MAPPING TDL TO TTCN-3

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  - One language in the development cycle
- Graphical
- Formal semantics
- Global view (Testers + SUTs)
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Request (ID:=1, Type:=Voice)
Accept (ID:=1)
Deny
Overview of TTCN-3

• Test scripting language
• ~C with test specific extensions
  • Components, ports, communication, alternatives, defaults, etc.
• Local view
  • Specifies the behaviour of tester(s) to test an implementation (as a black-box)
• TTCN-3 is widely used in standardization, industry
  • ~ 15 years
  • Lots of testcases
  • Tool support
  • Test frameworks

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Why to Map TDL to TTCN-3?

• TDL Test Descriptions -> TTCN-3 code
  • Test Design – at high level
• BUT
  • Can be executed by the existing tools
  • Can be combined with existing tests
• STF 522 at ETSI
Semantical Gaps Between the Two Languages

- Global vs local ordering
  - Centralised or distributed control
- Configuration
- Behaviour
- Data
Global vs Local Ordering

- Tester Node 1
- SUT Node 2
- Tester Node 3
- SUT Node 4

Diagram shows the relationship between these nodes.

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Global vs Local Ordering

• ‘Unite’ the behaviours of the Testers
  • Benefits of parallel specification is lost
    • Performance
    • Deployment

• Implement a ‘scheduler’ in TTCN-3
  • Special control/timing ports, messages
  • But: what if the synchronization method is different?
  • Where to deploy the scheduler?
Global vs Local Ordering

- In most of the practical systems no central scheduler
- The Testers synchronise each other when necessary
- During the test design these inter-tester messages are defined
Global vs Local Ordering

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- Introduce the ‘Local Ordering’ into TDL
- Only locally ordered Test Descriptions will be mapped to TTCN-3
Configuration

- TTCN describes only the behaviour of Testers
- Each TDL Tester -> PTC
- + Component for MTC
- TDL: more SUTs
- TTCN: one system
- Not allowed connection types
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Behaviour

- In TDL: covers all lifelines
- In TTCN: local to a component
- ‘Split’ the behaviours
- Interaction:
  - send + receive
  - call + getcall; reply + getreply / raise + catch
Behaviour

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Data

- In TDL: abstract
- In TTCN-3: more concrete
- Mapping can be specified in TDL by DataElementMapping
  - If provided: use the provided mapping to TTCN-3
  - If not, apply these principles in the mapping to TTCN-3:
    - Simple Types
    - Structured Types: record
    - Collection Types: record of
Data Instances

• In TTCN-3:
  • (specific) value
  • template
• Pre-defined annotations
Status of Mapping Standard

- ETSI ES 203 119-6
  - 2nd (Stable) Draft
  - Accepted by MTS on 27th Sept 2017
  - TBD: refinement, examples
  - To be published: April 2018
- Locally ordered Test Descriptions only
- Several, but not too many restrictions
Questions?