



Hahn
Schickard

Visions to Products

Applied research, development and foundry services for industry

- Budget 2018: 32,1 Mio. € (10,2 Mio. € industry)
- Employees 2018: 218 FTE (237 persons)
- Part of the Innovation Alliance Baden-Württemberg (innBW)



DIN EN ISO 9001:2015



Hahn-Schickard Stuttgart



Hahn-Schickard Villingen-Schwenningen



Hahn-Schickard Freiburg

R&D service provider

- We develop products and services for you using microsystems engineering: from the initial idea or concept through to product – across all industry sectors.

Problem solvers

- We take on your challenges and work with you to deliver intelligent solutions.

Future shapers

- We are one step ahead: we perform initial research and prepare innovations which we implement in products in partnership with you.

Partners

- We have regional roots, but are also globally in demand.

Our Service Portfolio

Research + development

Development of sensor solutions	Sensor integration
Electronics + microelectronics	Bioanalytical testing
Lab automation	Microfluidics + microdosing
3D electronics + MID	Micro-energy harvesting
Information technology	Communication technology + IoT
Artificial intelligence	Modeling + simulation
Measurement and analysis laboratory	

Production technologies

Silicon technology	Precision machining
High-tech functions in polymers	Microstructuring of surfaces
Integrated circuit packaging technology	Film technologies
Additive manufacturing	

Production

MEMS foundry
Lab-on-a-chip foundry
Microassembly + packaging
Tool making + injection molding

Applied research within innBW

- Strong alliance of 13 independent and unique research institutes
- Applied and results-oriented research for key enabling technologies
- Link between science and economy
- innBW in numbers (2016):
 - 1.150 FTE
 - 129 Mio. € turnover, thereof 20% institutional funding by the state of BW
 - 4.530 projects for industry clients, thereof 2.370 projects together with SME
 - 60 spin-off companies from 2007-2016



