

Club >>

Contactless Users Board

Smart Cards for e-ticketing

Quality and Certification to
ensure interoperability

Eric Nizard
October 5th, 2006

L'INFORMATIQUE
COMMUNICANTE

- Use new technologies based terminals and cards
- Operate in an *Interoperable* Environment
- Optimise *Integration of International and Domestic Scheme* Requirements for Transport Operators



Define Product Specification and Rules

The Public Transport world needs
an Authority to ensure that Cards and Terminals are

- developed, manufactured and maintained
 - according to well known specifications and rules
 - defined and according to business and public services objectives
 - during their whole life cycle

This Authority is called Certification Authority

- Certification establishes a common ground to ensure Interoperability by:
 - defining common specification
 - defining the related tests & evaluation for terminals and cards
 - External specifications evaluation*
 - Type approval testing*

Mission:

**To Facilitate Interoperable
Implementations**

Objectives:

**At the end of a design:
Compliant
Implementation**

**Mutual Services for
the Operators**

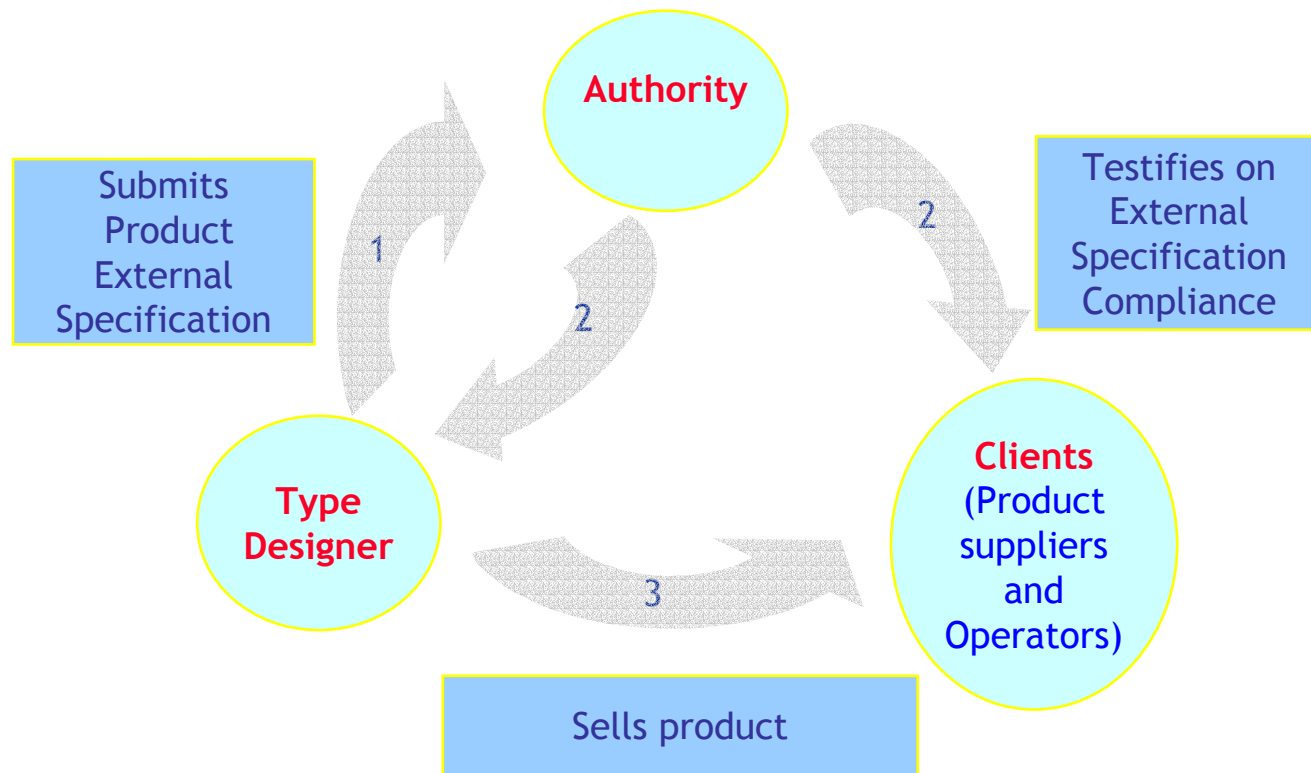
**Sample Testing
Type Approval**

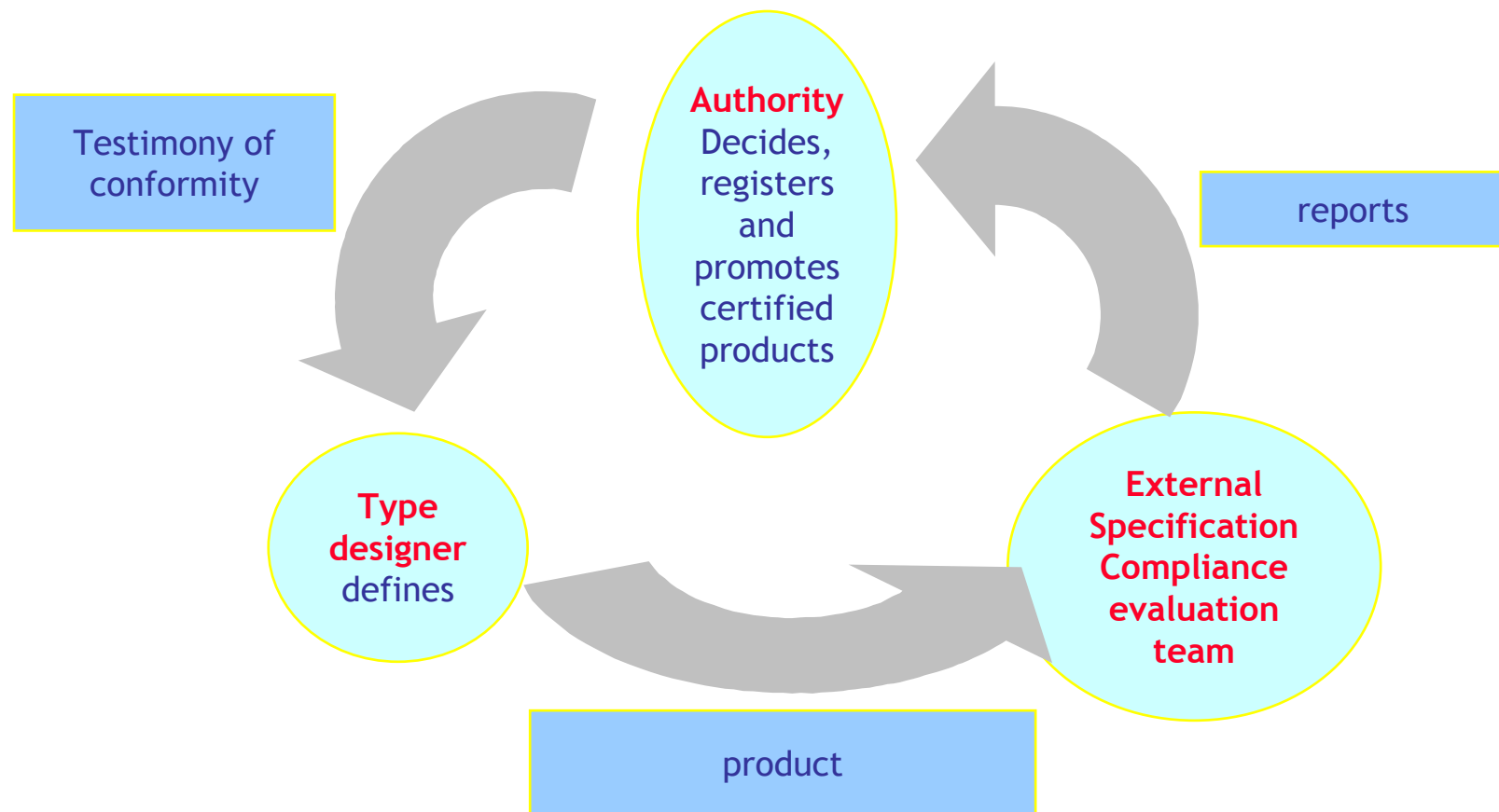
**Support & Manage
Quality Label**

- Gives a first level of confidence to
 - The Authority
 - its members,
 - products suppliers,
 - Operators
 - the type designers
- Reduce costs and time to set up a compliant Portable Object
- Reinforces the common technical environment as a must

