eUICC Profile Package: Interoperable Format Technical Speci ication

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1. Objective

The objective of this document is to define the technical specification of a standard format to be used for the loading and installation of an interoperable Profile Package in any compliant eUICC.

This specification is based on the following SIMalliance document: eUICC Profile Package: Interoperability Functional Requirements.

2. Introduction

The embedded UICC (eUICC), and the subsequent requirement for remote provisioning, has introduced the need for a number of operations, previously carried out in personalisation centres by individual UICC vendors, to be performed remotely in an open ecosystem.

This document specifies the structure and coding required to build, remotely load and install a profile in an eUICC.

The Profile Package, as technically specified in this document, represents the structure of data to be built by the Profile Creator and to be loaded in the eUICC in order for the eUICC to be personalised according to the content of the Profile Package.

This specification is intended primarily for Profile Creator providers, Profile Creator users (i.e. Mobile Network Operators or MNOs) and eUICC vendors in order for them to elaborate and exchange profiles with guaranteed interoperability.

In order to reduce complexity, the definition of the Profile Package does not support 2G SIM applications. This is not a limitation; for a terminal (e.g. a 2G M2M module) to be able to sustain remote provisioning of an eUICC according to this definition of the Profile Package, it shall support features defined in standard releases which also mandate the support of a UICC containing a USIM application to access a 2G network. This is aligned with requirements expressed in the GSMA Remote Provisioning Technical Specification [GS RPT], which require support of Release 9 for a device supporting eUICC.

eUICC ecosystem

The following illustration shows an example eUICC system environment. On the server side, interoperability is achieved on different levels (e.g. by the GSMA Remote Provisioning Technical Specifications [GS RPT]). The Subscription Manager (divided into two parts according to this specification) must interact with different entities like other SM, EUM (eUICC Manufacturer) or MNO.
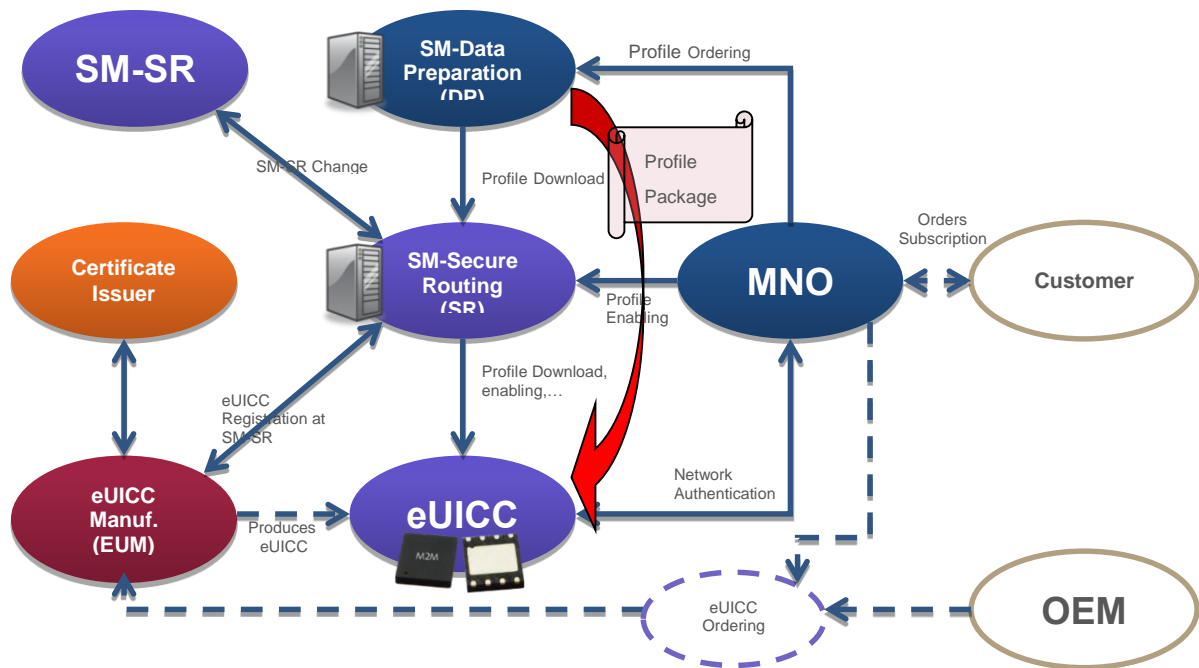
Figure 1**: Example of eUICC ecosystem**

3. Principles

- This specification is based on the requirements defined in the following SIMalliance specification: eUICC Profile Package: Interoperability Functional Requirements V1.1

- This specification also takes into account the requirements defined in section 6.5 of ETSI TS 103 383

- This specification also takes into account these GSMA documents:
  - o Remote Provisioning Architecture for Embedded UICC V1.1
  - o Remote Provisioning Architecture for Embedded UICC Technical Specification V2.0

4. References

4.1 Normative References

- [SA PP RS]: SIMalliance eUICC Profile Package: Interoperability Functional Requirements V1.1

- [101 220]: ETSI TS 101 220 V12.0.0: Smart Cards; ETSI numbering system for telecommunication application providers (Release 12)

- [102 221]: ETSI TS 102 221 V12.0.0: Smart Cards; UICC-Terminal interface; Physical and logical characteristics (Release 12)

- [102 222]: ETSI TS 102 222 V7.1.0: Integrated Circuit Cards (ICC); Administrative commands for telecommunications applications (Release 7)

- [102 226]: ETSI TS 102 226 V12.0.0: Smart Cards; Remote APDU structure for UICC based applications (Release 12)

- [USIM]: 3GPP TS 31.102 V12.6.0: Characteristics of the Universal Subscriber Identity Module (USIM) application (Release 12)

- [ISIM]: 3GPP TS 31.103 V12.2.0: Characteristics of the IP Multimedia Services Identity Module (ISIM) application (Release 12)

- [CSIM]: 3GPP2 C.S0065-C v1.0: cdma2000 Application on UICC for Spread Spectrum Systems

- [GP CS]: GlobalPlatform Card Specification V2.2.1

- [GP UC]: GlobalPlatform Card Specification UICC Configuration V1.0.1

- [GP AA]: Confidential Card Content Management; GlobalPlatform Card Specification Amendment A V1.0.1

- [GP AB]: GlobalPlatform Card Remote Application Management over HTTP Card Specification v2.2 – Amendment B v1.1.2

- [X.680]: ITU-T X.680 (11/2008): Abstract Syntax Notation One (ASN.1): Specification of basic notation including Corrigendum 1 and 2

- [X690]: ITU-T X.690 (11/2008): ASN.1 Encoding Rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER) including Corrigendum 1 and 2

4.2   Informative References

- [GS RPA]: GSMA Remote Provisioning Architecture for Embedded UICC V1.1

- [GS RPT]: GSMA Remote Provisioning Architecture for Embedded UICC Technical Specification V2.0

- [102 383]: ETSI TS 103 383 V12.7.0: Smart Cards; Embedded UICC; Requirements Specification (Release 12)

5. Abbreviations

ADF	Application Dedicated File
AID	Application Identifier
APDU	Application Protocol Data Unit
ASN.1	Abstract Syntax Notation One
CASD	Controlling Authority Security Domain
CDMA	Code Division Multiple Access
CSIM	cdma2000 Subscriber Identify Identity Module
DF	Dedicated File
DGI	Data Grouping Identifier
DO	Data Object
EAP	Extensible Authentication Protocol
EF	Elementary File
eUICC	embedded UICC
EUM	eUICC Manufacturer
FCP	File Control Parameters
GBA	Generic Bootstrapping Architecture

HCI	Host Controller Interface
ICCID	Integrated Circuit Card ID
ID	Identifier
IMSI	International Mobile Subscriber Identity
ISIM	IP Multimedia Services Identity Module
LCSI	Life Cycle Status Information
M2M	Machine to Machine
MAC	Message Authentication Code
MAC-A	MAC used for authentication and key agreement
MBMS	Multimedia Broadcast/Multicast Service
MNO	Mobile Network Operator
MNO-SD	Mobile Network Operator Security Domain (Root SD of a Profile)
NAA	Network Access Application
NAC	Network Access Control
OID	Object Identifier
OS	Operating System (of the eUICC)
OTA	Over the Air
PE	Profile Element
PIN	Personal Identification Number
POL	Policy Rules within the Profile
PUK	PIN Unblocking Key
RAM	Remote Application Management
RFM	Remote File Management
SCP	Secure Channel Protocol
SD	Security Domain
SP	Service Provider
SQN	Sequence Number
SSD	Supplementary Security Domain
SWP	Single Wire Protocol
USIM	Universal Subscriber Identity Module

6. Definitions

embedded UICC	A UICC which is not easily accessible or replaceable, is not intended to be removed or replaced in the terminal, and enables the secure changing of Subscriptions.
Policy Rules	Defines the atomic action of a Policy and the conditions under which it is executed.
Profile	Combination of a file structure, data and applications on an eUICC.
Profile Creator	External entity in charge of creating the Profile Package based on MNO requirements, protecting the Profile Package from modification and/or content access.
Profile Element	A Profile Element is a part of the Profile Package representing one or several features of the Profile encoded using TLV structures based on ASN.1 description
Profile Package	A Personalised Profile using an interoperable description format transmitted to an eUICC in order to load and install a Profile
Provisioning	The downloading and installation of a Profile into an eUICC

| Remote Provisioning | Provisioning done by the subscription manager on an eUICC outside of his premises, using a secure data link. |

7. Profile Package General Structure

7.1 Introduction

The Profile Package is a collection of Profile Elements (PE) which uses a common description language. This description language is independent from the transport protocol. Each PE is described and can be processed by the eUICC independently from the others. A specific sequence is required for many PEs, however, because they will be processed by the eUICC in the context of previous PEs (i.e. some elements of the profile may be created only after higher level elements, such as a directory, is created; NAA parameters are applied to the NAA file structure created by previous PEs etc.). Examples of Profile Elements include: a file; a reference to a file system structure; a set of parameters for a specific NAA; an interoperable application etc.

The description of every PE in this specification is based on ASN.1 specified in [X.680] and encoded in TLV structures using DER (Distinguished Encoding Rule) encoding as specified in [X690]. This provides a flexible description and avoids the limitations of APDU protocol.

An identification number shall be associated to every PE. This identification number is used for error reporting.

A PE starts with a header containing the following information:
- PE identification number
- Optional flag indicating that the support of this PE is mandatory
- PE type
- PE length

7.2 Error management

A PE can be flagged in order to indicate that the support of the feature described by this PE is mandatory. If this feature is not supported by the eUICC, an error is reported to the Profile Creator, the processing of the Profile Package is cancelled and all of the PE already processed shall be discarded.

If a PE is not flagged as mandatory, and if the eUICC does not support the associated feature, the error is reported but the processing of the Profile Package continues. The coding of the error message is defined in section 8.118.10.

In order to avoid errors and warnings during the processing of a Profile Package, the Profile Creator may audit the targeted eUICC before building a Profile Package. In that case, all the features described in the Profile Package will be entirely supported by the eUICC. This is the best way to ensure predictable behaviour of the Profile when installed on a specific eUICC. If this procedure is not followed, a functional Profile in the eUICC may still be possible, but available features may be restricted.

The features that shall be supported by the Profile are also described in the Profile header. In case the eUICC does not support one of the features listed in this Profile header, the eUICC shall immediately return an error code and abort the processing of the Profile. This second mechanism complements the list of mandatory features encoded in the Profile header and is required for some specific features (e.g. proprietary features) that are not in the standardised list of features.

7.3 ASN.1 Module

The PE format is defined in a single, self-contained, ASN.1 definition module called `PEDefinitions`, with an ISO Object Identifier in the SIMalliance namespace:

```
PEDefinitions {joint-iso-itu-t(2) international-organizations(23)
simalliance(143) euicc-profile(1) spec-version(1) version-one(1)}
```

```
DEFINITIONS
AUTOMATIC TAGS
EXTENSIBILITY IMPLIED ::=
BEGIN
```

Two encoding/decoding attributes are defined:
- AUTOMATIC TAGS means that the tags are defined automatically using the encoding rules unless a tag notation is present in the PE format definition
- EXTENSIBILITY IMPLIED means that types may have elements that are not defined in this specification. This means that decoders should be ready to handle values with unspecified tags, either by processing them if they know their value content, or ignoring them silently (without reporting an error) if they do not know them. This is useful when processing PEs from a newer specification and to handle proprietary tag values.

8. Profile Package Elements Definition

8.1 Common types

8.1.1 General Purpose types

To avoid ambiguity regarding the maximum allowed size of integers and octets strings, the following types and values, that are referenced in various PE definitions, are defined:

```
-- Basic integer types, for size constraints
maxUInt8 INTEGER ::= 255
UInt8 ::= INTEGER (0..maxUInt8)
maxUInt15 INTEGER ::= 32767
UInt15 ::= INTEGER (0..maxUInt15)
maxUInt16 INTEGER ::= 65535
UInt16 ::= INTEGER (0..maxUInt16)
maxUInt31 INTEGER ::= 2147483647
UInt31 ::= INTEGER (0..maxUInt31)
```

8.1.2 Profile specific types

The following types are used within several PE definitions:

```
ApplicationIdentifier ::= OCTET STRING (SIZE(5..16))
```

8.1.3 PE Header

The PE header is present at the beginning of all PEs described in this specification

```
PEHeader ::= SEQUENCE {
    mandated NULL OPTIONAL,
 -- if set, indicate that the support of this PE is mandatory
    identification UInt15 -- Identification number of this PE
}
```

The `mandated` field is used to indicate that the support of this PE is mandatory for the installation of this profile. If the eUICC does not support the following PE, it shall abort the processing of the profile and return an error to the sender of the profile.

The `identification` field is used to uniquely identify a PE within the profile. It will be used for error reporting to the sender of the profile.

The list of supported PEs is defined below:

```
ProfileElement ::= CHOICE {
      header ProfileHeader,

/* PEs */
      genericFileManagement PE-GenericFileManagement,
      pinCodes PE-PINCodes,
      pukCodes PE-PUKCodes,
      akaParameter PE-AKAParameter,
      cdmaParameter PE-CDMAParameter,
      securityDomain PE-SecurityDomain,
      rfm PE-RFM,
      application PE-Application,
      nonStandard PE-NonStandard,
      end PE-End,
      rfu1 PE-Dummy, -- this avoids renumbering of tag values
      rfu2 PE-Dummy, -- in case other non-file-system PEs are
      rfu3 PE-Dummy, -- added here in future versions
      rfu4 PE-Dummy,
      rfu5 PE-Dummy,

/*  PEs  related  to  file  system  creation  using  templates  defined  in  this
specification */
      mf PE-MF,
      cd PE-CD,
      telecom PE-TELECOM,
      usim PE-USIM,
      opt-usim PE-OPT-USIM,
      isim PE-ISIM,
      opt-isim PE-OPT-ISIM,
      phonebook PE-PHONEBOOK,
      gsm-access PE-GSM-ACCESS,
      csim PE-CSIM,
      opt-csim PE-OPT-CSIM,
...
}

PE-Dummy ::= SEQUENCE {
}
```

It is important that PEs are sent in an order which do not create unresolved dependencies. The following rules shall be considered:

ProfileHeader
Shall be the first element and provided once within a profile download only.

PE-MF

Shall be the first element of the file system creation.

PE-CD
The use of this PE is optional and shall come after the creation of the MF.

PE-TELECOM
The use of this PE is optional and shall come after the creation of the MF.

PE-USIM
The use of this PE is optional and shall come after the creation of the MF.

PE-OPT-USIM
The use of this PE is optional and shall come after PE-USIM.

PE-ISIM
The use of this PE is optional and shall come after the creation of the MF.

PE-OPT-ISIM
The use of this PE is optional and shall come after PE-ISIM.

