



**Welcome
to the World
of Standards**



SMARTM2M/ONEM2M APPROACHES TO TESTING AND CERTIFICATION

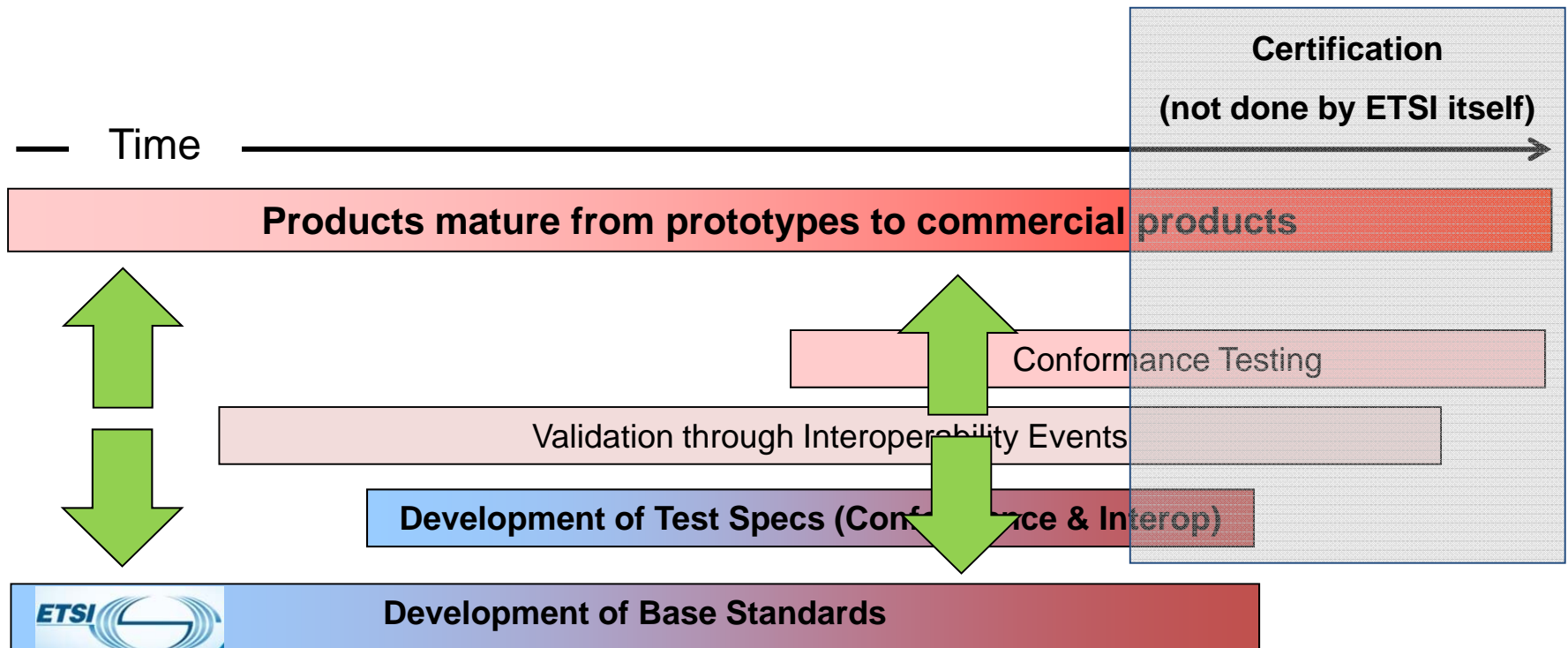
Presented by Laurent Velez (ETSI) for Smart Appliance Workshop, Brussels 27-28 May 2014

How to develop interoperable standards?



