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

Intelligent Transport Systems © ETSI

Adequate validation & testing

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

Support through TDL

TDL Addresses Needs from Practice

TDL for testing reactive distributed real-time systems

- Provides common black-box testing concepts
- 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

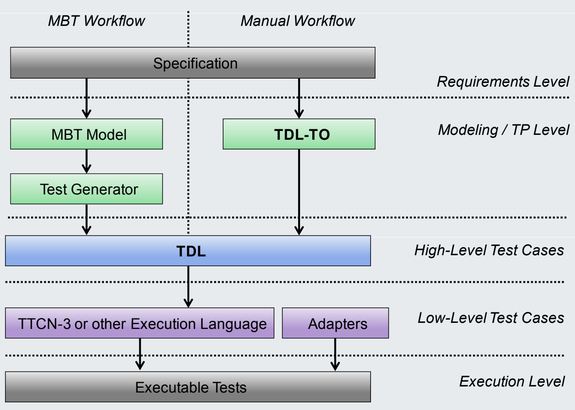
TDL Principles

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

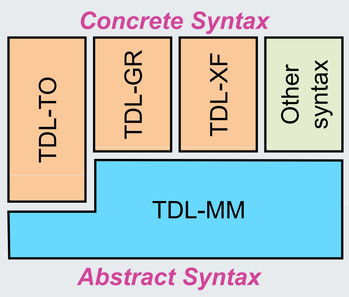
Language design

- Abstract syntax
  - MOF-based meta-model
- Associated semantics
- Concrete syntax
  - User-defined
  - Graphical syntax
  - Exchange syntax
- Adjustable
  - Concrete syntax, meta-model extension



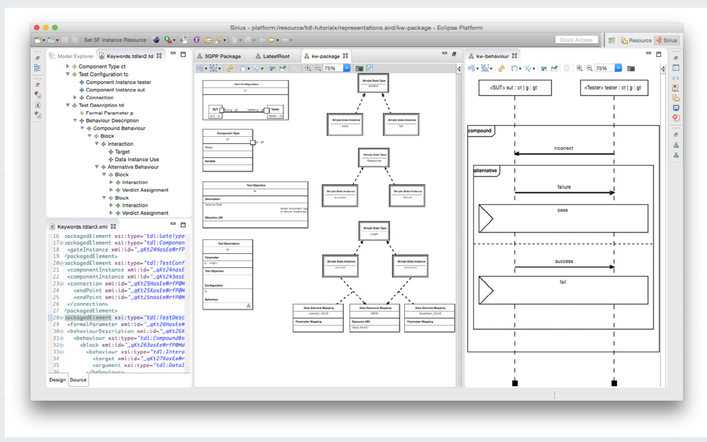
The ETSI standard series ES 203 119

- 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/ and https://www.etsi.org/



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/ or https://tdl.etsi.org/top

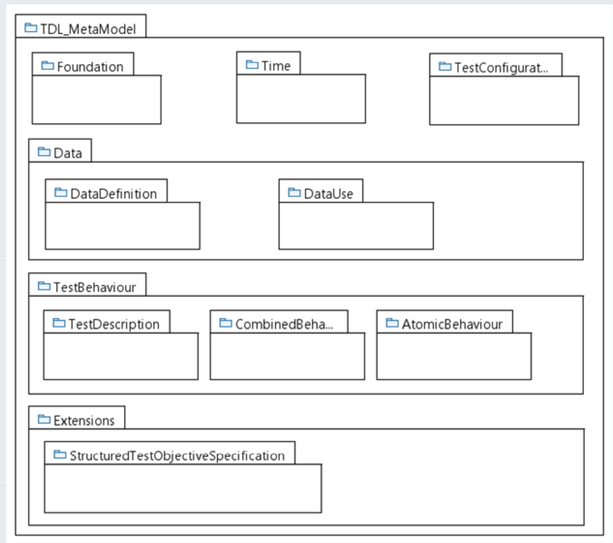
TDL Language Elements (Meta-Model, Part 1)

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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