Jornadas Técnicas

Industrial Track 4.0 2025

BURGOS, 15-16 DE OCTUBRE 2025

Smart Digitalization for Sustainable Manufacturing: Insights from EU Projects PIONEER and DIMAT

Daniel Gesto – AIMEN
Javier Gómez – Advanced Material Simulation
Harrison De La Rosa Ramirez – Polytechnic University of Valencia



DiMAT Pioneer

Smart Digitalization for Sustainable Manufacturing: Insights from EU Projects PIONEER and DIMAT

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Co-funded by
the European Union

Speakers

Javier Gómez

CEO Advanced Material Simulation (AMS)

Harrison De La Rosa Ramirez

Doctor Researcher Universitat Politècnica de València (UPV)

DiMAT

DiMAT - Objective

The Challenge

Digital transformation in manufacturing lags significantly in its integration with material science and engineering.

The Barrier

SMEs often cannot afford the costly, specialized modeling, simulation, and optimization systems needed for materials innovation.

The Gap

This digital divide is bigger for SMEs and smaller companies.

DiMAT Objective

Address this need by developing Open Digital Tools with a set of advanced technologies for offering SMEs and Mid-Caps an affordable (in terms of cost, implementation and usability) full modelling, simulation and optimisation system in each stage of the material value chain (design, processing and manufacturing).

DiMAT - Solutions Overview

DiMAT provides **Digital Technologies** for **modelling, simulation and optimization in each stage of the material value chain** with data analysis services and visualization techniques for improving quality, sustainability, effectiveness, and competitiveness of materials.

DiMAT has developed **9 toolkits** integrated into **3 Suites:**

SUITE 1

DiMAT Data and Assessment Suite

Digital technologies for storing, sharing and assessing materials data

SUITE 2

DiMAT Modelling and Design Suite

Digital technologies for material design dedicated to predict the material behavior before manufacturing

SUITE 3

DiMAT Simulation and Optimization Suite

Digital technologies for creating efficient materials manufacturing simulation processes.

The solutions are tailored to the specific needs of SMEs.