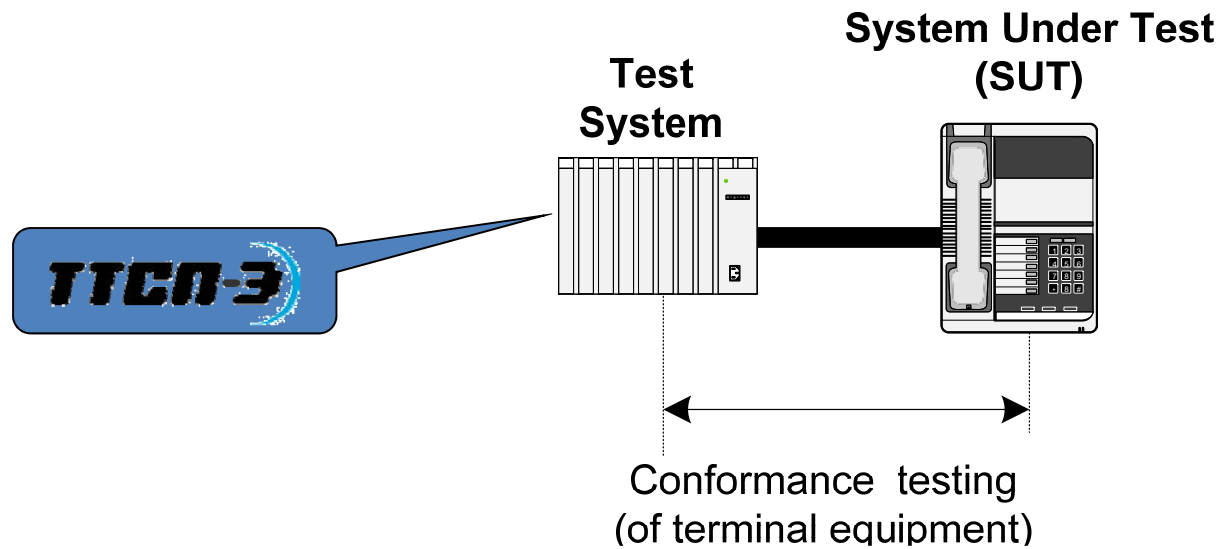
- One main aim of standardization is to enable interoperability in a multi-vendor, multi-network, multi-service environment
- ETSI has pragmatic approach relying on the 3 pillars of good practice to help realise interoperable standards:
 - Write good standards - **SPECIFICATION**
 - Ensure that the standards do the right thing - **VALIDATION**
 - Ensure products implement standards correctly - **TESTING**
- Centre for Testing and Interoperability (CTI) is a unit within ETSI dedicated to support the ETSI Technical Committees on the use of best practices for the specification and validation of base standards and the development of test specifications for Key ETSI technologies.

