Practical Methods for Functional Verification
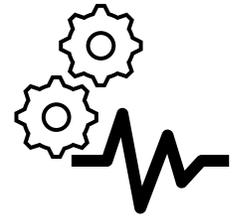
Simone Ponzio

- FDF 2025 -

Agenda

- Common Verification Methodologies
- Functional Verification Challenges - Intro
- Facing Design Complexity
- Facing Evolving Specification
- Facing Verification Closure

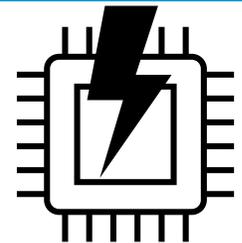# Common Verification Methodologies

Simulation-based Verification

Formal Verification

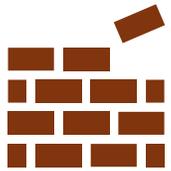## Emulation/Acceleration

Functional Verification Challenges

Design Complexity

Incomplete or Evolving Specification
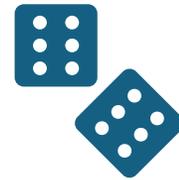
Verification Closure

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Facing Design Complexity

Modular Verification

Reuse and abstraction

Constrained-random testing with functional coverage

Formal Verification

Facing Incomplete or Evolving Specification

Plan
Plan your verification strategy early, even if it might change

Collaborate
Collaborate Closely with Designers

Use
Use Assertions and Scoreboards to Catch Divergence

Design
Design for Change: Reusability and Modularity

Facing Verification Closure

Functional
Coverage

Code
Coverage

Toggle
Coverage

Statistical
Coverage

Bug Trend

Key Takeaways

As **designs grow more complex**, the key isn't just writing more tests.

"**Specs will always evolve**, don't panic and be ready for that."

"**Verification closure** isn't just about hitting 100% coverage - it's about being able to **justify why you're done**"

Thank you

Q&A