Qualips
Quality Platform for Open Source Software

Systematic Technical Interoperability Testing

Dr. Yuri Glickman
Fraunhofer Institute for Open Communication Systems (FOKUS)

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CORDIS

Information Society Technologies

creative commons

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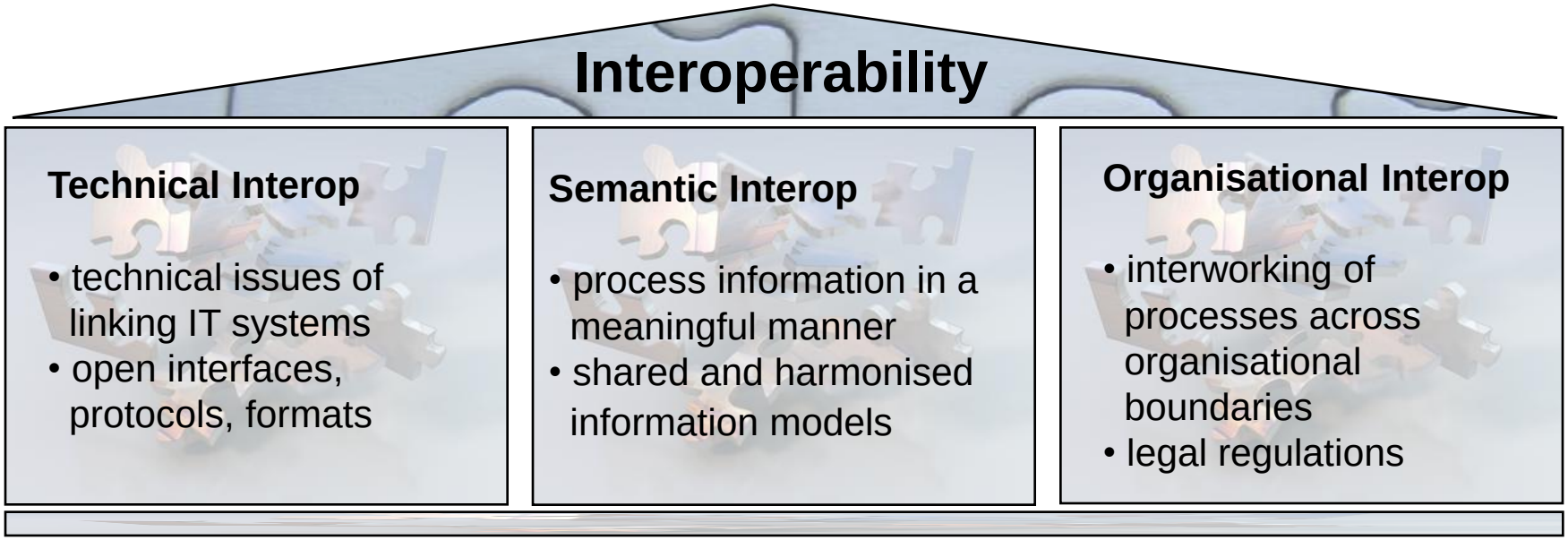
Interoperability in QualiPSo

- QualiPSo – Quality Platform for Open Source Software (IST Integrated Project)
- **One of the objectives:** Foster interoperability of OSS components as well as between open and closed source software



cf. EIF (IDABC)

Motivation – Interoperability and OSS

- High number and diversity of systems, components and services, especially in OSS domain
- Interoperability – a significant quality and trust criterion for Open Source Software
- Achieving interoperability is a significant issue
  - systems are not interoperable by default
  - standards do not assure interoperability as expected
- Interoperability **testing** is the key
- Software interoperability testing is a complex process
- Systematic testing is required to improve the quality

QualiPSo Approach

- A practical “light-weight” approach to software interoperability testing
  - Applicable in OSS communities
  - Addressing non-professional testers and OSS developers

