

# Chapter 1.2

## Components, Modules and Systems Integration

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# Chapter 1.2 – Components, Modules and Systems Integration

## Scope

- chapter deals with the physical and functional integration
- starts (roughly) after dicing of chips and ends at software and System of Systems
- mix of device architectures, including sensors, actuators, photonics, computing processors, power, communication etc.
- integration methods include advanced packaging, heterogeneous integration, additive manufacturing, flexible electronics, SiP technologies, etc.
- advanced systems offer intelligence, sensing, communication, and control functionalities while at the same time ensuring quality, reliability, repeatability, scalability, and sustainability

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- **Major Challenge 1: Functionality.**

- Developing new features for power, sensors, actuators and smart systems via new materials and methods enabling miniaturization and optimized performance.

- **Major Challenge 2: Advanced integration solutions.**

- Leading edge and advanced packaging technologies, design, materials, testing, including chiplets and integration on system level.

- **Major Challenge 3: Heterogeneous integration.**

- System-technology co-optimization for integration technologies, processes and manufacturing enabling cost-competitive smart systems supporting strategical autonomy.

- **Major Challenge 4: Sustainability.**

- Sustainable components, modules and systems and their integration processes to minimize their environmental impact over the entire lifecycle.

# Chapter 1.2 – Components, Modules and Systems Integration

- Rephrasing of Major challenges
- Focus on conciseness
- Integration of Advanced Packaging from Ch 1.1
- Update on ECUs
- Update on MEMS acoustic sensors
- Update on Sustainability
- Update on Photonics
- Update on Chiplets