PE-GSM-ACCESS
The use of this PE is optional and shall come after PE-USIM.

PE-PHONEBOOK
The use of this PE is optional and shall come after PE-USIM.

PE-CSIM
The use of this PE is optional and shall come after the creation of the MF.

PE-OPT-CSIM
The use of this PE is optional and shall come after PE-CSIM.

PE-GenericFileManagement
Dependencies within the file system creation need to be considered. E.g. the DF Telecom template may only be used when the MF has been created.

PE-AKAParameters
Shall be created in the context of the respective NAA. May only be provided once per NAA. This element is not allowed in the context of MF, SDs and applications.

PE-PINCodes
Shall be created in the context where they shall be defined. Global PINs shall be created in the context of the creation of the UICC file system (MF). This element may only be provided once within each DF (ADF).

PE-PUKCodes
May only be provided once within the context of the UICC file system (MF). It needs to include all PUK codes for the complete profile.

PE-SecurityDomain
Should be created after the creation of the file system, NAA parameters and PIN/PUK configuration.

PE-Application

Should be provided after the creation of the SDs.

PE-RFM
Shall be provided after the creation of the SDs.

PE-NonStandard
In general this element may be provided in any position after the profile header. Further restrictions depend on the respective application.

PE-End
Shall be provided once at the end of the Profile Package.

8.2 Profile header

The following type defines the service list which is used later in the Profile header. This service list is used to indicate the services that shall be supported by the eUICC. When a service is present in this sequence, it indicates that this service is mandatory.

```
ServicesList ::= SEQUENCE {
/* Contactless */
     contactless NULL OPTIONAL,

/* NAAs */
     usim NULL OPTIONAL,
     isim NULL OPTIONAL,
     csim NULL OPTIONAL,

/* NAA algorithms */
     milenage NULL OPTIONAL,
     tuak NULL OPTIONAL,
     cave NULL OPTIONAL,

/* USIM/ISIM services */
     gba-usim NULL OPTIONAL,
     gba-isim NULL OPTIONAL,
     mbms NULL OPTIONAL,
     eap NULL OPTIONAL,
/* Application Runtime environment */
     javacard NULL OPTIONAL,
     multos NULL OPTIONAL

}
```

The following list gives the features that the eUICC shall support in order to provide the associated service:
- contactless: support the SWP and HCI interfaces as well as the associated APIs
- usim: the USIM application as defined by 3GPP [USIM]
- isim: the ISIM application as defined by 3GPP [ISIM]
- csim: the CSIM application as defined by 3GPP2 [CSIM]
- milenage: the milenage AKA authentication algorithm
- tuak: the TUAK AKA authentication algorithm
- cave: the CAVE authentication algorithm

- gba-usim: support of GBA authentication context in the USIM application
- gba-isim: support of GBA authentication context in the ISIM application
- mbms: support of the MBMS authentication context in the USIM application
- eap: support of the UICC EAP client
- javacard: support of the Java Card^{TM} runtime environment
- multos: support of the Multos^{TM} runtime environment

The Profile header PE is used once at the beginning of the profile in order to give various indications on the content on the profile:

```
ProfileHeader ::= SEQUENCE {
     Major-version UInt8, -- set to 1 for this version of the specification
     Minor-version UInt8, -- set to 0 for this version of the specification
     profileType UTF8String OPTIONAL, -- Profile type
     iccid OCTET STRING (SIZE (10)),-- ICCID of the Profile
     pol OCTET STRING  OPTIONAL,
     eUICC-Mandatory-services ServicesList,
     eUICC-Mandatory-GFSTEList SEQUENCE OF OBJECT IDENTIFIER
}
```

When receiving the Profile header, the eUICC shall check the `major-version`. If the version indicated by the Profile is greater than the version supported by the eUICC, the eUICC shall return an error `"unsupported-profile-version"` and stop the processing of the Profile. The `minor-version` is only informative, however, this may indicate that the Profile contains elements that the eUICC will not be able to process if it supports an older version of the specification. In that case, these elements will be ignored by the eUICC unless they are marked as mandatory in the PE header.

The "`profileType`" is a free optional text indicating for example, the name of the Profile issuer and the type of Profile.

The "`pol`" contains the policy rules within a Profile (e.g. POL1 value as defined by GSMA in [GS RPT], Table 66). If this variable is not supplied in the Profile Package, its value shall be set to all 0 in the eUICC.

"`eUICC-Mandatory-GFSTEList`" contains a list of OIDs identifying file system templates used in the Profile Package that shall be supported by the eUICC in order for the Profile to be correctly installed on the eUICC. This list may contain the OIDs associated to the file system template defined in "ANNEX A (Normative): File Structure Templates Definition" of this specification.

Usage rules: This PE shall be used once and shall be the first PE of the Profile Package.

8.3 File system

8.3.1 File system templates

Templates are defined in Annex A of this document. These templates are used to accelerate the creation of the file system in the Profile. Their use is optional. An alternate mechanism is defined in order to allow the creation of files without using these templates.

These templates define default values for:
- File size, number of records and record size
- Access conditions
- Content

These default values are not defined for all the files. In that case, these values shall be provided in the Profile. There are 2 types of templates:

- Created by default templates: All the files described in these templates will be created, even if they are not listed in the PE provided in the Profile Package, except if they are tagged with "`doNotCreate`" in the "`File`" sequence.
- Not created by default templates: Only the file listed in the PE provided in the Profile Package will be created.

The templates also indicate an access rule reference which can be used to build the Access Rules Reference file content.

When using a template containing a hierarchy of files, Profile Creator shall take care to not instantiate files within a DF without instantiating the DF before.

8.3.2   File related types

These types are required for file system and file PE definitions.

```
ProprietaryInfo ::= SEQUENCE {
      specialFileInformation [PRIVATE 0] OCTET STRING (SIZE (1)) DEFAULT '00'H,

      /* fillPattern, repeatPattern
      only one of the parameters may be present. Coding and rules defined within
ETSI TS 102 222 [102 222] apply
      */

      fillPattern [PRIVATE 1] OCTET STRING OPTIONAL,
      repeatPattern [PRIVATE 2] OCTET STRING OPTIONAL
}

Fcp ::= SEQUENCE {
        fileDescriptor [2] OCTET STRING (SIZE(1..5)) OPTIONAL,

          /* fileID
                For ADFs, the fileID is a temporary value (named temporary
file ID in this document) used only during the profile creation. It has to be
unique within a profile and is used for referencing files within this ADF using
the file path.
          */
        fileID [3] OCTET STRING (SIZE(2)) OPTIONAL,

          /* dfName
                Only applies for ADFs
          */
        dfName [4] ApplicationIdentifier OPTIONAL,

          /* lcsi
                Coding according to ETSI TS 102 222 [102 222]
          */
        lcsi [10] OCTET STRING (SIZE (1)) DEFAULT '05'H,

          /* securityAttributesReferenced
          Either containing EF ARR ID[2] + record number[1] or
          record number[1] only and EF ARR ID implicitly known from the
          context, i.e. '2F06' within the MF and '6F06' otherwise
```

```
            */
        securityAttributesReferenced [11] OCTET STRING OPTIONAL,

          /* efFileSize
                Mandatory for EF file types
                Not allowed for DF files
          */
        efFileSize [0] OCTET STRING OPTIONAL,

          /* pinStatusTemplateDO
                Not allowed for EF files
                Mandatory for DF/ADF files
                Encoding is defined in ETSI TS 102 221 [102 221]
          */
        pinStatusTemplateDO [PRIVATE 6] OCTET STRING OPTIONAL,

          /* shortEFID
                Optional for EF file types
                Not allowed for DF files
          */
        shortEFID [8] OCTET STRING (SIZE (1)) OPTIONAL,

          /* proprietaryEFInfo
                Optional for EF file types
                Not allowed for DF files
          */
        proprietaryEFInfo [5] ProprietaryInfo OPTIONAL,

          /* linkPath
                Specifies the path to the file to which shall be linked,
                also valid for DFs/ADFs. Files within ADFs are addressed
                by the temporary file ID of the respective ADF. For the coding
                see filePath.
          */
        linkPath [PRIVATE 7] OCTET STRING OPTIONAL
}

File ::= SEQUENCE OF CHOICE {
     doNotCreate NULL, /* Indicates that this file shall not be created by the
eUICC even if present in a PE referencing a "Created by Default" template.
This flag has no effect for the creation of files in the MF and shall not be used
for all the files listed in a "Not Created by Default" template*/
     fileDescriptor Fcp,
     fillFileOffset UInt16,
     fillFileContent OCTET STRING

}
```

The "`File`" type is used during the creation of the file system when using a template. It contains 2 optional elements that are used to modify the content of the template during file creation or to set the content when it is not defined in the template.

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The "`Fcp`" type contains all the file control parameters required for an ADF, DF or EF creation. All the elements contained in the "`Fcp`" are marked as optional. The parameters to be provided within the "`Fcp`" are context specific (See 8.3.3 and 8.3.5).
Within "`File`" type, "`Fcp`" may be repeated to create a sequence of files (like several EF ICON files).
The "`fillFileContent`" type, preceded optionally by a "`fillFileOffset`" type, is used to set the content of a file. These types may be used repetitively for each file created.

The eUICC shall process the elements contained in the "`File`" type according to the diagram below to create no, one or several files and optionally fill them with content.
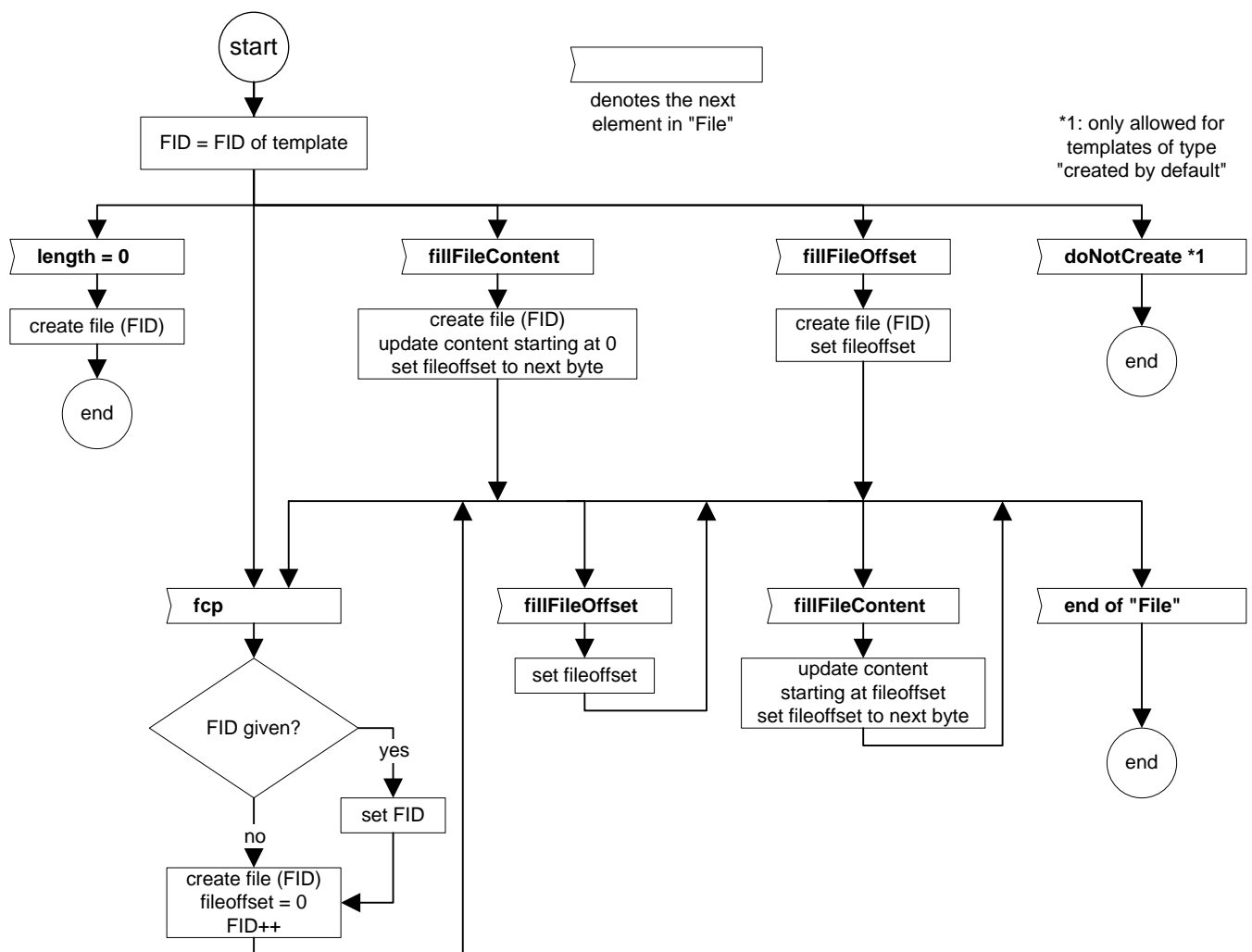
Figure 2**: Processing of "File" type**

NOTE: Not all sequences allowed by this diagram are useful (e.g. several sequential "`fillFileOffset`"). However, the processing defined above simplifies the rules to be followed and the implementation on the eUICC.

8.3.3   Template Modification Rules

For each template, default settings are defined within ANNEX A (Normative): File Structure Templates Definition. If no value is defined for a specific parameter, it has to be provided as a parameter within the template instance parameters (e.g. content of EF IMSI).

To overwrite parameters of the template, the following parameters may be specified within the FCP parameters defined within a PE. Depending on the file type defined in the template, the following parameters may be provided within the FCP of a PE to change the settings of the template for a respective file.

Parameter	ADF	ADF Link	DF	DF Link	EF	EF Link
fileDescriptor	F	F	F	F	C	C (See Note 2)
fileID	C	C	C	C	C	C
dfName	M	M	F	F	F	F
lcsi	C	C	C	C	C	C
securityAttributesReferenced	C	C (See Note 4)	C	C (See Note 4)	C	C (See Note 4)
efFileSize	F	F	F	F	C	F
pinStatusTemplateDO	C	C (See Note 4)	C	C (See Note 4)	F	F
shortEFID	F	F	F	F	C	C
proprietaryEFInfo	F	F	F	F	C	F
linkPath	F	C (See Note 3)	F	C (See Note 3)	C (See Note 1)	C (See Note 3)

M: Mandatory
Parameters marked as mandatory have to be provided. Otherwise the file creation will fail.

C: Conditional
Parameters marked with conditional may always be provided if the default value of the template shall be modified (e.g. change of securityAttributesReferenced).
In case no default value is defined within the template the respective conditional parameter is mandatory. Otherwise the creation will fail.

F: Forbidden
These parameters shall not be provided within the FCP since they are invalid within the respective context. In case they are available they will be skipped like unknown tags.

Note 1: For some files it is required to provide content. Instead of providing content it is also allowed to turn the file into a link to an existing file. In this case the settings of the source file for fileDescriptor, efFileSize and proprietaryEFInfo will be applied for creating the file (the respective settings from the template will be ignored).

Note 2: Size within FileDescriptor shall match the size or the file which is referenced by the link. In case a link is turned into an independent file the size may be altered according to the necessary size.

Note 3: In case a link shall be turned in an independent file an empty linkPath needs to be provided. For EFs the FCP needs to include the parameters to define the file size (efFileSize; file Descriptor for record oriented files).

Note 4: Allowed only when a link is changed into an independent file.

All file default contents defined within the template are defined as either repeat or fill patterns. There are two ways to alter the default:

- Overwrite Repeat/Fill Pattern:

A repeat or fill pattern provided within the respective "Fcp" will overwrite the default pattern completely. It does not matter whether the default has been defined as repeat or fill pattern. This means that in case the "Fcp" in the PE includes a fill pattern, but the template is defined as repeat pattern, the fill pattern from the PE will be applied (and vice versa).