www.innbw.de

Hahn-Schickard Stuttgart and IFM



Hahn-Schickard Stuttgart

www.hahn-schickard.de



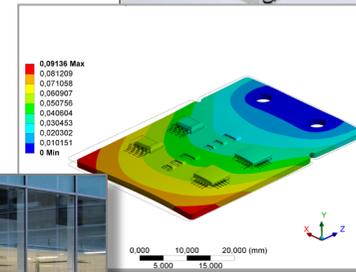
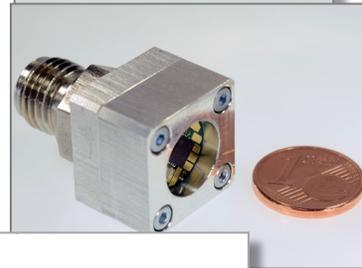
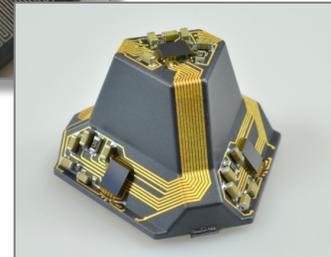
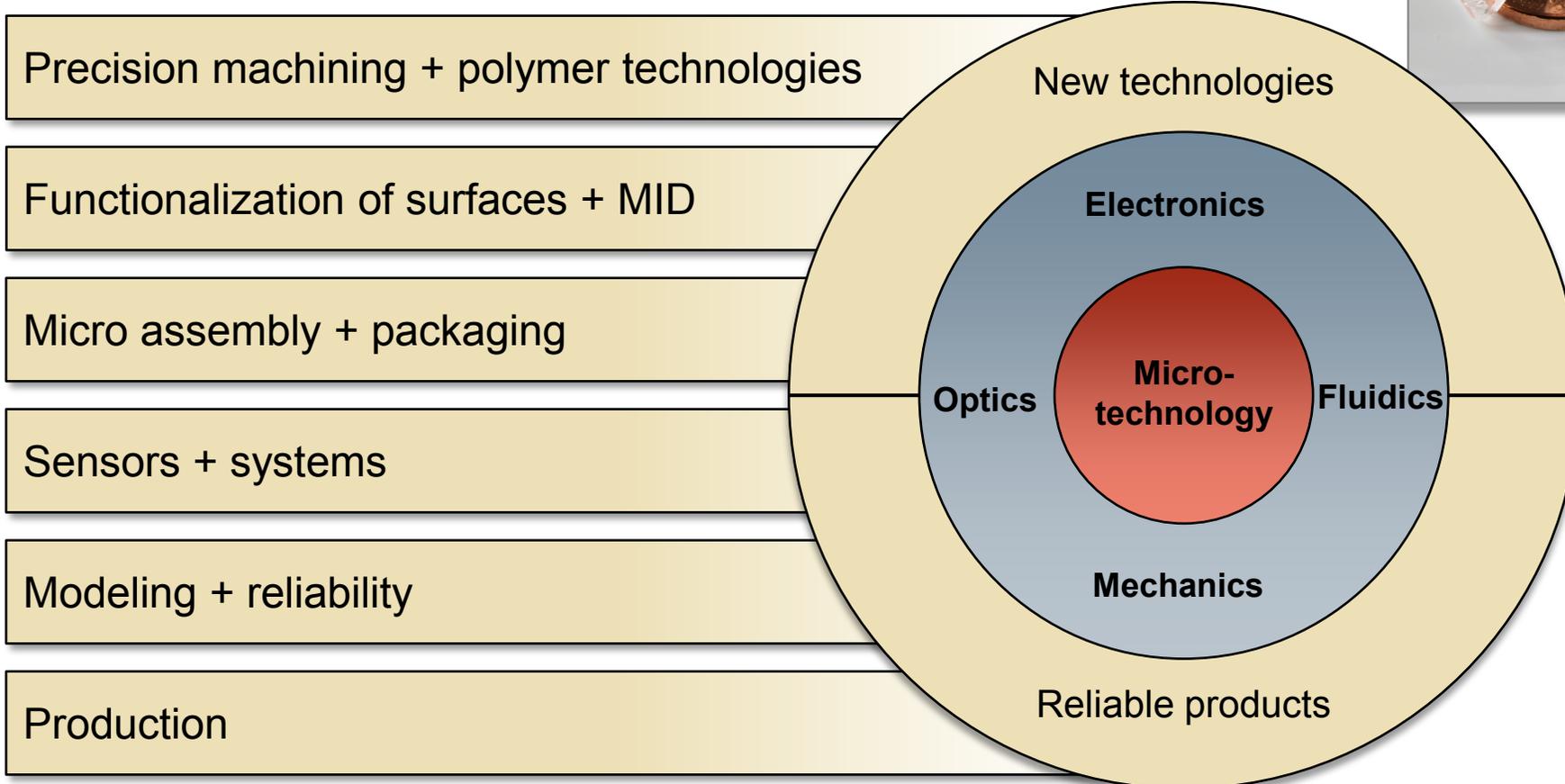
**Institute for Micro Integration
University of Stuttgart**

