



**SLOVENSKI STANDARD**  
**SIST EN 301 934-1 V1.1.1:2005**

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**Intelligentno omrežje (IN) – Tretji nabor zmožnosti inteligentnega omrežja (CS3) – Abstraktni preskušalni niz (ATS) in delna dodatna informacija za preskušanje izvedbe protokola (PIXIT) – Proforma specifikacija – 1. del: Osnovni nabor zmožnosti CS3**

Intelligent Network (IN); Intelligent Network Capability Set 3 (CS-3); Abstract Test Suite (ATS) and Partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification; Part 1: Basic capability set of CS3

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# ETSI EN 301 934-1 V1.1.1 (2003-01)

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*European Standard (Telecommunications series)*

**Intelligent Network (IN);  
Intelligent Network Capability Set 3 (CS-3);  
Abstract Test Suite (ATS) and Partial Protocol  
Implementation eXtra Information for Testing (PIXIT)  
proforma specification;  
Part 1: Basic capability set of CS3**

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## Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

The present document is part 1 of a multi-part deliverable covering the Intelligent Network Capability Set 3 (CS-3); Abstract Test Suite (ATS) and Partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification, as identified below:

**Part 1: "Basic capability set of CS3";**

Part 2: "Call Party Handling (CPH)".

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## 1 Scope

The present document contains the Abstract Test Suite (ATS) and Partial PIXIT for the basic capability set of CoreINAP CS-3.

The present document provides the Abstract Test Suite (ATS) and Partial PIXIT for the testing of the basic capability set of the Service Switching Function (SSF), defined for the Intelligent Network Application Protocol (INAP) of Intelligent Network (IN) Capability Set 3 (CS3) according to ETSI EN 301 931-1 [1] and ETSI EN 301 931-2 [2].

Annex A provides the Tree and Tabular Combined Notation (TTCN).

Annex B provides the Partial Protocol Implementation eXtra Information for Testing (PIXIT) Proforma.

Annex C provides the Protocol Conformance Test Report (PCTR) Proforma.

The present document is completed by other parts constituting the testing of the CS3 Core INAP specifications: ETSI EN 301 934-2 [3] (Call Party Handling of CS-3).

ISO/IEC 9646-1 [4] and ISO/IEC 9646-2 [5] are used as the basis for the testing methodology.

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## 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

- [1] ETSI EN 301 931-1: "Intelligent Network (IN); Intelligent Network Capability Set 3 (CS3); Intelligent Network Application Protocol (INAP); Protocol specification; Part 1: Common aspects".
- [2] ETSI EN 301 931-2: "Intelligent Network (IN); Intelligent Network Capability Set 3 (CS3); Intelligent Network Application Protocol (INAP); Protocol specification; Part 2: SCF-SSF interface".
- [3] ETSI EN 301 934-2: "Intelligent Network (IN); Intelligent Network Capability Set 3 (CS3); Abstract Test Suite (ATS) and Partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification; Part 2: Call Party Handling (CPH)".
- [4] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [5] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite specification".
- [6] ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".
- [7] ETSI ETS 300 374-1: "Intelligent Network (IN); Intelligent Network Capability Set 1 (CS1); Core Intelligent Network Application Protocol (INAP); Part 1: Protocol specification".
- [8] ITU-T Recommendation Q.771: "Functional description of transaction capabilities".



## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 301 931-1 [1], ISO/IEC 9646-1 [4] and ISO/IEC 9646-2 [5] apply.

### 3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ASP	Abstract Service Primitive
ATM	Abstract Test Method
ATS	Abstract Test Suite
BI	Invalid Behaviour tests
BO	inOpportune Behaviour tests
BV	Valid Behaviour tests
CS	Call Segment
CS	Capability Set
IN	Intelligent Network
INAP	Intelligent Network Application Protocol
IP	Intelligent Peripheral
IUT	Implementation Under Test
IXIT	Implementation eXtra Information for Testing
LT	Lower Tester
MPyT	Multy Party Testing
MSC	Message Sequence Chart
NWK	NetWork Layer
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
SAP	Service Access Point
SCF	Service Control Function
SCP	Service Control Point
SDF	Service Data Function
SDL	Specification and Description Language
SRF	Specialized Resource Function
SSF	Service Switching Function
SSP	Service Switching Point
SUT	System Under Test
TC	Test Case
TCAP	Transaction Capabilities Application Part
TP	Test Purpose
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation

## 4 Test architecture

### 4.1 Abstract Test Method (ATM)

This clause describes the ATM used for testing the INAP protocol. It is the embedded variant of the remote test method used in Multy Party Testing (MPyT) context, as defined in ISO/IEC 9646-2 [5].

