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Corporate Technology

A Model-Based Approach to Test Specification

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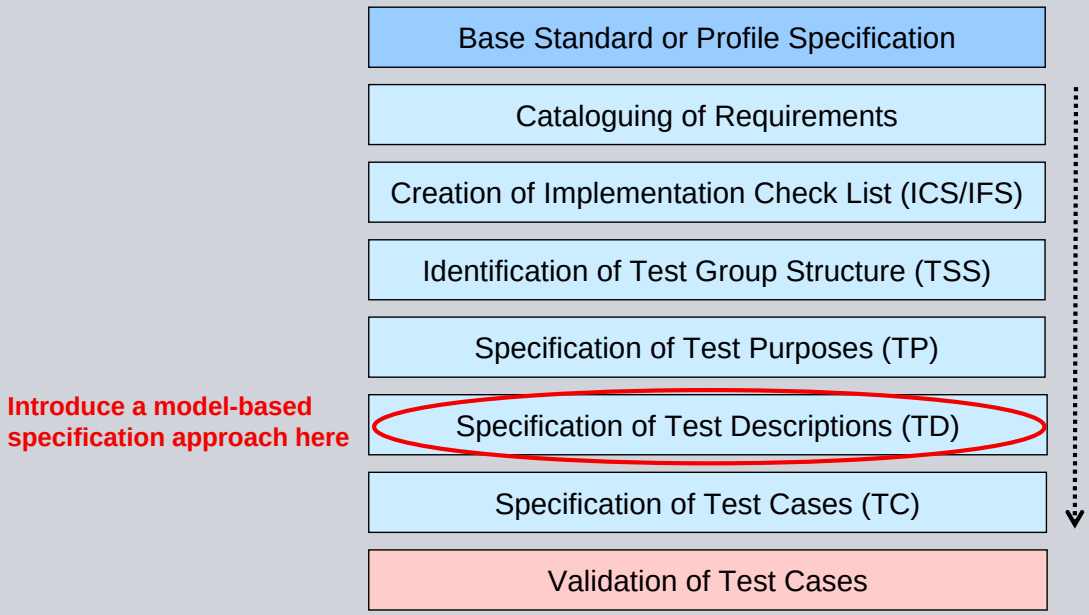
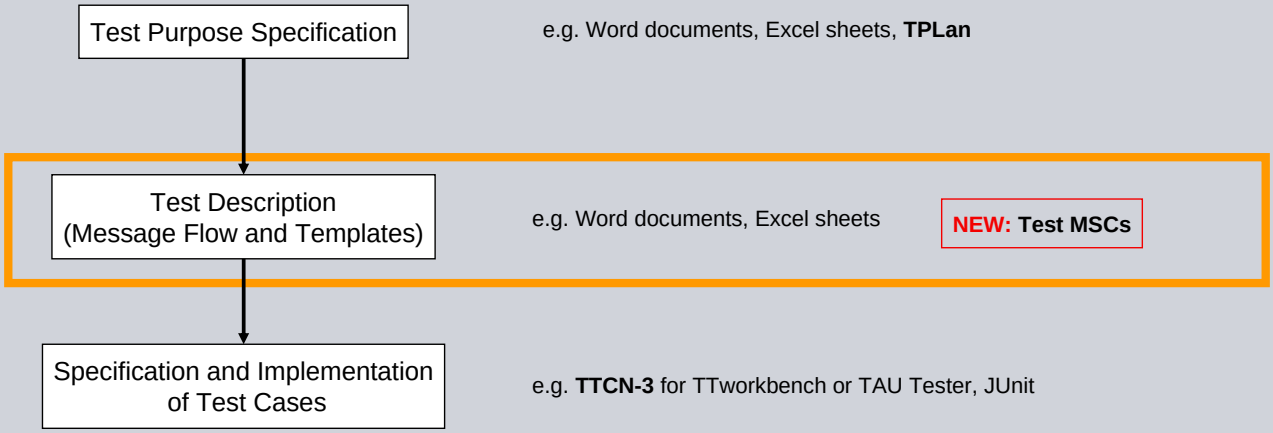
Stages in ETSI (Test) Specification Development