www.ifm.uni-stuttgart.de

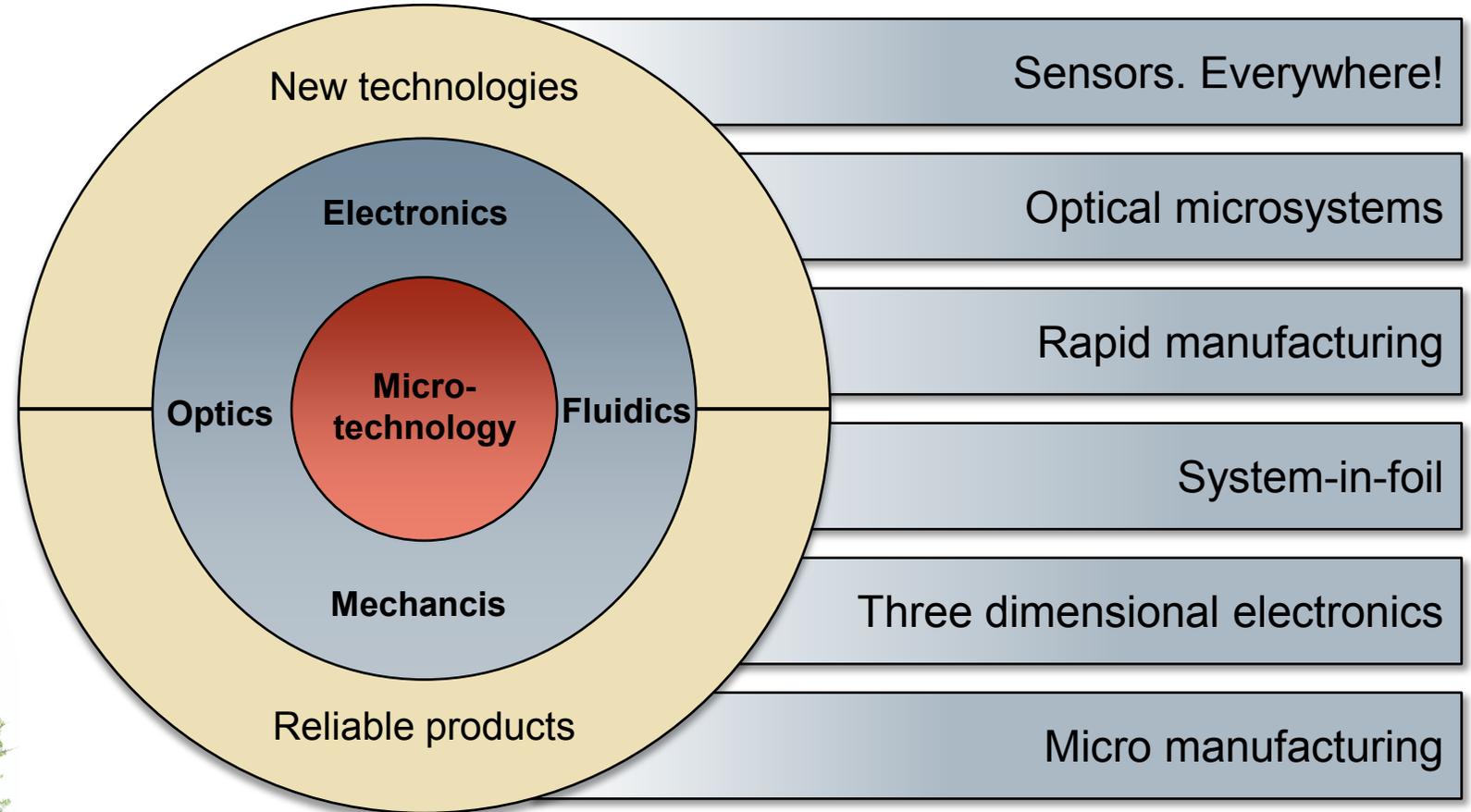


We create innovations from research to transfer into industrial applications

Core competences



Application areas



Measuring on site

- Seamless integration of sensors
- Enabler for the megatrends **internet of things**, **smart factory**, **smart home** and **ambient assisted living**

Hahn-Schickard ...

- develops sensors and sensor systems based on various physical principles and technologies.
- integrates sensors as closely as possible at the optimal site utilizing competency on micro integration.
 - Miniaturization, adaption of the form factor, reliability in harsh environment