Consortium

DiMAT Pioneer

Research & Development

Fraunhofer IWM

University of Applied Sciences and Arts of Southern Switzerland SUPSI

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

aitex research & innovation center

NATIONAL TECHNICAL UNIVERSITY OF ATHENS

CENTRE FOR RESEARCH & TECHNOLOGY - HELLAS Information Technologies Institute

Technology Providers

CETMA EUROPEAN RESEARCH CENTER FOR TECHNOLOGIES DESIGN AND MATERIALS

DRAXIS

ADVANCED MATERIAL SIMULATION

ROPARDO

Industrial Partners

HEGLA HANIC Intelligent Glass Software

IMERYS

CETMA composites

ACCELIGENCE

TECNORED

NaturePlast Bioplastics Expert

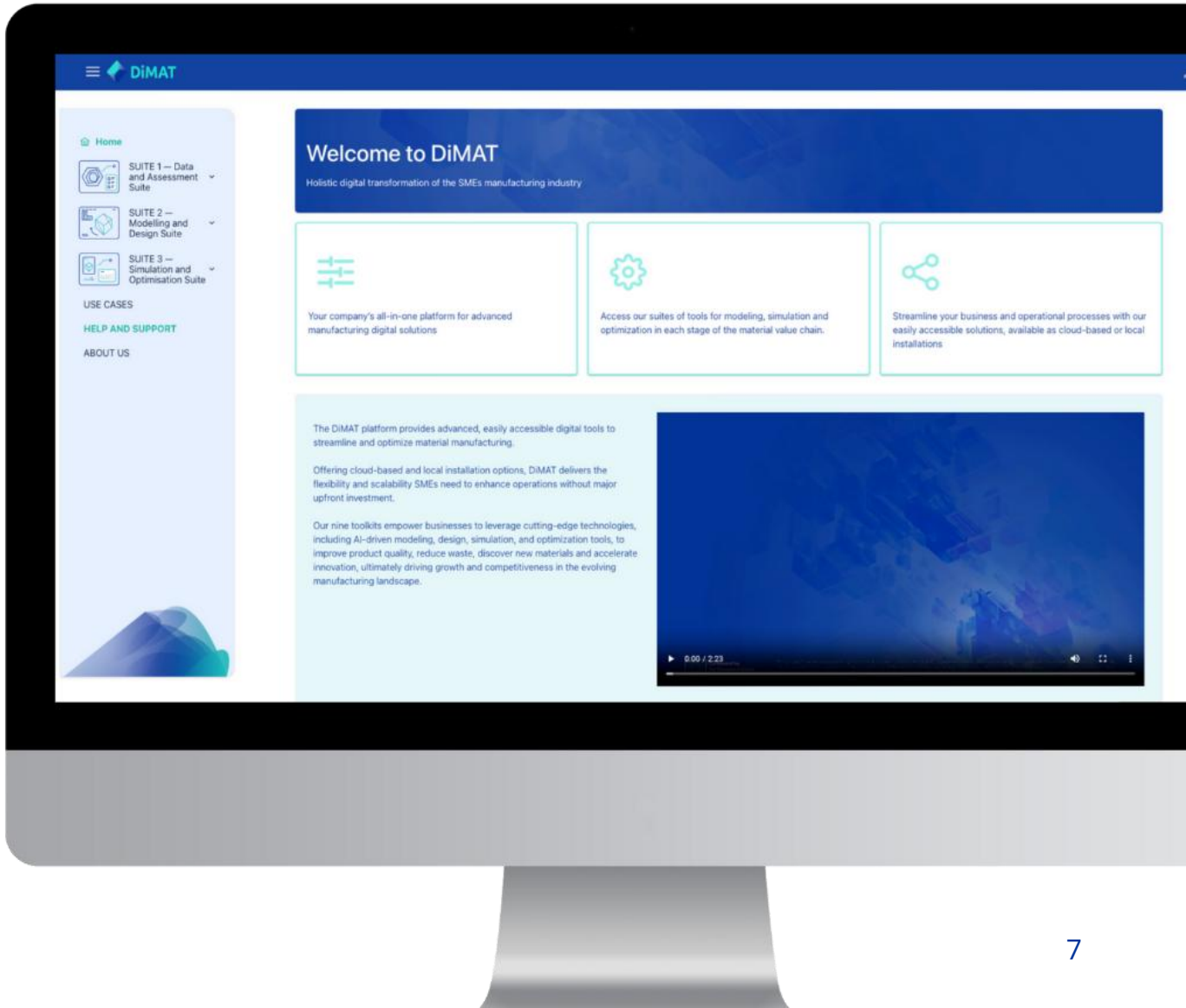
Specialist Partners

F6S

DIN

DiMAT: Platform

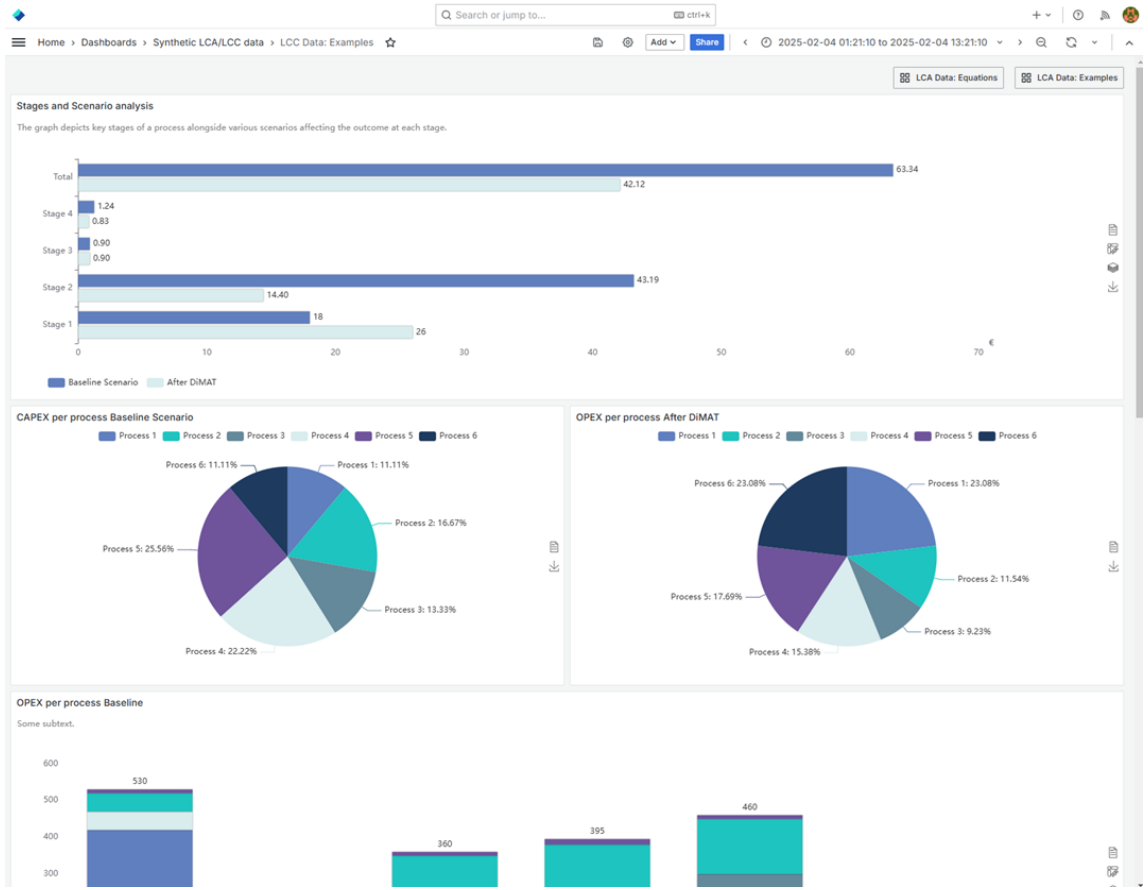
All DiMAT toolkits are integrated into the DiMAT Platform. The platform enables businesses to integrate digital technologies into their workflows without the need for major upfront investments.