This might be needed for some files where the default template size shall be modified (e.g. EF ICI, EF OCI).

- Using "fillFileCOntent"/"fillFileOffset":

Providing file content within "fillFileCOntent"/"fillFileOffset" will have the same effect as creating a file with a fill/repeat pattern and thereafter updating the content via Update.

8.3.4   **File system PEs**

8.3.4.1. MF PE

This PE is used to create and set the content of the files at the MF level. It is based on the template defined in Annex A, section 9.2. The template referenced by the PE is a "Created by default" type template. The rules associated with this kind of template will be used by the eUICC.

```
PE-MF ::= SEQUENCE {
    mf-header PEHeader,
    templateID OBJECT IDENTIFIER,
    mf File,
    ef-pl File OPTIONAL, --
    ef-iccid File,
    ef-dir File,
    ef-arr File
}
```

Usage rules: This PE shall be used only once at the beginning of the profile Package.

8.3.4.2. DF CD PE

This PE is used to create the DF CD and to create and set the content of the files at the DF CD level. It is based on the template defined in Annex A, section 9.3. The use of this PE is optional. If this PE is not received by the eUICC, it will not create DF CD in the profile. The template referenced by the PE is a "Not created by default" type template.

```
PE-CD ::= SEQUENCE {
    cd-header PEHeader,
    templateID OBJECT IDENTIFIER,
    df-cd File,
    ef-launchpad File OPTIONAL, --
    ef-icon File OPTIONAL
}
```

Usage rules: This PE may be used only once after the creation of the MF.

8.3.4.3. DF TELECOM PE

This PE is used to create the DF TELECOM, to create the DFs under the DF TELECOM and to create and set the content of the EFs at the DF TELECOM and sub DFs level. It is based on the template defined in Annex A, section 9.4. The use of this PE is optional. If this PE is not received by the eUICC, it will not create DF TELECOM in the profile. The template referenced by the PE is a "Not created by default" type template.

```
PE-TELECOM ::= SEQUENCE {
    telecom-header PEHeader,
    templateID OBJECT IDENTIFIER,
    df-telecom File,
    ef-arr File OPTIONAL,
    ef-rma File OPTIONAL,
    ef-sume File OPTIONAL,
    ef-ice-dn File OPTIONAL,
    ef-ice-ff File OPTIONAL,
    ef-psismsc File OPTIONAL,
    df-graphics File OPTIONAL,
```

```
            ef-img File OPTIONAL,
            ef-iidf File OPTIONAL,
            ef-ice-graphics File OPTIONAL,
            ef-launch-scws File OPTIONAL,
            ef-icon File OPTIONAL,
        df-phonebook File OPTIONAL,
            ef-pbr File OPTIONAL,
            ef-ext1 File OPTIONAL,
            ef-aas File OPTIONAL,
            ef-gas File OPTIONAL,
            ef-psc File OPTIONAL,
            ef-cc File OPTIONAL,
            ef-puid File OPTIONAL,
            ef-iap File OPTIONAL,
            ef-adn File OPTIONAL,
            ef-pbc File OPTIONAL,
            ef-anr File OPTIONAL,
            ef-puri File OPTIONAL,
            ef-email File OPTIONAL,
            ef-sne File OPTIONAL,
            ef-uid File OPTIONAL,
            ef-grp File OPTIONAL,
            ef-ccp1 File OPTIONAL,
        df-multimedia File OPTIONAL,
            ef-mml File OPTIONAL,
            ef-mmdf File OPTIONAL,
        df-mmss File OPTIONAL,
            ef-mlpl File OPTIONAL,
            ef-mspl File OPTIONAL,
            ef-mmssmode File OPTIONAL
}
```

Usage rules: This PE may be used only once after the creation of the MF. Additional files may be required that are not part of this template. These files shall be created using the GenericFileManagement PE.

8.3.4.4. USIM Related Files and Directories

8.3.4.4.1. USIM "Created by default" Files PE

This PE is used to create a USIM ADF and to create and set the content of the files either mandatory or always used at the DF USIM level. The template referenced by the PE is a "Created by default" type template. This PE is based on the template defined in Annex A, section 9.5.1.

```
PE-USIM ::= SEQUENCE {
    usim-header PEHeader,
    templateID OBJECT IDENTIFIER,
    adf-usim File,
    ef-imsi File,
    ef-arr File,
    ef-keys File OPTIONAL,
    ef-keysPS File OPTIONAL,
    ef-hpplmn File OPTIONAL,
```

```
      ef-ust File, /* The content of UST file shall be modified by the eUICC
during profile installation according to the functionality supported by the eUICC
platform  i.e. in the case where a service is not supported (and not indicated as
required) the related bit(s) will be set to zero */
      ef-fdn File OPTIONAL,
      ef-sms File OPTIONAL,
      ef-smsp File OPTIONAL,
      ef-smss File OPTIONAL,
      ef-spn File,
      ef-est File,
      ef-start-hfn File OPTIONAL,
      ef-threshold File OPTIONAL,
      ef-psloci File OPTIONAL,
      ef-acc File,
      ef-fplmn File OPTIONAL,
      ef-loci File OPTIONAL,
      ef-ad File OPTIONAL,
      ef-ecc File,
      ef-netpar File OPTIONAL,
      ef-epsloci File OPTIONAL,
      ef-epsnsc File OPTIONAL
}
```

Usage rules: This PE may be used several times after the creation of the MF.

8.3.4.4.2. USIM "Not Created by default" Files PE

This PE is used to create the files less often used under the USIM DF previously created. The template referenced by the PE is a "Not created by default" type template. This PE is based on the template defined in Annex A, section 9.5.2.

```
PE-OPT-USIM ::= SEQUENCE {
      optusim-header PEHeader,
      templateID OBJECT IDENTIFIER,
      ef-li File OPTIONAL,
      ef-acmax File OPTIONAL,
      ef-acm File OPTIONAL,
      ef-gid1 File OPTIONAL,
      ef-gid2 File OPTIONAL,
      ef-msisdn File OPTIONAL,
      ef-puct File OPTIONAL,
      ef-cbmi File OPTIONAL,
      ef-cbmid File OPTIONAL,
      ef-sdn File OPTIONAL,
      ef-ext2 File OPTIONAL,
      ef-ext3 File OPTIONAL,
      ef-cbmir File OPTIONAL,
      ef-plmnwact File OPTIONAL,
      ef-oplmnwact File OPTIONAL,
      ef-hplmnwact File OPTIONAL,
      ef-dck File OPTIONAL,
      ef-cnl File OPTIONAL,
```

```
        ef-smsr File OPTIONAL,
        ef-bdn File OPTIONAL,
        ef-ext5 File OPTIONAL,
        ef-ccp2 File OPTIONAL,
        ef-ext4 File OPTIONAL,
        ef-acl File OPTIONAL,
        ef-cmi File OPTIONAL,
        ef-ici File OPTIONAL,
        ef-oci File OPTIONAL,
        ef-ict File OPTIONAL,
        ef-oct File OPTIONAL,
        ef-vgcs File OPTIONAL,
        ef-vgcss File OPTIONAL,
        ef-vbs File OPTIONAL,
        ef-vbss File OPTIONAL,
        ef-emlpp File OPTIONAL,
        ef-aeem File OPTIONAL,
        ef-hiddenkey File OPTIONAL,
        ef-pnn File OPTIONAL,
        ef-opl File OPTIONAL,
        ef-mbdn File OPTIONAL,
        ef-ext6 File OPTIONAL,
        ef-mbi File OPTIONAL,
        ef-mwis File OPTIONAL,
        ef-cfis File OPTIONAL,
        ef-ext7 File OPTIONAL,
        ef-spdi File OPTIONAL,
        ef-mmsn File OPTIONAL,
        ef-ext8 File OPTIONAL,
        ef-mmsicp File OPTIONAL,
        ef-mmsup File OPTIONAL,
        ef-mmsucp File OPTIONAL,
        ef-nia File OPTIONAL,
        ef-vgcsca File OPTIONAL,
        ef-gbabp File OPTIONAL,
        ef-msk File OPTIONAL,
        ef-muk File OPTIONAL,
        ef-ehplmn File OPTIONAL,
        ef-gbanl File OPTIONAL,
        ef-ehplmnpi File OPTIONAL,
        ef-lrplmnsi File OPTIONAL,
        ef-nafkca File OPTIONAL,
        ef-spni File OPTIONAL,
        ef-ppni File OPTIONAL,
        ef-ncp-ip File OPTIONAL,
        ef-ufc File OPTIONAL,
        ef-nasconfig File OPTIONAL,
        ef-uicciari File OPTIONAL,
        ef-pws File OPTIONAL,
        ef-fdnuri File OPTIONAL,
        ef-bdnuri File OPTIONAL,
        ef-sdnuri File OPTIONAL,
```

```
      ef-iwl File OPTIONAL,
      ef-ips File OPTIONAL,
      ef-ipd File OPTIONAL
}
```

Usage rules: This PE can be used once for each USIM application after the creation of the USIM Mandatory files.

8.3.4.4.3. DF PHONEBOOK PE

This PE is used to create the DF PHONEBOOK inside the ADF USIM and the EFs contained in DF PHONEBOOK. It is based on part of the template defined in Annex A, section 9.4. The use of this PE is optional. If this PE is not received by the eUICC, it will not create DF TELECOM in the profile. The template referenced by the PE is a "Not created by default" type template.

```
PE-PHONEBOOK ::= SEQUENCE {
      phonebook-header PEHeader,
      templateID OBJECT IDENTIFIER,
      df-phonebook File,
      ef-pbr File OPTIONAL,
      ef-ext1 File OPTIONAL,
      ef-aas File OPTIONAL,
      ef-gas File OPTIONAL,
      ef-psc File OPTIONAL,
      ef-cc File OPTIONAL,
      ef-puid File OPTIONAL,
      ef-iap File OPTIONAL,
      ef-adn File OPTIONAL,
      ef-pbc File OPTIONAL,
      ef-anr File OPTIONAL,
      ef-puri File OPTIONAL,
      ef-email File OPTIONAL,
      ef-sne File OPTIONAL,
      ef-uid File OPTIONAL,
      ef-grp File OPTIONAL,
      ef-ccp1 File OPTIONAL
}
```

Usage rules: This PE may be used only once after the creation of the USIM ADF.

8.3.4.4.4. DF GSM ACCESS PE

This PE is used to create the DF GSM ACCESS and to create and set the content of the files at the DF GSM ACCESS level. The use of this PE is optional. If this PE is not received by the eUICC, it will not create DF GSM ACCESS in the profile. The template referenced by the PE is a "Not created by default" type template. This PE is based on the template defined in Annex A, section 9.5.4.

```
PE-GSM-ACCESS ::= SEQUENCE {
      gsm-access-header PEHeader,
      templateID OBJECT IDENTIFIER,
      df-gsm-access File,
      ef-kc File OPTIONAL,
      ef-kcgprs File OPTIONAL,
      ef-cpbcch File OPTIONAL,
```

```
            ef-invscan File OPTIONAL
}
```

Usage rules: This PE may be used only once after the creation of the USIM ADF.

8.3.4.5. ISIM Related Files and Directories

8.3.4.5.1. ISIM "Created by default" Files PE

This PE is used to create an ISIM ADF and to create and set the content of the mandatory files at the DF ISIM level. The template referenced by the PE is a "Created by default" type template. This PE is based on the template defined in Annex A, section 9.6.1.

```
PE-ISIM ::= SEQUENCE {
     isim-header PEHeader,
     templateID OBJECT IDENTIFIER,
     adf-isim File,ef-impi File,
     ef-impu File,
     ef-domain File,
     ef-ist File, /* The content of IST file shall be modified by the eUICC
during profile installation according to the functionality supported by the eUICC
platform i.e. in the case where a service is not supported (and not indicated as
required) the related bit(s) will be set to zero */
     ef-ad File OPTIONAL,
     ef-arr File
}
```

Usage rules: This PE may be used several times after the creation of the MF.

8.3.4.5.2. ISIM "Not Created by default" Files PE

This PE is used to create the optional files under the ISIM ADF previously created. The template referenced by the PE is a "Not created by default" type template. This PE is based on the template defined in Annex A, section 9.6.2.

```
PE-OPT-ISIM ::= SEQUENCE {
     optisim-header PEHeader,
     templateID OBJECT IDENTIFIER,
     ef-pcscf File OPTIONAL,
     ef-sms File OPTIONAL,
     ef-smsp File OPTIONAL,
     ef-smss File OPTIONAL,
     ef-smsr File OPTIONAL,
     ef-gbabp File OPTIONAL,
     ef-gbanl File OPTIONAL,
     ef-nafkca File OPTIONAL,
     ef-uicciari File OPTIONAL,
     ef-psismsc File OPTIONAL
}
```

Usage rules: This PE can be used once for each ISIM application after the creation of the ISIM Mandatory files.

8.3.4.6. CSIM Related Files and Directories

8.3.4.6.1. CSIM "Created by default" Files PE

This PE is used to create a CSIM ADF and to create and set the content of the mandatory files at the DF CSIM level. The template referenced by the PE is a "Created by default" type template. This PE is based on the template defined in Annex A, section 9.7.1.

```
PE-CSIM ::= SEQUENCE {
      csim-header PEHeader,
      templateID OBJECT IDENTIFIER,
      adf-csim File,
      ef-arr File,
      ef-call-count File,
      ef-imsi-m File,
      ef-imsi-t File,
      ef-tmsi File,
      ef-ah File,
      ef-aop File,
      ef-aloc File,
      ef-cdmahome File,
      ef-znregi File,
      ef-snregi File,
      ef-distregi File,
      ef-accolc File,
      ef-term File,
      ef-acp File,
      ef-prl File,
      ef-ruimid File,
      ef-csim-st File,
      ef-spc File,
      ef-otapaspc File,
      ef-namlock File,
      ef-ota File,
      ef-sp File,
      ef-esn-meid-me File,
      ef-li File,
      ef-usgind File,
      ef-ad File,
      ef-max-prl File,
      ef-spcs File,
      ef-mecrp File,
      ef-home-tag File,
      ef-group-tag File,
      ef-specific-tag File,
      ef-call-prompt File
}
```

Usage rules: This PE may be used several times after the creation of the MF.

