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# CAMPUS OF THE SENSES ERLANGEN

Kick-off 15<sup>th</sup> September 2017

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# Human Sensory Perception in the Digital Era



- Human sensory perception is barely understood in its complexity
- Because sensory perception is the interface between humans and their environment it influences each of our wishes and decisions, both, consciously and sub-consciously
- Signals generated with microphones, cameras, pressure sensors or chemical sensors typically do not accurately reflect human perception
- Transferring and using human perception in the digital domain will become a key success factor in many areas of science, economy and society

# The Individual in the Digital Era

## Need for Digitization of Sensory Perception



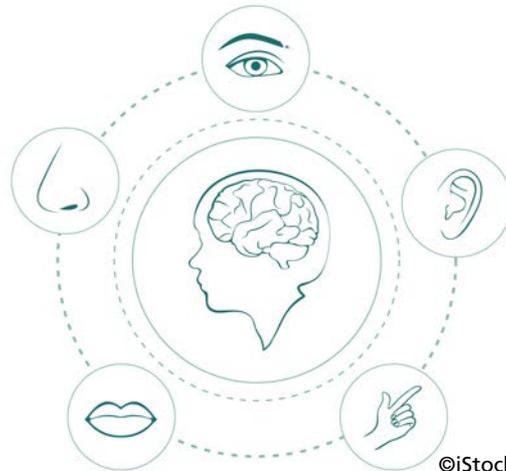
**We strive for an holistic integration of sensor technologies and perception.** Digital representation of the »Human Factor« leads to exciting new applications for:

- Individualized mass production, tailored service offerings and perceptually optimised goods and experiences
- Better human-machine interactions at work, home and during recreation
- Diagnostic and assistance for humans with and without sensory deficits
- Tools and methodologies for basic research

# Campus of the Senses Erlangen

## Convergence of Disciplines and Domains

human, analogue,  
individual,  
subjective,  
resource-rich



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**Understanding human sensory perception** requires a comprehensive effort from several domains and disciplines, e.g.

- Fundamental research in human psychophysiology
- Natural sciences, in particular chemistry
- Medicine and neurosciences

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## Convergence of Disciplines and Domains



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machines, digital,  
objective, scalable

**An holistic digital representation of human sensory perception** requires a comprehensive effort from several domains and disciplines, e.g.

- Design of robust integrated circuits and systems
- Applied research in smart sensors and medical grade wearables
- Communication systems
- Machine learning and artificial intelligence

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## Convergence of Disciplines and Domains

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machines, digital,  
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**Human perception** will be **digitally** represented in **interconnected** technical **sensor and actuator** systems. This is the evolution of

»Internet of Things«



»**Internet of Senses**«

# Fraunhofer Institute for Process Engineering and Packaging IVV

## Our guiding topics

FOOD, PACKAGING,  
PRODUCTS OF DAILY USE



SENSORY ANALYTICS



# Fraunhofer Institute for Integrated Circuits IIS

## Our guiding topics

**COGNITIVE SENSOR  
TECHNOLOGIES**

**AUDIO AND  
MEDIA TECHNOLOGIES**

# Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)

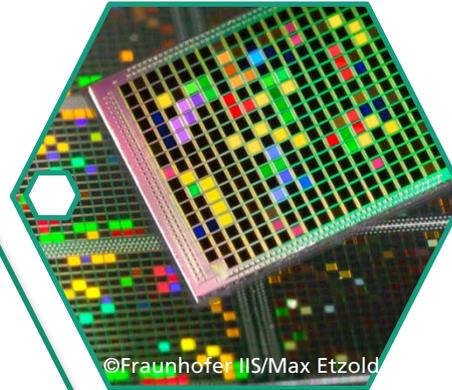
## A Strong Partner in Scientific Excellence



- FAU – Germany’s most innovative University and no. 6 in Europe (Reuters Ranking 2017), covering the full-spectrum of academic disciplines
- Committed to interdisciplinary research and teaching across the boundaries of individual subjects and traditional fields
- With about 40,000 students and 4,000 academic staff driving innovation and knowledge creation within and beyond the local ecosystem
- Passionate about the digitization of sensory perception and its implications

# Campus of the Senses Erlangen

## Unique in Bavaria and worldwide



Sensors,  
electronics, and  
artificial  
intelligence

Interdisciplinary  
research and  
teaching across  
the boundaries  
of traditional  
fields