DiMAT Project

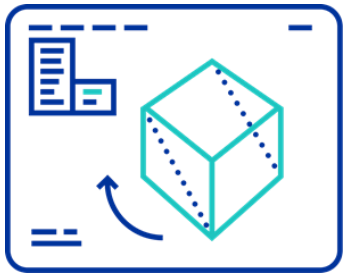
DiMAT Data and Assessment Suite - Di^{DAS}

- **Cloud Material Database Di^{CMDB}**
- **Knowledge Acquisition Framework Di^{KAF}**
- **Materials Environmental & Cost Life Cycle Assessment - Di$^{MEC-LCA}$**



Empowers SMEs to make **sustainable, cost-efficient** choices at the design phase

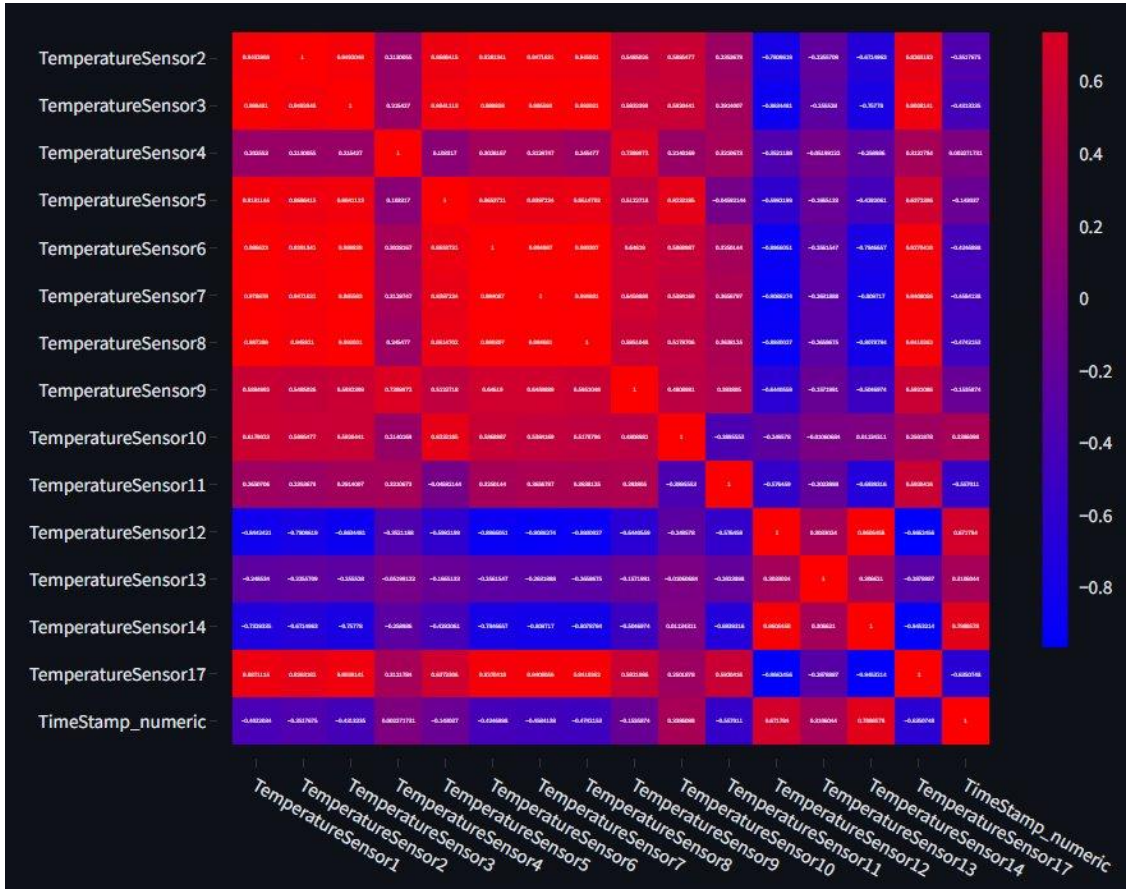
DiMAT Project



DiMAT Modelling and Design Suite - Di^{MDS}

- **Materials Design Framework - Di^{MDF}**
- **Materials Modeler - Di^{MM}**
- **Materials Designer - Di^{MD}**

SMEs can design materials tailored to desired properties, reduce development time and cost, and compete in innovation-driven sectors. The suite makes advanced materials design accessible to SMEs without in-house labs or simulation experts

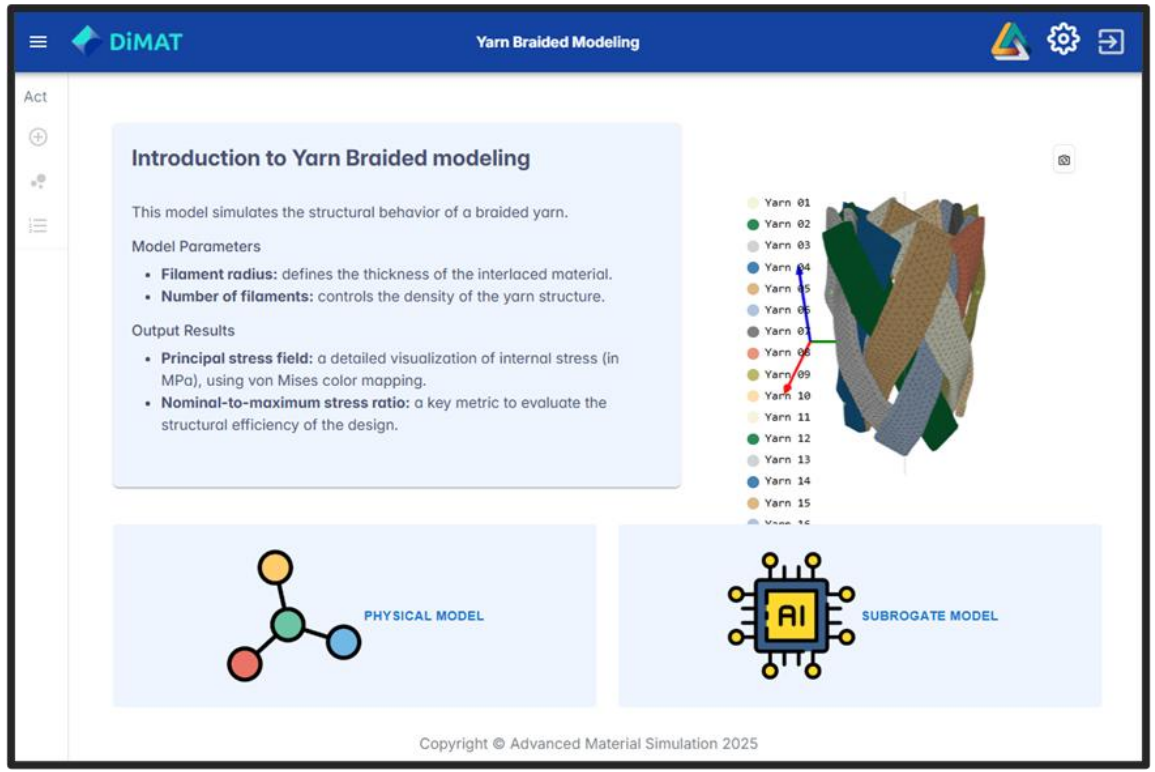


DiMAT Project

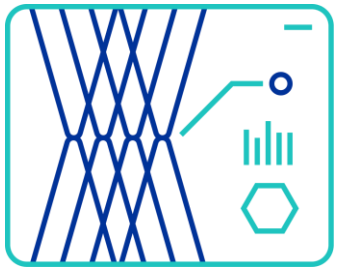
The DiMAT Simulation and Optimization Suite - Di^{SOS}