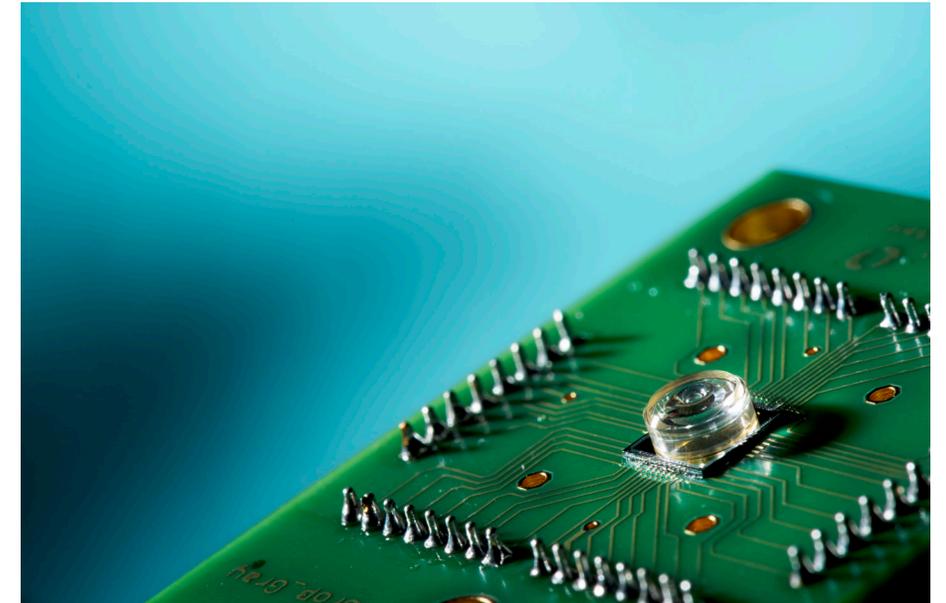


Optical components and system integration

- Touchless measurements
- High-speed data transfer
- Innovative sensors (for example quantum sensors)

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- offers a portfolio of micro-optical components.
 - Micro-lenses, diffractive components, hybrid optical components, micro-mirrors and wave guides
- enables active alignment and high-precision-assembly of optical systems.
- develops optical sensors.

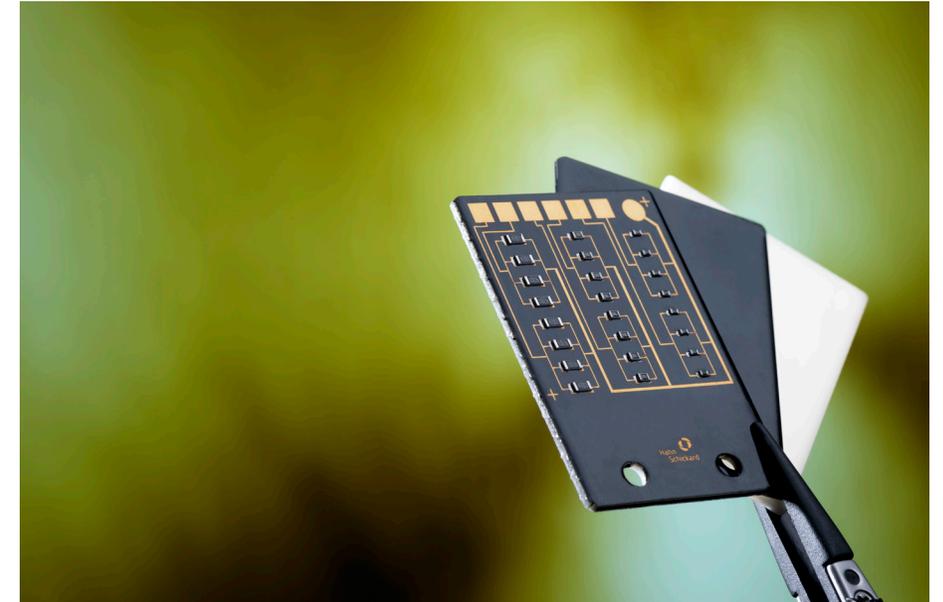


Digital process chains for individualized products

- Cost-competitive manufacturing of products right from lot size 1
- Individualized products, small lot sizes, large variant diversity

Hahn-Schickard ...

- develops digital process chains based on additive and subtractive 2D and 3D processes.
 - Direct imaging, printing technologies, laser technologies
- ensures their reliability.
- optimizes the technology readiness level from rapid prototyping to rapid manufacturing.

