporting various characteristics including temperature,





Netcompany



Fraunhofer

SINTEF



EPFL



SIEMENS
Ingenuity for life



STAY TUNED

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

Stay tuned @ www.dome40.eu!

SUBSCRIBE here to our newsletter!

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)



@DOME40_H2020



@DOME40



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

DOME 4.0 LINKS