- **Materials Mechanical Properties Simulator - Di^{MMS}**
- **Materials Processing Simulator - Di^{MPS}**
- **Digital Twin for Process Control - Di^{DTPC}**

This suite enables **more efficient, error-free production** - critical for small companies that managing complex materials with limited resources



DiMAT Pilots



Synthetic Textiles Production (Polymer)

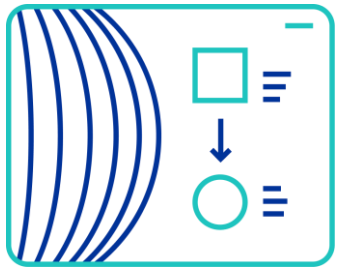
DiMAT Suites will support the **development of new polymers** and other materials in the manufacturing industry

FRANCE & SPAIN

UAVs Manufacturing with Advanced Composite Materials (Composite)

DiMAT Suites will be used to investigate the potential use of renewable and recyclable materials for **drone structures**

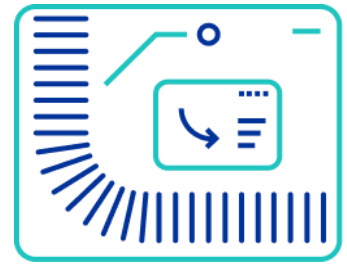
CYPRUS & ITALY



Innovative Glass Forming Process in Digital Environment (Glass)

DiMAT Suites will support the acceleration of innovative design and implementation of **the glass forming process**

GERMANY



Speeding-up the New Product Development Process (Graphite)

DiMAT Suites will be used to improve and speed-up the **product development process**

SWITZERLAND

Speakers

Daniel Gesto

PIONEER Project - Coordinator

PIONEER

Pioneer

Open innovation platform for optimizing production systems by combining product development, virtual engineering workflows and production data

Call topic: CL4-2022-RESILIENCE-01-25

17 Partners	11 Countries
36 Months	5.2M Total Budget

Coordinator: aimen TECHNOLOGY CENTRE

RESILIENCE-01-25-2022

Optimised Industrial Systems and Lines through digitalization (IA)

KEY FIGURES AND CONSORTIUM

Pioneer

Open innovation platform for optimizing production systems by combining product development, virtual engineering workflows and production data

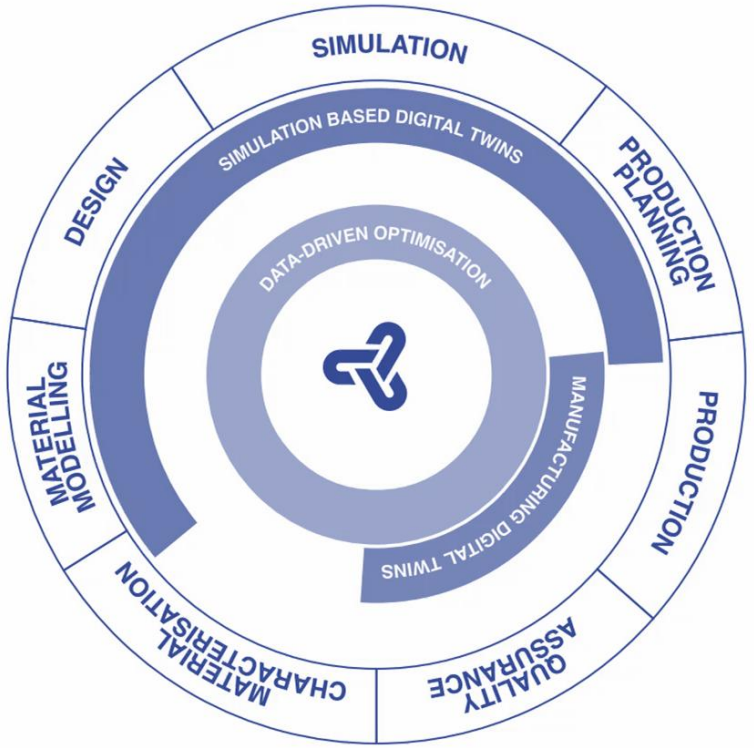
Addressing a **design-by-simulation** optimisation framework