8.3.4.6.2. CSIM "Not Created by default" Files PE

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The PE is used to create the optional files under the CSIM DF previously created. The template referenced by the PE is a "Not created by default" type template. This PE is based on the template defined in Annex A, section 9.7.2.

```
PE-OPT-CSIM ::= SEQUENCE {
      optcsim-header PEHeader,
      templateID OBJECT IDENTIFIER,
      ef-ssci File OPTIONAL,
      ef-fdn File OPTIONAL,
      ef-sms File OPTIONAL,
      ef-smsp File OPTIONAL,
      ef-smss File OPTIONAL,
      ef-ssfc File OPTIONAL,
      ef-spn File OPTIONAL,
      ef-mdn File OPTIONAL,
      ef-ecc File OPTIONAL,
      ef-me3gpdopc File OPTIONAL,
      ef-3gpdopm File OPTIONAL,
      ef-sipcap File OPTIONAL,
      ef-mipcap File OPTIONAL,
      ef-sipupp File OPTIONAL,
      ef-mipupp File OPTIONAL,
      ef-sipsp File OPTIONAL,
      ef-mipsp File OPTIONAL,
      ef-sippapss File OPTIONAL,
      ef-puzl File OPTIONAL,
      ef-maxpuzl File OPTIONAL,
      ef-hrpdcap File OPTIONAL,
      ef-hrpdupp File OPTIONAL,
      ef-csspr File OPTIONAL,
      ef-atc File OPTIONAL,
      ef-eprl File OPTIONAL,
      ef-bcsmscfg File OPTIONAL,
      ef-bcsmspref File OPTIONAL,
      ef-bcsmstable File OPTIONAL,
      ef-bcsmsp File OPTIONAL,
      ef-bakpara File OPTIONAL,
      ef-upbakpara File OPTIONAL,
      ef-mmsn File OPTIONAL,
      ef-ext8 File OPTIONAL,
      ef-mmsicp File OPTIONAL,
      ef-mmsup File OPTIONAL,
      ef-mmsucp File OPTIONAL,
      ef-auth-capability File OPTIONAL,
      ef-3gcik File OPTIONAL,
      ef-dck File OPTIONAL,
      ef-gid1 File OPTIONAL,
      ef-gid2 File OPTIONAL,
      ef-cdmacnl File OPTIONAL,
      ef-sf-eumid File OPTIONAL,
      ef-est File OPTIONAL,
      ef-hidden-key File OPTIONAL,
```

```
        ef-lcsver File OPTIONAL,
        ef-lcscp File OPTIONAL,
        ef-sdn File OPTIONAL,
        ef-ext2 File OPTIONAL,
        ef-ext3 File OPTIONAL,
        ef-ici File OPTIONAL,
        ef-oci File OPTIONAL,
        ef-ext5 File OPTIONAL,
        ef-ccp2 File OPTIONAL,
        ef-applabels File OPTIONAL,
        ef-model File OPTIONAL,
        ef-rc File OPTIONAL,
        ef-smscap File OPTIONAL,
        ef-mipflags File OPTIONAL,
        ef-3gpduppext File OPTIONAL,
        ef-ipv6cap File OPTIONAL,
        ef-tcpconfig File OPTIONAL,
        ef-dgc File OPTIONAL,
        ef-wapbrowsercp File OPTIONAL,
        ef-wapbrowserbm File OPTIONAL,
        ef-mmsconfig File OPTIONAL,
        ef-jdl File OPTIONAL
}
```

Usage rules: This PE can be used once for each USIM application after the creation of the USIM Mandatory files.

8.3.5 Generic File management PEs

This PE is used in order to create a file in a generic way. This will typically be used in case files are not defined in a file system template (e.g. application specific files, future standard files not covered by the templates).

The Generic File Management PE consists of a list of file system operations and follows the same approach as the one described within the existing standards to establish files within a Profile.
Any file system operation is always executed within the current context. Files are always created within the current DF. File updates are always applied to the currently selected EF.

The default selection at the beginning of this PE is as follows:
  – Current DF: MF
  – Current EF: no selection

The following operations are available:

`filePath`:
Selects a DF or EF according to the rules in ETSI TS 102 221 [102 221] for "select by path from MF". It is a concatenation of file identifiers and has even length or length zero for selecting the MF. To select an ADF or a file in an ADF, the file identifier '7FFF' shall be replaced by the temporary File ID of the ADF.

`createFCP`:
The `createFCP` structure is used to create files. Coding of the parameters is based on ETSI 102 222 [102 222] and tailored to profile download to minimise the profile download size and to support linked files.

The following file types can be created using this structure; Linear Fixed, Binary, Cyclic, BER-TLV, linked EFs, linked ADFs/DFs.

The file with the exception of ADFs will always be created within the currently selected DF/ADF. In case a DF/ADF is created it will be automatically selected. No EF will be selected in this case. When an EF has been created it will be automatically selected as the current EF.

`fillFileOffset` & `fillFileContent`:
These commands are used to provide content for EFs. There is always a current `fillFileOffset` pointer. After EF selection the current `fillFileOffset` pointer is set to the beginning of the file (e.g. after creation or after filePath).

`fillFileOffset` is a binary pointer. Record based files and binary files are handled in the same way. For record based files the current `fillFileOffset` may reference to any byte within a record.

e.g. LF file with 100 records and 20 bytes per record:
Default `fillFilePointer` = 1
`fillFileOffset`: 20 sets `fillFilePointer` to beginning of record 2 (Byte 21)
`fillFileContent`: 00 updates byte 21 and sets `fillFilePointer` to record 2 byte 2 (Byte 22)
`fillFileOffset`: 24 sets `fillFilePointer` pointer to beginning of record 3 byte 6 (Byte 46)
`fillFileContent`: 00112233445566778899AABBCCDDEEFF updates byte 46 to 61 and sets `fillFilePointer` to record 3 byte 2 (Byte 62)

`fillFilePointer`: > 2000 undefined behaviour but writing a value beyond the file size will generate an error "Invalid parameter".

For Cyclic files the record pointer of the file is not affected during the creation of the file and the setting of its content. After creation of the Profile in the eUICC, the record pointer will be set to the first record created during the processing of the Profile Package.

Content is personalised using `fillFileContent`. The content will be personalised starting at the current `fillFileOffset` pointer which will be implicitly set to the next unpersonalised content (`fillFileOffset` pointer new= `fillFileOffset` pointer + length of `fillFileContent`).

Since all parameters (except securityAttributesReferenced) for the Fcp type are optional the minimum parameters must be provided for generic File Creation:

Parameter	Create ADF	Create DF	Create DF Link	Create EF	Create EF Link
fileDescriptor	M	M	M	M	M
fileID	M	M	M	M	M
dfName	M	F	F	F	F
lcsi	O	O	O	O	O
securityAttributesReferenced	M	M	M	M	M
efFileSize	F	F	F	M	F
pinStatusTemplateDO	M	M	F	F	F
shortEFID	F	F	F	O	O
proprietaryEFInfo	F	F	F	O	F
linkPath	F	F	M	F	M
M: Mandatory This parameter has to be set within the FCP when the respective type is created. Otherwise creation will fail. O: Optional Parameters which are optional do not need to be provided since they either address optional features (ShortEFID) or a default will be applied (LCSI, proprietaryInfo, pinStatus_TemplateDO: copy of file addressed in linkPath).					

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F Forbidden
This parameter shall not be provided within the respective context.

```
/* Create GenericFileManagement
*/
    PE-GenericFileManage:ment ::= SEQUENCE {
         gfm-header PEHeader,
         fileManagementCMD SEQUENCE of FileManagement
    }

    FileManagement ::= SEQUENCE OF CHOICE {
        filePath [0] OCTET STRING, -- Use Temporary File ID for ADF
        createFCP [APPLICATION 2] Fcp,
        fillFileOffset UInt16,
        fillFileContent [1] OCTET STRING
    }
```

Usage rules: This PE may be used at any time after the creation of the MF.

8.4   NAA(s)

8.4.1   NAA Parameters

An NAA is implicitly installed in the context of the creation of the NAA file structure and includes the following PE provided subsequent to the PEs describing its file system:

- PE-AKAParameters
- PE-CDMAParameter (if <NAA> = CSIM)

8.4.2   AKA Parameters PE

This PE is used to set the parameters for AKA authentication algorithms like Milenage and TUAK.

```
MappingParameter ::= SEQUENCE {
     mappingOptions    OCTET STRING (SIZE(1)),
     mappingSource     ApplicationIdentifier
}

AlgoParameter ::= SEQUENCE {
     key OCTET STRING,
     opc OCTET STRING,        -- For TUAK, this parameter sets TOPc
     rotationConstants OCTET STRING (SIZE (5)) DEFAULT '4000204060'H,
     xoringConstants   OCTET STRING (SIZE (40)) DEFAULT
'00000000000000000000000000000001000000000000000200000000000000004000000000000000
8'H,
     sqnInit SEQUENCE (SIZE (32)) OF OCTET STRING (SIZE (6)) DEFAULT
{'000000000000'H, '000000000000'H, '000000000000'H,
'000000000000'H,'000000000000'H, '000000000000'H, '000000000000'H,
'000000000000'H, '000000000000'H, '000000000000'H, '000000000000'H,
'000000000000'H,'000000000000'H, '000000000000'H, '000000000000'H,
'000000000000'H, '000000000000'H, '000000000000'H, '000000000000'H,
```

```
'000000000000'H,'000000000000'H, '000000000000'H, '000000000000'H,
'000000000000'H, '000000000000'H, '000000000000'H, '000000000000'H,
'000000000000'H,'000000000000'H, '000000000000'H, '000000000000'H,
'000000000000'H }
}

PE-AKAParameter ::= SEQUENCE {
     aka-header PEHeader,
     algorithmID INTEGER {
        milenage(1),
        tuak(2)
     },
     algorithmOptions  OCTET STRING (SIZE(1)),
     algoConfiguration CHOICE {
          mappingParameter  MappingParameter,
          algoParameter     AlgoParameter
     },

     sqnOptions         OCTET STRING (SIZE(1)) DEFAULT '02'H,
     sqnDelta           OCTET STRING (SIZE(6)) DEFAULT '000010000000'H,
     sqnAgeLimit        OCTET STRING (SIZE(6)) DEFAULT '000010000000'H,
     authCounterMax     OCTET STRING (SIZE(3)) OPTIONAL
}
```

The `algorithm-Options` is encoded as follows:

Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Meaning
-	-	-	-	-	X	X	X	RES size (0: 32 bits ,1: 64 bits, 2:128 bits, 3: 256 bits)
		X	X	X				MAC-A and MAC-S size (0: 64 bits ,1: 128 bits, 2: 256 bits)
	X	-	-	-	-	-	-	CK and IK size (0: 128 bits ,1: 256 bits)
X	-	-	-	-	-	-	-	RFU

RES size allowed values depend on the algorithm. Certain lengths may not be allowed for some algorithms.

The `SqnOptions` is encoded as follows:

Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Meaning
-	-	-	-	-	-	-	X	Anonymity Key (AK) (1: not used, 0: used)
-	-	-	-	-	-	X		SQN wrap around (1: not allowed, 0: allowed)
-	-	-	-	-	X	-	-	SQN Delta (1: not used, 0: used)
-	-	-	-	X	-	-	-	SQN Age Limit (1: not used, 0: used)
X	X	X	X	-	-	-	-	RFU

The "`mappingOptions`" data element, if present, indicates the AKA parameters the current NAA uses from the application referenced by "`mappingSource`" and is encoded as follows:

Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Meaning
-	-	-	-	-	-	-	X	Key K, (T)OPc and all but SQN parameters
-	-	-	-	-	-	X	-	All SQN parameters including SQN
-	-	-	-	-	X	-	-	All SQN parameters except SQN
X	X	X	X	X	-	-	-	RFU

When the NAA maintains its own SQN array the eUICC implicitly creates an array for 32 SQNs and initialises them to zero or to the value given in the optional "`sqnInit`" array.

Key size: The "`key`" OBJECT STRING shall have a length of 16 bytes in case of the Milenage and 16 or 32 bytes in case of the TUAK algorithm.

OPc size: The "`opc`" OBJECT STRING shall have a size of 16 bytes in case of the Milenage and 32 bytes in case of the TUAK algorithm.

Usage rules: This PE shall be used once after the creation of a NAA using Milenage or TUAK authentication algorithm (e.g. USIM, ISIM or CSIM using Milenage). Only one Algorithm's parameter set should be provided in a given NAA. If more than one set of parameters is provided in the Profile, the indication of which set of parameters has to be used if FFS.

8.4.3 CSIM Parameters PE

This PE is used to set the parameters for the CSIM authentication algorithms CAVE. It may be provided within the context of an ADF_CSIM.

```
PE-CDMAParameter ::= SEQUENCE {
      cdma-header PEHeader,

/* A-Key for CAVE Authentication */
      authenticationKey OCTET STRING (SIZE(8)),

/*
Optional value for ssd
Bytes 1..8: value if shared secret data A
Bytes 9..16: value if shared secret data B
*/
      ssd OCTET STRING (SIZE (16)) OPTIONAL,

/*
   Shared Secrets for HRPD access authentication
   Includes the shared secret data. Length is variable
*/
      hrpdAccessAuthenticationData OCTET STRING (SIZE (8..255)) OPTIONAL,

/*
   Parameters for simple IP authentication
   The shared secrets will be provided as a list of TLVs
   For each NAI-entry-index which will be provided within CHAP command the
   shared secret will be coded as follows:
   Tag: NAI-entry-index, length, Shared secret
   up to 16 shared secret values may be provided
*/
      simpleIPAuthenticationData OCTET STRING (SIZE (10..4112)) OPTIONAL,

/*
   Parameters mobile IP authentication
   The shared secrets will be provided as a list of Tag Value pairs
   For each NAI-entry-index which will be provided within MN-HA command the
   necessary values will be coded as follows:
   Tag: NAI-entry-index, length of MN-AAA-SS, MN-AAA-SS value, length of
```

```
   MN-HA-SS, MN-HA-SS value
   up to 16 entries may be provided
*/
     mobileIPAuthenticationData OCTET STRING (SIZE (19..8208)) OPTIONAL
}
```

Usage rules: This PE shall be used once after the creation of a NAA using Cave authentication algorithm (e.g. CSIM). Only one Algorithm's parameters set should be provided in a given NAA. If more than one set of parameters is provided in the Profile Package, the indication of which set of parameters has to be used if FFS.

8.5   PIN and PUK codes

8.5.1   Pin Code PE
This PE is used to set the PIN codes related to the MF for the global ones or related to a DF.

NOTE: Universal PIN is not supported.

```
PINKeyReferenceValue ::= INTEGER {
pinAppl1(1),            -- PIN global of App 1
pinAppl2(2),            -- PIN global of App 2
pinAppl3(3),            -- PIN global of App 3
pinAppl4(4),            -- PIN global of App 4
pinAppl5(5),            -- PIN global of App 5
pinAppl6(6),            -- PIN global of App 6
pinAppl7(7),            -- PIN global of App 7
pinAppl8(8),            -- PIN global of App 8
adm1(10),       -- Administrative Key 1
adm2(11),       -- Administrative Key 2
adm3(12),       -- Administrative Key 3
adm4(13),       -- Administrative Key 4
adm5(14),       -- Administrative Key 5
secondPINAppl1(129),   -- PIN local of App 1
secondPINAppl2(130),   -- PIN local of App 2
secondPINAppl3(131),   -- PIN local of App 3
secondPINAppl4(132),   -- PIN local of App 4
secondPINAppl5(133),   -- PIN local of App 5
secondPINAppl6(134),   -- PIN local of App 6
secondPINAppl7(135),   -- PIN local of App 7
secondPINAppl8(136),   -- PIN local of App 8
adm6(138),       -- Administrative Key 6
adm7(139),       -- Administrative Key 7
adm8(140),       -- Administrative Key 8
adm9(141),       -- Administrative Key 9
adm10(142)       -- Administrative Key 10
}

PINConfiguration ::= SEQUENCE {
     keyReference PINKeyReferenceValue,
     pinValue OCTET STRING (SIZE (8)),
     unblockingPINReference PUKKeyReferenceValue OPTIONAL,
     pinAttributes UInt8 DEFAULT 7,
```

```
     maxNumOfAttemps-retryNumLeft UInt8 DEFAULT 51
/* maxNumOfAttemps-retryNumLeft is encoded as follows: max Number of Attempts is
encoded in the high nibble of this value (Bit 8 to 4) and the Number of retry left
is encoded in the low nibble of this value (Bit 3 to 0)*/
}


PE-PINCodes ::= SEQUENCE {
     pin-Header PEHeader,
     pinCodes CHOICE {
          pinconfig SEQUENCE (SIZE (1..26))OF PINConfiguration,
          filePath OCTET STRING /* temporary File ID for ADF, coding according
to section 8.3.6 */
     }
     /* PIN can be either defined in the current context or shared
      with another DF/ADF
      Up to 26 PIN could be defined according to TS 102 221 [102 221]
     */
}
```

If the RetryNumLeft if greater than MaxNumOfAttemps then the behaviour of the eUICC is undefined.