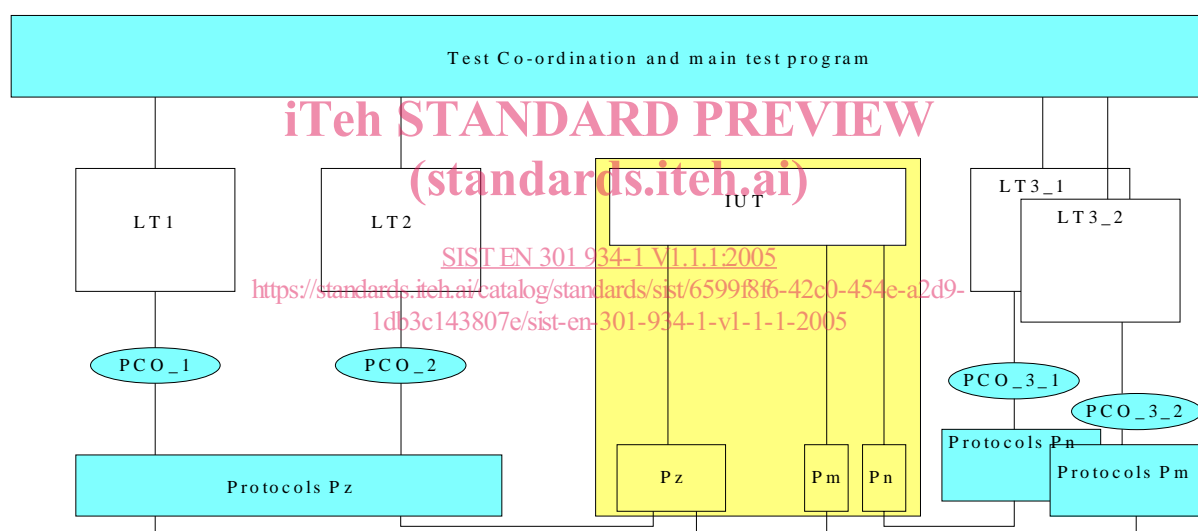
This test method has been selected, because:

- this test method implies no specific requirements from the Implementation Under Test (IUT);
- the upper Service Access Point (SAP) of the IUT cannot be directly observed;
- this test method places minimum limitations in the realization of conformance testing.

### 4.2 Overall configuration

Figure 1 describes the test architecture which will be used for the definition of the ATS.

A single test architecture covers all testing configuration requirements.



**Figure 1: Multi-party, single-layer testing context: one IUT and 4 types of LTs**

Figure 1 shows the multi-party, single layer testing context. The same architecture can be used for testing several interfaces. The roles of IUT and LTs change according to the protocol to be tested in the IUT.

Table 1 gives the nature of the IUT and LTs according to the protocol under test.

**Table 1: Possible testing configurations**

Test Config	Tested Interface	IUT	LT1	LT2	LT3_1	LT3_2	Functional Configuration
1	SSF-SCF	SSF	SCF	SRF	Sig con A	Sig con B	A
2	SSF-SCF	SSF	SCF	-	Sig con A	Sig con B	B

## 4.3 Test of SSF-SCF interface using INAP

The test program contains the program of the main LT1 main tester as well as the co-ordination points to co-ordinate the tasks with the other testers LT2 and LT3.

**IUT:** Is the SSF-INAP.

**LT1:** Test program is the SCF.

**LT2:** Test program is the SRF-INAP when required.

**LT3:** Informal test program for actions and observation at the signalling control points, to play the role of end users A, B and C for instance.

There are as many LT3 as required by the test configuration (LT3\_1, LT3\_2, ...) according to the number of end users A, B and C involved in a service scenario for instance, using different types of protocols).

**Pz:** Contains the protocols used below the INAP between SCP and SSP, also between SSP and SRF. They could be e.g. TCAP, SCCP and MTP of SS7 etc.