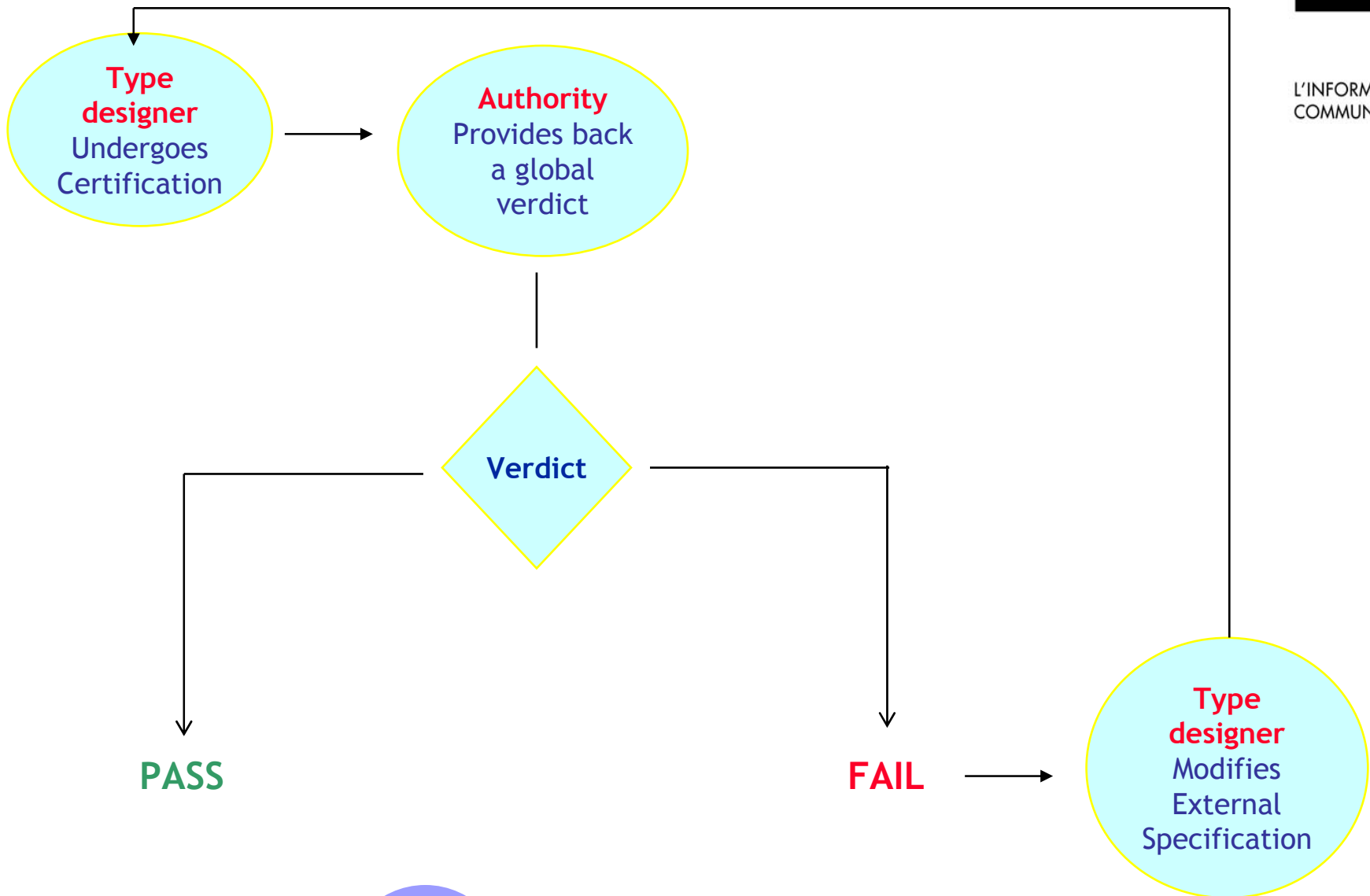
- **Object**: Build a Certification process of products
- **Objective**: confidence
- **Keyword**: compliance
- Two main **steps**:
 - First step: **External Specification Compliance**
 - Further step: Portable Object Type Approval