End-to-end dataflow along the **product lifecycle/material value chain**

Materials

Modelling

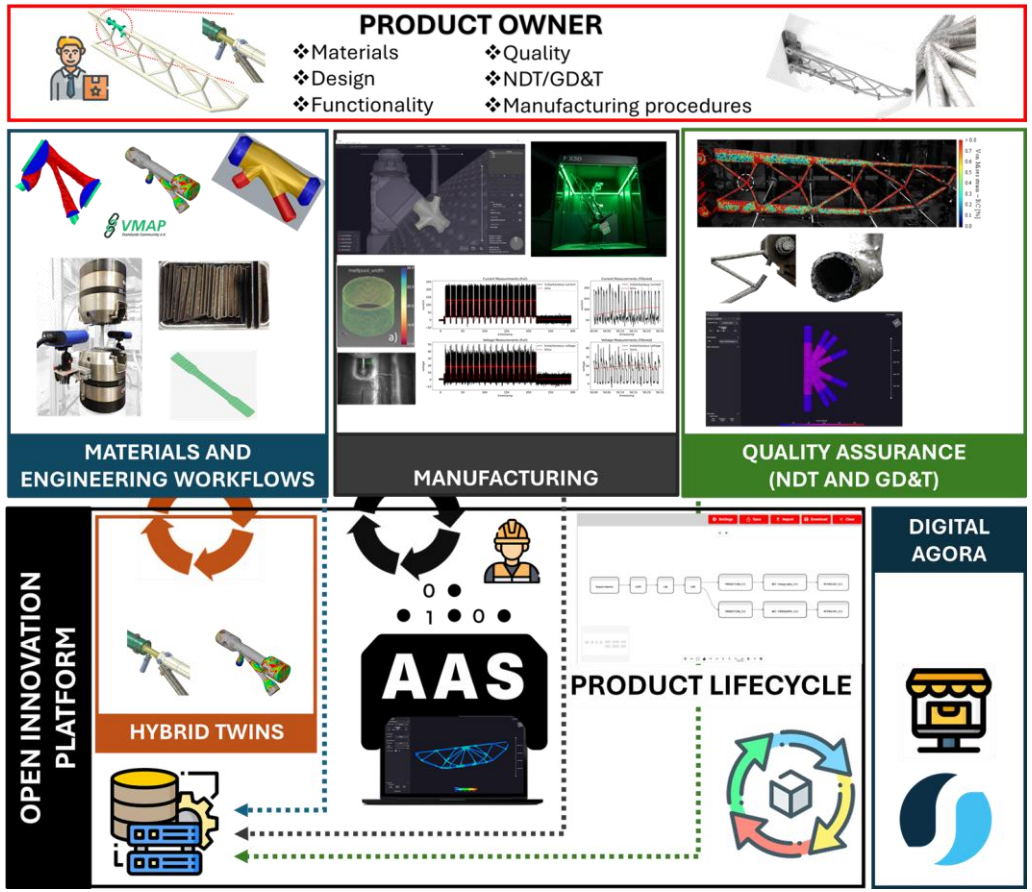
Manufacturing



OPEN INNOVATION PLATFORM AND INTEROPERABLE DIGITAL PIPELINE

Pioneer

Open innovation platform for optimizing production systems by combining product development, virtual engineering workflows and production data