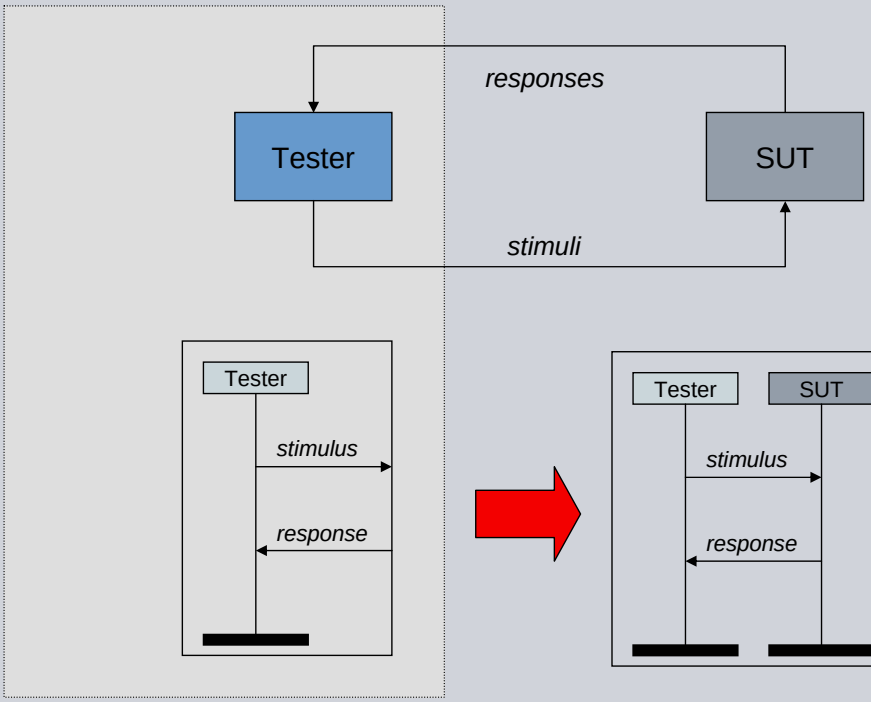
Ref.: A. Huima, St. Schulz: MBT in the Standardization of ICT: the ETSI Perspective; MBT 2007

Test Description

Typical tools and methods



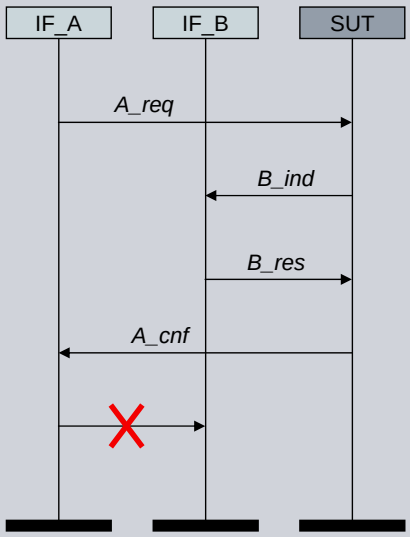
The Concept of Test MSCs for Functional Black-Box Testing



A closed test system

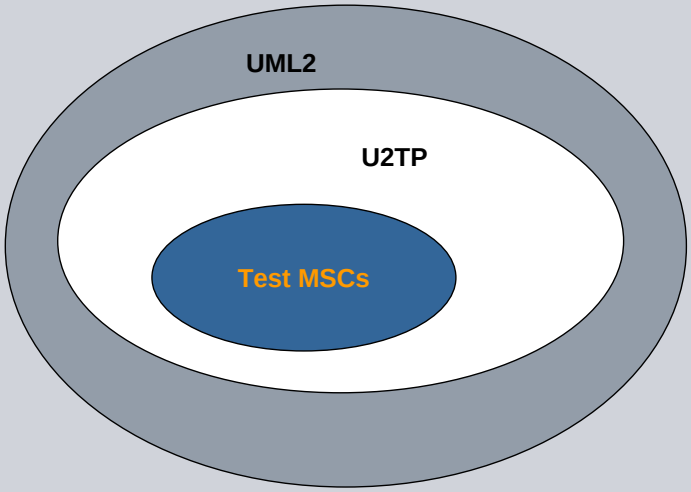
*A **Test MSC** describes the test system from the perspective of the tester; including the SUT as an independent instance*

Test MSCs to Describe Concurrent Scenarios



- ➔ Assume concurrency between all communication interfaces (maximize concurrency)
- Each interface occurs as an instance in a Test MSC
- Synchronous message exchange between tester interfaces and SUT (no message overtaking)
- No messages between tester interfaces (no description of internal tester behavior)

Implementing Test MSCs Based on UML2 Testing Profile



- Approach should be based on UML2 as the currently leading modeling language
- Implementation of Test MSCs shall be possible by any UML2 tool
- Generation of executable test scripts from Test MSCs, e.g. TTCN-3, is desirable

➔ **A Test MSC is an instantiation of a U2TP framework**

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Extensions for Test MSCs

- Support the specification of more complex test scenarios as they occur in practice
  - Alternative behavior
  - Parallel behavior
  - References to other Test MSCs
  - Parameterization and local variables
  - Implicit/explicit test verdicts
  - Pre/post-conditions
- Other possible features
  - Explicit timer operations
  - Procedure-based communication
  - . . .

➔ **General design goal must be: Keep it simple!**

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Benefits of Test MSCs

- Provide a formal, unambiguous notation to Test Descriptions for functional black-box tests
- Fill the gap between Test Purpose Specifications and Test Case Specifications
- Independent from test execution
- Serve as an exchange medium between different stakeholders, e.g. test engineers, implementers, protocol experts, customers
- Can be supported by UML design tools
  - Modeling
  - Code generation
- Increase productivity of the test process
- Provide new opportunity for tool vendors

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Interested?

Start a new MTS Work Item!

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Reference

- Some initial ideas were already discussed here:
  - Peter H. Deussen (Fraunhofer FOKUS),
    Stephan Tobies (Nokia Research):
    Formal Test Purposes and The Validity of Test Cases
    FORTE 2002

