FRAUNHOFER INSTITUTE FOR INTEGRATED CIRCUITS IIS

ETSIST Madrid

17.12.2018

Elena Burdiel, research associate, Frauhofer IIS, Erlangen/Germany

Agenda

- Fraunhofer-Gesellschaft

- Fraunhofer IIS

- Audio and Media Technologies

- Cognitive Sensors Technology

- Fraunhofer IIS as employer

- How to apply

- Q&A

Fraunhofer-Gesellschaft, the largest organization for applied research in Europe

- Application-oriented research for immediate benefit to the economy and to the benefit of society

- 72 institutes and research units

- 26,000 staff

- €2.6 billion annual research budget totaling. Of this sum, more than €2,2 billion is generated through contract research

  - Roughly two thirds of this sum is generated through contract research on behalf of industry and publicly funded research projects

  - Roughly one third is contributed by the German federal and Countries governments in the form of base funding

Fraunhofer
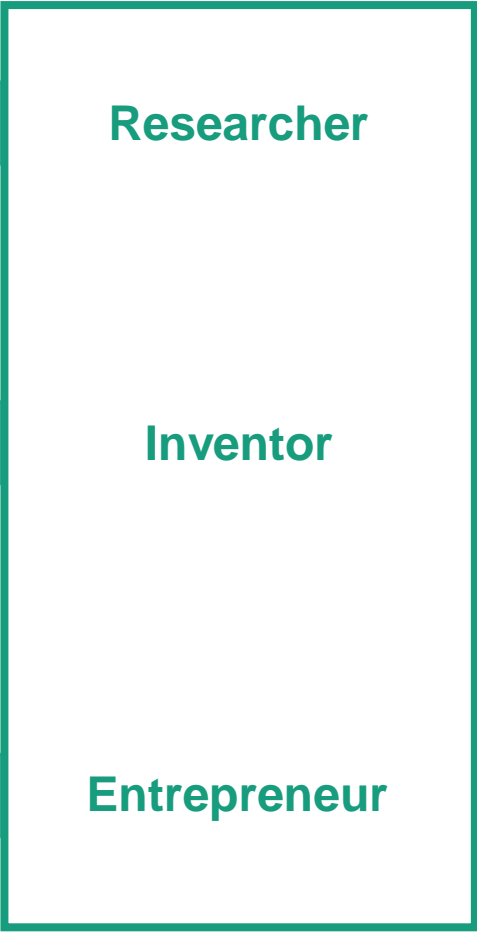
IIS

Joseph von Fraunhofer (1787 – 1826)
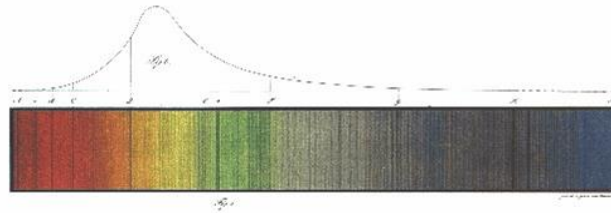
The Fraunhofer-Gesellschaft

	Researcher	
Discovery of the »Fraunhofer lines« in the solar spectrum		**Research and development on behalf of industry and state**
New methods for processing lenses	Inventor	**mp3 music format, white LED, high-resolution thermal camera**
Director and partner in a glassworks	Entrepreneur	**Research volume: approx. €2.6 billion annually**