Relationship Between Standards, Validation and Testing

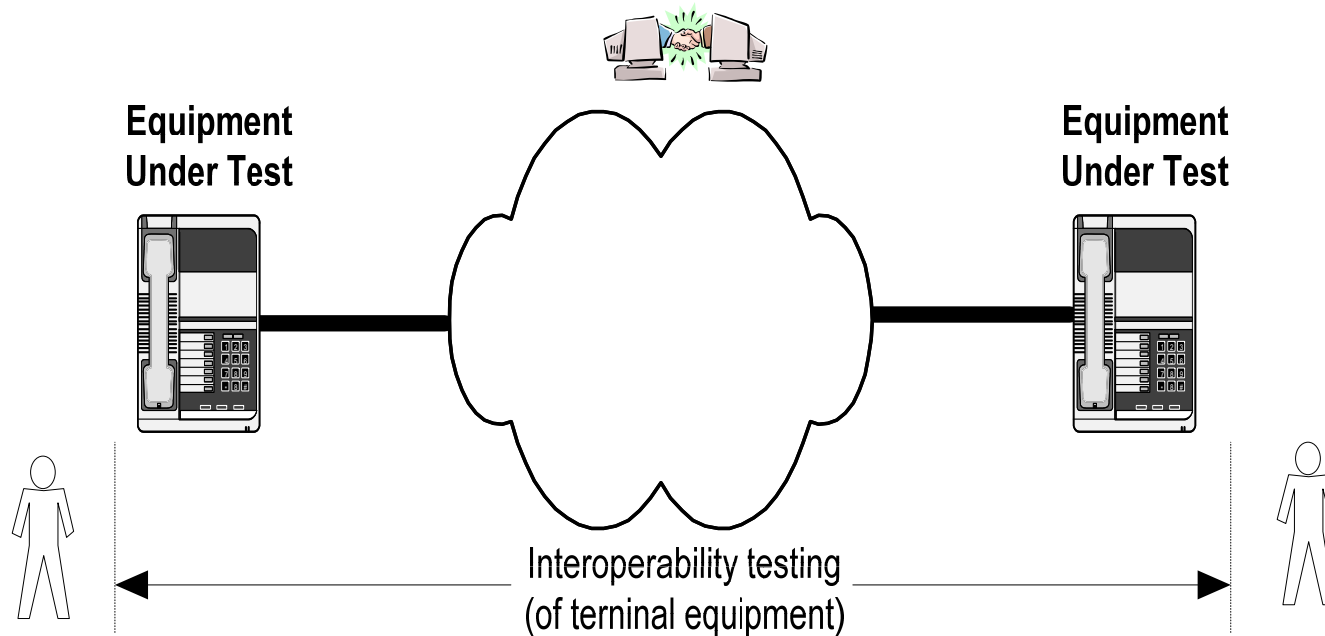


Validation and Testing

- Making sure that the standards **do the right thing** and that **they do it right**
- Many ETSI standards have an associated set of standardized test specifications
 - ETSI writes test – we do not perform tests (except what happens in ETSI Plugtests)
- Usually Conformance or Interoperability tests
 - For use by industry development processes
 - For 3rd party certification
 - Scope and review by the TCs
 - Developed by ETSI TC , supported by ETSI CTI



Tests a specific (part of a) product for compliance to requirements in a Base Standard