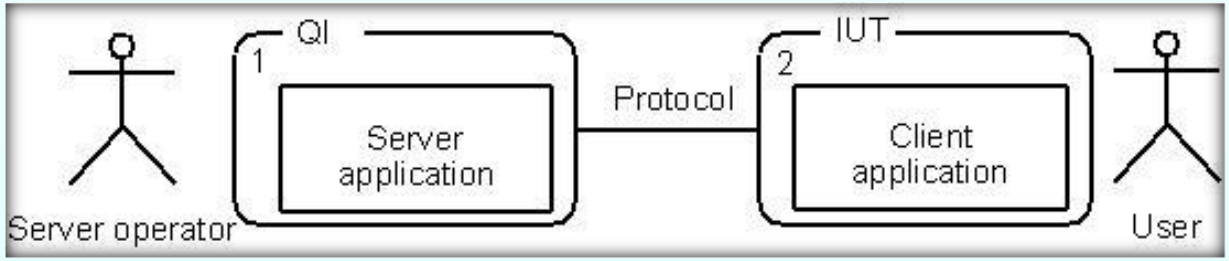
- The approach is based on ETSI’s „Generic Approach to Interoperability Testing”. The approach is simplified and refined:
  - to be more comprehsive for non-proffesional testers
  - to be straightforwardly applicable for testing **software** interoperability