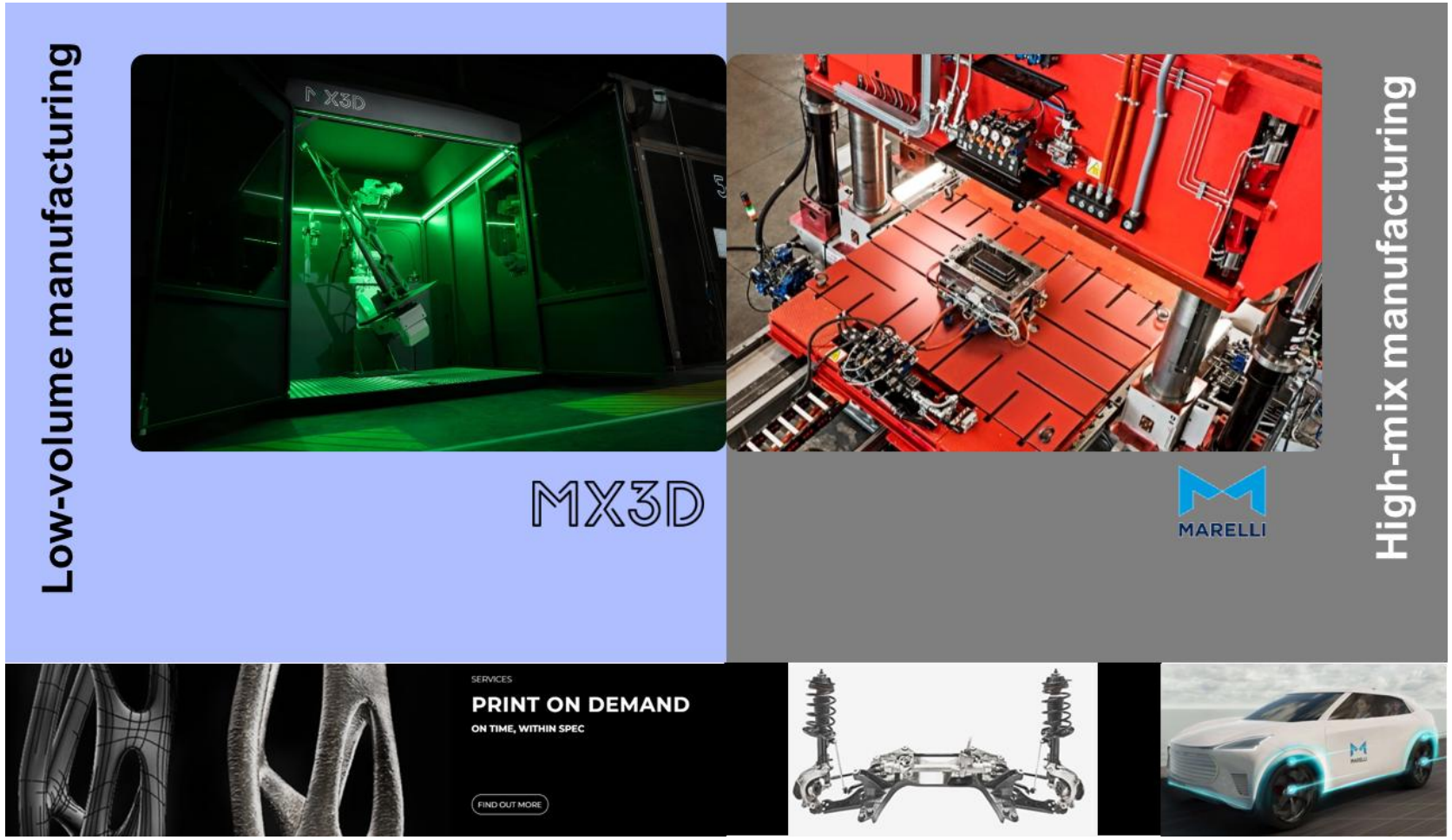


- Open Innovation Platform
- Interoperable Virtual Engineering workflows
- Digital Twins and Data-driven models
- End-to-end representation of the material value chain
- Semantics and interoperability