The coding of the PINAttributes is as follow:
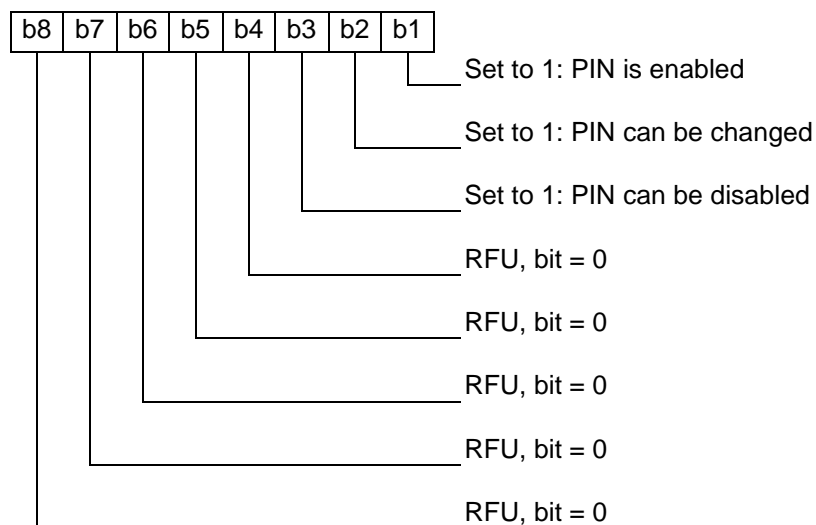
Usage rules: This PE shall be used during the file system creation right after the creation of the MF for global PINs or right after the creation of an ADF or a DF for local PINs. The use of this PE shall be unique in all these contexts.

8.5.2   PUK Code PE

This PE is used to set the PUK codes at the MF level. This PE shall be used during the file system creation right after the creation of the MF. The use of this PE shall be unique.

```
PUKKeyReferenceValue ::= INTEGER {
pukAppl1(1),            -- PUK global of App 1
pukAppl2(2),            -- PUK global of App 2
```

```
pukAppl3(3),            -- PUK global of App 3
pukAppl4(4),            -- PUK global of App 4
pukAppl5(5),            -- PUK global of App 5
pukAppl6(6),            -- PUK global of App 6
pukAppl7(7),            -- PUK global of App 7
pukAppl8(8),            -- PUK global of App 8
secondPUKAppl1(129),    -- PUK local of App 1
secondPUKAppl2(130),    -- PUK local of App 2
secondPUKAppl3(131),    -- PUK local of App 3
secondPUKAppl4(132),    -- PUK local of App 4
secondPUKAppl5(133),    -- PUK local of App 5
secondPUKAppl6(134),    -- PUK local of App 6
secondPUKAppl7(135),    -- PUK local of App 7
secondPUKAppl8(136)     -- PUK local of App 8
}

PUKConfiguration ::= SEQUENCE {
     keyReference PUKKeyReferenceValue,
     pukValue OCTET STRING (SIZE (8)),
     maxNumOfAttemps-retryNumLeft UInt8 DEFAULT 170
/* maxNumOfAttemps-retryNumLeft is encoded as follows: max Number of Attempts is
encoded in the high nibble of this value (Bit 8 to 4) and the Number of retry left
is encoded in the low nibble of this value (Bit 3 to 0)*/
     }

PE-PUKCodes ::= SEQUENCE {
     puk-Header PEHeader,
     pukCodes SEQUENCE (SIZE (1..16))OF PUKConfiguration
     }
```

If the RetryNumLeft if greater than MaxNumOfAttemps then the behavior of the eUICC is undefined.

__Usage rules__: The PE shall be used only once in the profile Package, right after the creation of the MF.

8.6 Security domains

8.6.1 Security Domain PE

SDs are installed using the `ApplicationInstance` type (As defined in section 8.7.3) which is also used for application installation. The values standardised for Supplementary SDs shall be used.

For the installation of SDs the following PE is defined:

```
PE-SecurityDomain ::= SEQUENCE {
     sd-Header PEHeader,
     instance ApplicationInstance, -- see section 8.7.3
     keyList SEQUENCE OF KeyObject OPTIONAL, -- see section 8.6.3
     sdPersoData SEQUENCE OF OCTET STRING OPTIONAL -- see section 8.6.4
}
```

__Usage rules__: The PE shall be used for every SD creation, starting from MNO-SD.

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8.6.2   SD and MNO SD Creation

The first SD to be created is the equivalent of the ISD (Issuer Security Domain) of a UICC and is the root of all the other SDs included in a Profile, it is called the MNO-SD. It needs to be installed explicitly using "`PE-SecurityDomain`" within the Profile Package. The MNO-SD shall be installed before any other SD, before any RFM Parameters are set or before any applets are created.

Since no package AID nor classAID is standardised for the MNO-SD, it shall use the values defined for supplementary SD creation. The first SD within the sequence of the Profile Package will thus be categorized as the MNO-SD by definition and will be installed with the special MNO-SD rights defined by the GSMA. Following instances of SDs will be installed like regular supplementary SDs as known from GlobalPlatform Card Specification [GP CS].

8.6.3   Key Personalisation

After creation of an SD, the keys which shall be installed can be described with the respective SD PE. The parameters are based on the DGIs for personalisation of SDs as specified within the GlobalPlatform Card Specification Amd A [GP AA], section 4.10. The structure has been optimised to avoid redundancy within the data structure.

```
KeyObject::= SEQUENCE {
     keyUsageQualifier [21] OCTET STRING (SIZE (1)),
     keyAccess [22] OCTET STRING (SIZE (1)),
     keyIdentifier [2] OCTET STRING (SIZE (1)),
     keyVersionNumber [3] OCTET STRING (SIZE (1)),
     keyCheckValue [4] OCTET STRING OPTIONAL,
     keyCounterValue [5] OCTET STRING OPTIONAL, --not checked if not present
     scp80SeqCounter OCTET STRING OPTIONAL,
     keyCompontents SEQUENCE OF SEQUENCE {
     keyType [0] OCTET STRING,
     keyData [6] OCTET STRING
  }
}
```

The coding of the following parameters shall follow the GlobalPlatform Card Specification Amd A [GP AA]:
`keyUsageQualifier`
`keyAccess`
`keyIdentifier`
`keyVersionNumber`
`keyCheckValue OPTIONAL`
`scp80keyCounter OPTIONAL`

Each key to be personalised must be listed only once. This means there shall be no keys with same `keyIdentifier` and `keyVersionNumber` listed twice. The optional `keyCheckValue` shall be checked in case available (if it fails the `PE-SecurityDomain` installation fails). The `keyCheckValue` may only be provided for key types supporting it.

`scp80SeqCounter` shall be defined only once for a complete key set.

To simplify the installation of PKI keys, which consist of multiple key components of different types, the following structure has been defined. This is so that redundant information can be avoided.

Only `keyTypes` defined in GlobalPlatform Card Specification [GP CS], Table 11-16, may be part of the list. Each key component shall be specified only once per key (e.g. including two times the same `keyType` within one `KeyObject` will lead to an error).

```
keyCompontents SEQUENCE OF SEQUENCE {
    keyType [0] OCTET STRING,
    keyData [6] OCTET STRING,
  }
```

8.6.4   SD Personalisation

Optionally a list of commands may be provided to personalise the SD (e.g. set IIN, change AID, …). Any commands which can be sent via STORE DATA commands addressing the SD personalisation defined by GlobalPlatform Card Specification [GP CS] may be sent to an SD via this means. Only the content of the STORE DATA commands will be provided (leaving CLA, INS, P1, P2, L).

The content shall not be encrypted and shall use DGI format. Since there is no limitation in terms of content length for within the `sdPersoData` parameter, the complete DGI structure for the SD personalisation shall be sent in one complete byte array. Each DGI shall be provided in its own `sdPersoData` record. Only standardised DGIs, according to GlobalPlatform Card Specification [GP CS], shall be sent when addressing a SD.

Installation of the CASD, if required inside a Profile, uses the same procedure.

8.6.5   RAM / OTA HTTPs Configuration

Within each SD, the settings for RAM and OTA HTTPs can be configured according to GlobalPlatform Card Specification [GP CS] and ETSI specifications. The TAR values for RAM can be configured as follows:
  – Bytes 13-15 of the SD instance AID
  – TAR List within SD install parameters

Settings for OTA HTTPs may be provided within the `processData` in tag '85' according to GlobalPlatform Amd B [GP AB] (Section 3.7.1 TLV: Security Domain Administration Session Parameters) in the `ApplicationInstance` structure.

The security level for RAM is defined by the MSL parameter of the SD installation parameters. It is highly recommended to assign "00 00 00" as the TAR value for RAM within the MNO-SD installation.

The configuration of the PoR (Proof of Receipt) handling is not part of the Profile definition. The eUICC shall follow the latest ETSI and 3GPP release to provide the necessary level of security.

8.7   Application loading and installation

8.7.1   Application PE

For loading and installing applications, the following PE is defined.

```
PE-Application ::= SEQUENCE {
    app-Header PEHeader,
    loadBlock ApplicationLoadPackage OPTIONAL,
    instanceList SEQUENCE OF ApplicationInstance OPTIONAL
}
```

Within the Application PE, application code can be loaded and instances can be installed and personalised. An example of application is a Java Card™ Applet. The elements are described in more detail in the following. All parameters are optional to cover the following use cases:
- A library shall be loaded: In this case only the library can be provided by specifying the `ApplicationLoadPackage` structure only (no install, no perso)
- A preloaded application shall be installed which only requires an `ApplicationInstance`: Multiple instances of the same ApplicationLoadPackage can be installed within one Application PE.
- An application shall be loaded providing an `ApplicationLoadPackage` object and installed via an `ApplicationInstance` (optionally multiple `ApplicationInstance` objects)

In case the mandatory parameter of the PEHeader object is set to mandatory, profile installation will fail if one of the subsequent elements cannot be executed (e.g. load fails because of API incompatibility, install fails because of duplicate TAR values …). If mandatory is not set, profile installation will continue with the next PE.

The loading procedure may fail for various reasons, including:
- The eUICC does not support the required runtime environment (e.g. Java Card™)
- The required version of the runtime environment is not available
- A library required by the application is not available
- An algorithm required by the application is not available

Within the subsequent sections, the elements for the PE are described in more detail.

8.7.2   ApplicationLoadPackage

The ApplicationLoadPackage parameter includes the applet code. It is based on the GP2.2 LOAD command according to GlobalPlatform Card Specification [GP CS], Section 11.6. The only difference to the GP Load Command is that the complete load block is provided within the `loadBlockObject` parameter.

```
ApplicationLoadPackage ::= SEQUENCE {
    loadPackageAID [APPLICATION 15] ApplicationIdentifier,
    securityDomainAID [APPLICATION 15] ApplicationIdentifier OPTIONAL,
    nonVolatileCodeLimitC6 [PRIVATE 6] OCTET STRING OPTIONAL,
    volatileDataLimitC7 [PRIVATE 7] OCTET STRING OPTIONAL,
    nonVolatileDataLimitC8 [PRIVATE 8] OCTET STRING OPTIONAL,
    hashValue [PRIVATE 1] OCTET STRING OPTIONAL,
    loadBlockObject [PRIVATE 4] OCTET STRING
}
```

The following parameters may be ignored by the eUICC in case they are not supported.

```
nonVolatileCodeLimitC6
volatileDataLimitC7
nonVolatileDataLimitC8
hashValue
```

All the other parameters are mandatory and need to follow the same rules as defined for the Load command as defined in GlobalPlatform Card Specification [GP CS].

8.7.3   ApplicationInstance

The ApplicationLoadPackage is used to instantiate and personalise applications. It is based on the GlobalPlatform Card Specification [GP CS] Install for Install command. To simplify and optimise the process of personalisation, additional parameters have been added which will be described in this section.

```
ApplicationInstance ::= SEQUENCE {
     applicationLoadPackageAID [APPLICATION 15] ApplicationIdentifier,
     classAID [APPLICATION 15] ApplicationIdentifier,
     instanceAID [APPLICATION 15] ApplicationIdentifier,
     extraditeSecurityDomainAID [APPLICATION 15] ApplicationIdentifier OPTIONAL,
     applicationPrivileges [2] OCTET STRING,
     lifeCycleState [3] OCTET STRING (SIZE(1)) DEFAULT '03'H,
     /* Coding according to GP Life Cycle State */

     applicationSpecificParametersC9 [PRIVATE 9] OCTET STRING,
     systemSpecificParameters [PRIVATE 15] ApplicationSystemParameters OPTIONAL,
     applicationParameters [PRIVATE 10] UICCApplicationParameters OPTIONAL,
     processData SEQUENCE OF OCTET STRING OPTIONAL
}

ApplicationSystemParameters ::= SEQUENCE{
     volatileMemoryQuotaC7 [PRIVATE 7] OCTET STRING OPTIONAL,
     nonVolatileMemoryQuotaC8 [PRIVATE 8] OCTET STRING OPTIONAL,
     globalServiceParameters [PRIVATE 11] OCTET STRING OPTIONAL,
     implicitSelectionParameter [PRIVATE 15] OCTET STRING OPTIONAL,
     volatileReservedMemory [PRIVATE 23] OCTET STRING OPTIONAL,
     nonVolatileReservedMemory [PRIVATE 24] OCTET STRING OPTIONAL,
     ts102226SIMFileAccessToolkitParameter [PRIVATE 10] OCTET STRING OPTIONAL,
     ts102226AdditionalContactlessParameters [0]
TS102226AdditionalContactlessParameters OPTIONAL
}

UICCApplicationParameters ::= SEQUENCE {
     uiccToolkitApplicationSpecificParametersField [0] OCTET STRING OPTIONAL,
     uiccAccessApplicationSpecificParametersField [3] OCTET STRING OPTIONAL,
     uiccAccessParams [1] OCTET STRING OPTIONAL,
     uiccAdministrativeAccessApplicationSpecificParametersField [2] OCTET STRING
OPTIONAL
}

TS102226AdditionalContactlessParameters ::= SEQUENCE{
     protocolParameterData OCTET STRING
}
```

The coding of the following parameters for the ApplicationInstance shall follow the coding defined for Install for Install defined by GlobalPlatform Card Specification [GP CS]:

```
applicationLoadPackageAID
classAID
instanceAID
applicationPrivileges
applicationSpecificParametersC9
```

Security, Identity, Mobility

```
systemSpecificParameters
```

Two parameters have been introduced to enable the direct association of an applet instance to a specific SD and to define the Life Cycle State of the instance. Providing a SD AID within `extraditeSecurityDomainAID` has the same effect like the Install for Extradition command (GlobalPlatform Card Specification [GP CS]). In case no value for the optional parameter `extraditeSecurityDomainAID` is provided, the instance will be associated to the MNO-SD by default.
The `lifeCycleState` parameter has the same encoding as the Life Cycle State defined within GlobalPlatform Card Specification [GP CS] (section 11.1.1 Life Cycle Coding). For application instances, coding is according to "Table 11-4 Application Life Cycle Coding"; for SDs according to "Table 11-5 Security Domain Life Cycle Coding". If no value is provided the default is installed & selectable.

With `applicationParameters` the ETSI TS 102 226 [102 226] install parameters can be provided to define the access domain for an applet or an RFM instance. Coding follows the same rules as specified within the referenced documents.
Interpretation of MSL (Minimum Security Level) shall follow the rules defined within ETSI TS 102 226 [102 226] for all applications.

Each Applet Instance can be personalised separately. The same means as for STORE DATA are used to personalise an application instance. All byte strings provided within `processData` will be directly sent to the respective application instance for processing. The content of the `processData` is specific to the implementation of the applet. It may contain all the bytes contained in a STORE DATA command (Including CLA,INS, P1, P2, L) if required by the application but encryption shall not be used. Any data may be sent. Processing is solely up to the applet itself. Data will be sent as is to the applet for processing. No decryption will be performed by the respective SD.

