



DIMOFAC

PARTNERS

Featuring

smartFactory^{KL}

ABOUT SMARTFACTORY

A research and industry network with three pillars of support – the non-profit association, Technologie-Initiative SmartFactory KL (SF-KL), plus two scientific research institutes ("Innovative Factory Systems" at DFKI and "Machine Tools and Control Systems" at the RPTU campus Kaiserslautern).

Prof. Dr. Martin Ruskowski has been responsible for organization and content since 2019. He serves as chair of the association's management board as well as the faculty chair and head of the DFKI research department. SmartFactory-KL brings stakeholders from industry and research together in a unique Industrie 4.0 network to facilitate collaboration in the joint development and implementation of future production concepts for the factories of the future. The manufacturer-independent demonstration and research platform enables industry representatives and researchers to conduct joint testing of innovative production technologies in a realistic factory environment.



2016: the German Federal Ministry for Economic Affairs and Energy (BMWi) appointed SF-KL lead manager of the Mittelstand 4.0 Competence Center (SME4.0) Kaiserslautern, which supported the digitalization efforts of SMEs until 2021. Since 2021, that work continues as the Mittelstand-Digital Zentrum Kaiserslautern with SmartFactory-KL providing continuity as lead manager. o.

2019: The partner network revisited the concept of Industrie 4.0 and that resulted in the upgrade now known as Production Level 4 (PL4).

2020: Introduced the world's first PL4 demonstrator. Since then, the association has participated in the European GAIA-X network with its smartMA-X research project. The demonstrator plays a major role as a testbed in the European effort.

2021: SF-KL presented the concept of Shared Production – implemented for the first time as a skill-based, PL4 manufacturing ecosystem in Kaiserslautern. This represents a major advance in production, enabling completely revolutionary manufacturing architectures that are individually configurable via digital platforms.

2022: The PL4 ecosystem was exhibited for the first time at the 2022 Hannover Messe, and consists of three production cells, one of which – the production island "KUBA". Many key enabling technologies such as AI operations, digital twins, operational safety intelligence, and industrial edge cloud applications have been implemented to date. SF-KL and DFKI are technology leaders in the TWIN4TRUCKS projects launched on the first of September 2022. Daimler Truck is lead manager for that project. The aim is to optimize commercial vehicle production at the Wörth plant.



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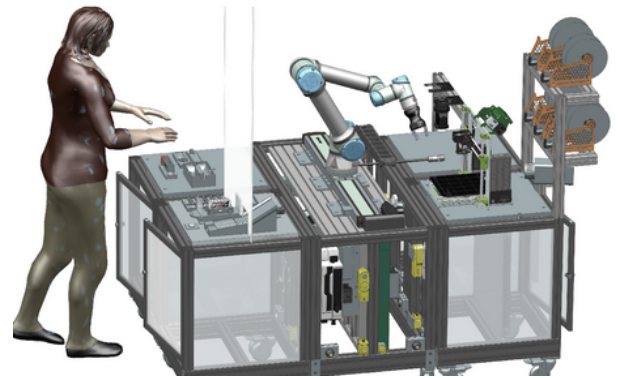
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INVOLVEMENT IN DIMOFAC

What is your role in the DIMOFAC project?

As an industrial manufacturer-independent demonstration and research platform, SmartFactoryKL role is to design and implement prototypical test beds to validate the individual manufacturing solutions, developed in the project, before being deployed at the industrial end-user sites. It supports the partners in pilot lines integration and demonstration. Moreover, SmartFactoryKL and its network acts as a multiplier for dissemination, exploitation and standardisation activities.



What are the knowledge or skills that you bring to DIMOFAC?

We have brought expertise in building and using the common information model based on the Asset Administration Shell for enhancing industrial interoperability and supporting plug-and-produce capabilities of the future modular production lines. We have also presented the vision of skill-based production to enable rapid reconfiguration in the modern modular production.

Why did you decide to participate in DIMOFAC?

The DIMOFAC vision has united various research and industrial partners from around the Europe to develop and test together technologies that enable modular, adaptable, and flexible production of the future.

What challenges do you have at the moment in DIMOFAC and how are you overcoming them?

1. Lack of standardization in defining common AAS information models. We use the well-established international standards for defining the AAS models. We take part in the standardization activities of the IDTA.
2. Lack of functionality in the Dimofac Digital Platform for integration with real-time systems. We use Dimofac platform in combination with modern industrial technologies, such as OPC UA, to ensure interoperability and real-time capabilities.



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What are the learnings you have gained from participating in DIMOFAC?

1. There is no one information model that fits all the use-cases, rather the Common Information Model consists of different domain specific views and glue them together.
2. There is no need to map models developed in one modelling framework to another, rather they can be directly referenced and used in scope of the AAS.

How do you see the DIMOFAC innovation in the Manufacturing Industry?

The Dimofac has developed the Common Information Model that can be used in the Manufacturing Industry for boosting interoperability. The Dimofac has also developed the portfolio of production modules to enable the modular and reconfigurable production. The Dimofac project has been one of the Lighthouses of the Asset Administration Shell technology for the Industry 4.0



What are the benefits that you have/are taking away from this collaboration?

Together with the partners we defined and tested technologies that will be build upon and further developed in to enable our vision of Production Level 4. We have built the testbed for investigating modular and reconfigurable production modules.

“Together with Demonic partners, we have developed and tested technologies that will define the manufacturing of tomorrow.”.