Approach overview

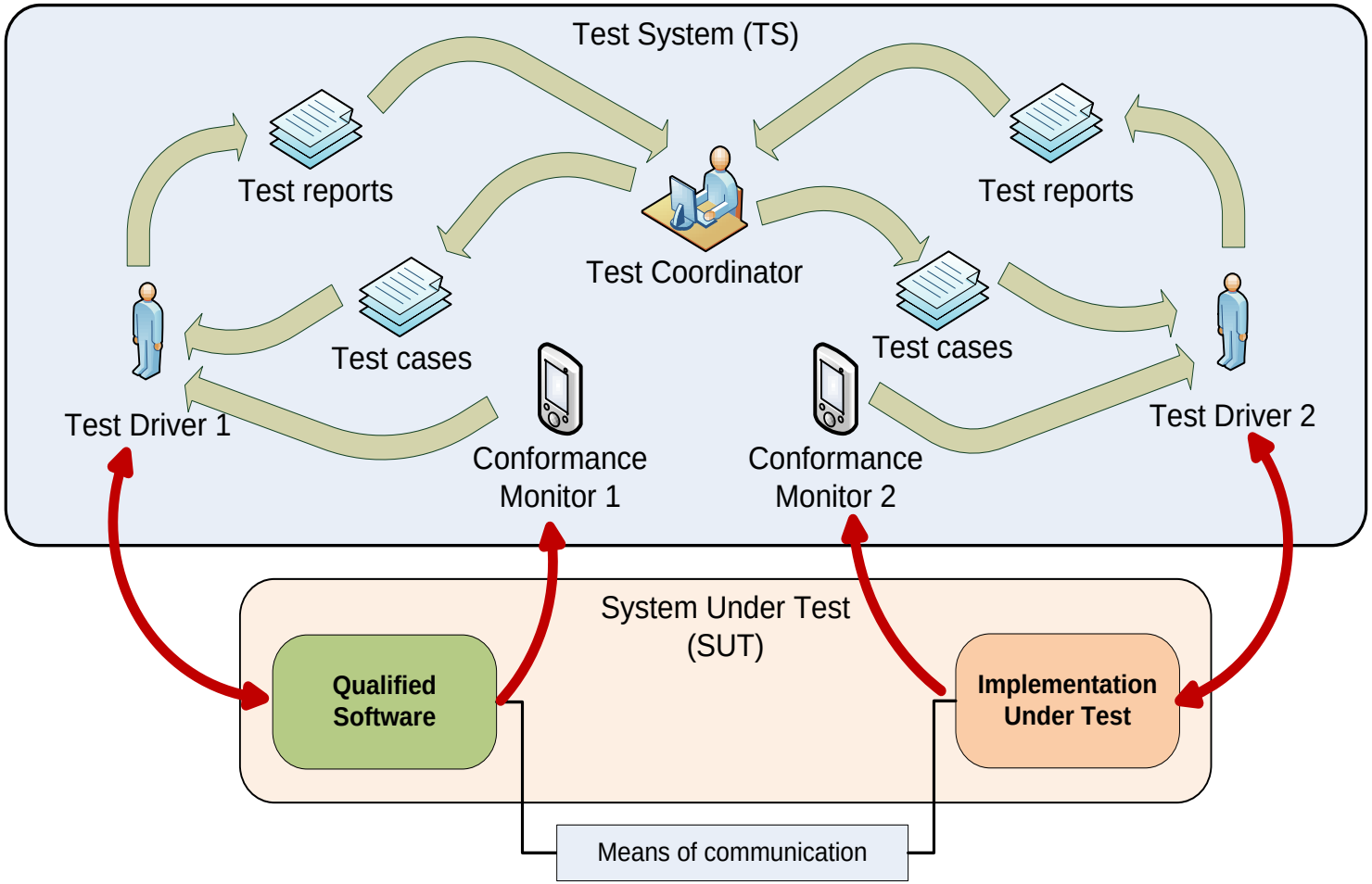
Specify abstract testing architecture

Clearly indicate:

- Implementation(s) under test (IUT) – software systems or components which interoperability has to be verified,
- Qualified implementation(s) (QI) – IUT(s) that have been already tested and can be considered as interoperable,
- Communication channels between components – indicating which components are interconnected,
- Communication protocol or information exchange specification for each channel.



Qualipso abstract interoperability testbed architecture



Approach overview

Specify abstract testing architecture

Specify the software systems involved in tests

- Clearly identify the software by providing
  - entity name (used in abstract architecture),
  - full software name,
  - version,
  - supplier,
  - homepage,
  - contact point.
- Gather information for each entity in a separate table containing the listed elements.

Approach overview

Specify abstract testing architecture

Specify the software systems involved in tests

Specify the IUT(s) roles

- ❑ Meaningful role name
- ❑ Short description
- ❑ Reference to the specification (or standard)
- ❑ Reference to the concrete system implementation in testbed

Approach overview

Specify abstract testing architecture

Specify the software systems involved in tests

Specify the IUT(s) roles

Prepare draft interoperability functions

- functions which must be supported by the IUT(s) to be interoperable with other systems (e.g. “Send a request”)
- ❑ on the basis of the available information exchange specification
- ❑ function name, unique identifier, short description (optionally) and reference to the specification or standard where it is defined
- ❑ is mandatory, optional or conditional (depending on some conditions)?

Approach overview

Specify abstract testing architecture

Specify the software systems involved in tests

Specify the IUT(s) roles

Prepare draft interoperability functions

Develop a test suite structure

- organize the interoperability functions into logical groups:
  - by the role of the entity or
  - by functionality or
  - by test bed configuration or
  - by normal(successful) / exceptiona(unsuccessful) behaviour

Approach overview

Specify abstract testing architecture

Specify the software systems involved in tests

Specify the IUT(s) roles

Prepare draft interoperability functions

Develop a test suite structure

Prepare test purposes

- what must be tested for each identified interoperability function
  - in natural language or
  - in TPLan (for complex test purposes)