Fraunhofer
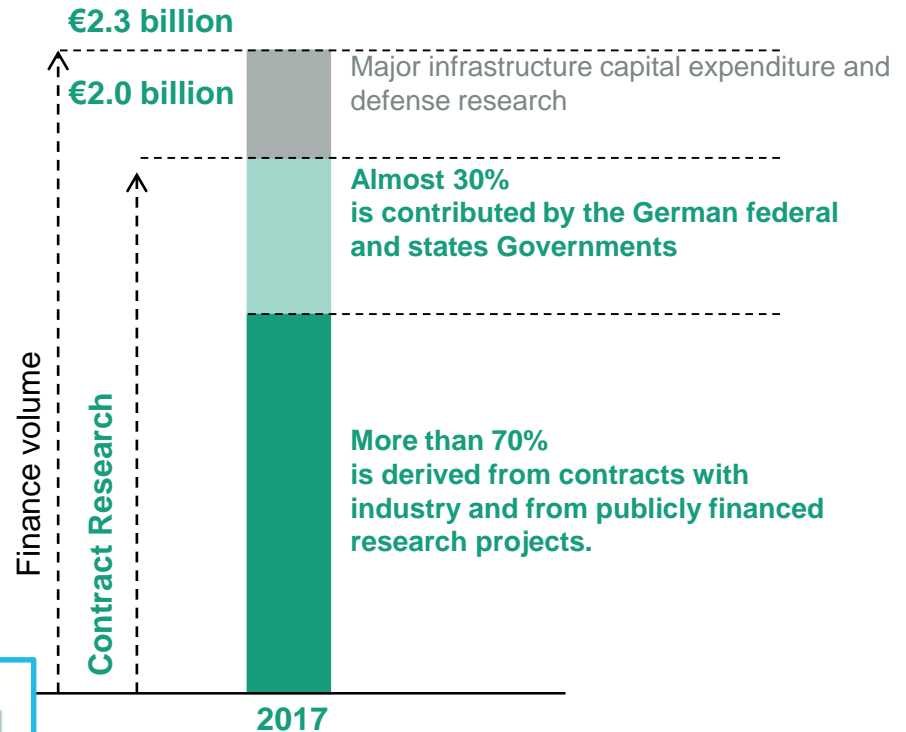IIS

The Fraunhofer-Gesellschaft at a Glance

The Fraunhofer-Gesellschaft undertakes applied research of direct utility to private and public enterprise and of wide benefit to society.

25,327 staff

72 institutes and research units

Main locations ●
Other locations ○

Itzehoe
Rostock
Lübeck
Stade
Bremerhaven Hamburg
Bremen
Oldenburg
Wolfsburg
Berlin
Hannover
Potsdam Teltow Wildau
Braunschweig
Lemgo
Gelsenkirchen Münster Paderborn
Oberhausen Hamm Soest
Dortmund
Duisburg Schmallenberg
Willich
Aachen Sankt Augustin
Euskirchen
Wachtberg
Remagen
Frankfurt Hanau
Alzenau Coburg
Aschaffenburg Bamberg
Mainz
Darmstadt
Würzburg Erlangen Bayreuth
Kaiserslautern
St. Ingbert Wertheim Fürth
Saarbrücken Mannheim Nürnberg
Karlsruhe Pfinztal
Ettlingen Esslingen Regensburg Straubing
Stuttgart Deggendorf
Augsburg Freising
Garching
Freiburg München
Oberkochen Kochel
Efringen- Holzkirchen
Kirchen
Magdeburg
Göttingen Halle Schwarz- Cottbus
heide
Schkopau Leipzig
Leuna Dresden Zittau
Jena Freiberg
Erfurt Hermsdorf
Ilmenau Chemnitz

Fraunhofer IIS

€2.3 billion
€2.0 billion

Finance volume

Contract Research

Major infrastructure capital expenditure and defense research

Almost 30% is contributed by the German federal and states Governments

More than 70% is derived from contracts with industry and from publicly financed research projects.

2017

Fraunhofer
IIS

Fraunhofer Worldwide

Legend:
- Subsidiary
- Center
- Project Center
- ICON/Strategic Cooperation
- Representative/Marketing Office
- Senior Advisor

Locations: Glasgow, Gothenburg, Dublin, Southampton, Wrocław, Brussels, Vienna, Paris, Budapest, Bolzano, Graz, Porto, Thessaloniki, Vancouver, London, East Lansing, Boston, Cambridge, San José, Plymouth, Storrs, Newark, Maryland, Beijing, Seoul, Sendai, Tokyo, Jerusalem, Cairo, Dubai, Bangalore, Ampang, Singapore, Jakarta, Salvador, Campinas, São Paulo, Santiago de Chile, Stellenbosch, Sydney