Tests (end-to-end) functionality between two or more products

Conformance Testing and IOP Testing are Complementary



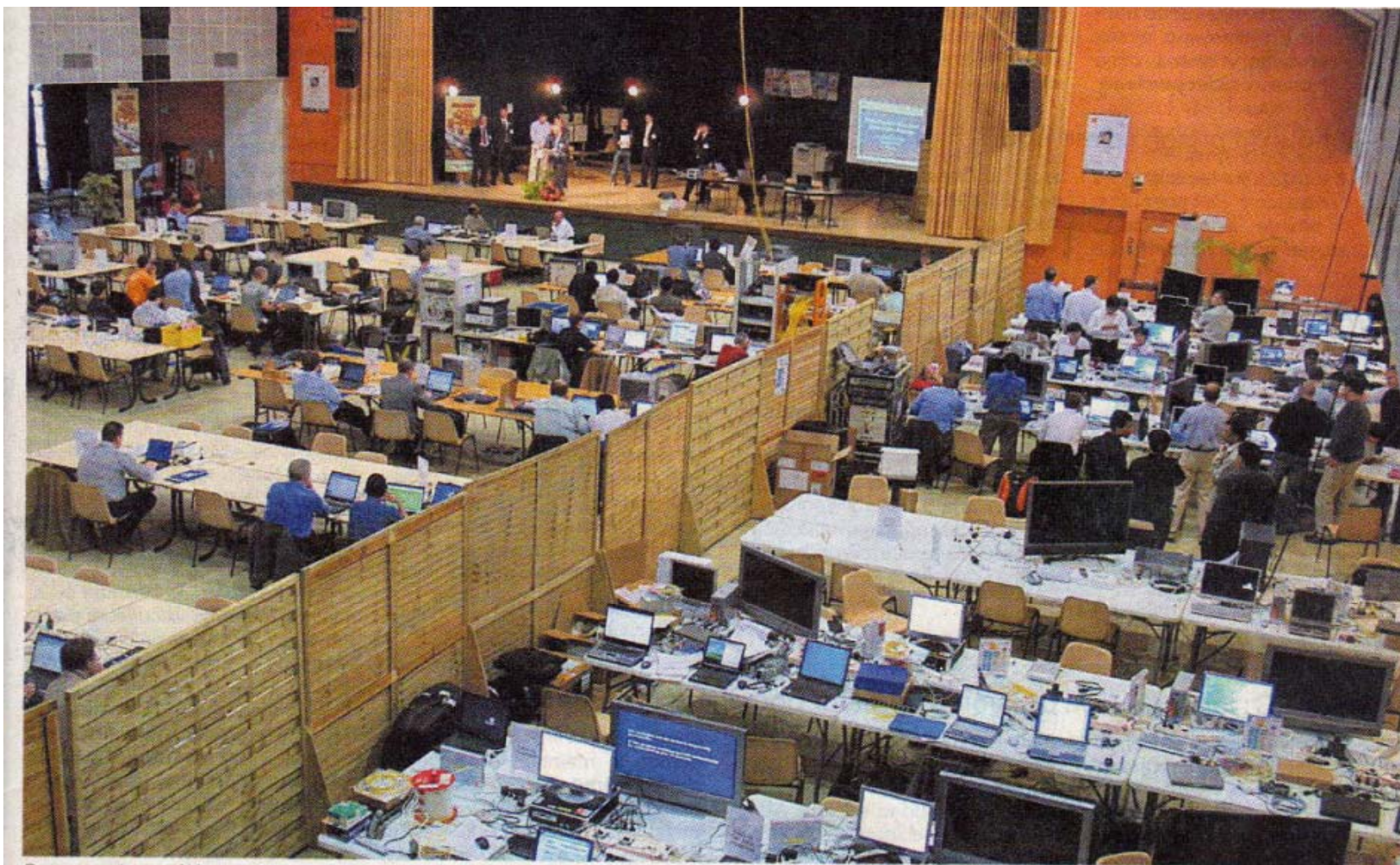
- **As you move up a system stack the emphasis should change from conformance to interoperability testing**
- Lower layer protocols
 - Mainly conformance testing
- Middleware, enablers, infrastructure
 - Combination of conformance and interoperability testing
- Services, applications, systems
 - Emphasis on interoperability testing
- **Conformance testing should be a pre-requisite to interoperability testing**



Why Validate Standards?

- Validation reveals problems/errors in
 - Standards and Products
- Validated standards give a higher chance of interoperable products
 - For standardisers gives assurance that they provide right functionality
 - For manufacturers and operators gives confidence to implement and go to market
- Provides an opportunity to correct errors in a controlled manner
 - Late fixes in the product cycle are more expensive than early ones
 - Decreases time to market
- Standards can be validated by several means but one of the most practical and cost effective is by **interoperability events**

Plugtests™ can look like this...



Des experts en télécommunications venus de toute la planète testent entre eux aux Ursulines les produits qui seront demain sur le marché.

... or this (Car2Car Interop)



Or like this ... (Remote Electronic Signature interop)



ASiC Signature Plugtests Portal

Common for ASiC

- Testing Procedure
- Cryptographic
- PKI services
- Attribute Certificate
- Participants List
- Meeting Support
- Chat
- Questions/Issues
- Presentations
- Back to Public pages

ASiC

- Test Definition Lang.
- Test Cases
- Verification Reports
- Stats per Form
- Upload
- Download
- Test Data Directory
- Conformance Checker

Generation and cross-verification

Welcome verez
[change password](#)
16/4/2014

19 March 2014

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1. Introduction

The present document provides details on how to operate for conducting the **generation and cross-verification** interoperability tests.