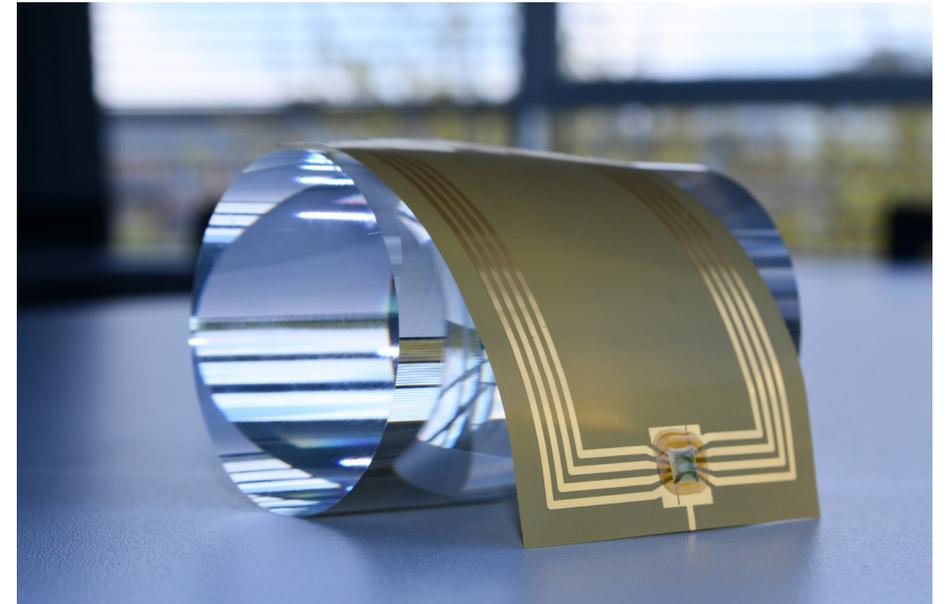


Ultra-thin flexible microsystems

- Mechanically flexible microsystems
 - Adaptation to curved shapes, deformability during application
- Miniaturization in z-direction

Hahn-Schickard ...

- develops complete technology chains.
 - Structuring of foil substrates, assembly and interconnection of ultrathin components, production of multi-layer systems
- ensures the reliability under relevant loading conditions.



Functional integration in three dimensions

- Design freedom and miniaturization potential via 3D-capability
- Integration of mechanical, electrical, fluidic and optical functions

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- optimizes the maturity of MID-technologies.
 - Standardization (i.e. for laser direct structuring), knowledge on reliability, improvement of fine-pitch-capability
- enlarges the materials portfolio from thermoplastics to ceramics and thermosets.
 - Application in harsh environment

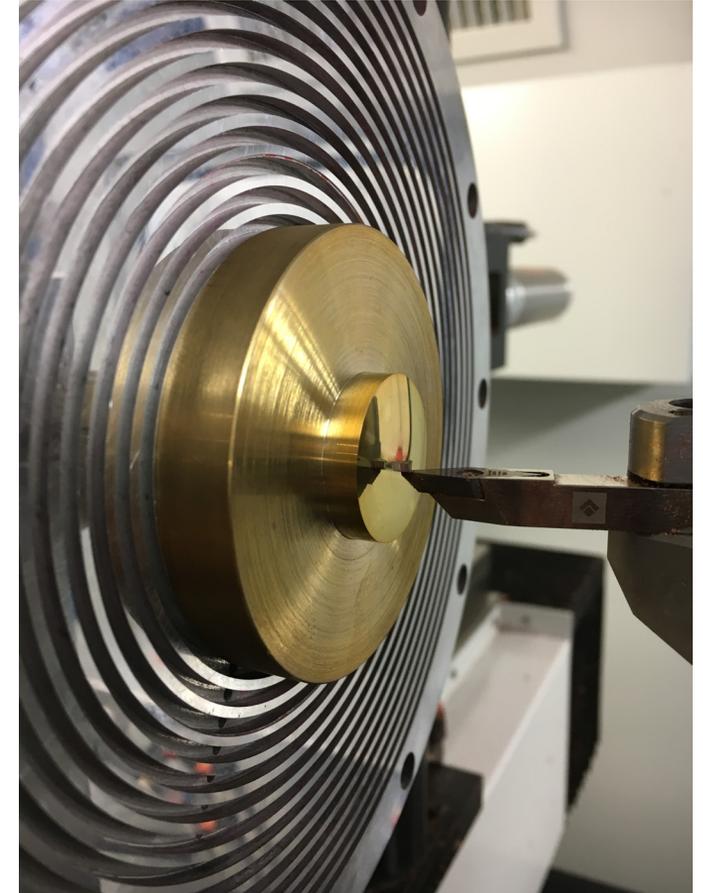


High-precision patterning and machining

- Development of innovative products based on micro technology
- Enabling of optical, electronic, fluidic and / or mechanical functions