Fraunhofer
IIS

Fraunhofer Institute for Integrated Circuits IIS

- Founded in 1985
- Largest of 72 Fraunhofer Institutes
- 184 Mio € budget in 2017
- Biggest share of funding by industry
- Headquarter in Erlangen

Map of Germany with locations: Dresden, Ilmenau, Coburg, Bamberg, Waischenfeld, Würzburg, **Erlangen**, Fürth, Nürnberg, Deggendorf, Passau

Fraunhofer

IIS

Fraunhofer Institute for Integrated Circuits IIS

Human resource structure

- **>1100 Employees**
  - 70% scientists (Master and Bachelor), Average age: mid 30

- **>450 students**

- Fraunhofer IIS employs people from 51 countries
  Top 5 nations: Germany, India, Spain, Egypt, Turkey

- **Typical qualifications**
  - Electrical Engineering, Computer science
  - Information and communication technology, Physics, Mathematics
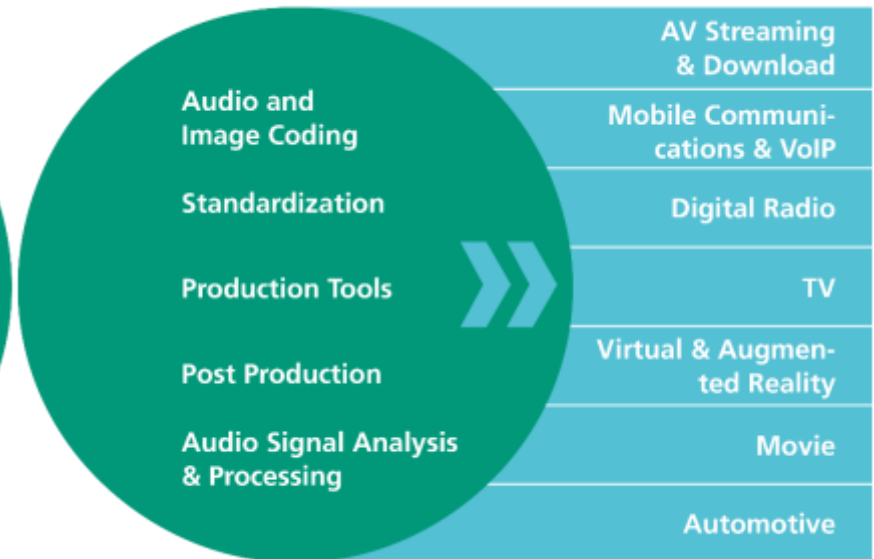 - Mechatronics and Media technology