8.8 RFM Parameters

This PE is used to set the parameters related to RFM.

```
PE-RFM ::= SEQUENCE {
    rfm-header PEHeader,
    /*    securityDomainAID
        Security Domain which includes the Keys for RFM
    */
    securityDomainAID [APPLICATION 15] ApplicationIdentifier,

    /*    tarList
    List of TAR values which can be used to address the
    respective NAA application
    */
    tarList [0] SEQUENCE OF OCTET STRING (SIZE(3)),

    minimumSecurityLevel [1] OCTET STRING (SIZE (1)),

    uiccAccessDomain OCTET STRING,
    uiccAdminAccessDomain OCTET STRING,

    /*
      If the following parameter is available the respective ADF will be the
directory selected by default within an RFM script. In case it is not available
the MF will be the default selection.
```

```
        */
      adfRFMAccess ADFRFMAccess OPTIONAL
}


ADFRFMAccess ::= SEQUENCE {
      adfAID ApplicationIdentifier,
      adfAccessDomain OCTET STRING,
      adfAdminAccessDomain OCTET STRING
}
```

Usage rules: This PE can be used several times in the Profile Package after the PE containing the SD and the PE containing the ADF.

The following parameters for RFM can be configured:

`securityDomainAID`
References the SD in which the keys for RFM are located. If not provided, it will automatically reference the MNO-SD.

`tarList`
Within the list the TAR values can be defined which shall be used to address the RFM instance.

`minimumSecurityLevel`
Define the Minimum Security Level (MSL) for the RFM instance. Interpretation of MSL shall follow the rules defined within ETSI TS 102 226 [102 226].

`uiccAccessDomain`
Access domain of the RFM instance within the MF.

`uiccAdminAccessDomain`
Administrative access domain of the RFM instance within the MF.

`adfRFMAccess`
To address ADFs via RFM, each RFM instance can be associated with one ADF. This optional parameter links the RFM instance to the given ADF. When processing an RFM script, the defined ADF will be selected by default and can be addressed by the file path '7FFF' as it is defined within ETSI standards.
In case this optional parameter is not provided, the RFM instance will be linked only to the MF which will be the default selection in the context of an RFM script.

`adfAID`
AID of the ADF to link to the RFM instance.

`adfAccessDomain`
Access domain of the RFM instance within the referenced ADF.

`adfAdminAccessDomain`
Administrative access domain of the RFM instance within the referenced ADF.

8.9 Non standardised content
This PE is used to send content that can only be processed by specific eUICCs. This content can be either a proprietary element or content standardised in a specification after eUICC creation. The Profile Package can use as many PEs of this type as required.

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```
PE-NonStandard ::= SEQUENCE {
     nonStandard-header PEHeader,
     issuerID OBJECT IDENTIFIER,
     content OCTET STRING
}
```

Usage rules: The PE can be used at any place in the Profile Package.

8.10   Profile Package end
This PE is used to indicate the end of the Profile Package to the eUICC.

```
PE-End ::= SEQUENCE {
     end-header PEHeader
}
```

Usage rules: The PE shall be used as the last element of the Profile Package.

8.11   eUICC Response type
The eUICC response type is defined in the following ASN.1 type definition:

```
PEStatus ::= SEQUENCE {
status INTEGER {
     ok(0), pe-not-supported(1), memory-failure(2),bad-values(3),
     not-enough-memory(4),invalid-request-format(5), invalid-parameter(6),
     runtime-not-supported (7), lib-not-supported (8), template-not-supported
(9), feature-not-supported (10), unsupported-profile-version(31)
-- proprietary values shall use the [16384...65535] range
     },
identification UInt15 OPTIONAL,
-- Identification number of the PE triggering the error
additional-information UInt8 OPTIONAL
-- Additional information related to the status code
}

