

PRESS RELEASE

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An operating system for factories

With FabOS, science and industry have together developed an operating system for the manufacturing industry that facilitates the integration of production technology with Information and Communication Technology (ICT). FabOS will also simplify the process behind capturing production data and enable the broader application of Artificial Intelligence (AI). This is the idea that brought the 26 collaborating project partners success in the AI innovation competition organized by the German Ministry for the Economy Affairs and Energy (BMWi). Along with other selected projects, FabOS was publicly unveiled on September 19.

There are two major reasons why German industry has, for the most part, hung back on the application of AI in production processes. First, because production technology is primarily oriented at the reliable fulfilment of its core remit. That is, the manufacture of goods. Generally speaking, collecting data is simply a casual by-product. The thinking is that making production data accessible to an automated learning process after the event would be very costly. As Daniel Stock, of Fraunhofer IPA's DigITools Competence Center, says: "The system landscape in production is currently still very heterogeneous and inflexible".

Second, many companies are worried, with some justification, about making data indiscriminately available for AI applications. The fear is that cloud or AI service providers might use such production data for their own purposes. "In this way, established platform service providers based abroad could appropriate the unique process knowledge of German manufacturing companies and jeopardize this USP", Stock warns, adding: "German companies must protect their digital and technological sovereignty and move towards a position from which they can develop and use their own AI infrastructure".

More flexible production and automation techniques

Consequently, the 26 project partners involved in the FabOS project, who come from research institutes, colleges and industrials including Fraunhofer IPA, are aiming to structure production and automation technology to be as flexible as ICT already is today. "At the moment, they are two different worlds", Stock explains, "but we can only obtain valuable data for AI applications and achieve the necessary synergies if we can manage to combine and harmonize the two". With this in mind, the researchers are envisioning a platform serving both production workers and data analysts, based on an open, shared, real-time and secure IT architecture.

The platform is intended to facilitate the adaptable automation of factories and to form the basis of an eco-system for data-driven services and AI applications. In line with the

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principles of well-known operating systems for computers and smartphones, FabOS will generate a platform for machinery, infrastructure and AI services constituting a complete factory by linking hardware with apps and programs. To prevent industrials becoming dependent on a single manufacturer, the researchers are aiming to integrate some open-source components and elements of community and crowdsourcing into FabOS.

Transforming vision into reality

With their idea, the scientists involved in the FabOS research project emerged victorious in the “Artificial Intelligence as the engine of economically relevant eco-systems” innovation competition organized by the German Ministry for Economic Affairs and Energy (BMWi). In the second half of August, a jury of independent experts adjudicated the projects entered by the 35 consortiums that had made it to the second phase of the AI innovation competition. On September 19, the BMWi publicly showcased and awarded the winning projects.

On February 1, 2020, the partners will begin their work on the FabOS research project. Three years later, their shared vision will have been transformed into reality. The project will be overseen by the DLR in its role as the project management agency.



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With nearly 1000 employees, the **Fraunhofer Institute for Manufacturing Engineering and Automation IPA**, Fraunhofer IPA, is one of the largest institutes in the Fraunhofer-Gesellschaft. The total budget amounts to € 74 million. The institute's research focus is on organizational and technological aspects of production. We develop, test and implement not only components, devices and methods, but also entire machines and manufacturing plants. Our 15 departments are coordinated via six business units, which together conduct interdisciplinary work with the following industries: automotive, machinery and equipment industry, electronics and microsystems, energy, medical engineering and biotechnology as well as process industry. The research activities of Fraunhofer IPA aim at the economic production of sustainable and personalized products.