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- applies and combines various processes for direct manufacturing of micro technology-based products.
 - Laser processes, electro(less) plating, printing processes, high and ultra precision machining, MEMS technologies and nickel casting
- integrates micro-structured components in injection and transfer molding tools.
 - Replication in polymers



Application examples from different industrial branches

Automotive sensors

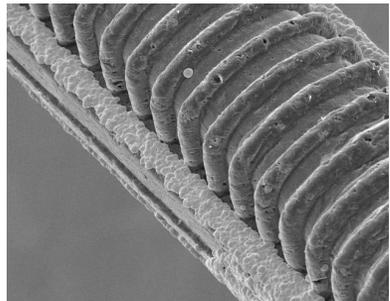


Wheel speed sensor



Pressure sensor

Medical technology sensors



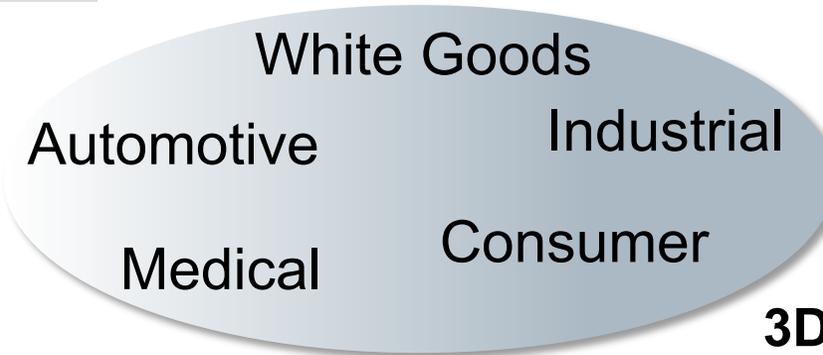
Ischämie-Sensor

The Product

The IscAlert system provides simultaneous sensing on three channels per ECU and comprises:

- Sensor element
- ECU (Electronic Conditioning Unit)
- Calibration Unit

Sensocure
Early warning - Early action



Capacitive sensors



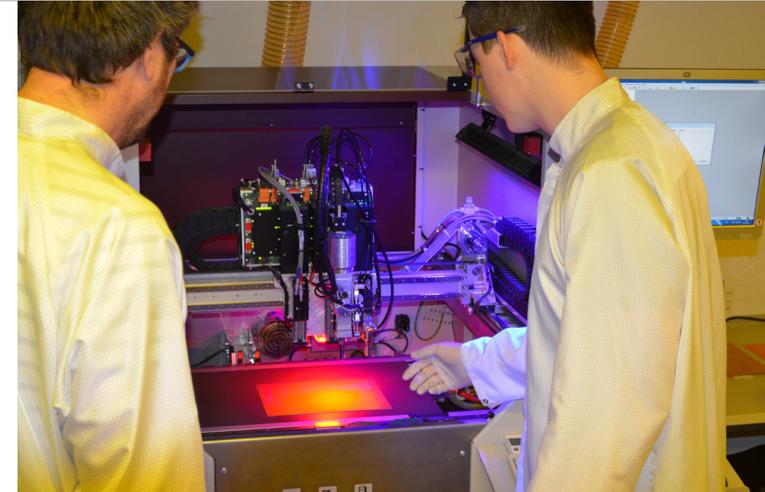
3D Display



Hahn-Schickard – Your partner for innovation

- Complete solutions for microsystems
- Full support of industrial clients from idea to production
- High flexibility and fast realization
- Access to innovative solutions
- Overcome the gap between R&D and commercialization through the infrastructure for manufacturing of first and small batch series
- Control of complex process chains based on understanding of cause-effect-relationships
- Regionally enrooted and globally in demand

We are looking forward to your challenge and develop solutions together with you.





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Schickard**

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