Fraunhofer
IIS

Fraunhofer Institute for Integrated Circuits IIS
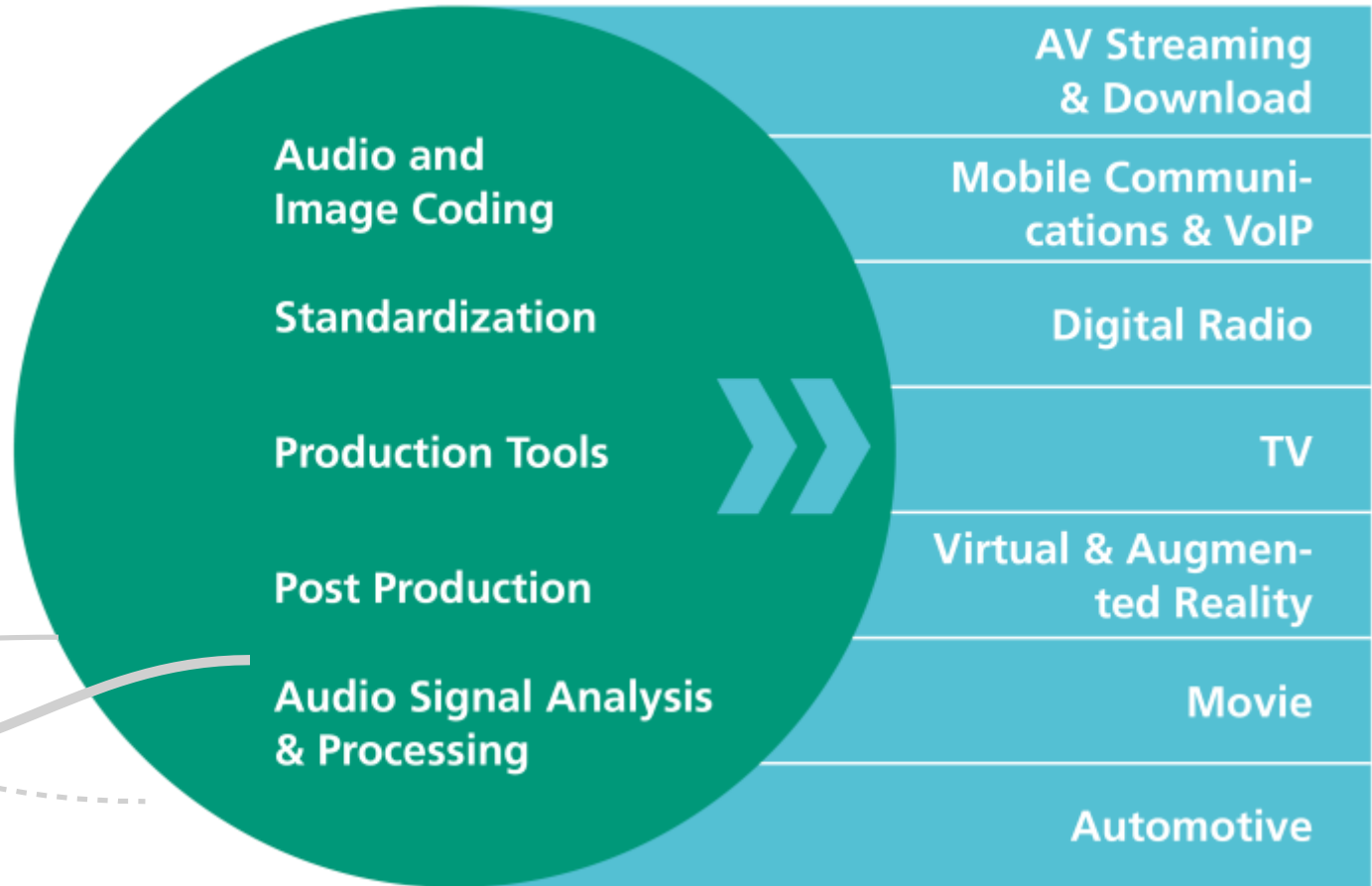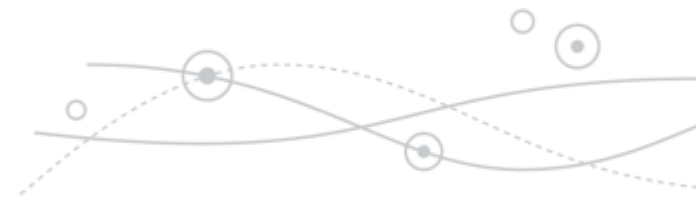## Our Guiding Topics

Cognitive Sensors Technology

Mobility

IoT Comms

Human Sensing

Product- and Material Monitoring

Supply Chains

« Sensors, ICs

Communications Technology

Analytics

Services, Business Models

Audio and Media Technology

Audio and Image Coding

Standardization

Production Tools

Post Production

Audio Signal Analysis & Processing

»