**Pm:** Contains the protocols used below the LT3\_1 between the IUT and the Signalling control point. It could be the DSS1 protocols or ISUP SS7 protocol (in the case of having a transit exchange).

**Pn:** Contains the used protocols below the LT3\_2 between the IUT and the Signalling control point. It could be the DSS1 protocols or ISUP SS7 protocol (in the case of having a transit exchange).

## 4.4 Points of control and observation (PCOs)

PCO-Declarations.

- 1) **PCO\_1:** This PCO is at the core INAP interface between SSP and SCP. The lower layer protocol is Pz. It could be e.g. TCAP.
- 2) **PCO\_2:** This PCO is at the core INAP interface between SSP and SRF. The lower layer protocol is Pz. It could be e.g. TCAP, ISUP, B-ISUP, TUP or the NWK of DSS1.
- 3) **PCO\_3\_1:** This PCO is at the interface between SSP and Signalling Control A. The lower layer protocol is Pm. It could be e.g. ISUP, B-ISUP, TUP or the NWK of DSS1.
- 4) **PCO\_3\_2:** This PCO is at the interface between SSP and Signalling Control B. The lower layer protocol is Pn. It could be e.g. ISUP, B-ISUP, TUP or the NWK of DSS1.

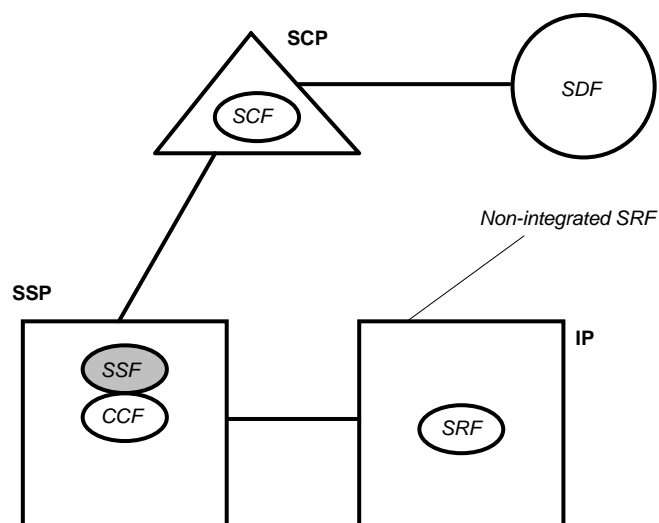
## 4.5 Test system

It is expected that the test system supports the protocols Pz, Pz-1, Pz-2 and the protocols for Pm and Pn.

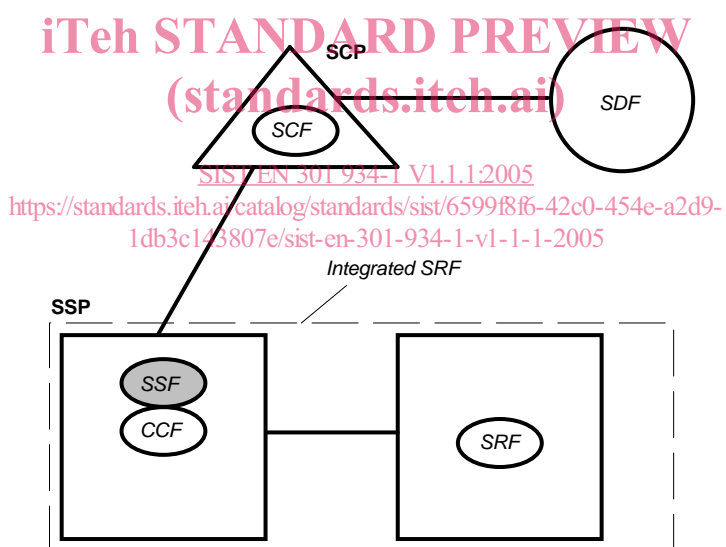
It is expected that the test system supports the PCO Requirements of PCO\_1, PCO\_2, PCO\_3\_1 to PCO\_3\_n.

## 4.6 Functional configurations

### 4.6.1 SSF-SCF interface



**Figure 2: SCP with single SSP  
Configuration A: IUT = SSF (non integrated with SRF)**



**Figure 3: SCP with single SSP  
Configuration B: IUT = SSF (integrated with SRF)**