VISION

Pioneer

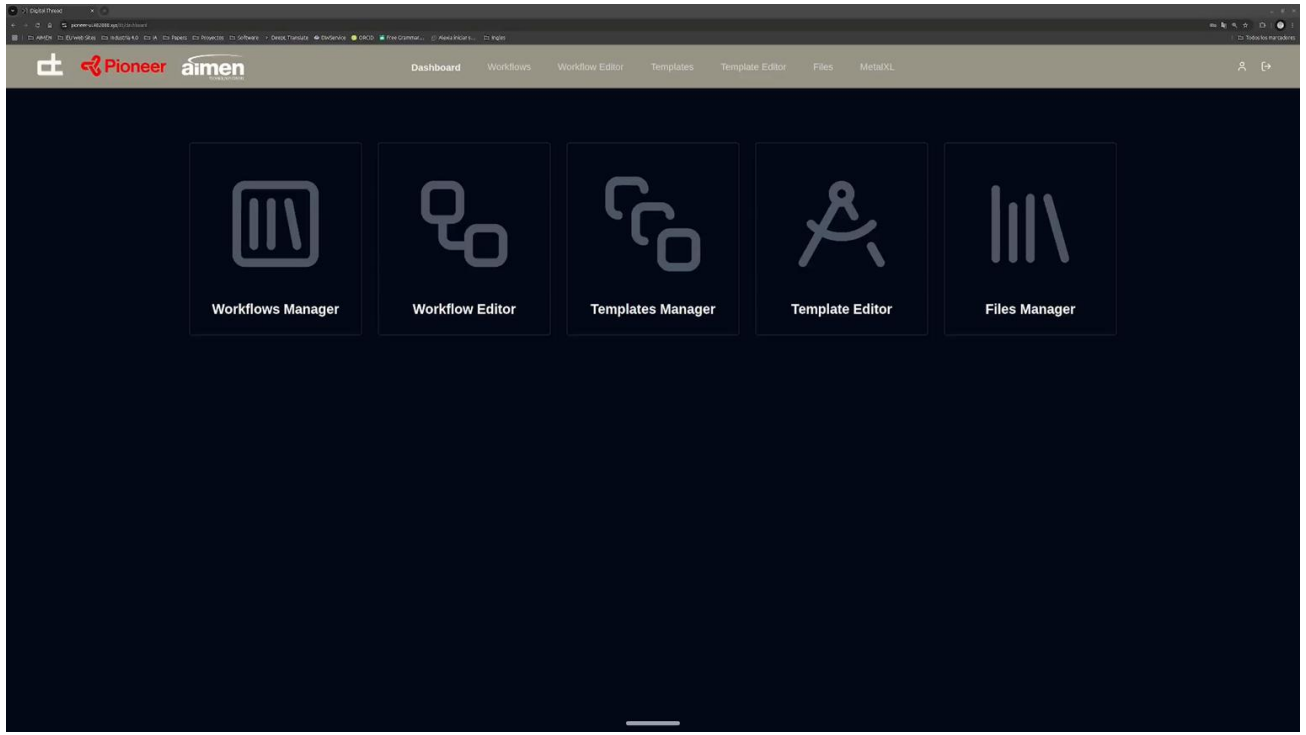
Open innovation platform for optimizing production systems by combining product development, virtual engineering workflows and production data

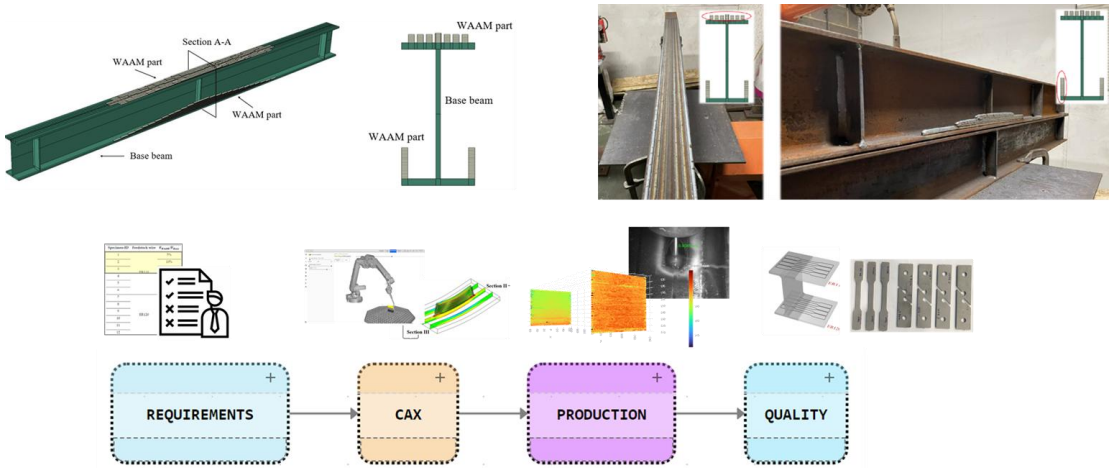


VISION

Pioneer

Open innovation platform for optimizing production systems by combining product development, virtual engineering workflows and production data





Data formats supported:
STL, PLY, PCD/ASC,
VMAP, VTK, MX3D, AML...

DIGITAL THREAD

Front-end of the Open Innovation Platform

OPEN INNOVATION PLATFORM

DiMAT Pioneer

Join us at Stand P1 - DIGIS3 Information Point
“Servicios avanzados para la digitalización industrial a través de DIGIS3 y la red europea de EDIHs”

Thank you!

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Gracias!

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