AV Streaming & Download

Mobile Communications & VoIP

Digital Radio

TV

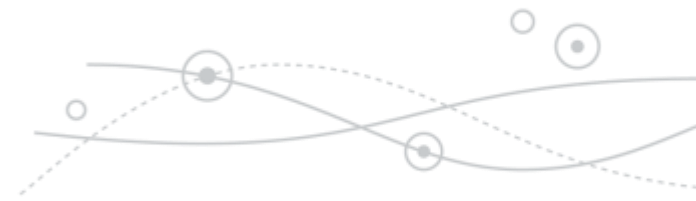Virtual & Augmented Reality

Movie

Automotive
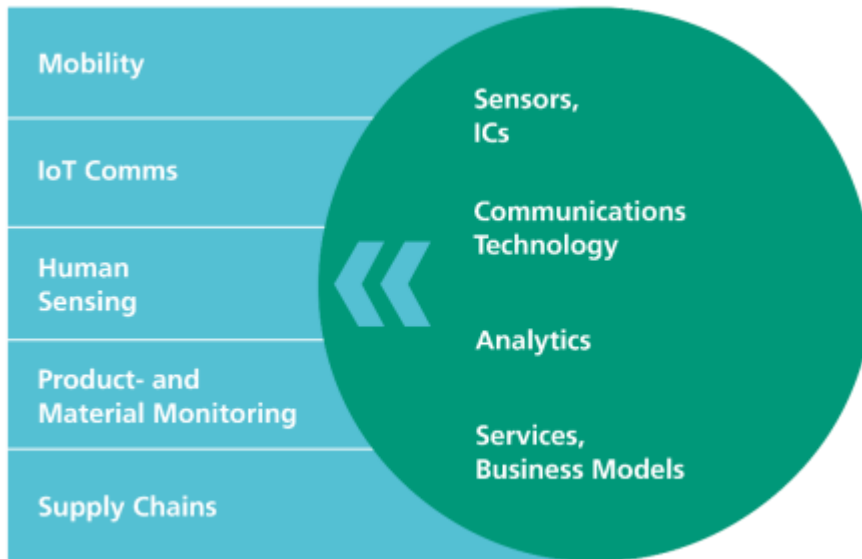
Guiding Topic
Audio and Media Technologies

Audio and Media Technologies
A global success story

World leadership: Developers of mp3, AAC, EVS, MPEG-H as well as digital radio systems and film production technologies

Largest team of developers: Vanguard expertise in the areas audio and media technologies for communications, consumer electronics, media services and media production

