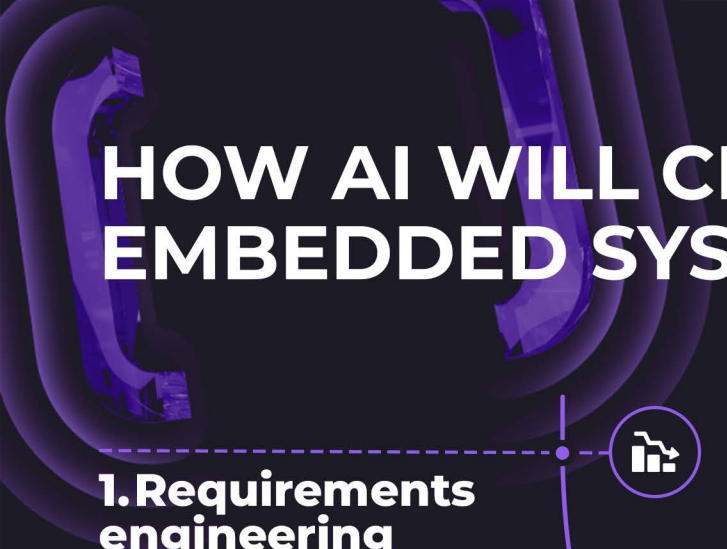
( expleo )

# HOW AI WILL CHANGE EMBEDDED SYSTEMS ENGINEERING (AI)



## 1. Requirements engineering

AI validates and refines requirements by checking for ambiguity, completeness, and consistency.

**Ensures a shared understanding to reduce costly reworks at later stages.**

## 2. Functional specifications and detailed design

Based on validated requirements, AI assists engineers in generating functional specifications (e.g., behaviours, etc.) and translates them into software architectures, including state machines.

**Accelerate design, improve first-pass design robustness, and increase design reuse.**

## 3. Implementation

AI assists engineers in analysing schematics and datasheets and can even generate embedded software codes and PCB routing from the detailed design.

**Boosts the productivity of embedded software/hardware engineers by automating repetitive tasks.**

## 4. Unit & integration testing

AI generates unit test cases directly from detailed design (e.g., boundary conditions, failure modes) and proposes integration test scenarios based on architecture-level interactions and data flows.

**Accelerate early-stage testing, increase test coverage and robustness while lowering human error in test creation.**

## 5. System validation

AI generates validation test cases and maps system-level tests to requirements.

**Facilitate the certification by ensuring full traceability and alignment with regulatory requirements such as ISO 26262 and DO-178C.**