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Smart Secure Platform (SSP);
Part 2: Integrated SSP (iSSP) characteristics
(Release 17)

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Contents

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The present document is part 2 of a multi-part deliverable covering Smart Secure Platform (SSP), as identified below:

Part 1: "General characteristics";

Part 2: "Integrated SSP (iSSP) characteristics";

Part 3: "Embedded SSP (eSSP) Type 1 characteristics";

Part 4: "Embedded SSP (eSSP) Type 2 characteristics".

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In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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1 Scope

The present document details the technical specifications for the Smart Secure Platform (SSP) integrated into an SoC, also known as iSSP. The present document defines specific attributes on top of the generic SSP specified in ETSI TS 103 666-1 [3].

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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Referenced documents which are not found to be publicly available in the expected location might be found in the ETSI docbox.

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The following referenced documents are necessary for the application of the present document.

[1] ETSI TS 102 221: "Smart Cards; UICC-Terminal interface; Physical and logical characteristics".

[2] ETSI TS 102 223: "Smart Cards; Card Application Toolkit (CAT)".

[3] ETSI TS 103 666-1: "Smart Secure Platform (SSP); Part 1: General characteristics".

[4] BSI-CC-PP-0084-2014: "Security IC Platform Protection Profile with Augmentation Packages".

[5] BSI-CC-PP-0089-2015: "Embedded UICC Protection Profile, Version 1.1 25.08.2015".

[6] GlobalPlatform Technology: "Open Firmware Loader for Tamper Resistant Element", Version 1.3.

[7] GlobalPlatform Technology: "Virtual Primary Platform - Concepts and Interfaces", Version 2.0.

[8] GlobalPlatform Technology: "Virtual Primary Platform - Firmware Format", Version 2.0.

[9] GlobalPlatform Technology: "Virtual Primary Platform - OFL VNP Extension", Version 1.0.

[10] IETF RFC 4122: "A Universally Unique IDentifier (UUID) URN Namespace".

[11] IETF RFC 5280: "Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile".

[12] Void.

[13] NIST 800-108: "Recommendation for Key Derivation Using Pseudorandom Functions".

[14] BSI AIS 20, version 1 (02/12/1999): "Functionality Classes and Evaluation Methodology for Deterministic Random Number Generators".

[15] BSI AIS 31, version 3.1 (25/09/2001): "Functionality classes and evaluation methodology for true (physical) random number generators".

[16] Joint Interpretation Library: "Application of Attack Potential to Smartcards and Similar Devices", v3.1, June 2020.

[17] CCMB-2017-04-003: "Common Criteria for Information Technology Security Evaluation; Part 3: Security assurance components", April 2017 Version 3.1 Revision 5.

[18] NIST 800-56A Revision 2: "Recommendation for Pair-Wise Key Establishment Schemes Using Discrete Logarithm Cryptography", May 2013.

[19] IETF RFC 5639: "Elliptic Curve Cryptography (ECC) Brainpool Standard Curves and Curve Generation".

[20] ANSI X9.142-2020: "Financial services - Public Key Cryptography for the Financial Services Industry - The Elliptic Curve Digital Signature Algorithm - ECDSA".

[21] ISO/IEC 14888-3:2018: "IT Security techniques — Digital signatures with appendix — Part 3: Discrete logarithm based mechanisms".

[22] ISO/IEC 10118-3:2018: "IT Security techniques — Hash-functions — Part 3: Dedicated hash-functions".

[23] BSI TR-03111: "Elliptic Curve Cryptography", Version 2.10.

[24] draft-sca-cfrg-sm3-02: "The SM3 Cryptographic Hash Function".

[25] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".

[26] IETF RFC 8446: "The Transport Layer Security (TLS) Protocol Version 1.3".

[27] ETSI TS 101 220: "Smart Cards; ETSI numbering system for telecommunication application providers".

[28] Void.

[29] IETF RFC 5480: "Elliptic Curve Cryptography Subject Public Key Information".

[30] IETF RFC 5758: "Internet X.509 Public Key Infrastructure: Additional Algorithms and Identifiers for DSA and ECDSA".

[31] Recommendation ITU-T X.501 (10/2019) (ISO/IEC 9594-2:2020): "Information technology - Open Systems Interconnection - The Directory: Models".

[32] IETF RFC 4868: "Using HMAC-SHA-256, HMAC-SHA-384, and HMAC-SHA-512 with IPsec".

[33] NIST SP 800-38B (May 2005): "Recommendation for Block Cipher Modes of Operation: The CMAC Mode for Authentication".

[34] ETSI TS 102 241: "Smart Cards; UICC Application Programming Interface (UICC API) for Java Card™".

[35] ETSI TS 102 226: "Smart Cards; Remote APDU structure for UICC based applications".

[36] ISO 7816 (all parts): "Identification cards — Integrated circuit cards".

[37] IETF RFC 5754: "Using SHA2 Algorithms with Cryptographic Message Syntax".

[38] GlobalPlatform Technology: "Card Specification", Version 2.3.1.

[39] IETF RFC 4648: "The Base16, Base32, and Base64 Data Encodings".

[40] ETSI TS 123 003: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; Numbering, addressing and identification (3GPP TS 23.003)".

[41] ETSI TS 129 002: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; Mobile Application Part (MAP) specification (3GPP TS 29.002)".

[42] IETF RFC 3986: "Uniform Resource Identifier (URI): Generic Syntax".

[43] Recommendation ITU-T E.212: "The international identification plan for public networks and subscriptions".

