

## COMET MODULE

### DESIMPLIFY – CREATING THE CONFIGURABLE PROCESS MODELLING ARCHITECTURE THAT ACKNOWLEDGES THE COMPLEXITY OF CHEMICAL PRODUCTION SYSTEMS

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**Main location:** Vienna (Vienna)

**Other locations:** Linz (Upper Austria)

**Thematic area:** Materials & Manufacturing



#### Thematic focuses

- creating an integrated, smart, and advanced Process Modelling Architecture (isaPMA)
- multi-architecture parallelized open-source platform for detailed and efficient simulation of industrial multi-scale, multi-physics unit operations
- establishing versatile, reusable, and sustainable guidelines, workflows and tools for deriving fast and robust surrogate models based on the high-fidelity simulation data

#### Planned realisation and outcomes

DeSimplify will deliver isaPMA, an integrated, smart, and advanced Process Modelling Architecture that has as its core objectives the elimination of the accuracy-speed trade-off and the versatile, reusable, and sustainable workflow generation for many industrial scenarios in the chemical process industry. The architecture's three layers address accuracy across scales (advanced), real-time capability (smart) and the flexible integration into the framework of process simulations (integrated).

isaPMA establishes FAIR modelling principles, is based on open platform standards, extendible, and readily accommodates new developments including data-based models. The architecture is configurable to specific chemical systems, and it is the indispensable prerequisite that enables the Model-Based Digital Twin (MB-DT) for the chemical process industries.

Hence, DeSimplify delivers a normative architecture configurable to and built on the specific requirements of the chemical industries and beyond. This is the breakthrough technology needed to pave the way for MB-DT based process control. It will enable integrated, end-to-end process simulation while ensuring real-time capability and flexible configuration permitting interoperability between linked model constituents and re-usability of coupled modelling methods.

## COMET FACTSHEET

### Selected company partners (max. 10):

1. Festo
2. NGR
3. TPK

### Selected scientific partners (max. 5):

1. Johannes Kepler University Linz
2. TU Wien
3. University of Vienna

### Selected international<sup>1</sup> partners (max. 5):

1. Karlsruhe Institute of Technology
2. Technical University of Denmark

**Duration:** 01.01.2026 – 31.12.2029 (4 years)

**Staff employment:** 10 FTE, thereof 9.25 scientists

**Management:** Dr. Karin Wieland, Project manager

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Status 02/2026

The COMET Module is funded within COMET – Competence Centers for Excellent Technologies – by BMIMI, BMWET as well as the co-financing federal provinces Upper Austria and Vienna. The COMET programme is managed by FFG. [www.ffg.at/comet](http://www.ffg.at/comet)

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<sup>1</sup> Partners with headquarters outside Austria