Approach overview

Specify abstract testing architecture

Specify the software systems involved in tests

Specify the IUT(s) roles

Prepare draft interoperability functions

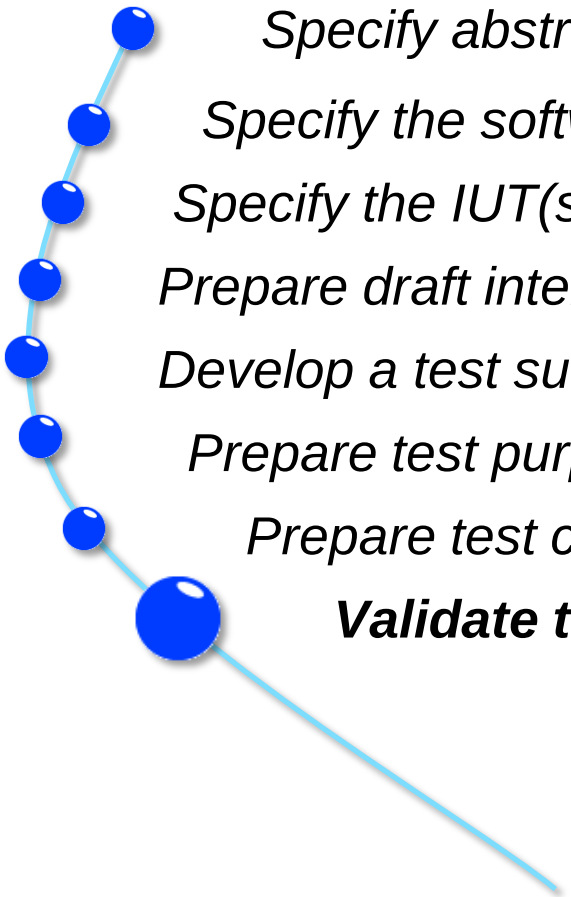
Develop a test suite structure

Prepare test purposes

Prepare test cases

Test case identifier, Summary, Test purpose, Test purpose ID, Testing Architecture ID, Test preconditions, Pre-amble and post-amble, Test steps, Verdict criteria and verdicts

Approach overview



Specify abstract testing architecture

Specify the software systems involved in tests

Specify the IUT(s) roles

Prepare draft interoperability functions

Develop a test suite structure

Prepare test purposes

Prepare test cases

Validate test cases

Approach overview

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Specify the software systems involved in tests

Specify the IUT(s) roles

Prepare draft interoperability functions

Develop a test suite structure

Prepare test purposes

Prepare test cases

Validate test cases

Prepare for testing (arrangement and planning)

- ❑ Configure the test bed
- ❑ Prepare the testing plan

Approach overview

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Specify the IUT(s) roles

Prepare draft interoperability functions

Develop a test suite structure

Prepare test purposes

Prepare test cases

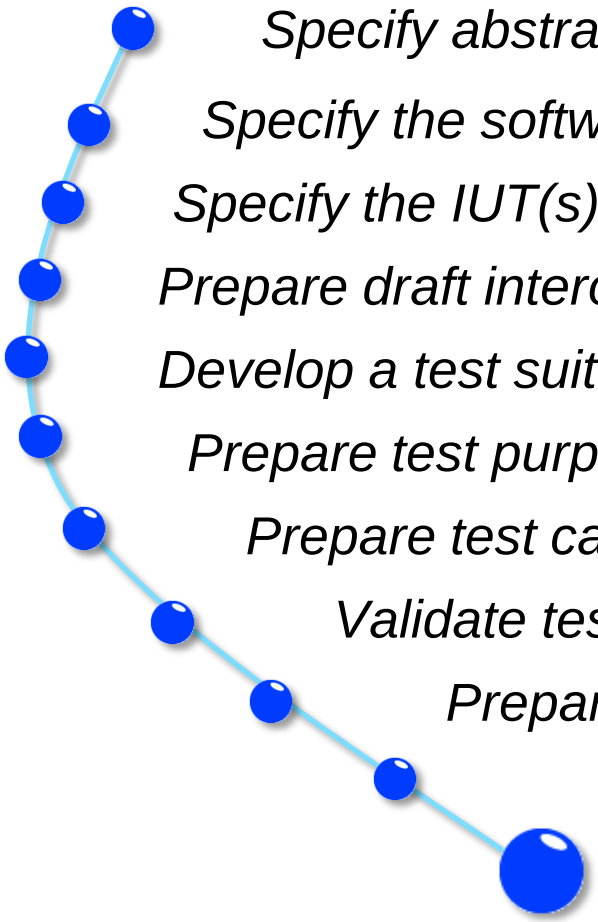
Validate test cases

Prepare for testing (arrangement and planning)

Perform tests

- ❑ Execute test cases
- ❑ Record verdicts

Approach overview



Specify abstract testing architecture

Specify the software systems involved in tests

Specify the IUT(s) roles

Prepare draft interoperability functions

Develop a test suite structure

Prepare test purposes

Prepare test cases

Validate test cases

Prepare for testing (arrangement and planning)

Perform tests

Make a test report

The approach characteristic

- Holistic approach
- Clear terminology
- Practical instructions for execution
- Minimal documentation and clear templates
- All steps illustrated with examples for one scenario
- Recommendations on OSS tools to use
- Possibility for automation

www.qualipso.org

or

German QualiPSo Competence Centre

Yuri Glickman
yuri.glickman@fokus.fraunhofer.de