[44] ISO/IEC 18033-3:2010/Amd 1:2021: "Information technology — Security techniques — Encryption algorithms — Part 3: Block ciphers — Amendment 1: SM4".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- In the case of a reference to a TC SET document, a non-specific reference implicitly refers to the latest version of that document in the same Release as the present document.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] BSI-DSZ-CC-0827-V7-2018: "Security IC Platform Protection Profile", Version 1.0, 15 June 2007.

[i.2] Void.

[i.3] NIST IR 7298: "Glossary of Key Information Security Terms".

[i.4] ETSI TS 134 108: "Universal Mobile Telecommunications System (UMTS); LTE; Common test environments for User Equipment (UE); Conformance testing (3GPP TS 34.108)".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI TS 103 666-1 [3] and the following apply:

3GPP network registration: procedure defined by 3GPP allowing a terminal to get access to services provided by telecommunication networks compliant with 3GPP specifications, using the subscription information stored within the said terminal in a SIM, a USIM or an ISIM application

address space: set of addresses that can be used by a particular program or functional unit

custodian: organization that defines family identifier specific requirements (e.g. trusted CIs, product certification) within its iSSP ecosystem

family identifier: UUID identifying a family of Secondary Platform Bundles

NOTE: It is equivalent to Firmware Family in GP OFL specification [6].

plaintext: intelligible data that has meaning and can be understood without the application of decryption (see NIST IR 7298 [i.3])

process: independent sequences of execution running within independent virtual address space and which may have shared virtual memories with other processes (e.g. virtual shared memory for communication between processes)

program: independent set of instructions executed by CPU

Secondary Platform Bundle (SPB) container: packaged code and data to create a Secondary Platform Bundle instance

Secondary Platform Bundle (SPB) image: data encapsulating an encrypted Secondary Platform Bundle container and cryptographic data to extract a Secondary Platform Bundle container

Secondary Platform Bundle (SPB) instance: runtime instance of the container, running on top of the Primary Platform Interface

Secondary Platform Bundle (SPB) loader: Secondary Platform Bundle instance with special privileges that enable managing Secondary Platform Bundle containers

Secondary Platform Bundle (SPB) management operation: operation related to the state of the Secondary Platform Bundle, including its enablement, its disablement and its deletion

Secondary Platform Bundle (SPB) provisioning: sequence of operations related to the downloading of a Secondary Platform Bundle from a SPB Manager, its loading and its installation within the iSSP

service: hardware dependent low level software running in unprivileged mode

telecom family identifier: family identifier having a reserved value, used to identify a Secondary Platform Bundle as a Telecom Secondary Platform Bundle

telecom Secondary Platform Bundle (SPB): Secondary Platform Bundle (SPB) which contains or is intended to contain at least one 3GPP NAA

test telecom bundle: telecom bundle containing a 3GPP NAA which is intended to access a 3GPP test network (e.g. a network compliant with ETSI TS 134 108 [i.4])

user intent: direct, real time acquisition and validation of the end user input on the LBA to trigger locally a Secondary Platform Bundle provisioning or a Secondary Platform Bundle management operation

virtual address: in a virtual storage system, the address assigned to a storage location in external storage (i.e. outside the SE) to allow that location to be accessed as though it were part of main storage (i.e. inside the SE)

virtual address space: set of virtual addresses that can be used by a particular program or functional unit

3.2 Symbols

Void.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI TS 103 666-1 [3] and the following apply:

ABI	Application Binary Interface
API	Application Programming Interface
HLOS	High Level Operating System
iNVM	(internal NVM) Non-Volatile Memory inside the SSP
iRAM	(internal RAM) volatile Random Access Memory inside the SSP
ISN	Individual Serial Number
MMF	Memory Management Function
OID	Object IDentifier
PRF	Pseudorandom Function family
rNVM	(remote NVM) Non-Volatile Memory outside the SE
rRAM	(remote RAM) volatile Random Access Memory outside the SSP
SPB	Secondary Platform Bundle

4 Introduction

4.1 Document Layout

The present document specifies:

- an overview of the iSSP;
- the iSSP architecture;
- the Primary Platform, including the hardware platform requirements and services;
- the Primary Platform Interface;
- the Secondary Platform Bundle;
- the communication interface, including the protocol stack layers;
- the certification requirements for the iSSP.

4.2 ASN.1 syntax

4.2.1 Introduction

The provisions of ETSI TS 103 666-1 [3], clause 4.4.1 shall apply.

The complete ASN.1 code is provided for reference in Annex B.

4.2.2 Start of ASN.1

```
-- ASN1START

ISSPDefinitions { itu-t (0) identified-organization (4) etsi (0) smart-secure-platform (3666) part2
(2) }
DEFINITIONS
AUTOMATIC TAGS
EXTENSIBILITY IMPLIED ::=
BEGIN

/* Imports */

IMPORTS
    Certificate, Time, AlgorithmIdentifier
        FROM PKIX1Explicit88 {iso(1) identified-organization(3) dod(6) internet(1) security(5)
mechanisms(5) pkix(7) id-mod(0) id-pkix1-explicit(18)}
    SubjectKeyIdentifier
        FROM PKIX1Implicit88 {iso(1) identified-organization(3) dod(6) internet(1) security(5)
mechanisms(5) pkix(7) id-mod(0) id-pkix1-implicit(19)};

-- ASN1STOP
```


5 Overview

5.1 Description

An iSSP is an integrated SSP confined in a dedicated sub-system within an SoC. The SoC is usually soldered in the terminal and so the SSP is an integral part of the terminal.

The iSSP is a composition of three parts as described in clause 6.1.