More than 12 billion licensed devices: All devices from entertainment and communications electronics, Internet browsers, music on the Internet, etc.
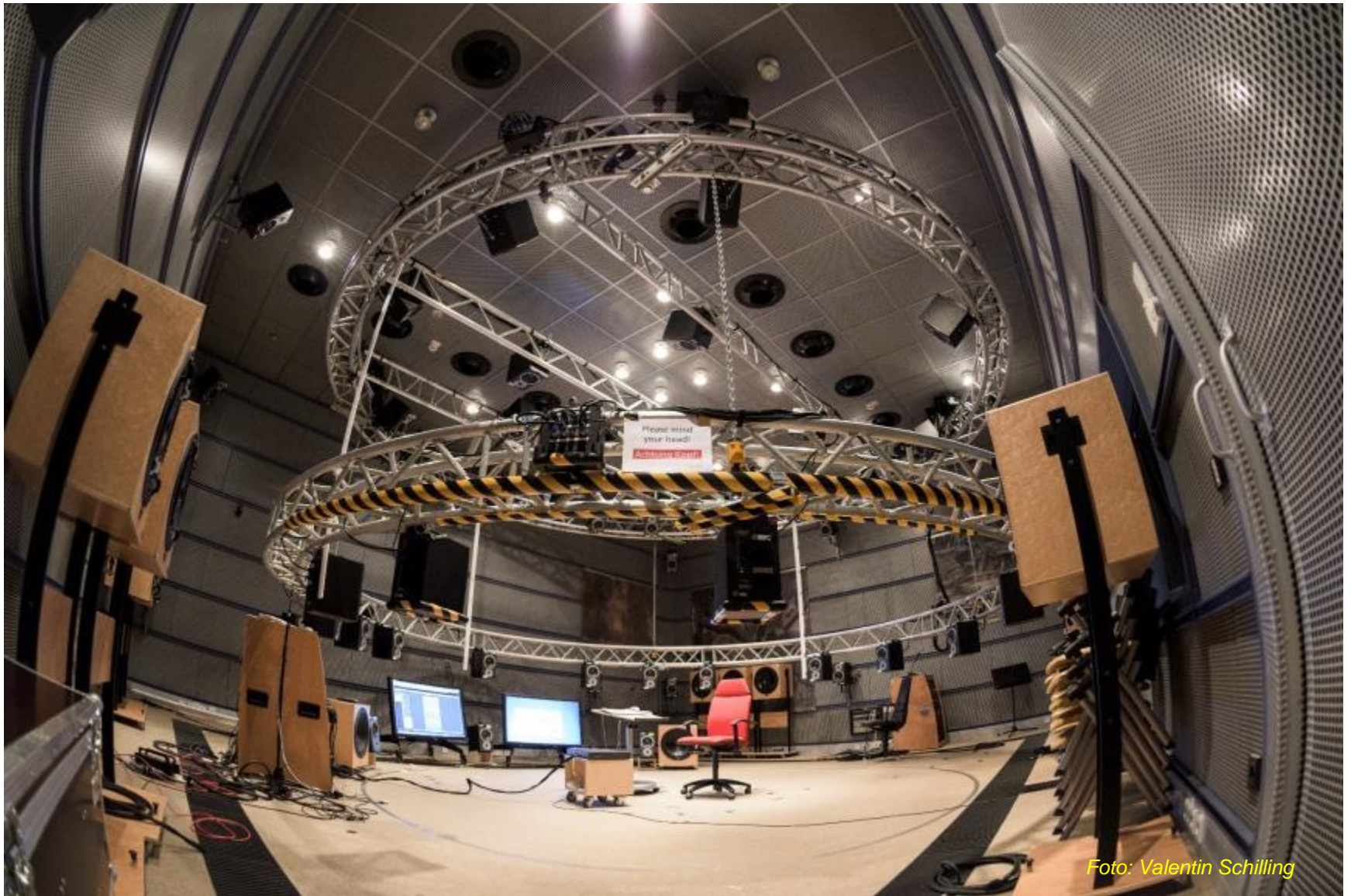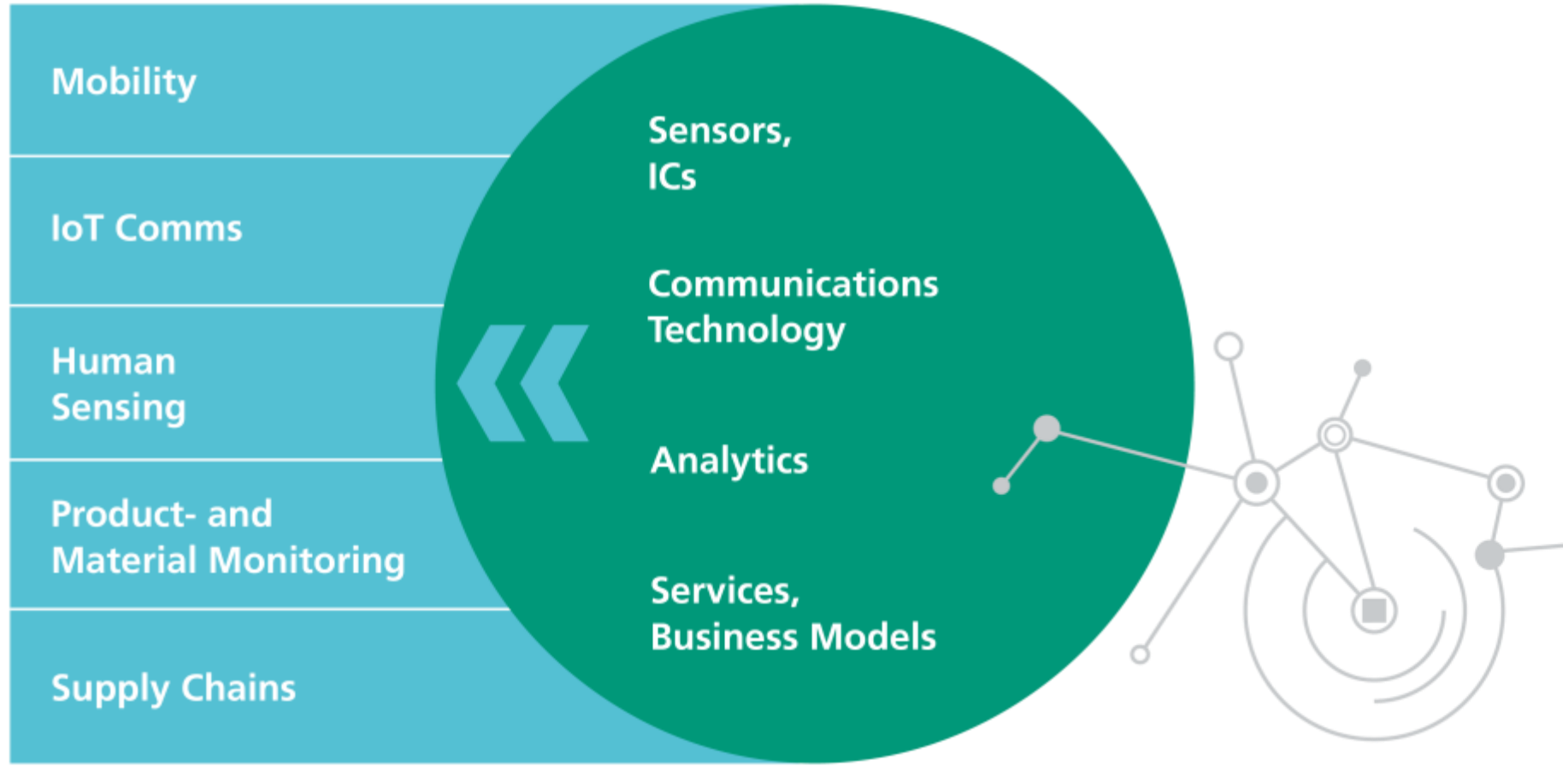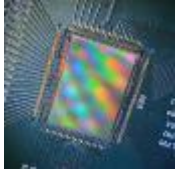
≋ Fraunhofer