Multi-sensory  
analytics, food  
and flavour  
optimisation



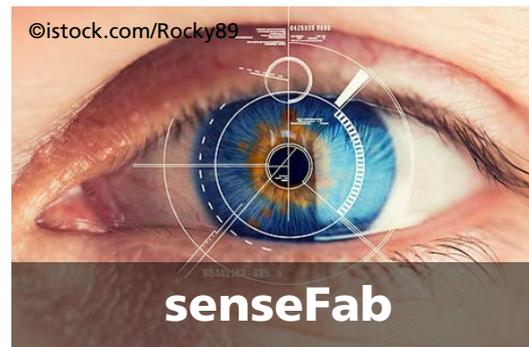
# Campus of the Senses Erlangen

## Three domains, three value propositions

### What we offer

The digital sensory transition in your enterprise is catered for by

- multi-sensory optimisation of products and services
- new technologies for digital acquisition and generation of sensory perception
- transfer and generation of knowledge with experts, partners and customers alike



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## Optimisation in the senseLab

**Sensory optimisation of products for diverse branches (food, articles of everyday use, mobility, construction, etc.)**

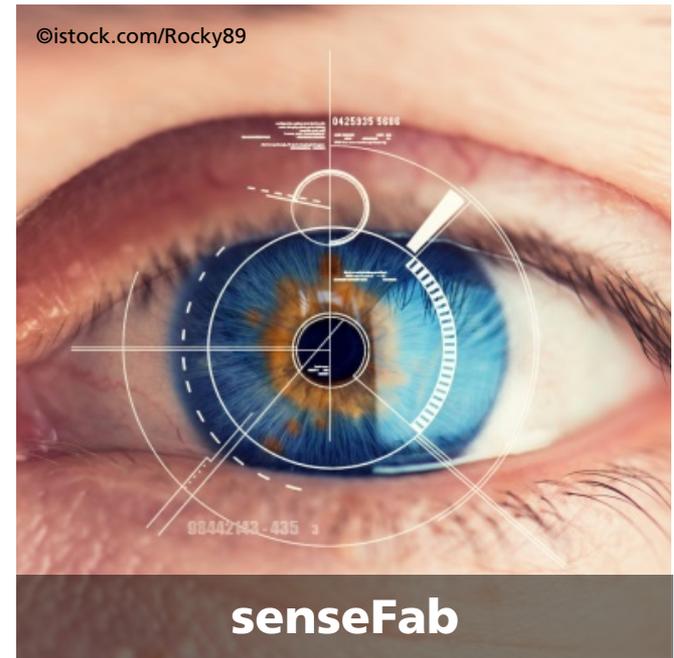
- Focus groups, certified test subjects and certified test systems
- Research on (multi)sensory perception and information processing
- Development of novel psychophysiological instrumentation to record cognitive and emotional states



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## Technologies from the senseFab

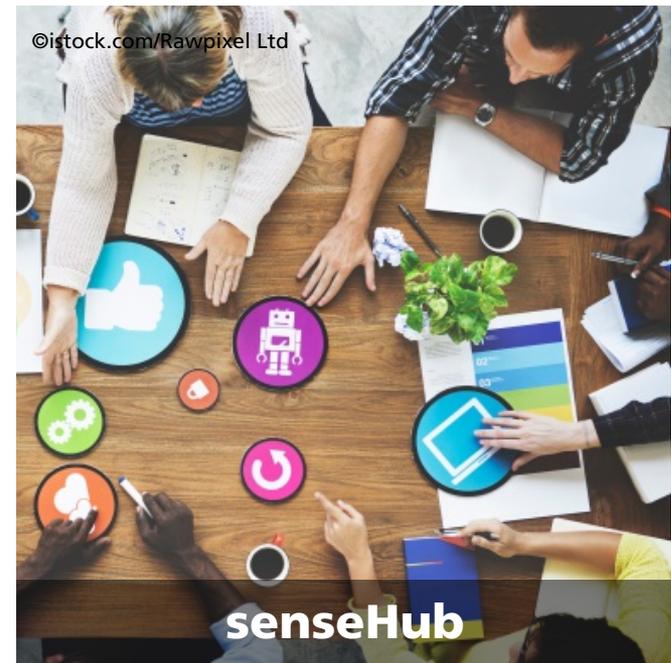
- Development of new technologies for sensors and analytical devices, control, diagnosis and dosing for sensory stimulation and perception applications
- Development of new psychophysiological assessment techniques
- Pool of AI methods focussing on interpretability, transferability, reliability