EUICCResponse ::= SEQUENCE {
     peStatus SEQUENCE OF PEStatus,
     profileInstallationAborted NULL OPTIONAL,
     statusMessage UTF8String OPTIONAL
}
```

The eUICC response may contain several status corresponding to several PEs generating different status messages. The eUICC may group the status messages into one "eUICCResponse" sent after receiving the "PE-End", or right after the processing of a PE leading to the abortion of the Profile Package installation. In case there is nothing to report, one "eUICCResponse" containing the "ok" status code shall be sent by the eUICC at the end of the Profile Package installation.

The status can take the following values:

- `ok`: used at the end of the Profile download and installation in order to indicate that the Profile has been successfully processed by the eUICC. This status shall not be sent for all the PEs but only at the end of the Profile installation. When using this status code, the eUICC shall not indicate any identification of a PE.
- `PE-not-supported`: indicates that a specific PE identified by its identification number is not supported by the eUICC. If this PE was indicated as "mandated" in the PE header, this status is an error status and the processing of the Profile was aborted. Otherwise this is just a warning and the installation of the Profile continues.
- `memory-failure`: indicates a failure during the installation of the Profile due to internal memory issue.
- `bad-values`: indicates that a least one value in the PE identified by its identification number is out of acceptable value range.
- `not-enough-memory`: indicates that the eUICC does not have enough free memory to install the Profile. This status is an error status and the processing of the Profile was aborted.
- `invalid-request-format`: indicates that a structure in a PE is unknown or badly formatted.
- `invalid-parameter`: indicates that a parameter in a PE description is not supported.
- `runtime-not-supported`: indicates that the runtime environment required by the application present in a `PE-Application` is not supported by the eUICC.
- `lib-not-supported`: indicates that a library required by the application present in a `PE-Application` is not available in the eUICC.
- `template-not-supported`: indicates that the template indicated by the OBJECT IDENTIFIER in the Generic File System Template PE is not available in the eUICC.
- `feature-not-supported`: indicates that a feature included in the PE is not supported by the eUICC.
- `unsupported-profile-version`: indicates that the major version indicated in the Profile header is not supported by this eUICC. This status is an error status and the processing of the Profile was aborted.

The optional tag `profileInstallationAborted` indicates that the installation of the Profile is aborted due to an error specified in the `status` field.
The optional `statusMessage` can be used in order to give additional information.

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9. ANNEX A (Normative): File Structure Templates Definition

9.1 Templates rules and usage

The goal of the templates defined below is to reduce the size of the Profile Package by providing a data compression mechanism. Only the differences between the content and parameters of the files required for a specific Profile, and the content and parameters provided by these templates, need to be included in the Profile Package. Additional templates, along with their management instructions, may be defined later.

Table column information:

- FID: File Identifier.
- File Type: TR= Transparent, LF= Linear Fixed, CY= Cyclic, BER-TLV= BER-TLV coded files, MF= Master File, DF= Dedicated File.
- NB Rec: Number of records in the files for LF or CY files.
- File/Rec Size: File size for TR and BER-TLV files, Record size for LF and CY files.
- Access Conditions: the Access Conditions in the tables are related to the Access Rules numbers, but are a recommendation only, as no EF-ARR content is pre-defined.
- Access Rules: reference to the access rules combination that may be defined in the EF-ARR.
- Content Required: Content not defined as a default value and which shall be provided during personalisation.
- Parameters: Characteristics of the files that may be changed during personalisation.

9.2 Files at MF level

This Template is a "Created by default" type template.
Template OID: `{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) mf(1)}`

FID	EF Name	File Type	NB Rec.	File / Rec Size	Access Conditions					Acces Rules	Default Value	Content Required	Parameters
					Read	Update	Incr.	Act.	Deact.				
3F00	MF	MF											
2F05	EF PL	TR	NA	3	ALWAYS	PIN 1	NEVER	ADM 1	ADM 1	1	FF...FF	N	Size
2FE2	EF ICCID	TR	NA	10	ALWAYS	NEVER	NEVER	ADM 1	ADM 1	11		Y	
2F00	EF DIR	LF	X	X	ALWAYS	ADM 1	NEVER	ADM 1	ADM 1	10		Y	Record size, Number of records

2F06	EF ARR	LF	8	X	ALWAYS	ADM 1	NEVER	ADM 1	ADM 1	10		Y	Record size, Number of records

9.3 DF CD

This Template is a "Not created by default" type template.

Template OID: `{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) cd(2)}`

FID	EF Name	File Type	NB Rec.	File / Rec Size	Access Conditions					Acces Rules	Default Value	Content Required	Parameters
					Read	Update	Incr.	Act.	Deact.				
7F11	DF CD	DF											
6F01	EF LAUNCHPAD	TR	NA	X	PIN1	ADM 1	NEVER	ADM1	ADM1	2	FF...FF	Y	Size
6F40 to 6F7F	EF ICON	TR	NA	X	PIN1	ADM 1	NEVER	ADM1	ADM1	2	FF...FF	Y	Size

9.4 DF TELECOM

This Template is a "Not created by default" type template.

Template OID: `{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) telecom(3)}`

Ass. Serv.	FID	EF Name	File Type	NB Rec.	File / Rec Size	Access Conditions					Acces Rules	Default Value	Content Required	Parameters
						Read	Update	Incr.	Act.	Deact.				
	7F10	DF TELECOM	DF											
	6F06	EF ARR	LF	8	X	ALWAYS	ADM 1	NEVER	ADM 1	ADM 1	10		Y	Record size, Number of records
	6F53	EF RMA	LF	X	X	ADM1	ADM1	NEVER	ADM1	ADM1	3	-	Y	Record size, Number of records
	6F54	EF SUME	TR	NA	22	ADM1	ADM1	NEVER	ADM1	ADM1	3		Y	Size
	6FE0	EF ICE DN	LF	50	24	ALWAYS	PIN1	NEVER	PIN1	PIN1	9	FF…FF	N	Number of records
	6FE1	EF ICE FF	LF	X	X	ALWAYS	PIN1	NEVER	PIN1	PIN1	9	FF…FF	N	Number of records
12 and 91	6FE5	EF PSISMSC	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5	-	Y	Record size, Number of records
	5F50	DF GRAPHICS	DF	-	-	-	-	-	-	-	-	-	-	-

	File ID	Name	Type								Num	Default		Description
	4F20	EF IMG	LF	X	X	PIN1	ADM1	NEVER	ADM1	ADM1	2	00 FF...FF	N	Record size, Number of records
	4F40 to 4F7F	EF IIDF	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
	4F21	EF ICE GRAPHICS	BER-TLV	NA	X	ALWAYS	PIN1	NEVER	PIN1	PIN1	9	FF…FF	N	Size
	4F01	EF LAUNCH SCWS	TR	NA	X	ADM1	ADM1	NEVER	ADM1	ADM1	3		Y	Size
	4F80 to 4FBF	EF ICON	TR	NA	X	ALWAYS	ADM1	NEVER	ADM1	ADM1	10		Y	Size
	5F3A	DF PHONEBOOK	DF	-	-	-	-	-	-	-	-	-	-	-
	4F30	EF PBR	LF	X	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Record size, Number of records
	4F38 to 4F3F	EF EXT1	LF	X	13	PIN1	PIN1	NEVER	ADM1	ADM1	5			Number of records
	4F40 to 4F47	EF AAS	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5			Record size, Number of records
	4F48 to 4F4F	EF GAS	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5			Record size, Number of records
	4F22	EF PSC	TR	NA	4	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF FF FF FF	N	
	4F23	EF CC	TR	NA	2	PIN1	PIN1	NEVER	ADM1	ADM1	5	00 00	N	
	4F24	EF PUID	TR	NA	2	PIN1	PIN1	NEVER	ADM1	ADM1	5	00 00	N	
	4F50 to 4F57	EF IAP	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF	N	Record size, Number of records
	4F58 to 4F5F	EF ADN	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5			Record size, Number of records
	4F60 to 4F67	EF PBC	LF	X	2	PIN1	PIN1	NEVER	ADM1	ADM1	5			Number of records
	4F68 to 4F6F	EF ANR	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5			Record size, Number of records
	4F70 to 4F77	EF PURI	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5			Record size, Number of records
	4F78 to 4F7F	EF EMAIL	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5			Record size, Number of records
	4F80 to 4F87	EF SNE	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5			Record size, Number of records
	4F88 to 4F8F	EF UID	LF	X	2	PIN1	PIN1	NEVER	ADM1	ADM1	5	00 00	N	Number of records
	4F90 to 4F97	EF GRP	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5			Record size, Number of records
	4F98 to 4F9F	EF CCP1	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5			Record size, Number of records
67	5F3B	DF MULTIMEDIA	DF	-	-	-	-	-	-	-	-	-	-	-
67	4F47	EF MML	BER-TLV	NA	X	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF	N	Size
67	4F48	EF MMDF	BER-TLV	NA	X	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF	N	Size
	5F3C	DF MMSS	DF	-	-	-	-	-	-	-	-	-	-	-
	4F20	EF MLPL	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size

Ass. Serv.	FID	EF Name	File Type	NB Rec.	File / Rec Size	Read	Update	Incr.	Act.	Deact.	Acces Rules	Default Value	Content Required	Parameters
	4F21	EF MSPL	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
	4F22	EF MMSSMODE	TR	NA	1	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	

9.5 USIM

9.5.1 Mandatory USIM EFs

This Template is a "Created by default" type template.

Template OID: `{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) usim(4)}`

Ass. Serv.	FID	EF Name	File Type	NB Rec.	File / Rec Size	Access Conditions					Acces Rules	Default Value	Content Required	Parameters
						Read	Update	Incr.	Act.	Deact.				
	XXXX	ADF USIM	ADF											Temporary FID
	6F07	EF IMSI	TR	NA	9	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	No
	6F06	EF ARR	LF	X	X	ALWAYS	ADM1	NEVER	ADM1	ADM1	10		Y	Record size, Number of records
	6F08	EF Keys	TR	NA	33	PIN1	PIN1	NEVER	ADM1	ADM1	5	07FF…FF	N	No
	6F09	EF KeysPS	TR	NA	33	PIN1	PIN1	NEVER	ADM1	ADM1	5	07FF…FF	N	No
	6F31	EF HPPLMN	TR	NA	1	PIN1	ADM1	NEVER	ADM1	ADM1	2	0A	N	No
	6F38	EF UST	TR	NA	14	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
2 or 89	6F3B	EF FDN	LF	20	26	PIN1	PIN2	NEVER	ADM1	ADM1	8	the first byte of each record set to '00' and the remaining bytes set to 'FF'	N	Number of records
10	6F3C	EF SMS	LF	10	176	PIN1	PIN1	NEVER	ADM1	ADM1	5	the first byte of each record set to '00' and the remaining bytes set to 'FF'	N	Number of records
12	6F42	EF SMSP	LF	1	38	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF...FF	N	Number of records
10	6F43	EF SMSS	TR	NA	2	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF FF	N	No
19	6F46	EF SPN	TR	NA	17	ALWAYS	ADM1	NEVER	ADM1	ADM1	10		Y	No
2,6,34 or 35	6F56	EF EST	TR	NA	1	PIN1	PIN2	NEVER	ADM1	ADM1	8		Y	Size
	6F5B	EF START-HFN	TR	NA	6	PIN1	PIN1	NEVER	ADM1	ADM1	5	F00000 F00000	N	No
	6F5C	EF THRESHOLD	TR	NA	3	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF FF FF	N	No
42	6F61	EF OPLMNwAcT	TR	NA	40	PIN1	ADM1	NEVER	ADM1	ADM1	2	FFFFFF0000..FFFFFF0000	N	Size

Ass. Serv.	FID	EF Name	File Type	NB Rec.	File / Rec Size	Read	Update	Incr.	Act.	Deact.	Acces Rules	Default Value	Content Required	Parameters
43	6F62	EF HPLMNwAcT	TR	NA	5	PIN1	ADM1	NEVER	ADM1	ADM1	2	FFFFFF0000..FFFFFF0000	N	Size
	6F73	EF PSLOCI	TR	NA	14	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF FF FF FF FF FF FF 00 F1 10 00 00 FF 01	N	No
	6F78	EF ACC	TR	NA	2	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	No
	6F7B	EF FPLMN	TR	NA	12	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF	N	Size
	6F7E	EF LOCI	TR	NA	11	PIN1	PIN1	NEVER	ADM1	ADM1	5	FFFFFFFF xxxxxx 0000 FF 01	N	No
	6FAD	EF AD	TR	NA	4	ALWAYS	ADM1	NEVER	ADM1	ADM1	10	00 00 00 02	N	Size
	6FB7	EF ECC	LF	1	4	ALWAYS	ADM1	NEVER	ADM1	ADM1	10		Y	Size
	6FC4	EF NETPAR	TR	NA	128	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF	N	Size
85	6FE3	EF EPSLOCI	TR	NA	18	PIN1	PIN1	NEVER	ADM1	ADM1	5	FFFFFFFFFFFFFFFFFFFFFFFFF xxxxxx0000 01	N	No
85	6FE4	EF EPSNSC	LF	1	80	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF	N	Size

9.5.2   Optional USIM EFs

This Template is a "Not created by default" type template.

Template OID: `{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) opt-usim(5)}`

Ass. Serv.	FID	EF Name	File Type	NB Rec.	File / Rec Size	Access Conditions					Acces Rules	Default Value	Content Required	Parameters
						Read	Update	Incr.	Act.	Deact.				
	6F05	EF LI	TR	NA	6	ALWAYS	PIN 1	NEVER	ADM1	ADM1	1	FF...FF	N	Size
13	6F37	EF ACMmax	TR	NA	3	PIN1	PIN1	NEVER	ADM1	ADM1	5	000000	N	No
13	6F39	EF ACM	CY	1	3	PIN1	PIN1	PIN1	ADM1	ADM1	7	000000	N	No
17	6F3E	EF GID1	TR	NA	8	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
18	6F3F	EF GID2	TR	NA	8	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
21	6F40	EF MSISDN	LF	1	24	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF...FF	N	Record size, Number of records
13	6F41	EF PUCT	TR	NA	5	PIN1	PIN1	NEVER	ADM1	ADM1	5	FFFFFF0000	N	No
15	6F45	EF CBMI	TR	NA	10	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF...FF	N	Size
19	6F48	EF CBMID	TR	NA	10	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF...FF	N	Size
4 or 89	6F49	EF SDN	LF	10	24	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF...FF	N	Record size, Number of records

3	6F4B	EF EXT2	LF	10	13	PIN1	PIN2	NEVER	ADM1	ADM1	8	FF...FF	N	Number of records
5	6F4C	EF EXT3	LF	10	13	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF...FF	N	Number of records
16	6F50	EF CBMIR	TR	NA	20	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF...FF	N	Size
20	6F60	EF PLMNwAct	TR	NA	40	PIN1	PIN1	NEVER	ADM1	ADM1	5	FFFFFF0000..FFFFFF0000	N	Size
36	6F2C	EF DCK	TR	NA	16	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	No
37	6F32	EF CNL	TR	NA	30	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF...FF	N	Size
11	6F47	EF SMSR	LF	10	30	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF...FF	N	Number of records
6	6F4D	EF BDN	LF	10	25	PIN1	PIN2	NEVER	ADM1	ADM1	8	FF...FF	N	Number of records
44	6F4E	EF EXT5	LF	10	13	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF...FF	N	Number of records
14	6F4F	EF CCP2	LF	5	15	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF...FF	N	Record size, Number of records
7	6F55	EF EXT4	LF	10	13	PIN1	PIN2	NEVER	ADM1	ADM1	8	00 FF...FF	N	No
35	6F57	EF ACL	TR	NA	101	PIN1	PIN2	NEVER	ADM1	ADM1	8	00 FF...FF	N	Size
6	6F58	EF CMI	LF	10	11	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF...FF	N	Record size, Number of records
9	6F80	EF ICI	CY	20	38	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF 000000 00 01FFFF	N	Number of records
8	6F81	EF OCI	CY	20	37	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF 000000 01FFFF	N	Number of records
9	6F82	EF ICT	CY	1	3	PIN1	PIN1	PIN1	ADM1	ADM1	7	000000	N	No
8	6F83	EF OCT	CY	1	3	PIN1	PIN1	PIN1	ADM1	ADM1	7	000000	N	No
57	6FB1	EF VGCS	TR	NA	20	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
57	6FB2	EF VGCSS	TR	NA	7	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	No
58	6FB3	EF VBS	TR	NA	20	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
58	6FB4	EF VBSS	TR	NA	7	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	No
24	6FB5	EF eMLPP	TR	NA	2	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	No
25	6FB6	EF AaeM	TR	NA	1	PIN1	PIN1	NEVER	ADM1	ADM1	5	00	N	No
	6FC3	EF HiddenKey	TR	NA	4	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF	N	No
45	6FC5	EF PNN	LF	10	16	ALWAYS	ADM1	NEVER	ADM1	ADM1	10		Y	Record size, Number of records
46	6FC6	EF OPL	LF	5	18	ALWAYS	ADM1	NEVER	ADM1	ADM1	10		Y	Record size, Number of records

47	6FC7	EF MBDN	LF	3	24	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	Record size, Number of records
47	6FC8	EF EXT6	LF	10	13	PIN1	PIN1	NEVER	ADM1	ADM1	5	00 FF...FF	N	No
47	6FC9	EF MBI	LF	10	5	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	Record size, Number of records
48	6FCA	EF MWIS	LF	10	6	PIN1	PIN1	NEVER	ADM1	ADM1	5	00 00 00 00 00	N	No
49	6FCB	EF CFIS	LF	10	16	PIN1	PIN1	NEVER	ADM1	ADM1	5	00 FF...FF	N	No
49	6FCC	EF EXT7	LF	10	13	PIN1	PIN1	NEVER	ADM1	ADM1	5	00 FF...FF	N	No
51	6FCD	EF SPDI	TR	NA	17	PIN1	ADM1	NEVER	ADM1	ADM1	2		N	Size
52	6FCE	EF MMSN	LF	10	6	PIN1	PIN1	NEVER	ADM1	ADM1	5	00 00 00 FF…FF	N	Record size, Number of records
53	6FCF	EF EXT8	LF	10	13	PIN1	PIN1	NEVER	ADM1	ADM1	5	00 FF...FF	N	Record size, Number of records
52	6FD0	EF MMSICP	TR	NA	100	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF…FF	N	Size
52	6FD1	EF MMSUP	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF	N	Record size, Number of records
52 or 55	6FD2	EF MMSUCP	TR	NA	100	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF	N	Size
56	6FD3	EF NIA	LF	5	11	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF…FF	N	Record size, Number of records
64	6FD4	EF VGCSCA	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2	00…00	N	Size
65	6FD5	EF VBSCA	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2	00…00	N	Size
68	6FD6	EF GBABP	TR	NA	X	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF	N	Size
69	6FD7	EF MSK	LF	X	X	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF...FF	N	Record size, Number of records
69	6FD8	EF MUK	LF	X	X	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF...FF	N	Record size, Number of records
71	6FD9	EF EHPLMN	TR	NA	15	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF…FF	N	Size
68	6FDA	EF GBANL	LF	X	X	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF…FF	N	Record size, Number of records
71 or 73	6FDB	EF EHPLMNPI	TR	NA	1	PIN1	ADM1	NEVER	ADM1	ADM1	2	00	N	No
74	6FDC	EF LRPLMNSI	TR	NA	1	PIN1	ADM1	NEVER	ADM1	ADM1	2	00	N	No
68 or 76	6FDD	EF NAFKCA	LF	X	X	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF…FF	N	Record size, Number of records
78	6FDE	EF SPNI	TR	NA	X	ALWAYS	ADM1	NEVER	ADM1	ADM1	10	00 FF...FF	N	Size

79	6FDF	EF PNNI	TR	NA	X	ALWAYS	ADM1	NEVER	ADM1	ADM1	10	00 FF…FF	N	Size
80	6FE2	EF NCP-IP	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
	6FE6	EF UFC	TR	NA	30	ALWAYS	ADM1	NEVER	ADM1	ADM1	10	80 1E 60 C0 1E 90 00 80 04 00 00 00 00 00 00 00 00 00 F0 00 00 00 00 40 00 00 00 00 00 00 80	N	Size
96	6FE8	EF NASCONFIG	TR	NA	18	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
95	6FE7	EF UICCIARI	LF	X	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Record size, Number of records
97	6FEC	EF PWS	TR	NA	X	ALWAYS	ADM1	NEVER	ADM1	ADM1	10		Y	Size
2 or 99	6FED	EF FDNURI	LF	X	X	PIN1	PIN2	NEVER	ADM1	ADM1	8	FF…FF	N	Record size, Number of records
6 or 99	6FEE	EF BDNURI	LF	X	X	PIN1	PIN2	NEVER	ADM1	ADM1	8	FF…FF	N	Record size, Number of records
4 or 99	6FEF	EF SDNURI	LF	X	X	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF…FF	N	Record size, Number of records
108	6FF0	EF IWL	LF	X	X	ADM1	ADM1	NEVER	ADM1	ADM1	3		Y	Record size, Number of records
108	6FF1	EF IPS	CY	X	4	ALWAYS	ADM1	NEVER	ADM1	ADM1	10	FF…FF	N	Number of records
108	6FF2	EF IPD	LF	X	X	ADM1	ADM1	NEVER	ADM1	ADM1	3	FF…FF	N	Record size, Number of records

Files EF GBABP, EF MSK, EF MUK, EF GBANL and EF NAFKCA are associated with services which require support at the eUICC operating system level. So, even if indicated in the profile, the creation of these files shall be skipped by the eUICC if these functionalities are not supported by the eUICC framework. In that case, the eUICC shall answer to the Profile Creator with a status code set to "`feature-not-supported`" with "`additional-information`" set to '1' if GBA is not supported, to '2' if MBMS is not supported and '3' if both are not supported.

9.5.3   DF Phonebook

The template for DF Phonebook at the USIM level is the same as the template for DF Phonebook at the DF Telecom level. This Template is a "Not created by default" type template.

Template OID: `{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) phonebook(6)}`

9.5.4   DF GSM-ACCESS

This Template is a "Not created by default" type template.

Template OID: `{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) gsm-access(7)}`

Ass. Serv.	FID	EF Name	File Type	NB Rec.	File / Rec Size	Access Conditions					Acces Rules	Default Value	Content Required	Parameters
						Read	Update	Incr.	Act.	Deact.				
27	5F3B	DF GSM-ACCESS	DF											
27	4F20	EF Kc	TR	NA	9	PIN1	PIN1	NEVER	ADM 1	ADM1	5	FF FF FF FF FF FF FF FF 07	N	No
27	4F52	EF KcGPRS	TR	NA	9	PIN1	PIN1	NEVER	ADM 1	ADM1	5	FF FF FF FF FF FF FF FF 07	N	No
39	4F63	EF CPBCCH	TR	NA	10	PIN1	PIN1	NEVER	ADM 1	ADM1	5	FF..FF	N	Size
40	4F64	EF InvScan	TR	NA	1	PIN1	ADM 1	NEVER	ADM 1	ADM1	2	00	N	No

9.5.5   DF MexE

There is no template currently defined for this DF.

9.5.6   DF WLAN

There is no template currently defined for this DF.

9.5.7   DF HNB

There is no template currently defined for this DF.

9.5.8   DF SoLSA

There is no template currently defined for this DF.

9.5.9   DF BeCast

There is no template currently defined for this DF.

9.5.10   DF ProSe

There is no template currently defined for this DF.

9.6   ISIM

9.6.1   Mandatory ISIM EFs

This Template is a "Created by default" type template.

Security, Identity, Mobility

simalliance

Template OID: `{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) isim(8)}`

Ass. Serv.	FID	EF Name	File Type	NB Rec.	File / Rec Size	Access Conditions					Acces Rules	Default Value	Content Required	Parameters
						Read	Update	Incr.	Act.	Deact.				
	XXXX	ADF ISIM	ADF											Temporary FID
	6F02	EF IMPI	TR	NA	X	PIN1	ADM 1	NEVER	ADM 1	ADM1	2		Y	Size
	6F04	EF IMPU	LF	1	X	PIN1	ADM 1	NEVER	ADM 1	ADM1	2		Y	Size
	6F03	EF Domain	TR	NA	X	PIN1	ADM 1	NEVER	ADM 1	ADM1	2		Y	Size
	6F07	EF IST	TR	NA	14	PIN1	ADM 1	NEVER	ADM 1	ADM1	2		Y	Size
	6FAD	EF AD	TR	NA	3	ALWAYS	ADM 1	NEVER	ADM 1	ADM 1	10	000000	N	Size
	6F06	EF ARR	LF	X	X	ALWAYS	ADM 1	NEVER	ADM 1	ADM 1	10		Y	Record size, Number of records

9.6.2   Optional ISIM EFs

This Template is a "Not created by default" type template.

Template OID: `{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) opt-isim(9)}`

Ass. Serv.	FID	EF Name	File Type	NB Rec.	File / Rec Size	Access Conditions					Acces Rules	Default Value	Content Required	Parameters
						Read	Update	Incr.	Act.	Deact.				
1 or 5	6F09	EF P-CSCF	LF	1	1	PIN1	ADM 1	NEVER	ADM 1	ADM1	2	'07FF…FF'	N	Size
2	6FD6	EF GBABP	TR	NA	X	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF	N	Size
2	6FDA	EF GBANL	LF	X	X	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF...FF	N	Record size, Number of records
2 or 4	6FDD	EF NAFKCA	LF	X	X	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF…FF	N	Record size, Number of records
6 or 8	6F3C	EF SMS	LF	10	176	PIN1	PIN1	NEVER	ADM1	ADM1	5	the first byte of each record set to '00' and the remaining bytes set to 'FF'	N	Number of records
6 or 8	6F43	EF SMSS	TR	NA	2	PIN1	PIN1	NEVER	ADM1	ADM1	5	FFFF	N	No
7or 8	6F47	EF SMSR	LF	10	30	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF...FF	N	Number of records
8	6F42	EF SMSP	LF	1	38	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF...FF	N	Number of records

simalliance

| 10 | 6FE7 | EF UICCIARI | LF | X | X | PIN1 | ADM1 | NEVER | ADM1 | ADM1 | 2 | | | Y | Record size, Number of records |
| 8 | 6FE5 | EF PSISMSC | LF | X | X | PIN1 | PIN1 | NEVER | ADM1 | ADM1 | 5 | - | | Y | Record size, Number of records |

Files EF GBABP, EF GBANL and EF NAFKCA are associated with services which require support at the eUICC operating system level. So, even if indicated in the profile, the creation of these files shall be skipped by the eUICC if these functionalities are not supported by the eUICC framework. In that case, the eUICC shall answer to the Profile Creator with a status code set to `"feature-not-supported"` with `"additional-information"` set to '1' if GBA is not supported, to '2' if MBMS is not supported and '3' if both are not supported.

9.7   CSIM

9.7.1   Mandatory CSIM EFs

This Template is a "Created by default" type template.

Template OID: `{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) csim(10)}`

Ass. Serv.	FID	EF Name	File Type	NB Rec.	File / Rec Size	Access Conditions					Acces Rules	Default Value	Content Required	Parameters
						Read	Update	Incr.	Act.	Deact.				
	XXXX	ADF CSIM	ADF											Temporary FID
	6F06	EF ARR	TR	NA	9	ALWAYS	ADM 1	NEVER	ADM 1	ADM 1	10		Y	
	6F21	EF CALL_COUNT	CY	10	2	PIN1	PIN1	PIN1	ADM1	ADM1	7	00 00	N	
	6F22	EF IMSI_M	TR	NA	10	PIN1	ADM1	NEVER	PIN1	ADM1	6	00…00	N	No
	6F23	EF IMSI_T	TR	NA	10	PIN1	ADM1	NEVER	PIN1	ADM1	6	00…00	N	No
	6F24	EF TMSI	TR	NA	16	PIN1	ADM1	NEVER	ADM1	ADM1	2	00 00 00 00 00 00 00 00 00 FF FF FF FF 00 00 00	N	No
	6F25	EF AH	TR	NA	2	ADM1	ADM1	NEVER	ADM1	ADM1	3	00 00	N	No
	6F26	EF AOP	TR	NA	1	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	
	6F27	EF ALOC	TR	NA	7	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	
	6F28	EF CDMAHOME	TR	NA	5	PIN1	PIN1	NEVER	ADM1	ADM1	5	00...00	N	No
	6F29	EF ZNREGI	TR	NA	8	PIN1	PIN1	NEVER	ADM1	ADM1	5	00…00	N	No
	6F2A	EF SNREGI	TR	NA	7	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	

	6F2B	EF DISTREGI	TR	NA	8	PIN1	PIN1	NEVER	ADM1	ADM1	5	00…00	Y	Size
	6F2C	EF ACCOLC	TR	NA	1	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
	6F2D	EF TERM	TR	NA	1	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	
	6F2F	EF ACP	TR	NA	7	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	
	6F30	EF PRL	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
	6F31	EF RUIMID	TR	NA	5	ALWAYS	NEVER	NEVER	NEVER	NEVER	4		Y	
	6F32	EF CSIM_ST	TR	NA	6	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
	6F33	EF SPC	TR	NA	3	ADM1	ADM1	NEVER	ADM1	ADM1	3	00…00	N	
	6F34	EF OTAPASPC	TR	NA	12	PIN1	PIN1	NEVER	ADM1	ADM1	5	00	N	Size
	6F35	EF NAMLOCK	TR	NA	1	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	
	6F36	EF OTA	TR	NA	17	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
	6F37	EF SP	TR	NA	1	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
	6F38	EF ESN_MEID_ME	TR	NA	8	ALWAYS	ADM1	NEVER	ADM1	ADM1	10	00…00	N	
	6F3A	EF LI	TR	NA	6	ALWAYS	PIN1	NEVER	ADM1	ADM1	1	FF…FF	N	Size
	6F42	EF USGIND	TR	NA	1	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
	6F43	EF AD	TR	NA	3	ALWAYS	ADM1	NEVER	ADM1	ADM1	10	00…00	N	Size
	6F45	EF MAX_PRL	TR	NA	4	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
	6F46	EF SPCS	TR	NA	1	PIN1	NEVER	NEVER	NEVER	NEVER	12		Y	
	6F55	EF MECRP	TR	NA	3	PIN1	PIN1	NEVER	ADM1	ADM1	5	00..00	N	
	6F70	EF HOME_TAG	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
	6F71	EF GROUP_TAG	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
	6F72	EF SPECIFIC_TAG	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
	6F73	EF CALL_PROMPT	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	

9.7.2 Optional CSIM EFs

This Template is a "Not created by default" type template.

Template OID: `{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) opt-csim(11)}`

Ass. Serv.	FID	EF Name	File Type	NB Rec.	File / Rec Size	Access Conditions					Acces Rules	Default Value	Content Required	Parameters
						Read	Update	Incr.	Act.	Deact.				
	6F2E	EF SSCI	TR	NA	1	PIN1	PIN11	NEVER	ADM1	ADM1	5		Y	
2	6F3B	EF FDN	LF	20	26	PIN1	PIN2	NEVER	ADM1	ADM1	8	FF…FF	N	Record size, Number of records
6	6F3C	EF SMS	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5	00 FF…FF	N	Record size, Number of records
7	6F3D	EF SMSP	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF … FF	N	Record size, Number of records
6	6F3E	EF SMSS	TR	NA	X	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF	N	No
	6F3F	EF SSFC	TR	NA	X	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	
10	6F41	EF SPN	TR	NA	35	ALWAYS	ADM1	NEVER	ADM1	ADM1	10		Y	
	6F44	EF MDN	LF	X	11	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	Number of records
	6F47	EF ECC	TR	NA	X	ALWAYS	ADM1	NEVER	ADM1	ADM1	10	FF…FF	N	Size
14,15	6F48	EF ME3GPDOPC	TR	NA	1	PIN1	PIN1	NEVER	ADM1	ADM1	5	00	N	
14,15	6F49	EF 3GPDOPM	TR	NA	1	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
14	6F4A	EF SIPCAP	TR	NA	4	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
15	6F4B	EF MIPCAP	TR	NA	5	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
14	6F4C	EF SIPUPP	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
15	6F4D	EF MIPUPP	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
14	6F4E	EF SIPSP	TR	NA	1	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	
15	6F4F	EF MIPSP	TR	NA	1	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	
14	6F50	EF SIPPAPSS	TR	NA	X	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	Size
	6F53	EF PUZL	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
	6F54	EF MAXPUZL	TR	NA	5	PIN1	ADM1	NEVER	ADM1	ADM1	5		Y	
8	6F56	EF HRPDCAP	TR	NA	1	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
8	6F57	EF HRPDUPP	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size

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	6F58	EF CSSPR	TR	NA	1	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF	N	
8	6F59	EF ATC	TR	NA	1	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
	6F5A	EF EPRL	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
9	6F5B	EF BCSMScfg	TR	NA	1	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
9	6F5C	EF BCSMSpref	TR	NA	1	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF	N	
9	6F5D	EF BCSMStable	LF	X	X	PIN1	ADM1	NEVER	ADM1	ADM1	2	00 FF…FF	N	Record size, Number of records
9	6F5E	EF BCSMSp	LF	X	2	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF FF	N	Record Count
18	6F63	EF BAKPARA	LF	X	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Record size, Number of records
18	6F64	EF UpBAKPARA	CY	X	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Record size, Number of records
19	6F65	EF MMSN	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5	00 00 00 FF…FF	N	Record size, Number of records
20	6F66	EF EXT8	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF	N	Record size, Number of records
19	6F67	EF MMSICP	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2	FF…FF	N	Size
19	6F68	EF MMSUP	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF…FF	N	Record size, Number of records
19,21	6F69	EF MMSUCP	TR	NA	X	PIN1	PIN1	NEVER	ADM1	ADM1		FF…FF	N	Size
22	6F6A	EF AUTH_CAPABILITY	LF	X	X	PIN1	ADM1	NEVER	ADM1	ADM1	2	00…00	N	Record size, Number of records
16	6F6B	EF 3GCIK	TR	NA	32	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
25	6F6C	EF DCK	TR	NA	20	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	
23	6F6D	EF GID1	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
24	6F6E	EF GID2	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
26	6F6F	EF CDMACNL	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
34	6F74	EF SF_EUIMID	TR	NA	7	ALWAYS	NEVER	NEVER	NEVER	NEVER	4		Y	
2	6F75	EF EST	TR	NA	X	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	Size
	6F76	EF HIDDEN_KEY	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
17	6F77	EF LCSVER	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size

17	6F78	EF LCSCP	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
4	6F79	EF SDN	LF	X	X	PIN1	PIN2	NEVER	ADM1	ADM1	8		Y	Record size, Number of records
3	6F7A	EF EXT2	LF	X	13	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Number of records
5	6F7B	EF EXT3	LF	X	13	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	Number of records
28	6F7C	EF ICI	CY	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	Record size, Number of records
27	6F7D	EF OCI	CY	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	Record size, Number of records
29	6F7E	EF EXT5	LF	X	13	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	Number of records
33	6F7F	EF CCP2	LF	X	X	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	Record size, Number of records
	6F80	EF AppLabels	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
	6F81	EF MODEL	TR	NA	126	PIN1	PIN1	NEVER	ADM1	ADM1	5	FF..FF	N	
36	6F82	EF RC	TR	NA	X	ALWAYS	ADM1	NEVER	ADM1	ADM1	10		Y	Size
6	6F83	EF SMSCAP	TR	NA	4	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
35	6F84	EF MIPFlags	TR	NA	1	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
14	6F85	EF 3GPDUPPExt	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
35	6F87	EF IPV6CAP	TR	NA	21	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
14	6F88	EF TCPConfig	TR	NA	2	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
14	6F89	EF DGC	TR	NA	3	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
37	6F8A	EF WAPBrowserCP	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size
37	6F8B	EF WAPBrowserBM	TR	NA	X	PIN1	PIN1	NEVER	ADM1	ADM1	5		Y	Size
19	6F8C	EF MMSConfig	TR	NA	8	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	
38	6F8D	EF JDL	TR	NA	X	PIN1	ADM1	NEVER	ADM1	ADM1	2		Y	Size

9.8   EAP

There is no template currently defined for this DF.

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9.9 Access Rules Definition

The following table summarises the access rules used by the different templates defined above.

Access Conditions					Acces Rules
Read	Update	Incr.	Act.	Deact.	
ALWAYS	PIN 1	NEVER	ADM 1	ADM 1	1
PIN1	ADM 1	NEVER	ADM 1	ADM1	2
ADM1	ADM1	NEVER	ADM1	ADM1	3
ALWAYS	NEVER	NEVER	NEVER	NEVER	4
PIN1	PIN1	NEVER	ADM 1	ADM1	5
PIN1	ADM1	NEVER	PIN1	ADM1	6
PIN1	PIN1	PIN1	ADM1	ADM1	7
PIN1	PIN2	NEVER	ADM1	ADM1	8
ALWAYS	PIN1	NEVER	PIN1	PIN1	9
ALWAYS	ADM 1	NEVER	ADM 1	ADM 1	10
ALWAYS	NEVER	NEVER	ADM 1	ADM 1	11
PIN1	NEVER	NEVER	NEVER	NEVER	12

These access rules may be used by the Profile Creator in order to set the content of EF ARR files.

10. ANNEX B (Normative): List of OIDs

All the OIDs used in this specification are located under the SIMalliance branch dedicated for this specification:
`{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1)}`

The table below lists the OIDs currently assigned:

ASN.1 Notation	Dot Notation	Comments
`{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) spec-version(1) version-one(1)}`	2.23.143.1.1.1	Specification version
`{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) mf(1)}`	2.23.143.1.2.1	MF system template
`{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) cd(2)}`	2.23.143.1.2.2	DF CD file system template
`{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) telecom(3)}`	2.23.143.1.2.3	DF TELECOM file system template
`{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) usim(4)}`	2.23.143.1.2.4	ADF USIM "created by default" file system template
`{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) opt-usim(5)}`	2.23.143.1.2.5	ADF USIM "not created by default" file system template
`{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) phonebook(6)}`	2.23.143.1.2.6	DF PHONEBOOK under ADF USIM file system template
`{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) gsm-access(7)}`	2.23.143.1.2.7	DF GSM-ACCESS under ADF USIM file system template
`{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) isim(8)}`	2.23.143.1.2.8	ADF ISIM "created by default" file system template
`{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) opt-isim(9)}`	2.23.143.1.2.9	ADF ISIM "not created by default" file system template
`{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) csim(10)}`	2.23.143.1.2.10	ADF CSIM "created by default" file system template
`{joint-iso-itu-t(2) international-organizations(23) simalliance(143) euicc-profile(1) template(2) opt-csim(11)}`	2.23.143.1.2.11	ADF CSIM "not created by default" file system template

11. ANNEX C (Informative): Example of Profile Package

11.1 Example of Profile Package structure

The following example shows a typical structure of a Profile Package containing a USIM application and a supplementary SD containing an application.

Profile Element	Comments
ProfileHeader	
PE-MF	
PE-PUKCodes	Only one set of PUK codes exist in a Profile Package
PE-PINCodes	Creates the Global PIN codes
PE-TELECOM	
PE-GenericFileManagement	To be repeated in order to create the files required in the DF Phonebook under DF Telecom
PE-USIM	Creates a USIM ADF and the associated files
PE-OPT-USIM	
PE-PHONEBOOK	Creates DF PHONEBOOK under USIM ADF
PE-AKAParameter	Sets the AKA parameters related to the previously created USIM
PE-PINCodes	Creates the local PIN code structure at the USIM ADF level
PE-GenericFileManagement	To be repeated in order to create additional files required in the ADF USIM
PE-GSM-ACCESS	
PE-SecurityDomain	Creates the MNO-SD
PE-SecurityDomain	Creates a SSD
PE-Application	Loads a USAT application
PE-Application	Loads an application in the SSD
PE-RFM	Sets the RFM parameters for the Profile
PE-End	End of the Profile Package

11.2 Example of Profile Package content

The following example contains a limited profile content.

