

Technical Expertise Nürnberg: Fraunhofer IIS

INTRODUCTION

The Fraunhofer Institute for Integrated Circuits IIS conducts contract research for national as well as international industry and public authorities. Fraunhofer Institute for Integrated Circuits IIS with its headquarters in Erlangen and further locations in Nürnberg, Fürth and Dresden today ranks first among the Fraunhofer Institutes in terms of headcount and industrial revenues.

800 employees work in the areas microelectronics, information technology, telecommunications, high frequency and radar technologies, audio and multimedia, digital broadcasting, imaging and X-ray technology, medical technology, navigation and logistics as well as the automation of mechanical and plant engineering.

The Fraunhofer IIS has consolidated its positioning, navigation and identification expertise within a single research unit in Nuremberg, where more than 135 employees (engineers and computer scientists) in five departments pool a wide array of skills. Technology solutions range from wireless sensor networks and adaptive antennas to satellite navigation systems, including GPS, EGNOS, GALILEO and GLONASS. Over 10 different IIS positioning technologies can be adapted, advanced, and combined to produce tailor-made prototypes and systems.

Navigation, communication and identification technologies as well as all other technologies of Fraunhofer IIS may have potentials for new products and can be the technological basis for a start-up company.

OVERVIEW

Core Competencies of Fraunhofer IIS

Technical domains
- Audio and Multimedia
- Imaging Systems
- Digital Broadcasting Systems
- Embedded Communication
- IC-Design
- Logistics, Supply Chain Services
- Energy management and Energy Harvesting
- Positioning and Navigation
- Medical Technology
- Optical inspection Systems
- X-RayTechnology
- Virtual ASIC Foundry
- Robotics

Fraunhofer IIS support in the product generation process

Steps to realization
- Applied Research
- Requirements and Specification
- Feasibility Studies
- Prototyping and Demonstrator Development
- Verification, Simulation and Testing
- Product Development and Design
- Application and Service Development
- Market Studies

Fraunhofer IIS general offering for ESA BIC entrepreneurs in Nürnberg

Technical Domains	mark fields of interest
Position and Navigation	
GNSS Satellite Navigation Systems for GPS/Galileo/GLONASS/EGNOS	
Navigation software development for GPS/Galileo/GLONASS/EGNOS	
High precision localization systems (cm-range)	
Inertial sensor systems	
Sensor fusion technologies, multi-sensor platforms	
Time-of-flight measurements	
Received signal strength indication by WLAN, GSM, UMTS	
Autarkic WLAN positioning	
Multicell radio networks	
Sensor Fusion	
Environment Modelling	
Angle of arrival technology	
Sensor networks s-net®-Technology	
Event detection software	
Hardware and Sensor Development	
Development of high-precision GNSS navigation antenna (3G+C)	
Antenna design	
Antenna measurement	
Design of embedded systems	
HallinOne®-Technology for 3-D magnetic field sensors	
ASIC design	
Sensor design	
Condition monitoring	
System level design	
Communication	
DECT communication	
UWB ultra-wide-band radio communication	
UMTS, GSM	
Telemetric systems with high band width and high range	

s-net® communication protocol for distributed wireless multi-hop sensor networks	
WLAN applications	
Multi-standard transceivers	
Software-defined radio systems	
Thermo-electric radio sensors	
Identification	
RFID	
Embedded RFID systems in metallic objects	
Intelligent objects	
Optimization solutions and tools for supply chain managements	
Platforms for integration of different communication and positioning technologies	
Supply chain technologies	
Software platforms	
Asset tracking technologies and systems	
Design of efficient logistics workflow (hardware, software-based)	
Energy Management	
Energy Harvesting technologies (thermal, vibration, kinetic etc.)	
Development of energy harvesting systems	
Data logging for energy management systems	
Battery management systems	
Development of energy-efficient components for communication and positioning application as well as smart metering and asset tracking	
Power management systems and communication technologies for smart grid applications	
Embedded systems	
Hardware and software design	
Integration Platform	
Miniaturization technologies	
Energy-efficient design	
Test an Application Center L.I.N.K.	
Combination of realistic application conditions and environment and technologically reliable test environments on (1400 sqm indoor, 14.000 sqm outdoor area)	
State-of-the-art test equipment and technology for test of localization, identification, communication and energy management technologies	
Practice and field test facility with indoor, outdoor testing areas	
Test course for all sorts of vehicles e.g. trucks, electric and motor cars, fork lifts and pallet carriers etc.	
Test and Application labs	
Services and consulting	
Consulting and design for evaluation, selection of application related technologies	
Development and consulting for services based on these technologies	
Market studies, potential technology analysis, analysis of targeted groups etc.	

Table 4: Fraunhofer IIS Technical Expertise in Nürnberg