# Campus of the Senses Erlangen

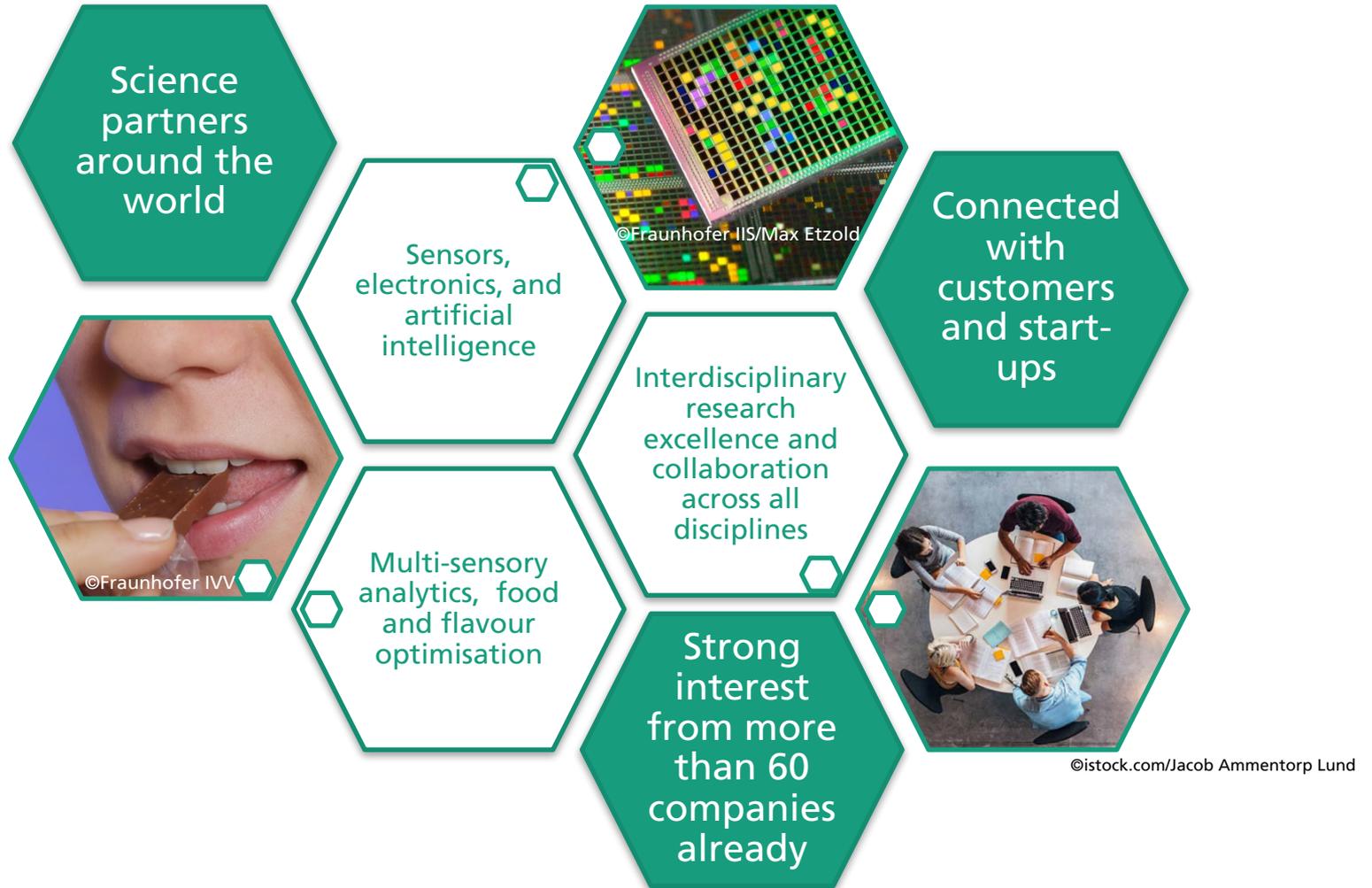
## Networks in the senseHub

- Customer co-creation workbench
- Sense for Excellence Track: Top young scientists work in interdisciplinary teams with your enterprise
- Advancement via Tech Radar and training offers
- Networking through exclusive »Sixth Sense« events



# Campus of the Senses Erlangen

## Let's Shape the Future of Digital Senses Together



# Campus of the Senses Erlangen

## Join us!



- The Campus of the Senses Erlangen will host a unique combination of skills and people passionate about the digitization of human senses
- We seek for partners from industry and academia to build strong consortia around specific R&D programs
- We offer access to know-how, talents and infrastructure

**Join us from the beginning!**

# Campus of the Senses Erlangen