```
value1 ProfileElement ::= header : {
  major-version 1,
  minor-version 0,
  profileType "SIM Alliance Sample Profile",
  iccid '00000000000000000000'H,
  eUICC-Mandatory-services {
    usim NULL,
    milenage NULL
  }
}
value2 ProfileElement ::= mf : {
  mf-header {
    mandated NULL,
    identification 3
  },
  mf-property {
    lcsi '05'H
  },
  ef-iccid {
```

```
  },
  ef-dir {
  },
  ef-arr {
  }
}
Value3 ProfileElement ::= pukCodes : {
  puk-Header {
    mandated NULL,
    identification 2
  },
  pukCodes {
    {
      keyReference pukAppl1,
      pukValue '0000000000000000'H,
      maxNumOfAttemps 10,
      retryNumLeft 10
    },
    {
      keyReference pukAppl2,
      pukValue '0000000000000000'H,
      maxNumOfAttemps 10,
      retryNumLeft 10
    },
    {
      keyReference secondPUKAppl1,
      pukValue '0000000000000000'H,
      maxNumOfAttemps 10,
      retryNumLeft 10
    }
  }
}
value4 ProfileElement ::= cd : {
  cd-header {
    identification 4
  },
  cd-df-property {
    lcsi '05'H
  }
}
value5 ProfileElement ::= telecom : {
  telecom-header {
    identification 5
  },
  telecom-df-property {
    lcsi '05'H
  }
}
value6 ProfileElement ::= usim : {
  usim-header {
    mandated NULL,
    identification 6
```

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```
  },
  usim-df-property {
    lcsi '05'H
  },
  ef-imsi {
  },
  ef-ust {
  },
  ef-spn {
  },
  ef-est {
  },
  ef-acc {
  },
  ef-ecc {
  }
}
value7 ProfileElement ::= opt-usim : {
  optusim-header {
    identification 7
  },
  ef-arr {
    fileContent '00'H
  },
  ef-msisdn {
    fileContent '00'H
  }
}
value8 ProfileElement ::= pinCodes : {
  pin-Header {
    identification 8
  },
  pinCodes pinconfig : {
    {
      keyReference pinAppl1,
      pinValue '0000000000000000'H,
      pinAttributes 1,
      maxNumOfAttemps 3,
      retryNumLeft 3
    }
  }
}
value9 ProfileElement ::= akaParameter : {
  aka-header {
    identification 9
  },
  algorithmID milenage,
  algorithmOptions '00'H,
  algoConfiguration algoParameter : {
    key '00'H,
    opc '00'H,
    rotationConstants '4000204060'H,
```

```
    xoringConstants
'000000000000000000000000000000010000000000000000200000000000000004000000000000
8'H
  },
  sqnOptions '02'H,
  sqnDelta '000010000000'H,
  sqnAgeLimit '000010000000'H
}
value10 ProfileElement ::= securityDomain : {
  sd-Header {
    mandated NULL,
    identification 10
  },
  instance {
    applicationLoadPackageAID '0000000000'H,
    classAID '0000000000'H,
    instanceAID '0000000000'H,
    applicationPrivileges '00'H,
    lifeCycleState '03'H,
    applicationSpecificParametersC9 '00'H
  },
  keyList {
    {
      keyUsageQualifier '00'H,
      keyAccess '00'H,
      keyIdentifier '00'H,
      keyVersionNumber '00'H,
      keyCompontents {
        {
          keyType '00'H,
          keyData '00'H
        }
      }
    }
  },
  sdPersoData {
    '00'H
  }
}
```

12. ANNEX D (Informative): Document history

The table below indicates changes that have been incorporated into the present document since it was created by SIMalliance.

Version	Date	Brief Description of Change
V1.0	26/06/2015	1st Release of Document
V1.01	06/07/2015	Addition of SIMalliance OID value