The figure below shows the interactions of two participants for conducting this kind of tests:



Package contains:

-  Cryptographic material for different scenarios
-  Test cases pre-uploaded to the plugtest portal



SMARTM2M / ONEM2M TESTING ACTIVITIES ON SMART APPLIANCE

- The standardization bodies SmartM2M and oneM2M consider the Testing as a key element in the success of Smart Appliance.
- As a first step, SmartM2M has created a new Work Item DTS/SmartM2M-103 268-1
- This future TS will propose a global methodology for conformance and interoperability testing for Smart Appliance.
- It will analyze the overall testing needs and will identify and define the additional documentation required.



- **Conformance:**
 - Protocol Implementation Conformance Statement (PICS)
 - Test Suite Structure and Test Purposes (TSS&TP)
 - Abstract Test Suite (ATS), possibly using TTCN-3
- **Interoperability:**
 - Interoperability Test Descriptions (TD) for Smart Appliances
- **Interoperability Events (Plugtests) on Smart Appliance**
- **oneM2M:** The SmartM2M work will be proposed to oneM2M later, once oneM2M will be ready for it

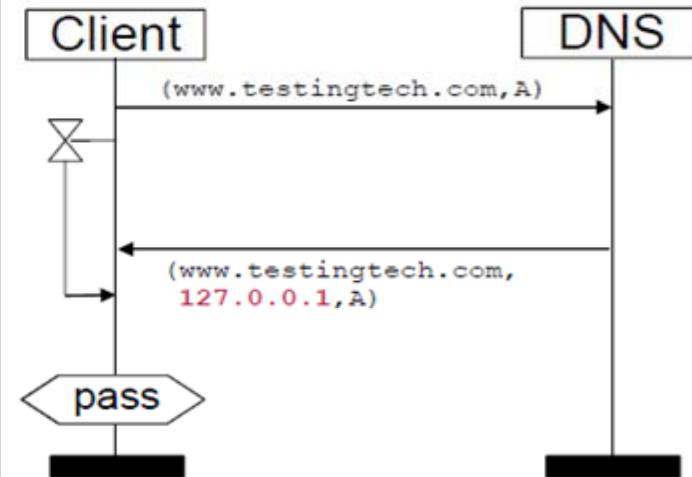


About TTCN-3



- TTCN-3 (Testing and Test Control Notation Version 3) is an internationally standardized programming language that has been specifically designed for use in specifying and controlling testing scenarios.

```
testcase tc_testcase2() runs on DNSTester {  
  
  P.send(query);  
  t.start;  
  
  alt {  
    [] P.receive(reply) {  
      setverdict(pass);  
    }  
    [] P.receive { // any message  
      setverdict(fail);  
    }  
    [] t.timeout {  
      setverdict(inconc);  
    }  
  }  
  stop;  
}
```





