



## **Baden-Württemberg supports new centre of excellence for “Mass Personalization” at the Stuttgart location**

Joint initiative by the University of Stuttgart and the Fraunhofer Institute for personalized products

The state government of Baden-Württemberg is supporting the establishment of a centre of excellence for “Mass Personalization” with a sum of five million Euros. This was announced by the Minister for Economic Affairs, Dr Nicole Hoffmeister-Kraut, and Minister for Science, Theresia Bauer, on 16<sup>th</sup> October. The centre is a joint initiative between the University of Stuttgart and the Fraunhofer Institute at the Stuttgart location. It researches interdisciplinary and cross-sector methods, procedures, processes, product systems and business models to produce personalized products. “Mass Personalization” comprises the comprehensive restructuring of product development, from the development of holistic user friendliness up to the smooth implementation in personalized product and service innovations with costs hardly higher than those of mass products.

The potential of personalized added value so far is still scarcely developed and is expected particularly in the fields of living, mobility and health. These three sectors should therefore become the focus of the work performed at the centre of excellence.

“Individualized products and their production offer a high innovation potential. The centre will lead the significant tradition of production science at the Stuttgart location into the future. The campus needs these locations in which innovation culture is lived”, according to the Minister for Science, Theresia Bauer.

Professor Wolfram Ressel, Rector of the University of Stuttgart, said, “The strategic objective of the University of Stuttgart of being an

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innovative and reliable partner for the transfer of science and technology becomes visible in an exemplary way. Personalized products open up new cross-sector market potentials. We will jointly research and process central topics of mass personalization. The expertise of our institute will contribute towards providing attractive and successful solutions for the economy.”

The project term will be two and a half years with a total project volume of 12.5 million Euros; of this 700,000 Euros comes from the University of Stuttgart’s own funds. Research partners are the four Stuttgart Fraunhofer Institutes, eight institutes from the University of Stuttgart and numerous industrial partners from various sectors. To ensure results that are as consistent as possible, the project has been divided up into three pilot projects that relate to concrete application scenarios.

### **The pilot projects**

**Pilot project 1** concerns the implementation of the process chain “Mass Personalization” for personalized assistance systems, medical and sport products. In so doing the Institute for Interfacial Engineering and Plasma Technology (IGVP) researches functionalising implant materials on the surface during manufacturing and applying them through additive manufacturing process such as inkjet printing. The Institute for Sport and Kinesiology (INSPO) works on a further development of generic digital human models that are validated through real data from experimental measurements. At the Institute for Industrial Manufacturing and Factory Operation (IFF) the configuration of the assembly exoskeleton with its wide variety is researched and a suitable customisable human exoskeleton model derived from this. The Institute for Electric Energy Conversion (IEW) deals with a modular and fully integrated machine that is freely scalable through a modular sprocket construction and builds a test bench to measure various machines in terms of their suitability for robotic application.

**Pilot project 2** concerns the implementation of the process chain “Mass Personalization” in the field of modularised building, transformable vehicle concepts as well as for consumer products and services. The results of the research work by the Institute for Work Science and



Technology (IAT) comprise a method to flexibly integrate users in the product configuration resp. in conversion processes of products. The tasks of the Institute for Beam Tools (IFSW) are the fundamental investigations to increase the throughput and component quality for additive processes and an optimisation of beam formation for the productivity increase in laser-based powder bed processes. The goal of the Institute for Acoustics and Building Physics (IABP) is a method for assessing mass personalization in the context of developing socio-economic framework conditions and building on this to provide the users with the information relevant for making decisions. The tasks of the Institute for Control Technology of Machine Tools and Production Facilities (ISW) are the conceptual development of a standardised process chain, the development of cyber-physics systems for adapted production technology and the extension of process boundaries of the additive production during laser-based powder bed processes.

**Pilot project 3** concerns the concepts and implementation of quality assurance, logistics and production technologies in the process chain "Mass Personalization" of personalized therapeutic products. In so doing the IGVP develops an innovative detection system for microorganisms and their inflammation triggering components by means of immune receptors of the human being without the use of elaborate, very expensive blood tests that are costly in terms of time and apparatus.