Conformance and Interoperability Testing
Overview & Minder Introduction

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CONFORMANCE & INTEROPERABILITY TESTING OVERVIEW
e-SENS provides generic architecture specifications to the piloting countries

Pilots use implementations of these specifications

2 questions:

- How should we verify if an implementation meets the necessary requirements of a specification?
- How should we verify if two implementations of the same specification are interoperable?

Answer: Conformance and Interoperability Testing
Conformance Testing

- Verifies whether all the systems use and exchange information properly

- E.g.:
  - Specification: eDelivery – eSENS AS4 Profile
  - Implementation: Flame FMS AS4 Server vended by “Flame Computing Enterprises”
  - eSENS verifies that the implementation is in compliance with the e-SENS AS4 specification
Conformance Testing – Gainings

- Assures that the implementation is in full compliance with the specification
- Brings implementation defects/lacks on functionalities that is required by specification to light
- Reduces testing cost for subsequent interoperability/end-to-end tests
- Validates developers’ understanding of the specification
- Gives the opportunity for promoting products
- Included in the software in list of Conformant products
Verifies whether the product performs in compliance with defined standards (E.g. ETSI, OASIS etc.)

E.g.:
- Specification: eSignature – PADES
- Implementation: DSS
- Implementation: X-Software
- Test Case 1: What DSS signs as PADES can be verified by SW X.
- Test Case 2: What SW X signs as PADES can be verified by DSS
Assures that the implementation is interoperable with the other implementations

Performed for the most common usage of specification

Brings implementation defects/lacks on interoperability functionalities to light

Reduce testing cost for subsequent end-to-end tests

Gives the opportunity for promoting products

Included in list of interoperable products
eSENs AS4 Profile

- eSENs AS4 Test Assertions prepared

- Conformance and Interoperability Tests completed for
  - Holodeck B2B AS4 GW
  - Flame Message Server
  - IBM Adv. Comm. GW
  - Domibus

- Other vendors: Future Cycles managed by CEF
Introducing Minder
Minder is a generic testing platform/online test programming environment interconnecting multiple systems through a central node via adapters (wrappers)

The central node (i.e. the minder server) allows complex connectivity between the connected systems

- Minder allows programmers to write scripts in MTDL (Minder Test Definition Language)
- A programmer can follow, check and manipulate the flow of information in order to verify that a certain task is being done in the right manner. (i.e. against a specification – conformance testing)
Introduction to Minder

- Minder is selected by the Connecting Europe Facility (CEF) programme as the testbed for the e-Delivery DSI
- Collaboration with ISA: GITB Service Level Compliance
  - Minder is the first test bed to be piloted for GITB compliance
  - Minder is at JoinUp
  - Minder and Kerkovi are in Test Registry and Repository
    Minder as a testbed
Adapters (Wrappers) – Closer Look

Minder

Test Engine

TDL Script

Adaptor

Generic Side

SUT Specific Side

SUT (System Under Test)

Signal 1

Signal 2

Signal 3

Slot 1

Slot 2

Slot 3

Service 1

Service 2

Service 3

Service 4

Service 5

Service 6

A converter

```scala
val as4Checker: Any => Any = { 
  val soap = deserializeSOAP(any.asInstanceOf[Array[Byte]])
  val decrypted = verifyAndDecrypt(soap)
  ... 
  val res = signAndEncrypt(decrypted)
  serialize(res)
}

```
Thank you