GOING TO CERTIFICATION : THE 3GPP CASE

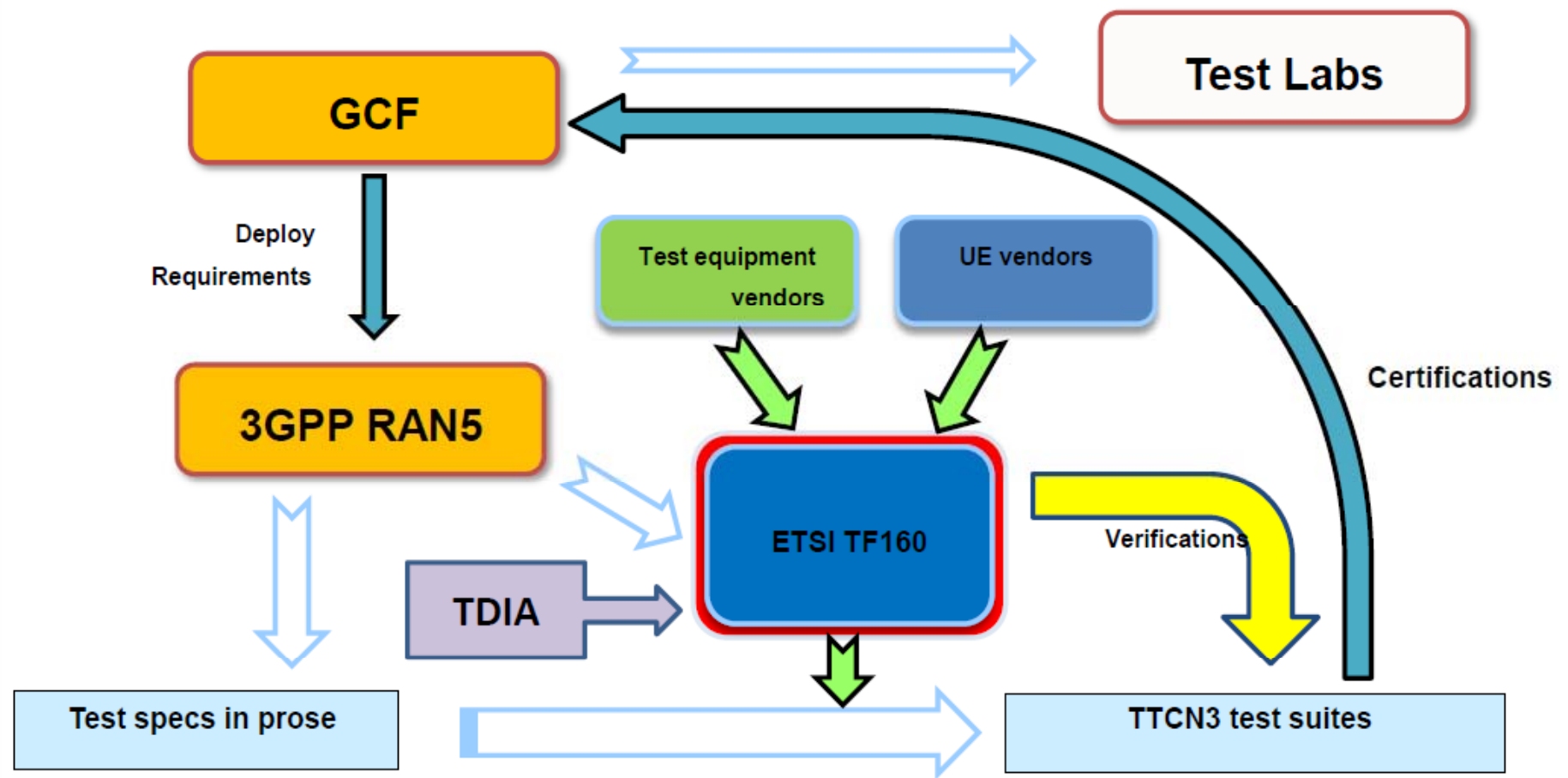
3GPP UE conformance test

- Mobile terminal conformity is one of the key issues in the mobile industry
- 3GPP RAN5 and GERAN3 are responsible for UE conformance test specifications
- A task force TF160 under 3GPP and led by ETSI CTI develops, maintains, delivers the 3GPP UE test suites in TTCN (signalling and protocols)
- Only these TTCN test cases produced at ETSI are valid for the UE certifications
- The TTCN test cases agreed by RAN5 are deployed in the UE certifications by GCF and PTCRB



TF160 in the chain of TTCN production

- ETSI/3GPP TF160 responsible for the TTCN development, maintenance and deliveries from the UE conformance test in UMTS and LTE



• Validation of the tests

- A test is declared validated if it was executed by at least one GCF-approved test platform (equipment + configurations + software) against two devices under test (DUT)
- Validation information is collected from any combination of test platform/DUT

• Validation of the test platform

- GCF-accredited test labs executed tests
- Test Platform Approval Criteria – Protocol Tests: e.g. at least 80% of the priority 1 and at least 80% of the priority 2 tests have been validated on the Test Platform

• Certification of the devices

- Certification only starts after test and test platform validation to ensure that test results are repeatable and comparable
- Vendors can buy the test platform of their choices or use testing services from test labs



Contact Details



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Thank you!