IIS

Foto: Valentin Schilling

Fraunhofer
IIS

Guiding Topic
Cognitive Sensor Technologies

Mobility

IoT Comms

Human Sensing

Product- and Material Monitoring

Supply Chains

Sensors, ICs

Communications Technology

Analytics

Services, Business Models

Fraunhofer IIS

Cognitive Sensor Technologies
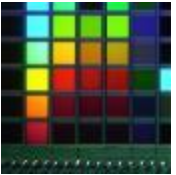## Areas of expertise

Sensors and ICs
Sensor systems for magnetic field, imaging, X-ray, position; IC design and methods, circuit IPs

Communication Technology
Wireless communication, 5G, MIOTY, high-speed-wireline wireless

Analytics
Intelligent data evaluation (e. g. image analysis) using AI/ML methods for description, prediction, prescription

Services and Business Models
Service design and -engineering (JOSEPHS®), digital transformation

Fraunhofer
IIS

Cooperation with Academic Research

The International Audio Laboratories Erlangen (AudioLabs®)

- Joint institution of Fraunhofer IIS and Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU).

- Research areas such as audio coding, audio signal analysis and perceptual spatial audio signal processing

- 50 globally-renowned scientists, post docs and PhD students from Fraunhofer IIS and FAU conducts cutting-edge research and shape the future of audio and multimedia

LIKE

- Standard Model at Fraunhofer:
  Double role of Fraunhofer Director and research chair at the university

- Chair at FAU for Information Technologies and Communication Electronics (LIKE)

- Main Areas: Localization and Telemetry Systems

- 20 PhD students

Fraunhofer
IIS

Good reasons to work for Fraunhofer
A springboard for students and graduates

- One of Germany's most attractive employers (Universum, 2017)

- Internship and employment opportunities

- Continued professional training

- Final theses, doctorate opportunities

- More than 50 nationalities

- Many graduate students

- Professional English

personalmarketing@iis.fraunhofer.de

universum

Student Survey 2018
Deutschland

Wirtschafts-wissenschaften   **TOP 10 ARBEITGEBER**

Natur-wissenschaften

1.	Max-Planck-Gesellschaft	=
2.	Bayer	=
3.	Fraunhofer-Gesellschaft	=
4.	BASF	=
5.	Merck	=
6.	Novartis Pharma	=
7.	Roche	=
8.	DLR (Zentrum für Luft- & Raumfahrt)	+1
9.	Boehringer Ingelheim Pharma	-1
10.	Bundesinstitut für Risikobewertung	NEU

Fraunhofer
IIS

For future employees

Career <u>with</u> Fraunhofer:
- Research associate with time-limited contract
  - Qualification and Work experience
  - Work on PhD thesis (in cooperation with University)
  - Work in Start-up-Team with option to start own company

Career <u>in</u> Fraunhofer:
- Researcher with permanent contracts

  - Management career as leader of research groups, Department heads..

  - Expert career as
    "senior engineer"
    "chief scientist"
    "business / technology manager"
    "standardization expert"

Fraunhofer

IIS

For future students

Student Jobs
- Many opportunities to gain practical experience
- Flexible working hours (study activities / work balance)
- Chance to work in state-of-the-art research and technology

Internships
- Insight into research and development
- Guidance and support in your work/research
- Possibility to contribute with your own ideas and enjoy substantial creative leeway

Thesis
- An open and friendly working environment in an international research institute
- Guidance and advice from experienced scientists

Fraunhofer

IIS

Locations: Erlangen

Headquarters Fraunhofer IIS

Erlangen facts:

- Around 113,164 inhabitants

- University of Erlangen-Nuremberg (Friedrich-Alexander-Universität), mathematician Emmy Noether

Fraunhofer

IIS

Locations: Nürnberg

Research Area Positioning and Networks

Fraunhofer-Center for Applied Research on Supply Chain Services

Nürnberg facts:

- Around 515,201 inhabitants

- Friedrich-Alexander-Universität and Technische Hochschule Nürnberg

Fraunhofer

IIS

Locations: Franconia – Other activities

- Medieval towns (Bamberg, Würzburg)

- Rock Im Park

- Summer Festivals (Kirchweih)

- Nature (Fränkische Schweiz)

- Christmas Markets

How to Apply

- Check our offers in our webpage (see links at the end of the presentation)

- It's also worth submitting a speculative application

- **Application cover letter**

  - Why you have chosen a job at the Fraunhofer IIS

  - What expectations you have of us

  - Dates, departments/focal areas of interest to you

- **CV**

  - Personal details, education, professional experience, special knowledge and skills (e.g. hardware and software skills, foreign language skills), as well as your hobbies, interests, and personal projects

- **Evidence of your educational and professional history**

  - Latest references, examination certificates (or statements of results)

Fraunhofer

IIS

Links and contacts

- Subdirección de Relaciones Externas sre.etsist@upm.es

- Fraunhofer Institute for Integrated Circuits IIS
personalmarketing@iis.fraunhofer.de

- Fraunhofer site: www.iis.fraunhofer.de

- Fraunhofer job opportunities: www.iis.fraunhofer.de/en/jobs

- Fraunhofer graduates jobs: www.iis.fraunhofer.de/en/jobs/stellen

- Fraunhofer internships and students jobs
www.iis.fraunhofer.de/en/jobs/studierende

- Fraunhofer thesis
www.iis.fraunhofer.de/en/jobs/studierende/abschlussarbeiten

- www.youtube.com/playlist?list=PL1xbox4kZP0Mny3Qo39UpOVWeR9IyH5QD

Fraunhofer

IIS

¡GRACIAS!

Fraunhofer

IIS