ETSI Test Description Language – TDL

### Challenges in Validating Complex Systems

**Complex Systems**
- Complex design
- System of systems
- Complex behavior
- Real-time, concurrency
- Complex data
- Big data

**Adequate validation & testing**
- Proper modeling techniques
- Proper test automation
- Proper fault analysis
- Support of agile approaches (scenario-based testing)

### TDL Addresses Needs from Practice

**TDL for testing reactive distributed real-time systems**
- Provides common black-box testing real-time systems
- Adjustable to domain-specific needs
- Supporting agile testing process

**TDL is standardized**
- Clear semantics
- Interoperability of test specifications between tools
- Meta-model maintained and kept updated with user needs

**TDL application scenarios**
- Manual specification of tests, e.g. for functional/conformance/interoperability testing
- Representing tests from different sources, e.g. output from test generators
- Knowledge exchange between different stakeholders

### TDL Design

#### TDL Principles

**Major testing features**
- Formal notation for test objectives and test descriptions
- Tester/SUT interactions based on a test configuration
- Only expected behavior needs to be modeled
- Test patterns

**Language design**
- Abstract syntax
- MOF-based meta-model
- Associated semantics
- Concrete syntax
- User-defined
- Graphical syntax
- Exchange syntax
- Adjustability
- Concrete syntax, meta-model extension

### TDL Implementation

#### TDL Open Source Project (TOP)

Lower the barrier of entry for both users and tool vendors in getting started with using TDL.

Graphical and textual editors, validation facilities.

Visit [https://top.etsi.org](https://top.etsi.org) or [https://tdl.etsi.org/top](https://tdl.etsi.org/top)

### The ETSI standard series ES 203 119

- TDL-MM, part 1: Abstract Syntax and Associated Semantics
- TDL-GR, part 2: Graphical Syntax
- TDL-XF, part 3: Exchange Format
- TDL-TO, part 4: Structured Test Objective Language
- Published documents
  - [https://tdl.etsi.org](https://tdl.etsi.org)
  - [https://www.etsi.org](https://www.etsi.org)

#### TDL Language Elements (Meta-Model, Part 1)

- Base elements, Concept of time, Test configuration
- Simple data, Structured data, Data use
- Test description, Atomic behavior, Complex behavior
- Test objective language extension → Part 4

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Andreas Ulrich, Siemens AG and ETSI TDL Promotion Team