

# Feasibility Study for Application-Specific Multi-Chip Module Solutions

**Independent evaluation of your options for  
miniaturized microelectronics**

When classic PCBs are no longer sufficient and an ASIC is too expensive or inflexible, an application-specific multi-chip module (MCM) may be the solution. With our independent feasibility study, we evaluate opportunities, limitations, and integration paths, thus creating a sound basis for decision-making for your next development stage.

## Challenges in choosing technology

- Limited space and need for secure and more compact integration solutions
- High development effort and costs for ASICs
- Protection of intellectual property
- Efficient combination of different functional technologies (RF, analog, digital, sensor technology, memory)
- Need for flexible, versatile system architectures with customer-specific functional elements
- Security of supply despite complex global supply chains

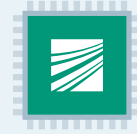
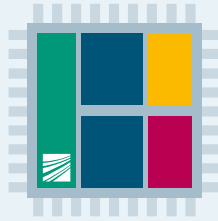
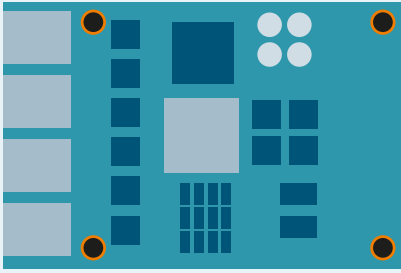
## One solution: application-specific multi-chip modules

- Combination of standard components with individual extensions
- Compact, powerful systems

## Your benefits with our feasibility study

- Comprehensive assessment of technical, financial, operational, and risk aspects
- Tailored analysis precisely tailored to your requirements
- Independent, technology- and manufacturer-recommendation
- Quick results: study durations from 4 weeks
- Flexible continuation of your project to concept validation to series production





© Fraunhofer IIS

**PCB**

Low development effort  
Low development costs  
Large size  
Standard components

**Application-specific MCM**

Medium development effort  
Medium development costs  
Small size  
Standard and customer-specific components

**ASIC**

Individual and time-consuming development  
High development costs  
Very small size  
Custom components

**Comparison of development approaches for miniaturization: Differences between PCB, application-specific MCM, and ASIC in terms of development effort and costs, size, and component selection.**

## What we offer: Technical, operational, and financial clarity for your next development step

Our feasibility study provides you with a solid basis for decision-making for your strategic technology planning – both technically and economically. Using a structured approach, we analyze the feasibility, ability to operationalize, and costs of an application-specific MCM. Thereby we create transparency regarding opportunities, risks, and expenses.

We proceed as follows:

### 1. Requirements analysis

- Optimization of your requirements specification
- Identification of special requirements
- Review of modern assembly and connection technologies

### 2. Proposals for system architecture

- Description of the system architecture and functionalities
- Analysis of the interaction of individual circuit blocks
- Definition of relevant system and circuit parameters

### 3. Risk and cost assessment

- Review of component and technology availability
- Analysis of the supply chain and connection technologies
- Estimation of development costs and unit costs

### 4. Implementation options and schedules

- Development of an implementation roadmap
- Evaluation of supply chain options

## Why the Bavarian Chip Design Center?

- Several decades of experience in analog, digital, and mixed-signal designs
- Application-specific MCM expertise through a combination of system and chip design
- Modular offering from system engineering to prototyping to production transition
- Extensive and up-to-date pool of components, industry-grade IPs
- Established partner network for IP development and production
- Specialization in small and medium quantities

## Contact

Harald Neubauer  
Phone +49 9131 776-4473  
harald.neubauer@iis.fraunhofer.de

Fraunhofer IIS  
Am Wolfsmantel 33  
91058 Erlangen, Germany

[www.iis.fraunhofer.de/chiplet-systems](http://www.iis.fraunhofer.de/chiplet-systems)



Sponsored by

Bavarian Ministry of  
Economic Affairs and Media, Energy and Technology