- Authority: **CNA** (Calypso Network Association)
- Certification concerns:
 - **Portable Objects** e-ticketing application
 - Vendors are **Type designers**
- Reference document is **R3 specification for ticketing (Card Application)**
- Certification current stage is: « portable object **external specification** compliance with reference documents »





Process Overview



- Calypso specification for e-ticketing (Card Application) - last version + addenda
- External Specification Compliance Analysis: method and requirement (template) - last version

- The ESCA template is the **base document** for this operation
- Any CNA member has a **free access** to the ESCA template
- This template is
 - by definition **independent** of any type designer product
 - based on the **Calypso R3** specification for ticketing (Card Application)
 - built according to the main functions of **Calypso logical architecture**

The ESCA template contains,
for each function of the specification:

- The function breakdown into elementary requirements
- the status of each elementary requirement regarding its implementation in the Portable Objects
 - **Mandatory** or
 - **Optional** or
 - **Forbidden** or
 - **Conditional** to a given condition or
 - an **Allowed** or **forbidden** range of values

The CNA mandated External Specification Compliance **evaluation team** edits an External Specification Compliance Analysis **Report** which contains:

- **Verdicts** (**PASS** or **FAIL** or **INCONCLUSIVE** or **PASS with WARNINGS**)

- A verdict for each elementary requirement
- A verdict for overall functions
- A global verdict for the whole specification

Verdict PASS: *Type designer external specification conform with the Calypso R3 specification*

Verdict FAIL: *Type designer external specification non conform with the Calypso R3 specification*

Verdict INCONCLUSIVE: *major request for clarification (should only occur in very exceptional situations)*

- **Explanations** whenever a verdict is **FAIL**

- The requirement reference in the Calypso R3 specification
- The requirement reference in the type designer external specification
- The non compliance cause with a comment
- The potential impact on interoperability

1. Elementary verdict

ESCA Ref.	Calypso Ref.	ESCA Requirement	Verdict
4 / M1	1.2 §7&8	Once a Calypso application has been selected, only the features defined in the Calypso specification shall be available (i.e. the availability of commands or options not described in the Calypso specification is forbidden).	[PASS or FAIL]

2. Function related verdict

Calypso Application Life Cycle Verdict	Summary
[PASS or FAIL]	[Brief description of the Calypso Application Life Cycle status]

3. Function xx FAIL verdict description

ESCA Req.	Issue Description	Criticality
[ESCA Requirement Reference]	<p>Issue: [Detailed description of the External Specification issue on ESCA Requirement.]</p> <p>Impact: [Description of the impact.]</p>	

Global Verdict	Synthesis
[PASS or FAIL]	[Brief explanation of the global verdict]

- **Primary External Specification Compliance Analysis:**
case when the type designer undergoes for certification for the first time for a given PO external specification
- **Secondary External Specification Compliance Analysis:**
new analysis of an external specification having previously obtained a global FAIL verdict, has been meanwhile updated and submitted again by the type designer

- Limits should vary due to the type of product (Card, Mask, Chip ...)
- Duration limits
- Limits due to the evolution of the reference documents (Calypso Rx specification and technical notes)
- Limits due to the evolution of the ES itself
- Limits due to architecture variations
- ...

- Should concern Authority and type designers only
- To be determined on base of:
 - Primary External Specification Compliance Analysis vs Secondary External Specification Compliance Analysis
 - Technical External Specification Compliance Analysis vs [Administrative + Technical] External Specification Compliance Analysis
- Price should not discourage vendors to stick to the process

- Certifies a specific product type
- Certification scheme:
 - Tests specifications (mechanical, electrical, RF, functional)
 - Test laboratories
 - Test bench(es)
 - Product sample

Questions?

Thank you!
Grazie Mille!